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Ethical Financing in Europe—Non-Parametric Assessment of Efficiency

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Abstract: The research gravitates around ethical, sustainable banking activity in an attempt to measure its responsible impact, which is proxy by the efficiency of their financial intermediation function. The paper focuses on ethical banks included in the membership of the European Federation of Ethical and Alternative Banks. Ethical banks are in the spotlight as they are explicitly involved in channeling financial resources towards start-ups and investment projects characterized by the social, cultural and environmental value-added, by encouraging the development of responsible, durable projects. The data envelopment analysis technique was used for computing the relative efficiency score which applies a linear programming algorithm for aggregating multiple inputs and outputs specific to banking activity. The main research stages developed within the paper consist of the following: (i) Computation of efficiency scores for each ethical bank in a timeframe of four successive years; (ii) developing the efficient frontier; (iii) performing discrimination between efficient and less efficient ethical banks and making a ranking. Therefore, the results emphasize ethical banks' comparative performance, in terms of efficiency, and allow the identification of resembling peers whose monitoring may help the bank in achieving a further efficiency status. Overall, the results show that a single ethical bank constantly fulfills its mission to be socially responsible and exhibits a persistent efficiency status while the remaining ones face heterogeneity in terms of efficient business conduct.

Keywords: ethical bank; sustainable business model; green financing; data envelopment analysis; efficiency score; efficiency frontier

1. Introduction

The concept of ethical banking entered the public arena after the onset of the 2008 global financial crisis, with the ample erosion of customers' confidence into commercial banks' financial behavior providing a backdrop. Investors and customers turned to a reliable, more transparent and simple banking alternative—not mainly driven by profit maximization—represented by so-called green, social, ethical or sustainable banks.

Callejas-Albinana et al. [1] noticed that ethical banking has recently witnessed a proliferation due to specificities of its business model: Investments mainly in projects which bring societal value added from an educational, cultural, environmental, and/or social perspective; and public commitment towards reconciling economic and financial profitability with active concern for human rights and the environment.

According to the European Federation of Ethical and Alternative Banks (FEBEA), ethical banks are financial intermediaries which collect money mainly through deposits and administer them responsibly, by channeling these financial resources to loans provision in order to achieve a long-lasting positive impact. They are active promoters of financial and social inclusion, sustainable development of the economy and society, and social entrepreneurship. The activities financed with predilection comprise

organic farming, renewable sources of energy, the nonprofit sector, fair trade, environmental protection initiatives, social and human development, civilly oriented economic projects, and the health sector. The ethical role of money is at the forefront of their current activity, which balances the financial and economic return with the social return.

The European Federation of Banks [2] adds a straightforward description of the two types of ethical banks' activities which are included in the category of green financing, namely: i) Direct green finance, represented by the financing of activities/investment projects that directly provide environmental benefits in the broader context of environmentally sustainable development; and ii) environmental and climate change screening, which comprises the financing of various activities/investment projects while taking into account the potential exposure to environmental and climate change risk factors.

The post-crisis period has witnessed the implementation of ample reforms of the financial industry at the European level, which focused on three complementary objectives: Macro-prudential regulation of the banking systems, micro-prudential regulation of financial institutions, and making the financial sector work for the benefit of customers and society [3]. With this understanding, a particular segment of financial intermediaries, represented by ethical, sustainable banks recently came in the spotlight of policymakers and European authorities.

The European Commission encourages the development of sustainable finance as a driver of economic growth, by defining it as the channeling of finance to investments focused on environmental, social and governance issues. Within the broad framework defined by the United Nations in 2016, called the UN 2030 Agenda and UN Sustainable Development Goals, the financial sector has acquired a key role in achieving these goals. Specific activities envisaged to be performed by banks are mainly related to promoting investments in sustainable technologies and businesses, contribution to climate resilient and circular economy. The first report on green finance released in 2017 by the European Federation of Banks [2] emphasizes the worldwide commitment for a transformation towards a sustainable economy. Against this background, banks have gained an essential and pivotal role in financing the transition to a sustainable economy and are ready to use their extensive knowledge in lending, investment and smart advisory services, to achieve sustainability goals for the benefit of society [2] (p. 2).

