



# The “Black Swan” Is “Green”: The Role of the Financial Sector in the Green Transition

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Received: August 14, 2023  
Accepted: October 27, 2023  
Published: March 16, 2024

## Keywords:

Green transition;  
Green finance;  
ESG



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**Abstract:** *The European Union has started an ambitious and unique transition to a green economy. The financial sector is assigned a key role in the transformation process. While the legal framework of the transition is already developed, many challenges remain to be resolved to achieve a smooth functioning of the financial system within the changing environment. The article explores theoretical views on the green transition and the role of the financial sector. The impact and the risks of the ongoing reforms in the financial sector are identified. The applied methodology is based on a combination of qualitative and quantitative analysis using ESG data, as well as data from a special survey aiming at capturing the views of companies with significant carbon emissions on their relationship with the banks in the changing regulatory and financial framework.*

## 1. INTRODUCTION

The European Union has embarked on an ambitious transition to a green economy. This transition transforms the entire economy, and the financial sector is assigned a key role in achieving the Paris Agreement goals. To fulfill its new mission, the financial sector has initiated large-scale changes in its functions and management. Using Nassim Taleb’s metaphor from his Black Swan theory, what happens in the financial sector falls under the understanding of the “black swan”, only now it is “green” (Taleb, 2007). The green transition in the EU takes place in an unfavorable external environment marked by COVID-19 and its consequences, Russia’s invasion of Ukraine, energy uncertainty and high inflation. In this environment, the financial sector should restructure its main activities and minimize the risks to financial stability.

The article identifies the main risks the financial system faces concerning climate change and the transition to a green economy, in order to outline the factors for successfully fulfilling the important mission of the sector in the transition to a climate-neutral green economy. The theoretical views on the green transition as well as the policies carried out by the European Union are studied here, seeking an answer to the question of how much the financial sector can contribute to the green transition and how this will affect its stability and role as a financial intermediary. The literature review focuses on the theoretical deficits in the conceptualization of the green transition that may create risks for its implementation. An unconventional view of the relationship of the green transition with the economic theory is presented. The main goals, tasks and regulations of the financial sector concerning the green transition are analyzed. In particular, the progress of the Bulgarian banking system (specifically 18 banks) in the implementation of the goals of the green transition is examined.

The research methodology includes quantitative and qualitative analysis. Green transition research is challenged by the limited data and short time series. To fill in the data gap, two empirical studies were conducted. The progress in carrying out the reforms in the banking sector is tracked based

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on the annual reports of the banks and the non-financial declaration with the ESG indicators data. The decarbonization of the economy requires a new model of relationships between the banks and their energy-intensive clients and carbon dioxide emitters. To investigate the change in these relationships, an empirical study of the enterprises with the largest carbon emissions is conducted.

The main thesis here is that the financial sector has started its green transition despite the unfavorable external environment. However, in this initial stage, there are problems and challenges and their resolution is of key significance to whether the financial sector will fulfill its mission in preserving the financial stability and expanding the financial intermediation.

## 2. WHERE DOES THE GREEN TRANSITION SEND THE ECONOMIC THEORY?

A good theory is the basis for a good economic policy. Comparing the main economic theories with the recent concepts of the green economy leads to the conclusion that the green transition challenges the conventional economic theory. Despite the strong evidence of the economy's culpability for climate change and the sense of academic agreement on the need for a green transition, how it is carried out provokes debates within the main economic schools. The focus is on the relevance of the theory of growth. The theory of [Malthus \(1798\)](#) has sent a warning of the ultimate carrying capacity of the earth and the depletion of the natural resources associated with the increasing population. This theory has been criticized for more than two hundred years, mainly for ignoring technological development and the ability of the economy to grow. John Stuart Mill ([Mill, 1848](#)), in Chapter Six "Of the Stationary State" of his work "*Principles of Political Economy*", argues that "the logical conclusion of the endless growth is the destruction of the environment and a reduced quality of life". From here he derives the need for the economy to always be in a "steady state". His views in this area were later developed by many economists. Schumpeter [Commoner \(1971\)](#) warns that modern technology causes increasing attacks on the environment.

