MASTER
IN FINANCE

MASTER´S FINAL WORK
DISSERTATION

ESG PERFORMANCE IN BANKING POST-COVID
PANDEMIC: DOES ISLAMIC BANKING PERFORM
BETTER?

VASCO ALBUQUERQUE MOTA

DECEMBER – 2022

MASTER
IN FINANCE

MASTER´S FINAL WORK
DISSERTATION

ESG PERFORMANCE IN BANKING POST-COVID PANDEMIC: DOES ISLAMIC BANKING PERFORM BETTER?

VASCO ALBUQUERQUE MOTA

SUPERVISION:
PROFESSOR TIAGO CRUZ GONÇALVES

DECEMBER-2022

To my family, friends,
colleagues, professors,
workmates and supervisor.

GLOSSARY

CEO – Chief Executive Officer.

CSR – Corporate Social Responsibility.

DID – Differences-in-Differences.

EBITDA – Earnings Before Interest, Taxes, Depreciation and Amortization.

ESG – Environment, Social and Governance.

FD – Financial Development.

FI – Financial Inclusion.

IFDI – Islamic Finance Development Indicator.

IQ – International Quality.

ISO – International Organization for Standardization.

JEL – Journal of Economic Literature.

ME – Middle East.

MFW – Master's Final Work.

OLS – Ordinary Least Squares.

SDG – Sustainable Development Goals.

SRI – Socially Responsible Investment.

SSB – Shariah Supervisory Board.

UK – United Kingdom.

UN – United Nations.

ABSTRACT, KEYWORDS AND JEL CODES

The fascinating and - for many - distant Islamic way of conducting corporate and public finance has multiple distinctive features from the one it is seen as conventional within western countries.

In times where sustainability is dominating agendas everywhere across the globe following an impactful pandemic period, it seemed interesting to study how this very distinct doctrine financial institutions behaved compared to the conventional European banks within the environmental, social and governance fields.

Along the below-presented work, it is possible to find several empirical approaches to the studied hypothesis, with three different regression methods being applied in order to infer whether Islamic banks overperformed non shariah-compliant ones within the COVID period in sustainability matters and also if that performance was linear throughout the several ESG score levels.

The results were inconclusive on the relationship between the Islamic factor and the post-pandemic ESG aggregate scores obtained by the financial institutions across Europe and Middle East, being the conclusions robust even through instrumental variables. But although these linear models having shown non-significant results regarding shariah-compliance, when assuming a non-linear approach through the utilization of a quantile regression it is possible to observe a very significant positive relationship between the Islamic factor and sustainability scores within the higher and lower quantiles.

KEYWORDS: Islamic Finance; Corporate Social Responsibility; Banking; COVID-19; ESG; Sustainability.

JEL CODES: A13; C12; F36; F65; G21; Z12.

TABLE OF CONTENTS

DO ISLAMIC BANKS PERFORM BETTER THAN NON-ISLAMIC BANKS IN ESG TERMS?

By Vasco A. Mota

In times where sustainability is dominating agendas everywhere across the globe following an impactful pandemic period, it is relevant to study how Islamic financial institutions behaved compared to conventional European banks within the environmental, social and governance fields. The results were inconclusive on the relationship between the Islamic factor and the post-pandemic ESG aggregate scores obtained by the financial institutions across Europe and Middle East, being the conclusions robust even through instrumental variables. But although these linear models having shown non-significant results regarding shariah-compliance, when assuming a non-linear approach through the utilization of a quantile regression it is possible to observe a very significant positive relationship between the Islamic factor and sustainability scores within the higher and lower quartiles.

1. INTRODUCTION

In an era dominated by globalization, this phenomenon covers every single area of our lives, including the financial sector worldwide as studied by García (2011). As so, it is absolutely crucial for institutions across the globe to better understand differences between the several cultures and doctrines adopted within different regions of the planet in order for them to learn one from each other and converge into a more efficient and sustainable way of making finance.

It is presented in the first subchapters a compilation of literature addressing Islamic finance and its distinctive features, corporate social responsibility and environmental social and governance issues. This intends not only to provide a larger understanding on the mentioned doctrine, but also to sense where could the conventional Western way of doing finance could learn from the Islamic perspective of the sector, with authors such as Paltrinieri, Dreassi, Migliavacca and Pisera (2020) looking into shariah-compliant practices for more ethical and sustainable methods within the banking sector.

After that, this work assembles a comparison between scores given to financial institutions from both doctrines within the post-COVID period in order to look for differences between them. This analysis will extend itself to each of the three components that support the ESG term, as well as to the aggregate score of all elements, and comprehends the years between the start of the pandemic (2019) and the one in which

companies and economies around the world started retrieving from it (2021). The studied period is very relevant to the sector, as among other factors, banks' profitability and consequently their financial stability was proven to be significantly affected by the COVID-19 pandemic scenario (Zakarneh, Khasawneh & Al-Hakim, 2021).

The posteriorly computed tests provide insights on whether to reject or not hypothesis regarding corporate social responsibility behaviours between Islamic and Western financial institutions within Europe and Middle East regions and their reaction to this exogenous shock, almost as a clash of cultures where both should look to one another searching for solutions that will make their entities from the financial sector progress in environmental, social and governance matters.