Nowadays, ethical banking is witnessing a momentum and has great prospects to become a reliable partner of national and European authorities, to put in practice their objectives related to achieving sustainable development goals. This paper focuses on the most representative European ethical banks and aims at answering the following question: Is ethical banking efficient when performing its fundamental banking intermediation mission? To this end, the activity of nine large ethical banks with a membership for the European Federation of Ethical and Alternative Banks, operating in seven European countries were investigated to uncover which bank records the highest efficiency, and hence exhibits a successful business strategy that may act as benchmark for its associates.

Several studies such as Belke et al. [4] and Cevik et al. [5] argue that a status of banking efficiency determines the financial system stability, higher financial intermediation quality, investment increases and economic growth. Grmanová and Ivanová [6] noticed that assessing banking performance and efficiency exerts a key contribution to their long-term strategy, as they can identify competitive advantages as well as strengths and vulnerabilities regarding financial products, pricing, communication policy, bank management or organization structure.

In addition, a report published by Cavallito et al. [7] comparatively assessed the financial performances and balance sheet structure of several ethical and large commercial banks across Europe and revealed that ethical banks recorded a higher level of banking profitability of 3.98%, compared with 1.23% for large banks during 2007–2017. Moreover, ethical banks have expanded their financial intermediation role by increasing the share of deposits in total liabilities (73.68%, compared with 44.05% for large banks in 2017), the share of loans in total assets (76.94%, compared with 40.52% for large banks) and the profitability indicators return on assets—ROA (an average of 0.47%, compared with only 0.05% for large banks) and return on equity—ROE (4.36% compared with 0.9% for large

commercial banks). Thus, ethical banks deserve further attention as they are more oriented towards the financing of the real economy, are resilient and more profitable than their commercial peers.

Therefore, the present paper starts from these ideas and aims at measuring the degree of efficiency of a novel sample, represented by ethical, sustainable banks, a strand not enough investigated in the existing literature.

The concept of banking efficiency measurement has been widely and extensively studied in the past few decades, both at country-level and in a cross-country manner, or by discriminating between state-owned banks and foreign ones. However, there is no similar study focusing on ethical banks' performance assessment despite increasing customer interest and market share hold by ethical, sustainable banks following the period of the 2008 financial crisis. In the following, the findings of several banking system-level analyses are summarized, to get an insight into the research hypotheses previously tested and prepare the ground for the subsequent analysis developed in this paper.

Some studies have relied on the efficiency assessment in order to reveal whether EU member states exhibit increased banking integration patterns, but their results show mixed evidence and low synchronization. In Mamatzakis et al. [8], the cost and profit efficiency depicted by the banking systems in 10 EU member states is measured, their findings indicate quite low levels of cost and profit efficiency. State-owned banks are outperformed by foreign banks in terms of profit efficiency. This finding is reinforced by the results of other recent studies [6,9], which also claim that the efficiency levels of foreign-owned banks exceed the efficiency levels of their domestic peers.

In Staikouras et al. [10], old and new EU member states' banking systems are disentangled. The findings illustrate that operating expenses are higher in new member states. Additional evidence on not enough consolidated banking systems is brought by Balcerzak et al. [11] which uncovers dissimilarities in terms of banking efficiency between old and new EU member states, or between euro-zone and non-euro-zone members. Euro-zone banking systems are more efficient than others, while the old 15 EU member states exhibit higher efficiency scores than the newer EU members.

Other recent studies [7,12,13] focus on a specific country and assess the degree of banking efficiency. Their findings have a common denominator: It seems that larger banks within a national banking system exhibit the highest efficiency scores, thus they implement a more appropriate business model and strategy than smaller-size peers.

In Fiordelisi et al. [14], it was uncovered that low levels of cost and revenue efficiency act as a proxy of bad bank management and create prospects for increasing banking risks, while efficiency improvements are directly related to increases of bank capital. A different perspective was investigated by Pasiouras [15], who first estimated the efficiency scores for a broad sample of 715 banks and then measured the impact exerted by various financial regulations on efficiency levels. The findings indicated that the design of market disciplining mechanisms always triggers a statistically significant influence on bank efficiency. Another research direction explored in Tuškan and Stojanović [16] compared the efficiency scores of the 28 EU banking systems with the level recorded by several profitability ratios. The latter seemed to be lagging in comparison with the information provided through the analysis of efficiency scores. This major finding determined the authors to argue that efficiency assessment may be useful in signaling the presence of improper business strategies at an early stage.

