APPLICATION OF A GREEN BANKING PERFORMANCE INDEX TO PORTUGAL
Aplicação de um Índice de Desempenho de Banco Verde em Portugal

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ABSTRACT

This paper reports the calculation of a green banking performance index that considers the importance that banks give to environmental issues. Research was conducted considering all banks authorized to operate in Portugal and similar relevant institutions. The calculated green banking performance index reveals a large difference between the 5 most representative banks and the others. The 5 most representative banks show that, on average, they are very concerned with environmental issues, and the others reveal, on average, a medium level of concern in terms of environmental issues.
Keywords: Green banking performance; Banks; Climate change; Nonfinancial information.

APLICAÇÃO DE UM ÍNDICE DE DESEMPENHO DE BANCO VERDE EM PORTUGAL

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RESUMO

Este artigo relata o cálculo de um índice de desempenho de banca verde que considera a importância que os bancos atribuem às questões ambientais. A pesquisa foi realizada considerando todos os bancos autorizados a operar em Portugal e instituições similares relevantes. O índice calculado de desempenho de banca verde revela uma grande diferença entre os 5 bancos mais representativos e os demais. Os 5 bancos mais representativos mostram que, em média, estão muito preocupados com as questões ambientais, e os restantes revelam, em média, um nível médio de preocupação com as questões ambientais.

Palavras-chave: Desempenho da banca verde; Bancos; Alterações climáticas; Informação não financeira.

INTRODUCTION

Banks are becoming aware of the importance of climate change. Moreover, governments, supervisory institutions, and central banks, among others, are considering the possible impacts of climate change in financial institutions. The creation of the Task Force on Climate-Related Financial Disclosures in December 2015 is a concrete example of the increasing importance of climate change among relevant global financial players.

After 2015, regulations about the inclusion of nonfinancial information in banks' annual reports became mandatory in many countries. This inclusion incentivized the production of academic and technical research that considers the information disclosed by banks in their annual reports (e.g., data to calculate a green banking performance index).

The green banking performance index is a methodology that evaluates whether a particular bank considers a specific environmental aspect (e.g., annual consumption of paper) in its activity. Therefore, the consideration of a group of various environmental aspects allows the calculation of an index that can be used to evaluate whether a bank considers environmental aspects to be relevant. Furthermore, the current research aims to apply a green banking performance index to Portugal to evaluate the level of relevance that banks operating in Portugal give to environmental aspects.

A research by Bose, Khan, and Monem (in press) discovered a potential positive relationship between green banking performance and a bank's financial performance. Moreover, Faiella and Lavecchia (2020) found that the Italian financial system in 2018 was significantly affected by climate-related financial risks.

To the best of our knowledge, green banking performance in Portugal is not well explored, which constitutes a gap that can be analysed; so the current research seeks to contribute to the global discussion about the effects of climate change on banks considering the particular case of Portugal. Therefore, we think that for this topic, it is important to deeply analyse each country because of their specificities, which will allow the construction of better policy prescriptions.

Furthermore, the application of a green banking performance index to Portugal would be useful to several financial players (e.g., the Bank of Portugal, the European Central Bank, analysts, and investors) to verify the current status of banks operating in Portugal considering environmental issues.

The remainder of the study is organized as follows. Section 2 presents a brief literature review, and Section 3 describes the data and methodology. Section 4 discusses the results, and Section 5 concludes.

1. LITERATURE REVIEW

There are different strands of literature about environmental issues and their relations with banks.

First, we study the effects of green banking on banks' financial performance. Bose et al. (in press) discovered a potential positive relationship between green banking performance and a bank's financial performance. Fabris (2020) argued that climate change can have a significant negative impact on the balance sheets of financial institutions. Grupo de Reflexão para o Financiamento Sustentável (2019) highlighted that climate change can have relevant negative impacts on the overall financial system.

Second, a series of articles emphasize the importance of the effects of climate change on banks. For example, the Task Force on Climate-related Financial Disclosures (2020) reported that the disclosure of climate-related financial information is increasing but is insufficient. Moreover, Kamdem-Fotso, Ngouadje, and Ermeneux (2020) stated that climate risks are now seen as a relevant concern by using a survey of 33 central banks and regulatory authorities worldwide. Furthermore, Schellhorn (2020) emphasized that effective climate action is important to ensure the stability of the global financial system. Additionally, the Banco de Portugal (2020) emphasized that climate change and its effects on the financial system need to be mitigated. Moreover, Basseti (2020) mentioned that it is important that policymakers and academic research consider the effects of climate risks on financial institutions. Furthermore, Colas, Khaykin, and Pyanet (2020) mentioned that the Task Force on Climate-Related Financial Disclosures and the Prudential Regulation Authority recommend banks examine climate risk. Moreover, Lamperti, Bosetti, Roventini, and Tavoni (2019) argued that the regularity of banking crises will increase due to climate change. Additionally, Durrani, Rosmin, and Volz (2020) found that a great part of respondents of a group of 18 central banks from the Asia-Pacific region considered that they should