As mentioned before, this paper starts with a literature review on the approached themes, which is followed by a hypothesis, variables and sample definition that precedes the core testing. Finally, results from that same testing will be dissected and will provide conclusions on the studied questions.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Islamic Finance and Corporate Responsibility

Relating the connection between Islamic firms and corporate responsibility, Nogueira (2011) states that meeting its own social obligations is seen as a regular and positive practice by the vast majority of Islamic Financial Institutions, considering them as relevant criteria for the decision-making process as well as being considered by the impacted stakeholders. Furthermore, a study conducted on *Shariah*-compliant firms shows that across both Islamic and non-Islamic firms the targeted CEOs did not take corporate social responsibility for self-interest but to settle conflicts among firm's stakeholders (Anwer, Azmi, Mohamad & Paltrinieri, 2021).

In 2020, a group of researchers conducted a study in order to develop a new Islamic Finance Development Indicator (IFDI) and found a positive and very consistent relationship between this indicator and environmental, social and governance scores, being this correlation mostly found in the social extent of the model (Paltrinieri et al., 2020). According to this study, there still is significant space for reaching sustainability benefits by promoting Islamic finance implementation and development, which corroborates the bond between these two concepts. Hassan, Chiaramonte, Dreassi, Paltrinieri and Pisera (2022) also confirmed this theory by demonstrating that religious beliefs and, more specifically, the acceptance of *Shariah* propositions, contributes to explicate companies' corporate social responsibility commitment, especially when it comes to responding to natural and social impactful events.

According to Yesuf and Aassouli (2020), there are significant common aspects between socially responsible investment principles and the *Shariah* objectives, and potential synergies between Islamic funds and SRIs could play a very important role to fill the existing sustainable development goals financing gaps. Other authors also point out that *Shariah* compliance screening can do much to improve ESG performance as they have numerous aspects in common between themselves (Al Ansari & Alanzarouti, 2020).

2.2. Sustainability

It should be considered two main concepts relating corporate sustainability: the first one is ESG, which stands for "Environmental", "Social" and "Governance" and was formulated for the first time in 2005, when the UN Global Compact released a landmark study ("Who cares Wins", 2005). Later, EUROSIF (2010) defined Sustainable and Responsible Investments (SRI) as the kind of funding that agglomerates both investors' financial objectives with their apprehension on either environmental, social, and governance (ESG) issues, meaning that we can use ESG as an indicator for firms' social responsibility practices ability to meet the behaviour of SRI-sensitive investors (Hassan et al., 2022). As stated by Al-Ansari and Alanzarouti (2020), ESG funding belongs to a wide range of investments considered sustainable in which the investors, besides looking for positive returns, also include the assessment of business practices' long-term effects on society, the environment and the performance of the business itself. Furthermore, it is also proven that powerful ESG policies and practices can support human capital recruitment and retention, as well as preserving brand reputation, while at the same time promoting customer loyalty and decreasing company's risk of facing potential legal actions.

Agnew, Klasa & Mundy (2022) found out that between 2005 and 2018 the term "ESG" was used in less than one per cent of the earnings calls, in opposition to the almost twenty per cent seen in May 2021. Together with the fact that assets in ESG funds increased to 2,7 trillion dollars worldwide during that same year – representing a 53% growth when compared to the previous year -, these statistics show the prominence attained by this term in the most recent years of financial history.

Another relevant term in this matter is CSR - which stands for Corporate Social Responsibility – and was defined by the European Commission (2011: p. 2) as "the responsibility of enterprises for the impact on society". Also the International Organization for Standardization provided another very relevant conceptualization of CSR (ISO 26000, 2010: p. 3), stating that a firm's commitment with this term is measured through different criteria, such as the "responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that contributes to sustainable development, including health and the

welfare of society", whether it "takes into account the expectations of stakeholders" or not, if the firm complies "with applicable law and is consistent with international norms of behaviour" or even whether the company "is integrated throughout the organization and practised in its relationships".

As expressed by Elkington (1999), the CSR theory provides a convincing stakeholder-oriented alternative involving environmental, social and governance business perspectives, which is very different from the classical shareholder-centric profit maximization view of the firm. It is also proven that companies' CSR engagement is usually found beneficial both in terms of increasing companies' profitability and reducing its' risk exposure (Paltrinieri et al., 2020; Gonçalves, Dias & Barros, 2022; Gonçalves, Pimentel & Gaio, 2021). Besides this, Empirical evidence gathered within the Organization of Islamic Cooperation countries also shows that there is a very relevant and positive association between financial inclusion (FI), institutional quality (IQ) and financial development (FD), knowing that even though higher IQ moderates FI levels, it has a very powerful and positive effect on FD (Ali, Nazir, Hashmi & Ullah, 2022).

Firm's engagement with relevant CSR practices is also explained, according to the literature currently available, by several other different perspectives, like the theory supported by Hong, Kubik and Scheinkman (2012), which shows that less capital and budget-constrained companies are more likely to invest more on goodness and consequently infers that these are the two main determinant factors on corporate social responsibility practices, or even others such as the one that suggests that country-specific regulations are the main factor behind corporate social practices, with more legally-developed countries presenting higher CSR ratings and as so making the legal factor a fundamental one on this matter (Liang & Renneboog, 2017).