Another strand of literature has started to investigate the efficiency of Islamic banking, a financial institution sharing similar societal and environmental concerns as ethical banks. The study Khan et al. [17] compares the structure and features of the balance sheet belonging to an Islamic and to an ethical bank. The findings show that although Islamic banks provide specific financial services to fund ecological agriculture, or microloans to stimulate financial inclusion, they still cannot promote sustainable growth as is the case for ethical banks. It is recommended that Islamic banks implement a reform of their activity, so as to balance moral standards, ethics, profit obtaining and commitment to Sharia law.

The technical and scale efficiency of representative Asian Islamic banks in seven countries has been assessed by Wahab et al. [18] based on Data Envelopment Analysis—DEA method and Tobit regression. Their findings indicated that the average overall efficiency level was of 68.5% during 2007–2011, and that the scale efficiency exceeded technical efficiency. Both internal and external factors have contributed to the fluctuation of efficiency scores in the crisis and post-financial crisis periods. The variables exerting a positive influence on the overall technical efficiency are the return on assets - ROA and loans-to-assets ratio, while the size of Islamic banks triggers a negative impact on their efficiency.

A similar approach has been followed in Basri et al. [19], which assessed the efficiency of Malaysian Islamic banks using DEA and uncovered that domestic Islamic banks are more efficient than foreign ones. In Rahim et al. [20], the efficiency of 63 Islamic banks in North Africa and the Middle East was computed and compared and revealed an overall technical efficiency of 48.7%, their conclusion points to inadequate functioning and size of business. This paper has the following structure: The second part presents the methodological framework of the data envelopment analysis technique; the third section synthesizes the findings obtained and their interpretation while the last part concludes our findings.

2. Methodological Insights

Data Envelopment Analysis (DEA) is included in the category of non-parametric methods, being a reliable benchmark for assessing the degree of efficiency exhibited by individual institutions, in a comparative fashion. It is a linear programming technique and consists of solving an optimization mathematical algorithm—the optimal solution is represented by the value of the efficiency score. According to a study performed by International Monetary Fund [21] (p. 11), this specific methodological framework "exploits information on the input-output mix of individual entities to construct an efficient frontier enveloping the data, and then uses the frontier as a benchmark to assess various efficiency indicators for individual entities". In Popovici [22], the authors argue that DEA's main goal is to develop a production frontier and to measure the efficiency of each institution relative to the frontier.

The concept of efficiency lies at the core of this method. For each institution in the sample, the efficiency scores were computed individually, their interpretation was intuitive and straightforward: A higher score indicated increased efficiency. The best result was the achievement of a score equal to 1, which indicated a situation of full efficiency. Only institutions recording an efficiency score of 1 were placed on the best-practice, efficiency frontier and become benchmarks for the inefficient institutions. By default, the level of inefficiency was calculated as the difference between 1 (the maximum level of efficiency that can be obtained) and the computed efficiency score. The larger the resulted level of inefficiency, the further away an institution was from the best-practice frontier.

Developing a DEA model involves several steps. First, the orientation of the model (input or output oriented) has to be chosen; in other words one has to decide whether a minimization or maximization problem has to be solved. In a minimization problem, the purpose is to find out whether an institution succeeded in properly managing its inputs (in terms of costs) in order to obtain the same level of results (outputs). On the contrary, a maximization problem aims at maximizing the level of outputs (results) by using a given level of inputs. The output-oriented assumption has been used in this study to reveal if ethical banks adequately fulfill their financial intermediation role which overlaps with their socially responsible mission.

Second, DEA methodology relies on variable returns to scale (VRS) in order to decompose the overall efficiency score into two components: Pure technical efficiency and scale efficiency [22]. The former illustrates an institution's positioning relative to the efficiency frontier, while the latter signals the pattern of evolution in terms of input-output mix. More specifically, if the scale efficiency is equal to 1, the institution operates at optimal scale and no input or output adjustments are needed. If it operates in an area of increasing returns to scale, a rise of all inputs with a value of x will trigger a subsequent increase of outputs with a value larger than x. When exhibiting decreasing returns to

scale, an increase in input amounts with a value of x is susceptible to generating an increase of outputs smaller than x.