It seems that the debate on the green transition has given additional impulse to the degrowth theory. Already in the 1970s, scientists like [Gorz \(1975\)](#) declared themselves against high economic growth, pleading for reduced ones to spare natural resources. On the other side of this century-old discussion are the economists who rely more on the spontaneity in the development of the economy and the ability to adapt to nature, on the one hand, and the population and its necessary resources, on the other.

In recent years, the debate on whether to limit economic growth to reduce the harmful impact on the climate has involved two Nobel Prize winners in economics – Joseph Stiglitz and William Nordhaus. This discussion is significant for the financial sector, which is very sensitive to economic growth, and its slowdown or limitation could lead to a decrease in financial intermediation and an erosion of financial stability. There is a wide political consensus, sealed in the 2015 Paris Agreement, on the need to limit global warming by reducing the temperature by 1.5 degrees. The Dynamic Integrated Model of Climate and the Economy (DICE), developed by [Nordhaus \(2018\)](#) however, shows that the goal of the UN policy to reduce temperatures by 1.5 degrees would bring more poverty to humanity. The relevance of the model is disputed by [Stern et al. \(2021\)](#). According to Stiglitz, it is not necessary to cut growth to achieve climate neutrality.

[Yergin \(2020\)](#) quite aptly makes a comparison between the green transition and the industrial revolution. "I was struck by how different this one is. Whereas technology and economic advantage drove earlier transitions, public policy is now the most important factor." In this regard,

economic science has a problem, since the engine of the process is not the spontaneous engine of the economy, but the state and the perceived necessity, which does not necessarily coincide with economic rationality. On the other hand, the green transition takes place in a much shorter period, unlike the industrial revolution. The time and term of the transition are the subject of serious scientific debates since they determine the policy decisions concerning the target date for carbon neutrality. While some believe it is too late and the lost time should be made up for, others believe that climate change does not need to produce shocks to the economy and can be limited by a more gradual reduction of emissions.

The difficulties of some countries, including in Central and Eastern Europe, are expected to be compensated with more financial resources and more social programs for the affected. However, in this regard, compensating time with money can be successful with effective use of the financial resource, which is by no means certain in terms of either the amount of absorbed financial resources or the efficiency of their use. In this connection, some authors pay attention to the risk of divergence in the transition to a climate-neutral economy (Bobeva et al., 2021).

The literature review shows that the green transition has challenged the conventional economic theory opening the discussion on the fundamental questions of whether economic growth should be slowed down or reduced, whether the state should play a decisive role in the economic transformation, whether the transition should be carried out as a shock therapy or gradually, whether convergence or divergence in the EU will be taking lead.

### 3. THE ROLE OF THE FINANCIAL SECTOR IN THE GREEN TRANSITION

Financial theory has been enriched with new concepts like green finance, climate finance, greening financial sector, green bonds, and others. They are positioned in the set of concepts of sustainable development and sustainable economy. The understanding of “sustainable finance” is broader than the concept of “green finance”. “Sustainable finance” covers everything related to both environmental and social issues. “Green finance” is mainly used when environmental aspects are considered. “Climate finance” refers to finance primarily related to climate change (in the context of the UN climate change negotiations).

The green transition changes the fundamental role of the financial sector. The financial sector is the main intermediary in the accumulation and distribution of the huge public investments that are set aside for the realization of the goals of the transition. In the transition, the financing function of the sector is limited regarding a significant segment of the clients – companies with high carbon emissions. The transition requires changes in the internal structure and functioning of the financial institutions. The institutional and regulatory framework in which the sector functions changes, as well as the ratings of the rating agencies.