promote green finance and sustainable funding. Furthermore, Esposito, Mastromatteo, and Molocchi (2020) mentioned that in order to reach the goals of the Paris Agreement, the financial system needs to be adapted. Moreover, Sawyer (2020) mentioned that the structures of the financial sector need to be modified to encourage financial institutions to focus on green investment. Additionally, the Rainforest Action Network (2020) mentioned that major global banks have increased fossil financing since the Paris Agreement. Finally, D'Orazio and Löwenstein (2020) identified a relevant relationship considering public funding and private renewable energy investments.

Third, a group of articles is more focused on the risk from climate change. For example, according to Plochan (2020), enterprise risk management processes at banks will need to consider the impacts of climate change. Moreover, Warmbrodt (2020) mentioned that the financial industry does not like the application of climate stress tests and modifications to capital rules, but political pressure has been changing this position. Furthermore, Eceiza, Harreis, Hartl, and Viscardi (2020) analysed the portfolios of 46 European banks and identified that approximately 15 percent of them registered an increase in the risk from climate change. Moreover, Faiella and Lavecchia (2020) found that the Italian financial system in 2018was significantly affected by climate-related financial risks, with a percentage between 8 and approximately 10 percent of banks' total assets. Furthermore, the Network for Greening the Financial System (2020a) notes that a great part of environmental risk analysis models for banks incorporate the impacts on credit risk metrics. Additionally, Regelink, Reinders, Vleeschhouwer, and Wiel (2017) emphasized the importance of climate-related risks and their impacts on financial institutions. Moreover, the Network for Greening the Financial System (2020b) note that the implementation of environmental risk analysis requires the association of multiple relevant actors, namely, supervisors, financial institutions and research institutions. Finally, Aznar-Siguan and Bresch (2019) highlighted the importance of quantifying the risk of extreme weather events and their impacts in terms of socioeconomic factors.

Fourth, a series of articles emphasise the importance of banks disclosing nonfinancial information. For example, the Bank of England (2020) stated that they are supporting an international initiative to emphasize the importance of firms disclosing information on the financial risks from climate change. Furthermore, Campra, Esposito, and Lombardi (2020) emphasized the idea that the banking industry needs to consider the adoption of nonfinancial reporting in a mandatory way rather than a voluntary way.

The current research is based on Bose et al. (in press) who used data from the banking sector of Bangladesh and discovered a potential positive relationship between green banking performance and a bank's financial performance. Therefore, as this research from Bose et al. (in press) introduces a new perspective in the literature linking the green banking performance and financial performance of banks in a specific country, we believe that it is important to calculate green banking performance in other countries. The specificities of banks are slightly different around the globe, and the inclusion of a euro area country such as Portugal would give a new perspective. However, our objective is to calculate only a green banking performance index for Portugal and not linking it with the financial performance of banks. Moreover, our version of a green banking performance index is an adapted version of Bose et al. (in press) to the Portuguese specificities. Therefore, we agree with Bose et al. (in press) that future research should conduct cross-country analysis, but it is not the goal of the current research.

2. DATA AND METHODS

Environmental issues such as climate change are considered more relevant by society in general. For example, the banking sector has started to include measures that consider the risks of climate change in its operations. Moreover, an increasing number of banks disclose nonfinancial information in their annual reports, which in some cases include information about measures adopted by the banks to reduce the impacts of their operations on the environment. Current research aims to determine the importance that banks operating in Portugal give to environmental issues.

The data used include the sustainability reports of banks operating in Portugal and nonfinancial information included in their annual reports. Therefore, sustainability reports and annual reports of banks are

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available on their official websites. The research sample includes all authorized banks operating in Portugal referring to 22 December 2020. However, regarding nonfinancial data, 2019 data is considered as they are the most updated data. Moreover, we decided to include two other institutions that are relevant in the Portuguese banking sector: Banco Montepio and Crédito Agrícola.

The initial sample includes 28 banks, 1 savings bank (Caixa Económica) and 1 central mutual agricultural credit bank. However, some institutions are excluded from the sample for different reasons. Itaú BBA Europe started its operations only on 3 February 2020. Furthermore, Banco Carregosa, Banco Invest, Novo Banco dos Açores, Banco Santander Consumer Portugal, Montepio Investimento, Banco Credibom, Bison Bank, Banco Português de Gestão, Banco de Investimento Global, Banco Madesant, Banco BAI Europa, Banco Finantia, Banco CTT, BNI – Banco de Negócios Internacional (Europa), and Banco ActivoBank are excluded as no relevant information is found for these banks. The final sample considers 12 banks, 1 savings bank and 1 central mutual agricultural credit bank. Therefore, this smaller sample can be a consequence of the small size of many banks operating in Portugal that are not obliged to report nonfinancial information according to the Ministério das Finanças (2017).