Third, the appropriate configuration of input and output variables has to be defined. The intermediation approach (sometimes called the asset approach) is relied on to define banking input and output, which considers that banks are creating outputs (usually defined as loans and investments) by relying on their liabilities, the core ones being deposits attracted from customers.

The mathematical optimization model which is aimed at maximizing outputs is the one initially proposed by Färe et al. [23]:

$$\text{Max } \boldsymbol{\theta} \tag{1}$$

with the restrictions:

$$\boldsymbol{\theta}\, y_{in} \leq \sum \mu\, y_{in} \tag{2}$$

$$\sum \beta_j\, x_{jn} \leq x_{jn} \tag{3}$$

$$\sum \beta_j\, x_{jn} = \alpha_{jn}\, x_{jn} \tag{4}$$

$$\sum \beta_j = 1 \tag{5}$$

$$\alpha_{jn} \geq 0 \tag{6}$$

where:

$\boldsymbol{\theta}$–The efficiency score of each bank;
n–The number of ethical banks included in the sample;
i–The number of outputs;
j–The number of inputs;
μ–The weight of each output variable, for each bank in the sample;
β–The weight of each input variable, for each bank in the sample;
y–Vector of output variables;
x–Vector of input variables;
α–Parameter that reflects the input utilization rate.

Prior to applying DEA it is necessary to check the compliance with some methodological requirements. First, it has to be examined whether the institutions included in the sample are homogeneous in terms of the size of their activity, of the nature of the operations they perform, and the conditions/environment under which they operate [24,25]. Otherwise, the efficiency estimates could be due to these underlying differences rather than to a status of inefficiency. This rule of thumb is also known as the homogeneity principle. This idea is also stressed in [21] (p. 12) that "the technologies used by the banks included in each estimation have to be comparable (i.e., the institutions have to be dedicated to similar activities)" otherwise the validity of results obtained is biased and questionable.

Second, if large variations are present among the variables included in the dataset, they have to first be standardized in order to smooth their levels and rescale them in the range from 0–1 for mitigating the sensitiveness of the results to extreme values. The classical formula applied is (x-xmin)/(xmax-xmin) where x stands for each variable considered [26,27].

3. Results Obtained and Interpretation

The study employed bank-level data manually extracted from ethical banks' financial statements, the DEA analysis was run distinctly for a time window covering the period 2014–2017. The sample was represented by nine European ethical banks which joined the European Federation of Ethical and Alternative Banks (FEBEA) as members on a voluntary basis. Our choice for relying only on these banks resided in their transparent, acknowledged commitment for complying with the provisions of the ethical finance charter issued by FEBEA. In addition, their financial statements were available for

a longer timeframe, being publicly disclosed on their websites, which facilitated the data collection process. To have a brief insight into their main financial indicators and to comparatively ascertain the size of their banking business, we gathered financial data from their annual reports published for 2018 year-end activity (see Table 1 below).

Table 1. Main financial indicators.

Bank Name	Total Assets (mil. euro)	Equity (mil. euro)	Net Profit (mil. euro)
Banca Popolare Etica	1900	69	4
Alternative Bank	1,5	109	1,7
APS Bank	1800	142	12
Caixa Pollenca	596	41	3
Credit Cooperatif	2068	162	36,3
La Nef	505	42	0,3
Cultura Bank	99	7,3	0,4
MERKUR Bank	500	43	4,5

Source: Authors, financial data collected from banks' annual reports.

The DEA model tested was output-oriented, with variable returns to scale and a single-input single-output configuration. In choosing the variables to be included in the DEA model we relied on the financial intermediation approach. Consequently, the input variable is represented by deposits attracted from customers, while the output variable consists of loans granted to customers. In regards to our choice for the model's output orientation, we started from the premise that ethical banks' mission and activity is subordinated to social commitment, by channeling financing primarily to societal and development investment projects. This specific orientation emphasized their ability to optimize the amount of outputs (loans) they produced while keeping inputs at the same unchanged level. All the input and output variables were standardized.