2.3. Islamic Finance

According to Oseni, Hassan and Matri (2013), there were over $1.6 trillion *Shariah*-compliant assets across the world in 2010, with the Islamic finance industry proving its resilient identity even in a period of global financial crisis that led to years of large stress in the financial markets and pushed down many companies around the globe. In this doctrine's perspective, economies are mainly constituted by two important elements:

lucrative and non-lucrative activities and, according to Jouti (2019), these are supposed to jointly evolve. The main guiding principles of Islamic financial engineering are "transparency, accountability and fairness" (Oseni, Hassan & Matri, 2013: pp. 173) and the unique characteristics of the institutions that follow this doctrine are present in their day-to-day operations. Nogueira (2011) also states that there is a very powerful focus on some concepts such as the prohibition or avoidance of some behaviors such as charging interest (*riba*), activities considered forbidden by the Islamic religion (*haram*) or speculation (*gahrar*), offering on the other hand alternative products such as profit-and-loss sharing arrangements which comply with *Shariah*. Ahmed (2010) stated that a change in the European financial institutions' business models towards profit-and-loss shared contracts instead of interest-based contracts would benefit the economies as it would contribute to more accurately define enterprises' risk premia, which would not only ensure an increased stability to the financial systems but also contribute to avoid redundant leverage or speculative activities that usually lead to macroeconomic crisis like the 2008 one.

The products used by Islamic financial institutions in order to meet its doctrine's fundamentals include a wide range of both asset based and profit participating contracts that are usually considered well suited to financing economic development (Hasan & Dridi, 2010). As stated by Ayub (2020), this kind of financing can often be provided through several forms, such as the sale or purchase of goods, asset leasing or even taking up equity and venture capital.

The previously mentioned equity-like and risk-sharing financing products help Islamic finance supporting circular businesses and achieve the holistic objective of *maqasid* (Ibrahim & Shirazi, 2020) – an Islamic legal doctrine. According to some researchers, Islamic banks for example have not yet adapted their business models to the expected *maqasid* outcomes (Mergaliyev, Asutay, Avdukic & Karbhari, 2019), pointing out that Islamic financial system is not enough oriented to the Islamic legal doctrine. Yet, a very particular attribute of Islamic finance is that Islamic banks and financial institutions are much beyond the concept of simple financiers, since they are also required to commit and respond to social and religious principles within the society in which they are included as any other company that follows this doctrine (Ayub, 2020). For example, the Shariah Supervisory Board (SSB), that supervises institutions' activities, is a mandatory

element in Islamic Banks and it contributes to increase these firms' corporate social responsibility levels given the existing correlation between these and the *Shariah* principles (Tasnia, Alhabshi & Rosman, 2021).

In alternative to this kind of investments, Islamic finance as many other Shariah-compliant alternatives such as *Musharakah* - an Islamic type of investment in which Islamic banks or any related parties share financing and management and posteriorly divide the profits according to pre-defined quotas (Alamer, Salamon, Qureshi & Rasli, 2015). Dusuki (2008) points the most common example in which the financial institution buys an asset with the objective of progressively shifting its ownership to the client through the execution of sales contracts or, in alternative, by charging monthly rents in a very similar operation to an asset leasing. According to a Malaysian study, *Musharakah* investment has a relevant and straight effect on society, being considered the best investment method in Islamic financial institutions and being responsible for a positive social impact. As so, increasing *Musharakah* and regular equity on Islamic banks' balance sheets are two very important actions for improving these institutions' corporate social responsibility (Alamer et al., 2015).

Another fundamental Islamic finance mechanism is *Wāqf*, which happens through the endowment of an asset on a permanent basis (Ahmed, 2007) and as so, it is a value-based funding model that can offer new opportunities for sustainable financing to achieve SDGs locally. It agrees with Islamic law – charity is considered a very important act of devotion to Allah – and has the intent to promote social cohesion (Budalamah, El-Kholei & Al-Jayyousi, 2020), through the charitable donation of an asset that cannot be transferred posteriorly and must be used with the aim predefined by the doner (Kasri & Ismail, 2019). According to the same authors, it could be the needed alternative to contribute to financing development at the local level, as it is a practice known in the Arab and Muslim worlds. So, in other words, *Wāqf* is a sustainable investing model that if properly used could support the Arab states' efforts to achieve the seventeen objectives known as sustainable development goals (Budalamah et al., 2020).

These mechanisms are present in Islamic social finance providers, which are divided into two main categories: the traditional social finance providers and the commercial ones. There are many paths of collaboration between them and both are supposed to

comply with *Shariah* principles, knowing that commercial financing can serve either as a new effective way to mobilize financial resources or as an investment opportunity for traditional institutions. This concept of building an ecosystem between the two dimensions would enable the optimization of the financial resources' usage, while at the same time being aligned with the spirit and the law of Islam (Jouti, 2019).

2.4. Empirical evidence

The positive correlation between Islamic finance and some determinant corporate responsibility indicators (Paltrinieri et al., 2020) is confirmed by empirical evidence on whether Islamic finance present better social responsibility practices than the non-Islamic ones. Besides this, on a study conducted with focus on *Shariah*-compliant firms in Indonesia and Malaysia, researchers found that Islamic firms outperformed the non-Islamic ones in the social and environmental scoring, proving that the "Islamic" label is not only a reputation and marketing one but also a guarantee of quality in terms of social responsibility (Qoyum, Sakti, Thaker & AlHashfi, 2021). Another study conducted using data from all around the world (Hassan et al., 2022) also reached the conclusion that Islamic firms from non-financial sectors seem more likely to adopt a sustainable and responsible behavior, especially when it comes to environmental-friendly practices. This finding led the researchers to conclude that not only that faith-based commerce in Islamic firms makes them more reactive to social responsibility engagement, but also that employing religious-oriented stimulus can boost sustainability practices.