2.1. Construct Measurement

The current research considers the construction of a green banking performance index applied to Portuguese banks. The methodology is very similar to that of Bose et al. (in press) with some adjustments considering the particularities of the Portuguese banking sector.
The green banking performance index considers three main areas: cost efficiency, revenue growth, and nonfinancial benefits.
Based on Bose et al. (in press), we considered the following aspects in terms of cost efficiency:
- Information on the reduction of paper waste (1.1.)
- Information on the reduction of the consumption of water (1.2.)
- Information on the reduction of greenhouse gas emissions (1.3.)
  Moreover, based on Bose et al. (in press), the following items are considered in terms of revenue growth:
- Financing eco-friendly projects (2.1.)
- Focusing on green products such as online banking and mobile banking (2.2.)
  Finally, based on Bose et al. (in press), we considered different nonfinancial benefits that banks are performing:
- The bank has a policy addressing climate change (3.1.)
- The bank is a member of or supports green initiatives (3.2.)
  In the construction of the green banking performance index, we consider a scale between 0 and 7. Therefore, a bank with an index of 7 has a strong commitment to the impacts of climate change. Moreover, a bank with an index of 0 is not concerned with the impacts of climate change.

We decided to consider a similar methodology to Bose et al. (in press) because it is in line with the specificities of what we want to study. Moreover, we take appropriate care in collecting and treating data since there is a relevant number of banks that for different reasons do not have sustainability reports and/or have very limited nonfinancial information in their annual reports.

3. RESULTS ANALYSIS

The current research aims to assess the relevance that banks operating in Portugal give to environmental issues. Therefore, by adapting a methodology developed by Bose et al. (in press), we calculate a green banking performance index that considers three main aspects: cost efficiency, revenue growth, and nonfinancial benefits.

As stated by Bose et al. (in press), green banking performance is not directly observable; therefore, we need to use a proxy. In this regard, our proxy relies on the description of green banking activities in sustainability reports and/or nonfinancial information in annual reports.

The general results show a large difference between the 5 most representative banks (Caixa Geral de Depósitos, Banco Comercial Portugues, Novo Banco, Banco BPI, and Banco Santander Portugal) and the other

banks. The 5 most representative banks give more relevance to environmental issues than the other banks. However, this result can be affected by the banks' size and by the obligation to report nonfinancial information. Table 1 shows the first part of the green banking performance index, cost efficiency. Therefore, there are 4 banks with a 0 in this part: Banco Primus, Banco Efisa, Banco Best, and Haitong Bank.

Table 1 – Cost efficiency

	Cost Efficiency			Total
	Information on the reduction of paper waste (1.1.)	Information on the reduction of the consumption of water (1.2.)	Information on the reduction of greenhouse gas emissions (1.3.)	
Caixa Geral de Depósitos	Yes	Yes	Yes	**3**
Banco Comercial Portugues	Yes	Yes	Yes	**3**
Novo Banco	Yes	Yes	Yes	**3**
Banco BPI	Yes	No	No	**1**
Banco Santander Portugal	Yes	Yes	Yes	**3**
Banco Montepio	Yes	No	Yes	**2**
Crédito Agrícola (Group)	Yes	Yes	No	**2**
Banco Primus	No	No	No	**0**
Banco Efisa	No	No	No	**0**
EuroBIC	No	No	Yes	**1**
Banco Best	No	No	No	**0**
Haitong Bank	No	No	No	**0**
Banco Atlântico Europa	Yes	Yes	Yes	**3**
CaixaBI	Yes	Yes	Yes	**3**
Total average				**1,71**
Average privately owned banks				**1,5**
Average state-owned banks				**3**
Average 5 most representative banks				**2,6**
Average (not including the 5 most representative banks)				**1,22**
Average publicly traded banks				**3**
Average non-publicly traded banks				**1,61**

Source: Own elaboration

Table 2 shows the second part of the green banking performance index, revenue growth. In this case, it can be emphasized that the 2 state-owned banks, Caixa Geral de Depósitos and CaixaBI, present the maximum value of 2.