The funding and the financial package are the main tools for implementing the green transition in the EU, as well as for solving the economic and social problems it creates. The question is whether the large financial flows at the European and national level are a sufficient incentive and engine to implement the green transition without challenging the economic and financial stability as well as the living standards. There is a consensus between theory and policy decisions that a wide range of instruments should be used, including emission prices, investment programs, public grant schemes, capital market interventions, standards, regulations, and labeling<sup>2</sup>.

<sup>2</sup> Labeling here means determining which investments and activities are climate friendly and which are not.

The financial aspect of the green transition is a challenge to the financial theory. Substitution of the investments in traditional carbon-intensive sectors with low-carbon or neutral ones is expected to lead to significant decarbonization. However, investments in alternative green activities generally are initially expensive, though the subsequent costs are low. This type of investment has a relatively low and long-term return. The demand for alternative investment opportunities significantly exceeds the supply of such. Not the market, but the regulatory authorities decide what and how to be financed. As it seems, the green transition, in addition to being stimulated by the financial flows, is also a highly administrative process – with racing against time new regulations, taxes, restrictions, activities labeling, etc.

This feeling is intensified by the conditionality funding regime, introduced in the EU. The “money-for-reforms” principle is used to force countries with problems in the areas of legality, corruption and the effectiveness of the institutions, to carry out the relevant reforms. This is supplemented by the refusal of most countries to benefit from the debt part of the financial package. Thus, the overall financial package decreases and creates a risk for the achievement of both decarbonization and the expected impulse on economic growth.

The financial sector may play a decisive role in the green transition but the risks and challenges beyond climate change remain, i.e. international political tension, war in Ukraine, economic downturn, population aging, and inflation. The risks to financial stability increase. The green transition of the financial sector has to be conducted prudently with vigilance.

#### **4. IS FINANCIAL SECTOR GREENING?**

The method of restructuring of the financial sector is defined as regulation-led greening of the financial system. The greening induces a large-scale legal reform with eleven new regulations and directives specifically dedicated to the financial sector. Although the reform is a long process, at this stage, the main legal framework has been created, and the regulation on taxonomy ([Regulation EU, 2020](#)) occupies a central place in it. Reporting and disclosure requirements expand, and the financial institutions have to significantly increase their capacity to analyze and assess the climate risks and their impact on the client exposures. The most significant changes occur in risk management inside financial institutions by adding climate risks, conducting green stress tests, and calculating new indicators like the Green Asset Ratio (GAR).

Enlarging mandates and tasks of the financial regulatory and supervisory authorities includes expanding the analytical activity and the control functions of these institutions and updating the macroprudential supervision. New informal associations of regulatory bodies and academic institutions emerge for cooperation in the process of greening the economy and the financial sector. Such an example is the Network for Greening the Financial System ([NGFS, n.d.](#)).

Rating agencies also incorporate climate risks in their credit rating methodology. New agencies are established to create green ratings based on a set of criteria assessing the degree of compliance with the goals for reducing greenhouse emissions, limited use of natural resources, and other environmental indicators.

All these large-scale changes in the financial system, united in the concept of greening it, create new opportunities, but also risks for it. For this article, a study of the Bulgarian banking system (of 18 Bulgarian banks) was conducted. This study allows us to draw some conclusions.

Driven by both the new regulatory requirements and the initiative and empathy of the banks themselves, the green transition in the banking system happens despite the deterioration of the external environment. Most banks, especially those that are subsidiaries of foreign large groups, have already added to their strategies and operational targets the expansion of their green portfolio at the expense of reducing the brown portfolio. One of the identified challenges is that the capacity of the smaller banks to catch up with the larger banks in terms of the green transition is limited. This refers to the development of own strategies for the green transition, provision of advice and assistance to the clients in the restructuring towards a climate-neutral economic activity, and creation of effective internal systems for assessing the portfolio risks in the development of new products. Thus, the green transition may turn out to be a factor of divergence between the larger and the smaller banks in the financial and especially in the banking system.