In terms of returns, literature expresses that Islamic funds outperform the socially responsible investments and underperform against conventional funds and the Islamic benchmarks in most of the regions. Yet, none of these results were statistically significant so hypothesis stating that Islamic funds underperform against their counterparts were rejected (Yesuf & Aassouli, 2020). Besides this, according to Yesuf and Aassouli (2020) Islamic funds have a better return per unit of risks in most of the region compared to SRIs, but in Europe presented poor performance compared to both SRIs, conventional funds and the Islamic market. It is also very relevant to mention that Islamic funds give the least volatile average return compared to the other funds and the market benchmark in all the studied region. The main conclusion taken from the study, was that risk-return

characteristics of Islamic funds are not significantly different from their conventional counterparts and the respective market benchmarks.

Even though these studies point to a satisfying performance from Islamic institutions in the environmental, social and governance fields, there are also many authors who express some concerns and mention some worrying aspects such as the fact that although a focus on the social issues characterizes both Islamic and ESG investment approaches, environmental considerations seem to be less of a concern in the Islamic finance industry (Al Ansari & Alanzarouti, 2020) or even that evidence shows there is greater focus on financial goals rather than in social goals - the very opposite of what is dictated by *Shariah* (Nogueira, 2011). Other authors also mention that even though Islamic banks and financial institutions have shown unprecedented success in their financial transformation in the form of asset accumulation, financial performance and geographical and institutional diffusion, the main objective of contributing to social good in the creation of good ('*ihsani*') society is yet to be fulfilled (Mergaliyev, Asutay, Avdukic & Karbhari, 2019).

2.5. COVID-19 Pandemic and Hypothesis Development

The relationship between Islamic and social, environmental and governance principle is nothing but natural, since as expressed by Al-Ansari and Alanzarouti (2020), Islamic finance shares very similar underlying principles with sustainable financing and investing, such as financial steadiness and economic growth, poverty easing and better wealth distribution, while looking for both financial and social inclusion as well as environmental conservation.

The way both financial kinds of companies reacted to relevant social and environmental shocks and major events that impacted Europe within the last decade could be a very relevant indicator in order to find out the doctrine's relationship with social responsibility criteria. A good example lies on the COVID pandemic situation, which not only had practical effects on the economic or the social perspectives, but also on the environmental one, with Filho et al. (2021) highlighting the importance of carbon use reduction shown throughout the first wave of the pandemic or the importance to include

low carbon transformation into COVID-19 recuperation plans in order to reduce the climate changes' impact on the planet.

The banking sector was not an exception and, as in almost every industry, the institutions that comprise it showed relevant changes on their behaviours as a result of the pandemic context. As an example of this, European authors denoted significant fluctuations on banks' loan levels throughout this period, with higher exposure to COVID leading to a subsequent increase in worse-capitalized banks' loans, while the better-capitalized ones had decreases on their conceded credit levels (Dursun-de Neef & Schandlbauer, 2021). Besides this, the pandemic also led to even deeper changes in Western banks, with Miklaszewska, Kil and Idzik (2021) pointing out that most of the larger financial institutions are switching their attentions to digital evolution in order to rethink their own sources of income and offset the decreasing profitability of primitive sources of profit such as intermediation or interest-related receivables.

Bank's cost structure has also changed, with social distancing policies being more impactful within the shariah-compliant institutions due to their doctrine-oriented higher cost structure and banks with lower level of current assets suffering more severely during this period (Ashraf, Tabash & Assan, 2022). These macroeconomic changes were significantly proven to affect the financial sector profitability in general, but it is relevant to state that according to Zakarneh et al. (2021) Islamic financial firms were less affected than non-Shariah compliant ones.

The impact was also felt on the markets, with the pandemic context showing negative influence on stock returns from both Islamic and Western financial institutions (Ashraf et al., 2022), even though Islamic banks' stocks were less volatile than the conventional ones throughout the affected period as shown by Aliani, Al-Kayed & Bouijlil (2022). This fact shows greater confidence from investors on Islamic financial institutions, with higher pre-pandemic efficiency explaining shariah-compliant banks better stock performance (Mirzaei, Saad & Emrouznejad, 2022).

On this matter, authors such as Abdul-Rahman and Gholami (2020) point out Islamic finance, via its profit-and-loss shared contracts, as one of the most suitable approaches towards enriching the resilient financial systems in thriving out of COVID-19 economic crisis and mention that, regardless the significant differences between profit-loss sharing

and interest-based financing contracts, a paradigm change of mentality of governments, financiers as well as entrepreneurs are required for attaining the so desired financial sustainability.

Given the relevant changes in environmental and social paradigms brought by this very relevant and exogenous to the financial markets' event such as the pandemic shock, the studied hypotheses will be the following:

H1: Shariah-compliant financial institutions across Middle East present higher Environmental, Governance and Social scores in the post-COVID period than the non-Islamic European financial firms.

H2: Middle Eastern Shariah-compliant financial institutions and European Non-Islamic ones post-COVID ESG performance was linear throughout the different ESG score levels.

These two stated hypotheses aim to explain the Islamic doctrine's impact on the environmental, social and governance performance of financial institutions in this most recent period across Europe and Middle East regions.

3. METHODOLOGY

3.1. Model and Variables

In order to respond to both hypotheses, aggregate, environmental, social and governance scores from both Islamic and non-Islamic selected banks will be individually analyzed, with a linear regression model containing pre-covid sustainability scores, company-level indicators, country-effect and the Islamic factor being used in order to understand whether there is a significant association between the post-COVID ESG scores and any of the mentioned variables.