The estimates of the technical efficiency scores for each bank in the sample and each year considered are summarized in Table 2. By plotting these estimates, a slightly distinct efficiency frontier for each year was obtained. Additionally, the scale efficiency was computed to provide information on whether a bank operates in an area of increasing/decreasing returns to scale or if it operates at its optimal efficient scale.

Table 2. Ethical banks' efficiency measures.

Ethical Bank	Country	2014		2015		2016		2017	
		Technical Efficiency	Scale Efficiency	Technical Efficiency	Scale Efficiency	Technical Efficiency	Scale Efficiency	Technical Efficiency	Scale Efficiency
Banca Popolare Etica	Italy	0.652	0.998	0.703	0.999	0.662	0.998	0.639	0.999
Alternative Bank	Switzerland	0.71	0.986	0.834	0.999	0.926	0.998	0.954	0.999
APS Bank	Malta	0.608	0.998	0.697	0.997	0.705	0.996	0.788	0.999
Caisse Solidaire	France	0.608	0.998	0.697	0.999	0.705	0.999	0.788	0.759
Caixa Pollenca	Balearic Islands	0.634	0.997	0.684	0.996	0.735	0.999	0.721	0.997
Credit Cooperatif	France	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
La Nef	France	0.829	0.999	0.914	0.998	0.586	0.998	0.546	0.993
Cultura Bank	Norway	0.618	0.998	0.632	0.997	0.672	0.997	0.627	0.980
MERKUR Cooperative Bank	Denmark	0.547	0.995	0.584	0.995	0.598	0.998	0.535	0.996
Average score		0.69		0.749		0.732		0.733	

Source: Authors, based on the results obtained by running Data Envelopment Analysis Program (DEAP) software.

The results indicate that all ethical banks in the sample depict close to optimal scale efficiency; hence the size of their business is appropriate [28].

The average technical efficiency score computed for each of the four years didn't record ample fluctuations one year from another—its level indicated a pattern of heterogeneity among individual efficiency scores. When examining the individual efficiency measure a common conclusion arose: Credit Cooperatif from France is the only fully efficient ethical bank (a score of 1) that was positioned on the best-practices, efficiency frontier in each of the four years considered. This finding may be due to the significant changes in the business strategy implemented by this bank, which covered its internal organization, its territorial presence and its relationship with customers. Another specificity of the bank which may have contributed to this positioning resides in its organizational form as a cooperative institution, although it performs financial activities as a typical retail-oriented bank. Also, it is actively engaged in the national initiatives related to developing a social and inclusive economy, by launching several tailor-made financial products to address the various customers' needs and fight against financial exclusion.

At the opposite end were ethical banks from two Northern European countries (Norway and Denmark) which persistently exhibited the lowest technical efficiency. MERKUR Bank was the least efficient, with a score of only 53.5% in 2017. Therefore, its estimated inefficiency amounts to 46.5%; in other words, to achieve maximum of efficiency in conducting the banking intermediation function loan amounts should have been increased by 46.5%.

There is also one ethical bank (Alternative Bank from Switzerland) which constantly improved its technical efficiency, from 71% in 2014 to 95.4% in 2017.

The levels of inefficiency recorded by most banks indicate that inputs should have been channeled more to the lending activity, detrimental to other financing destinations (such as purchasing securities for increasing the size of their financial assets portfolio and the revenues from trading securities). Although ethical banks directly compete with state-owned and foreign commercial banks, they must first follow their ethical, sustainable missions, to give priority to investment projects which not only add economic value, but also a societal, cultural or environmental value. These banks have to balance the economic return of their banking activity with the social return, a fact that could explain their predominant underperformance feature.