The study shows that all banking institutions carry out an active policy and specific actions to reduce the carbon footprint of their activities. Some banks report around 30% reduction in emissions over the past three years. In this regard, another challenge appears – reducing own carbon footprint relates to closing offices, and expanding digital services, which, despite the advantages of reducing carbon emissions and reducing banks’ costs, leads to restriction of the access to financial services of specific clients in the older age groups, as well as the less financially literate clients.

The study data show that intense regulations in the financial sector for its greening could reduce credit activity to large sectors of the economy. The limited technological options for green investments could create credit bubbles in the available few. For example, high energy prices have encouraged significant private investments in photovoltaic plants. With the collapse of the prices during the summer months and the oversupply of this type of energy, there is a risk to the credit servicing. The problem is that the technological alternatives for investments that can be qualified as green are few and they are mostly renewable energy sources.

Since the regulatory requirements for corporate credits and portfolios are more comprehensive (stricter and much more in number), there is a risk that the banks will focus more on retail, which from the point of view of the risk profile of the banks will be more profitable. Retail banks may be in a better position, less exposed to changing their client base. However, this will encourage a bubble in the property market that is already quite inflated.

Greening the banking business suggests diverse practices depending on the size and the current portfolio of the banks.

## **5. HOW THE GREENING OF THE BANKS CHANGES RELATIONS WITH CLIENTS**

Since acquiring data on the progress of the green transition in the financial system is limited, an in-depth study (BAS, n.d.) is conducted on a 20% sample of the largest industrial carbon emitters in Bulgaria. The questionnaire includes questions to clarify whether and to what extent the relationship between banks and their carbon-emitting clients changes. Some of those companies admit that they have to reduce their business while others foresee complete closure. The companies demonstrate understanding and support for the green transition. The key question raised by the companies is how this transition should be carried out since there are lots of challenges. The study reveals an important consideration that a large part of the biggest CO<sub>2</sub>-emitting companies do not depend on bank credits. This limits the impact of the banks

on decarbonization. Statistical data confirm this conclusion. Emission-intensive sectors, including mining, electricity production and distribution, paper, glass, and transport, contribute about 40% to the GDP in 2022. Their restructuring over the last decade relates mainly to improving energy efficiency, but the credits to these sectors are significantly smaller as a share of the entire bank portfolio. For example, credits for the mining industry decreased and by December 2022 they were only 210 in number with a total value of about BGN 149 million (which is 0.18% of all credits in the system). This means that the measures to limit the crediting of the large carbon-emitting companies through the banking system will not have an effect in the case of Bulgaria. On the other hand, this will lead to a delay in their restructuring, since it requires significant investments.

The withdrawal of the banks from the companies with large emissions may have a rather negative impact on the green transition itself as well as on the banking system. One of the most important identified problems is that the financial institutions, in their quest to green the portfolio, find it easiest to refuse to finance emitting companies instead of doing what is the essence of the green transition, namely to support their restructuring. This, however, requires also new and large-scale expertise within the banks themselves, which takes time and resources, while meeting the goals to reduce the climate risks in the bank portfolios.

The study reveals the diverse experience of cooperation between banks and carbon-emitting companies: the banks exposed to more brown companies face more challenges.

## 6. CONCLUSION

This article presents the challenges the financial sector faces in the green transition. The literature review defines the complex task of how to carry out the green transition without harming economic growth and lowering living standards. In solving this theoretical and political task, a significant role has financial sector, which will encourage the transition by offering large-scale and flexible financing tools, especially for green projects. To realize the green transition, however, the financial sector should not abandon the companies with carbon emissions and focus only on alternative projects, but rather finance the projects for restructuring and reducing the emissions. This requires, particularly for countries like Bulgaria, that the transition be more gradual without shocks and hasty decisions, to preserve the economic and financial stability. Government interventions in limiting the CO<sub>2</sub> quota prices are suggested.

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