The 2021 ESG score given to banks in Europe and Middle East by Thomson Reuters will be the independent variable (PoC-ESG score), following the approach chosen by Hassan et al. (2022) and is going to be explained by a set of several variables. The first explanatory variable included in the model is the Islamic dummy one, which will equal one (1) for shariah-compliant firms and zero (0) for financial institutions that do not follow the Islamic principles. Besides this one, other variables will be used in order to predict the 2021 ESG scores of the sampled banks, such as financial institutions' size – by adding the logarithm of total assets to the model – or their leverage, which is computed by dividing the firm's total debt over their amount of assets. Last but not least, country-effect will be taken into account by the generation of dummies by country of origin, as well as previous sustainability scores, with the 2019 ESG grades attributed by Thomson Reuters (PrC-ESG) used in order to reflect the pre-pandemic effect on the scores.

$$\textbf{(1)}\quad \textbf{PoC-ESG}_i = c + \beta_1\,\textbf{Islamic}_i + \beta_2\,\textbf{Country}_i + \beta_3\,\textbf{Size}_i + \beta_4\,\textbf{Leverage}_i + \beta_5\,\textbf{PrC-ESG}_i + \varepsilon_i$$

In the wake of this analysis, and looking to understand whether the banks relationship with sustainability scores is being affected by their exogenous context, a two-stage instrumental variable (2S-IV) least squares regression model is going to be used, allowing to confirm whether the hypothesis that shariah compliance explains or not the post-COVID institutions' scoring evolution.

This approach aims to follow Ullah, Zaefarian and Ullah (2021) views, since these authors point out that offsetting endogeneity is a very relevant quality benchmark in

scientific research, given that this problem may result in subsequent misleading conclusions. According to these very same authors, endogenous instrumental variables correlated with the endogenous variable, when properly justified, contribute to tackle this problem.

In order to proceed with this double-staged testing, the model will incorporate several instrumental nation-wide variables, such as the IFDI, which stands for Islamic Finance Development Indicator, as made by Paltrinieri et al. (2020) when trying to correlate these same subjects. Given by Thomson Reuters - after aggregating on a composite indicator several elements that measure the industry development –, this index will be used within the model as an instrumental variable by helping to predict the expected ESG of a bank given the level of Islamic development of the country in which it is based. This nation-based indicator varies between 0 and 100 and will be taken into account by obtaining the values attributed to the nations where each financial institution is seeded for the most recent period (2021).

On top of the mentioned variable, several macroeconomic indicators will be also used as instrumental variables, with scores such as the Human Development Index, yearly disclosed by United Nations, and the percentage of the country's female labor force included to consider the social context that involves each bank. Besides this, further indicators like the Global Freedom Score or the WJP Rule of Law, which ranks a vast number of countries according to the efficiency and level of development of their justice systems, will be used in order to estimate the country's degree of governance evolution, while on the environmental field indicators such as the level of country's emissions or the amount of energy consumption per capita being used in order to control endogeneity and ensure the model focus on the banks themselves.

Since the country-effect is already diluted between the several instrumental variables included on this second model, the nation dummy variables were removed from it, with the X representing the seven instrumental variables being included in its place:

(2) $\text{PoC-ESG}_i = c + \beta_1 \text{Islamic}_i + \beta_2 \text{Size}_i + \beta_3 \text{Leverage}_i + \beta_4 \text{PrC-ESG}_i + \beta_5 X_i + \varepsilon_i$

Finally, it is also very relevant to understand whether the relationship between these dependent variables and the post-COVID ESG score is linear or not throughout the different sustainability grade levels.

Adriyana, Gijbels and Verhasselt (2018) classified quantile regression as an important resource in order to characterize a population and, following the approached used by Engle and Manganelli (2004) to deal with different behaviors within their distribution. Quantile regressions will be performed for the 25%, 50% and 75% quartiles and will take us to conclude whether there is heteroscedasticity within the original models or not and allowing to understand the variation of weights of each explanatory variable depending on the degree of environmental, social and governance responsibility levels they're ranked to.

Table 1 is presented below with a list of the incorporated variables along with a summarizing explanation for each one:

Table 1 – List of variables

Variables	Definition
Dependent variables	
ESG Index (2021, Thomson Reuters)	The composite ESG index will aggregate scores attributed on environmental, social and governance issues to the firms studied by the model.
Environmental Index (2021, Thomson Reuters)	Score attributed by Thomson Reuters to banks' environmental concerns.
Social Index (2021, Thomson Reuters)	Score attributed by Thomson Reuters to banks' social concerns.
Governance Index (2021, Thomson Reuters)	Score attributed by Thomson Reuters to banks' governance concerns.

Independent variables

Dummy variable: Islamic financial institution	Variable intended to distinguish shariah-compliant and non-Islamic firms, with values (0) and (1) attributed to each ones respectively.
Dummy variable: Country	This explanatory dummy variable aims to control the country-effect on the models in which it is utilized, by attributing (1) to the country where the respective financial institution has its own headquarters.
Size	Indicator calculated through obtaining the logarithm of the total assets disclosed by a given bank in the year of 2021.
Leverage	Ratio computed as the 2021 banks' amount of total debt divided by its respective quantity of total assets, allowing to understand its leverage degree.
ESG Score (2019, Thomson Reuters)	The composite ESG index will aggregate scores attributed on environmental, social and governance issues to the firms studied by the model.
Environmental Score (2019, Thomson Reuters)	Score attributed by Thomson Reuters to banks' environmental concerns.
Social Score (2019, Thomson Reuters)	Score attributed by Thomson Reuters to banks' social concerns.
Governance Score (2019, Thomson Reuters)	Score attributed by Thomson Reuters to banks' governance concerns.