To the benefit of a comparative efficiency assessment, a hierarchization from fully efficient to less efficient ethical banks was realized (see Table 3), as well as a visual distribution of their efficiency scores (see Figure 1).
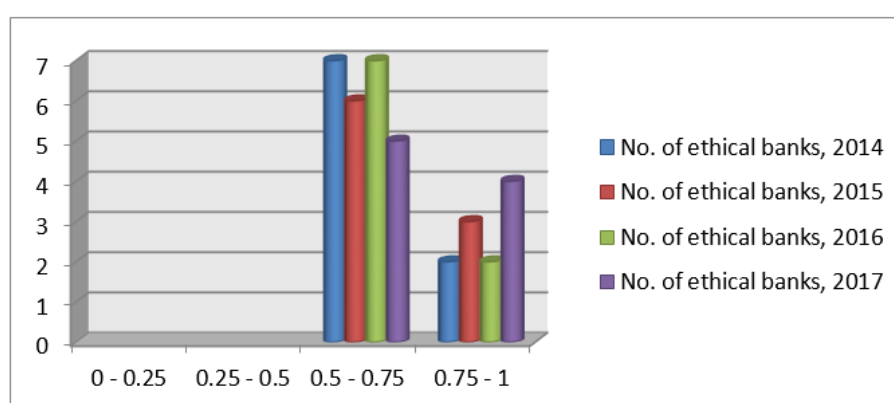
Figure 1. Ethical banks' distribution by year and range of efficiency scores. Source: Authors, based on DEA estimation of efficiency scores.

Figure 1 illustrates the fluctuation recorded in the number of ethical banks during 2014–2017, by considering an efficiency cut-off score of 0.25. Most efficiency scores lie in the range between 0.5–0.75 in all the four years considered, with a maximum of seven out of nine banks recorded in 2014 and

2016. The next efficiency range, which is best represented in terms of the number of banks, is 0.75–1. The 2017 year-end witnessed a rise in banks' efficiency compared with previous performance. There was no bank that exhibited a low efficiency level below 0.5, suggesting that ethical banks implement a sound financial intermediation conduct—characterized by medium-to-high efficiency—by relying on available core financial resources for financing sustainable loan applications.

Table 3. Banks' ranking according to the technical efficiency score levels.

Ranking	2014	2015	2016	2017
1	Credit Cooperatif	Credit Cooperatif	Credit Cooperatif	Credit Cooperatif
2	La Nef	La Nef	Alternative Bank	Alternative Bank
3	Alternative Bank	Alternative Bank	Caixa Pollenca	APS Bank
4	Banca Popolare Etica	Banca Popolare Etica	APS Bank	Caisse Solidaire
5	Caixa Pollenca	APS Bank	Caisse Solidaire	Caixa Pollenca
6	Cultura Bank	Caisse Solidaire	Cultura Bank	Banca Popolare Etica
7	APS Bank	Caixa Pollenca	Banca Popolare Etica	Cultura Bank
8	Caisse Solidaire	Cultura Bank	MERKUR Cooperative Bank	La Nef
9	MERKUR Cooperative Bank	MERKUR Cooperative Bank	La Nef	MERKUR Cooperative Bank

Source: Authors, based on DEAP estimation of efficiency scores.

The top three hierarchy obtained after ranking the technical efficiency scores illustrates that two banks (Credit Cooperatif and Alternative Bank) are the closest to the best-practice frontier from the standpoint of ability in maximizing lending.

Another finding was that only two ethical banks maintained the place they held in the ranking for the majority of the four years considered. Credit Cooperatif (France) was always placed first, and MERKUR Bank (Denmark) almost always came in last. To sum up, there is no long-lasting, predictable pattern in the evolution of annual efficiency scores as some ethical banks record sudden upward or downward moves of one to five positions, while others depict up and down fluctuations.

Another outcome of the DEA analysis was related to the identification of the peer ethical banks which were assigned by the algorithm for each inefficient bank, in each year under study, as well as for the necessary strategy to be adopted in order to improve their efficiency level.

Credit Cooperatif is placed on the efficient frontier, thus it has no peer, but it becomes a benchmark or peer for the remaining inefficient institutions. For the remaining eight banks, the computational algorithm identified the same peer banks in each year, namely Credit Cooperatif and Caisse Solidaire, both from France. The highest weight is attributed to Caisse Solidaire, meaning that the eight ethical banks should—to a great extent—target Caisse Solidaire's business model. These results suggest that, in order to improve their efficiency score, most ethical banks have to implement a business strategy closely related to Caisse Solidaire's one.

4. Conclusions

The efficiency assessment in this paper focused on ethical banks as they represent a successful example of business strategy that reconciles financial profitability with social and economic returns. Their financial intermediation mission is always subordinated to triggering social and environmental impact. Their activity has received the highest recognition in the last years, as institutional bodies such as the European Commission or the UN are more and more focused on smart and sustainable

economic development and growth. This new orientation of policies and strategies also incorporates ethical banks, as reliable pillars and tools for implementing this ambitious mission by channeling financing to small and medium-sized enterprises—SMEs, start-ups and entrepreneurs.