Table 2. Revenue growth

	Revenue Growth		
	Financing eco-friendly projects (2.1.) - companies and individuals	Focus on green products such as online banking and mobile banking (2.2.)	**Total**
Caixa Geral de Depósitos	Yes	Yes	**2**
Banco Comercial Portugues	Yes	Yes	**2**
Novo Banco	Yes	Yes	**2**
Banco BPI	Yes	Yes	**2**
Banco Santander Portugal	Yes	Yes	**2**
Banco Montepio	Yes	Yes	**2**
Crédito Agrícola (Group)	Yes	No	**1**
Banco Primus	No	No	**0**
Banco Efisa	No	No	**0**
EuroBIC	Yes	No	**1**
Banco Best	No	Yes	**1**
Haitong Bank	Yes	No	**1**
Banco Atlântico Europa	Yes	Yes	**2**
CaixaBI	Yes	Yes	**2**
Total average			**1,43**
Average privately owned banks			**1,33**
Average state-owned banks			**2**
Average 5 most representative banks			**2**
Average (not including the 5 most representative banks)			**1,11**
Average publicly traded banks			**2**
Average nonpublicly traded banks			**1,38**

Source: Own elaboration

Table 3 presents the nonfinancial benefits of the green banking performance index. Only two banks, Banco Efisa and Banco Best, do not have the maximum value of 2.

Table 3. Nonfinancial benefits

	Nonfinancial Benefits		Total
	Bank has a policy addressing climate change (3.1.)	Bank is a member of or supports green initiatives (3.2.)	
Caixa Geral de Depósitos	Yes	Yes	**2**
Banco Comercial Portugues	Yes	Yes	**2**
Novo Banco	Yes	Yes	**2**
Banco BPI	Yes	Yes	**2**
Banco Santander Portugal	Yes	Yes	**2**
Banco Montepio	Yes	Yes	**2**
Crédito Agrícola (Group)	Yes	Yes	**2**
Banco Primus	Yes	Yes	**2**
Banco Efisa	No	No	**0**
EuroBIC	Yes	Yes	**2**
Banco Best	Yes	No	**1**
Haitong Bank	Yes	Yes	**2**
Banco Atlântico Europa	Yes	Yes	**2**
CaixaBI	Yes	Yes	**2**
Total average			**1,79**
Average privately owned banks			**1,75**
Average state-owned banks			**2**
Average 5 most representative banks			**2**
Average (not including the 5 most representative banks)			**1,67**
Average publicly traded banks			**2**
Average non publicly traded banks			**1,77**

Source: Own elaboration

Table 4 summarises the calculated green banking performance index. As anticipated, the 5 most representative banks have a value of 6,6, very close to the maximum of 7. This means that the major players of the Portuguese banking sector are very concerned with environmental issues. Moreover, the group of banks that do not include the 5 most representative banks presents a value of 3,635, a medium level of concern in terms of environmental issues.

Table 4. Green banking performance index

	Green banking performance index
Caixa Geral de Depósitos	7
Banco Comercial Portugues	7
Novo Banco	7
Banco BPI	5
Banco Santander Portugal	7
Banco Montepio	6
Crédito Agrícola (Group)	5
Banco Primus	2
Banco Efisa	0
EuroBIC	4
Banco Best	2
Haitong Bank	3
Banco Atlântico Europa	7
CaixaBI	7
Total average	4,93
Average privately owned banks	4,58
Average state-owned banks	7
Average 5 most representative banks	6,6
Average (not including the 5 most representative banks)	3,63
Average publicly traded banks	7
Average non-publicly traded banks	4,77

Source: Own elaboration

The aforementioned results are based on public information shared by banks on their official websites, namely, sustainability reports and/or annual reports. Moreover, for different reasons, such as financial constraints, some banks, particularly small banks, might not have resources to implement more measures to address environmental issues. However, the current research aims to give an overall updated status of environmental concerns within the Portuguese banking sector.

Additionally, the results show that banks are becoming aware of the potential implications of their operations on the environment. However, more things can be done especially for the group of banks that are not the 5 most representative.

CONCLUSION

The calculated green banking performance index reveals a large difference between the 5 most representative banks and the others. With a value of 6,6 out of 7 in the green banking performance index, the 5 most representative banks show that they are very concerned with environmental issues. Furthermore, the group of banks that do not include the 5 most representative banks presents a value of 3,625 out of 7 in the green banking performance index, revealing a medium level of concern in terms of environmental issues.

Our calculated green banking performance index is derived from the methodology developed by Bose et al. (in press), which we apply to Portugal; and the current research provides an overall updated status of environmental concerns within the Portuguese banking sector. Therefore, these results can be useful to several players, such as regulators (e.g., Bank of Portugal and European Central Bank), Portuguese Banking Association, banks, and investors.

This research is based on public information shared by banks on their official websites, namely, sustainability reports and/or annual reports. Moreover, for different reasons, such as financial constraints, some banks might not have resources to implement more measures to handle environmental issues, particularly small banks. This aspect can affect the final results.

This research is focused on banks operating in Portugal. Future research might consider a multicountries perspective to compare the status of the environmental concerns within the different euro area countries.

Finally, banks operating in Portugal can use the results from this research to verify their own status, compare it to the statuses of their competitors and implement measures to improve their own situations.

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