Instrumental variables (Two-stage least squares regression)

Islamic Finance Development Indicator (IFDI, 2021, Thomson Reuters)	Composite indicator which aggregates several elements that measure the Islamic financing industry development by country.
Country's Female Labor Force (%, 2020, The World Bank)	Percentage of population within the active workforce constituted by women in a given country.
Human Development Index (2021, United Nations)	Worldwide-recognized indicator which evaluates a country's degree of development in the health, education and wealth components, allowing to infer the nations' stage of social development.
Country's Carbon Emissions per capita (metric tones, 2020, The World Bank)	Average yearly amount of carbon emissions issued by each individual in a given country, measured in metric tones.
Country's Energy Consumption per capita (kWh, 2021, The World Bank)	Average yearly amount of energy consumed by each individual in a given country, measured in kilowatts per hour.
Country's WJP Rule of Law (2021, World Justice Protect)	Annual report which evaluates the justice system, based on people's perception of it and by aggregating the opinion of several specialists on the matter.
Country's Global Freedom Score (2021, Freedom House)	This score is given through quantitative measuring the degree of freedom in a given country by examining the extent in which the individual freedoms of individuals is in fact respected in that same territory.

3.2. Sample Selection

The studied sample was retrieved from Thomson Reuters data on banks operating within Europe and the Middle East region, comprehending financial institutions from several different sizes. Since the analysis is based on the platform scores given to banks' environmental, social and governance attributes, the chosen institutions were the ones with this type of data available. For this reason, the number of non-Islamic financial institutions included on the sample is considerably larger and totally located in Europe, while the Islamic ones are integrally situated within the Middle East region.

The distribution by applicable doctrine – Islamic or non-Islamic – can be consulted on the appendix section situated on the final pages of this document. Table 2 summarizes the distribution of banks in our sample:

Table 2 – Banks Sample

Doctrine	Number of banks	Percentage	Cumulative Percentage
Islamic	25	14,286%	14,286%
Non-Islamic	150	85,714%	100%
Total	**175**	**100%**	**-**

4. RESULTS

As mentioned in previous chapters, the analysis made on this work will focus either on the environmental, social and governance scores of the in-scope institutions and their respective response to a very relevant external shock that took place in both regions simultaneously – the COVID-19 pandemic in 2020. As so, below are specified the observed results on the ESG criteria evolution for both doctrines following the exogenous crisis on a global perspective, followed by a specific analysis for each of the three components of this concept and their distribution throughout the several ESG score levels.

4.1. Variable Descriptive Statistics

Table 3 presents the descriptive statistics of our sample.

Table 3 – Population Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min.	Median	Max.
ESG Score (2021)	175	53.199	22.417	3.344	54.303	94.679
ESG Score (2019)	138	53.741	21.640	3.661	54.588	93.246
Environmental Score (2021)	175	44.996	33.581	0.000	44.415	97.836
Environmental Score (2019)	138	44.763	33.643	0.000	48.874	99.131
Social Score (2021)	175	52.946	26.060	1.453	55.774	96.772
Social Score (2019)	138	56.256	25.504	1.850	61.833	96.550
Governance Score (2021)	175	56.801	23.023	3.939	59.613	94.986
Governance Score (2019)	138	53.815	23.303	2.832	56.294	94.604
SIZE	175	24.566	1.770	19.108	24.517	28.728
LEVERAGE	175	25.493	191.000	0.000	7.679	2540.542
HDI	175	88.986	5.323	72.000	89.500	96.200
Female Labor Force	173	35.716	13.536	12.292	44.345	49.237
Energy Consumption	159	62,946.760	44,038.204	20,379.303	35,535.938	182,673.953
Carbon Emissions	175	10.661	8.371	0.040	7.250	35.640
Global Freedom Score	174	55.621	36.025	7.000	69.000	97.000
WJP Rule of Law	119	70.092	13.682	42.000	68.000	90.000
IFDI	170	22.103	24.494	0.886	3.019	73.638

Starting by the characterization of the population analysed within the below-presented analysis, it is possible to witness that all the variables, apart from country's energy consumption per capita and carbon emissions per capita, are converted to a percentage scale that goes from 0 to 100.

As it is possible to conclude, the higher average scores between the three fields that compose the aggregate ESG score were obtained by social and governance scores in 2019 and 2021, respectively. The aggregate average was placed between 53 and 54 in both periods, with environmental scores' average presenting lower values in the two studied years and, in the other hand, governance ones always higher than the total average score.

Looking at the remaining variables, it is important to highlight that the logarithm of total assets is the variable with lower standard deviation, with environmental instrumental variables and the country's Global Freedom Score presenting more dispersed results.

4.2. Regression Results and Discussion

As mentioned in the previous chapters, the analysis starts with a regression relating ESG aggregate score with the planned explanatory variables, which will be followed by three other OLS regressions addressing each of the components that contribute for this score. All of these models, will include country-effect dummy variables which intend to control the external context involving the sampled financial firms.

Below, it is possible to observe that the post-pandemic banks' ESG score is significantly related to both their pre-pandemic evaluation and their leverage degree, with the first independent variable showing a positive coefficient of association with the aggregate sustainability score, while increasingly leveraged financial institution considerably present lower ESG accumulated scores.

On the other hand, either the Islamic factor and the size of the bank given by the logarithm of its total assets in 2021 present positive correlation coefficients with the independent variable, but none of them has a significant result on this model. This allow us to infer that we cannot reject the hypothesis of both variables not having any association with the ESG score, meaning that, on aggregate, the shariah-compliance is not a determinant factor on the company's sustainability score, in 2021.