The study relied upon the most representative European ethical banks and aimed at investigating whether this special segment of the European banking sector performs its banking intermediation function efficiently, given the increased role it is going to play in the near future. Their efficiency scores were computed successively for a time window of four years, in order to get a comparative view both across banks in the sample and across different time frames. This dynamic picture shows that one bank (Credit Cooperatif) is the only fully efficient ethical bank, as it always reached a score of 1 which placed it on the best-practices, efficiency frontier in each of the four years considered. At the opposite end are two ethical banks from Norway and Denmark which persistently exhibited the lowest efficiency levels. Interestingly, we obtained evidence of another ethical bank (Alternative Bank from Switzerland) which constantly improved its efficiency scores, from 71% in 2014 to a level of 95.4% in 2017. Consequently, two business models emerge as being successful in terms of achieved efficiency, namely the ones of Credit Cooperatif and Alternative Bank.

Further research should explore the risk management issues arising from environmental and climate change considerations. The robustness of the risk mitigation framework has to be assessed for both the ethical and traditional banks as in the future they will have to turn towards a more responsible financial conduct, from a societal and environmental viewpoint. As [3] argues, the different time horizons of risk exposure have to be appropriately managed and screened: Most financial risks exhibit a short-to medium-term horizon, as opposed to long-term environmental risks.

In a recent communication [29], the European Parliament warned that the inaccurate assessment or misleading presentation of climate and other environmental risks associated to financial products provided by banks can constitute a risk to market stability and asked the European Commission to design and adopt a new regulatory strategy aimed at measuring sustainability risks and to promote the inclusion of sustainability risks in the Basel IV framework to ensure that banks highly exposed to sustainability risks hold sufficient capital reserves for withstanding sudden losses.

References

1. Callejas-Albinana, F.E.; Martinez-Rodriguez, I.; Callejas-Albinana, A.I.; de Vidales-Carrasco, I.M. Assessing the Growth of Ethical Banking: Some Evidence from Spanish Customers. *Front. Psychol.* **2017**, *8*, 1–12. [CrossRef] [PubMed]

2. European Banking Federation. *Towards A Green Finance Framework*; European Banking Federation: Brussels, Belgium, 2017.

3. Wehinger, G. Banking in a challenging environment: Business models, ethics and approaches towards risks. *OECD J. Financ. Mark. Trends* **2012**, *2*, 79–88. [CrossRef]

4. Belke, A.; Haskamp, U.; Setzer, R. Regional Bank Efficiency and Its Effect on Regional Growth in 'Normal' and 'Bad' Times. *Econ. Model.* **2016**, *58*, 413–426. [CrossRef]

5. Cevik, N.K.; Dibooglu, S.; Kutan, A.M. Real and Financial Sector Studies in Central and Eastern Europe: A Review. *Financ. Uver.* **2016**, *66*, 2–31.

6. Grmanová, E.; Ivanová, E. Efficiency of banks in Slovakia: Measuring by DEA models. *J. Int. Stud.* **2018**, *11*, 257–272. [CrossRef]

7. Cavallito, M.; Isonio, E.; Meggiolaro, M. Ethical and Sustainable Finance in Europe. 2019. Available online: https://www.finance-watch.org/pioneers-in-ethical-banking-a-new-goldmine-of-information/ (accessed on 15 October 2019).

8. Mamatzakis, E.; Staikouras, C.; Koutsomanoli-Filippaki, A. Bank efficiency in the new European Union member states: Is there convergence? *Int. Rev. Financ. Anal.* **2008**, *17*, 1156–1172. [CrossRef]

9. Sufian, F.; Kamarudin, F.; Nassir, A. Determinants of efficiency in the Malaysian banking sector: Does bank origins matter? *Intellect. Econ.* **2016**, *10*, 38–54. [CrossRef]

10. Staikouras, C.; Mamatzakis, E.; Koutsomanoli-Filippaki, A. An empirical investigation of operating performance in the European banking landscape. *Glob. Financ. J.* **2008**, *19*, 32–45. [CrossRef]