Given this, further testing will be performed in order to find out whether this variable significantly impacts any of the three specific components that are part of this global score.

Table 4 – ESG Score (2021) OLS Regression

Variables	ESG Score (2021)
Islamic	2.504
	(-0.860)
Size	0.543
	(0.740)
Leverage	-2.178***
	(-4.860)
ESG Score (2019)	0.846***
	(15.384)
Country	Yes
Observations	137
R-squared	0.917

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

The model below starts the comparison between the same explanatory variables that were used on the aggregate regression and each of the specific elements, being the environmental the first one to be analysed. In this case, results show that more variables are correlated with this particular score, with leverage and pre-pandemic score keeping their negative and positive significant correlations with the post-pandemic results, respectively, and the size of financial institutions gaining relevance on this specific model, given that higher-assets' banks have significantly shown higher post-pandemic scores according to the presented positively-shaped slope. In the meanwhile, the Islamic factor seems not to have significant impact on this field either, with the dummy variable

used to distinguish shariah-compliance showing a not sufficiently impactful significance value.

Table 5 – Environmental Score (2021) OLS Regression

Variables	Environmental Score (2021)
Islamic	4.044
	(0.992)
Size	2.131**
	(2.167)
Leverage	-1.478**
	(-2.260)
Environmental Score (2019)	0.811***
	(15.550)
Country	Yes
Observations	137
R-squared	0.926

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Regarding the post-pandemic social score, the conclusions were very similar to those obtained both in the aggregate and environmental results, with the degree of leverage (negatively) and the pre-COVID social score (positively) presenting significant impacts on the dependent variable. Once again too, it is not possible to reject the hypothesis that none of the remaining variables – size and shariah-compliance – is not correlated with the 2021 social score presented by European and Middle Eastern financial institutions in general.

Table 6 – Social Score (2021) OLS Regression

Variables	Social Score (2021)
Islamic	3.415
	(1.001)
Size	0.992
	(1.159)
Leverage	-2.177***
	(-4.113)
Social Score (2019)	0.787***
	(13.201)
Country	Yes
Observations	137
R-squared	0.911

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Lastly, equivalent testing was performed on the governance score variable in order to understand whether this component showed similar reaction to the other analysed fields or not. In fact, even though being the one with lower r-squared and, as so, the one with the less explanation power by the chosen independent variables, the governance component showed similar behaviours to the remaining scores.

Leverage ratio and pre-COVID governance results performed exactly the same way as in the other presented models, with significant negative and positive correlations to the dependent variable, respectively, with company's dimension and compliance with Islamic rules not allowing the rejection of the hypothesis that they have no relationship with the post-pandemic scores in this chapter.

The only major difference shown when compared to the other equivalent models was the fact that the Islamic factor seemed to present a negative correlation with the post-

COVID mark presented by banks, but since the significance value presented a very low explanatory power we cannot conclude by the effectiveness of this variable.

Table 7 – Governance Score (2021) OLS Regression

Variables	Governance Score (2021)
Islamic	-1.387
	(-0.271)
Size	0.997
	(0.963)
Leverage	-1.749**
	(-2.274)
Governance Score (2019)	0.751***
	(11.883)
Country	Yes
Observations	137
R-squared	0.766

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Given that the shariah-compliance indicator did not present sufficient evidence that it is significantly correlated with post-pandemic environmental, social and governance financial institutions' scores, the testing proceeds with two-stage instrumental variable least squares regressions in order to rule out any potential heterogeneity leading our results, such as endogenous heteroscedasticity underlying our dependent variable.

As was stated in the chapters above, the application of this model intends to eliminate any potential endogeneity problems contained within the sampled data, with several instrumental variables being used in order to infer predicted sustainability scores given the macroeconomic environment which surrounds the studied banks. The utilization of

these variables will simultaneously allow the removal of the country dummy variables in the following models, since by themselves they are already controlling the country effect on the model.

Table 8 – ESG Score (2021) Two-stage Least Squares Regression

Variables	ESG Score (2021)
Islamic	16.761
	(0.439)
Size	-5.531
	(-1.600)
Leverage	-3.797**
	(-2.021)
ESG Score (2019)	1.506***
	(4.611)
Freedom Score	Instrumental
Rule of Law	Instrumental
HDI	Instrumental
Female Labor Force	Instrumental
Energy Consumption	Instrumental
Carbon Emissions	Instrumental
IFDI	Instrumental
Observations	97
R-squared	0.689

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Similarly to the observed results on the OLS regression computed to explain ESG scores, the two-stage approach once again presented consistent conclusions, with shariah-compliance not showing a significant association with post-COVID scores. Furthermore, the significant variables presented once again themselves as leverage degree and pre-pandemic ESG scores.

Table 9 – Environmental Score (2021) Two-stage Least Squares Regression

Variables	Environmental Score (2021)
Islamic	-21.983
	(-0.384)
Size	-9.598*
	(-1.733)
Leverage	-2.104
	(-0.691)
Environmental Score (2019)	1.185***
	(3.988)
Freedom Score	Instrumental
Rule of Law	Instrumental
HDI	Instrumental
Female Labor Force	Instrumental
Energy Consumption	Instrumental
Carbon Emissions	Instrumental
IFDI	Instrumental
Observations	97
R-squared	0.377

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

While the social two-stage regression model seems to follow the shown trend in the ordinary model, with pre-pandemic score and leverage affecting the post-COVID score, the environmental model has shown us a slightly different conclusion than the previous one. Although confirming the theory that 2019's score positively impacts the 2021's one, including instrumental variables changed the bank's size effect on the score, with the variable showing a slightly significant negative impact on the post-pandemic score.