11. Balcerzak, A.P.; Kliestik, T.; Streimikiene, D.; Smrčka, L. Non-Parametric Approach to Measuring the Efficiency of Banking Sectors in European Union Countries. *Acta Polytech. Hung* **2017**, *14*, 51–70. [CrossRef]

12. Palečková, I. Banking Efficiency in Visegrad Countries: A Dynamic Data Envelopment Analysis. *Acta Univ. Agric. Silvic. Mendel. Brun.* **2015**, *63*, 2085–2091. [CrossRef]

13. Novickyte, L.; Droždz, J. Measuring the Efficiency in the Lithuanian Banking Sector: The DEA Application. *Int. J. Financ. Stud.* **2018**, *6*, 37. [CrossRef]

14. Fiordelisi, F.; Marques-Ibanez, D.; Molyneux, P. Efficiency and Risk in European Banking. *ECB Working Paper Ser.* **2010**, 1–37. [CrossRef]

15. Pasiouras, F. International evidence on the impact of regulations and supervision on banks' technical efficiency: An application of two-stage data envelopment analysis. *Rev. Quant. Financ. Account.* **2008**, *30*, 187–223. [CrossRef]

16. Tuškan, B.; Stojanović, A. Measurement of cost efficiency in the European banking industry. *Croat. Oper. Res. Rev.* **2016**, *7*, 47–66. [CrossRef]

17. Khan, T.; Raffick, A.B.; Mohomed, N. Ethical Banking and Islamic Banking: A Comparison of Triodos Bank and Islami Bank Bangladesh Limited. *Islam. Econ. Stud.* **2017**, *25*, 111–154. [CrossRef]

18. Wahab, N.A.; Rosman, R.; Zainol, Z. How efficient were Islamic banks during the financial crisis? Empirical evidence from Asian countries. *Intellect. Econ.* **2017**, *11*, 44–62.

19. Basri, M.F.; Jaafar, M.N.; Muhamat, A.A. The efficiency of Islamic banks in Malaysia: Based on DEA and Malmquist productivity index. *J. Emerg. Econ. Islam. Res.* **2018**, *6*, 15–27.

20. Rahim, A.; Rahman, A.; Rosman, R. Efficiency of Islamic Banks: A Comparative Analysis of MENA and Asian Countries. *J. Econ. Cooperation Devel.* **2013**, *34*, 63–92.

21. International Monetary Fund. *Switzerland: Financial Sector Assessment Program-Technical Note-The Swiss Banking System: Structure, Performance, and Medium-Term Challenges*; IMF Country Report No. 07/199; International Monetary Fund: Washington, DC, USA, 2007.

22. Popovici, M.C. Banking integration and efficiency convergence in Baltic countries in post-crisis period. *Timis. J. Econ. Bus.* **2014**, *7*, 134–146. [CrossRef]

23. Färe, R.; Grosskopf, S.; Kokkelenberg, E.C. Measuring plant capacity, utilization and technical change: A non-parametric approach. *Int. Econ. Rev.* **1989**, *30*, 655–666. [CrossRef]

24. Haas, D.A.; Murphy, F.H. Compensating for Non-Homogeneity in Decision-Making Units in Data Envelopment Analysis. *Eur. J. Oper. Res.* **2003**, *144*, 530–544. [CrossRef]

25. Coelli, T.J.; Prasada Rao, D.S.; O'Donnell, C.J.; Battese, G.E. *An Introduction to Efficiency and Productivity Analysis*, 2nd ed.; Springer: Berlin, Germany, 2005.

26. Smets, J. The Competitiveness of the Belgian Economy. *Revue de la Banque* **1985**, *2*, 7–16.

27. Moesen, W.; Cherchye, L. *The Macroeconomic Performance of Nations Measurement and Perception, Centre for Economic Studies Discussion Paper Series DPS 98.22*; Catholic University of Leuven: Leuven, Belgium, 1998.

28. Řepková, I. Efficiency of the Czech banking sector employing the DEA window analysis approach. *Proced. Econ. Financ.* **2014**, *12*, 587–596. [CrossRef]

29. European Parliament. Report on Sustainable Finance. 2018. Available online: http://www.europarl.europa.eu/doceo/document/A-8-2018-0164_EN.html (accessed on 15 September 2019).