Table 10 – Social Score (2021) Two-stage Least Squares Regression

Variables	Social Score (2021)
Islamic	41.987
	(1.266)
Size	-0.967
	(-0.397)
Leverage	-4.070**
	(-2.337)
Social Score (2019)	1.265***
	(7.124)
Freedom Score	Instrumental
Rule of Law	Instrumental
HDI	Instrumental
Female Labor Force	Instrumental
Energy Consumption	Instrumental
Carbon Emissions	Instrumental
IFDI	Instrumental
Observations	97
R-squared	0.550

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Table 11 – Governance Score (2021) Two-stage Least Squares Regression

Variables	Governance Score (2021)
Islamic	-73.461 *
	(-1.843)
Size	-3.845
	(-0.542)
Leverage	-1.533
	(-0.470)
Governance Score (2019)	0.941**
	(2.400)
Freedom Score	Instrumental
Rule of Law	Instrumental
HDI	Instrumental
Female Labor Force	Instrumental
Energy Consumption	Instrumental
Carbon Emissions	Instrumental
IFDI	Instrumental
Observations	97
R-squared	0.216

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Even though presenting once again the lowest explanatory power within the three ESG components, the governance score two-stage regression model shows that, with noise-reducing instrumental variables, the shariah-compliance has some degree of impact on the evaluation given to firm's governance field. This variable shows a negative

correlation coefficient with the post-pandemic banks' governance score with a moderately significative value, inferring that Islamic underperformed on this chapter.

Given the robustness shown by the 2-stages least squares regression model through instrumental variables, showing very reduced endogeneity fragilities, the next step is to verify whether this relationship is (non) linear through different ESG score levels. In order to achieve this, quantile regressions are performed for both the aggregate and the three subjects that compose it looking to measure the differences between the relationships through 25%, 50% and 75% quartiles, representing respectively the smaller, median, and larger ESG score Ranks sampled financial institutions.

Table 12 – ESG Score (2021) Quantile Regression

Variables	ESG Score (2021)		
	25%	50%	75%
Islamic	3.785***	0.559	2.386***
	(2.929)	(0.268)	(5.169)
Size	-0.123	0.265	0.337***
	(-0.377)	(0.505)	(2.902)
Leverage	-2.325***	-2.237***	-2.221***
	(-11.688)	(-6.972)	(-31.257)
ESG Score (2019)	0.870***	0.828***	0.819***
	(35.633)	(21.018)	(93.962)
Country		Yes	
Observations		137	
Pseudo R-squared	0.792	0.758	0.731

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Starting with the aggregate scores' regression, it is possible to conclude that shariah-compliance has a significant and positive correlation with bottom and top Sustainability ranked banks' post-COVID ESG scores, presenting positive correlation coefficients for the first and last presented quartiles. Although showing a negative coefficient for the middle-sized quartile, in fact this relationship is not significant. Besides this, it is also very relevant to refer that all the remaining explanatory variables also have significant correlations with post-pandemic ESG scores, with all of them apart from leverage (negatively correlated) presenting a positive impact on the sustainability scores.

Table 13 – Environmental Score (2021) Quantile Regression

Variables	Environmental Score (2021)		
	25%	50%	75%
Islamic	0.459***	-0.809	3.193**
	(3.384)	(-0.426)	(2.567)
Size	0.073**	0.729	1.480***
	(2.230)	(1.589)	(4.933)
Leverage	-2.153***	-1.924***	-1.687***
	(-98.910)	(-6.308)	(-8.450)
Environmental Score (2019)	0.953***	0.900***	0.859***
	(549.227)	(37.036)	(54.031)
Country		Yes	
Observations		137	
Pseudo R-squared	0.859	0.812	0.735

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

Relating the studied institutions' post-COVID environmental score it is also important to mention that the Islamic factor variable assumes a similar behaviour to the one shown on the general model, with positive and significant relationships for the banks included on the 25% and 75% quartiles. The most relevant difference to the observed on the

aggregate scores, and given that shariah-compliance also has reduced impact on the median-ranked banks, is that the other independent variables also show very significant correlations for the remaining quartiles, with leverage assuming a negative impact throughout all the levels and the pre-pandemic scores positively influencing the post-pandemic ones throughout the several quartiles.

Table 14 – Social Score (2021) Quantile Regression

Variables	Social Score (2021)		
	25%	50%	75%
Islamic	3.280***	0.203	6.432***
	(2.792)	(0.074)	(4.874)
Size	-0.419	0.572	1.189***
	(-1.422)	(0.827)	(3.590)
Leverage	-2.480***	-2.241***	-2.096***
	(-13.612)	(-5.243)	(-10.239)
Social Score (2019)	0.940***	0.826***	0.694***
	(45.801)	(17.154)	(30.122)
Country		Yes	
Observations		137	
Pseudo R-squared	0.803	0.742	0.688

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

When proceeding to the remaining ESG components individual analysis, it is possible to observe quite distinct conclusions in the social and governance subjects. The first one (above) presents a very similar result structure to the one observed in the environmental component, with Islamic doctrine compliance highly correlated with bank's post-pandemic social performance for the first and last quartiles, while showing significant irrelevance on the 50% one. The same applies for leverage and pre-pandemic marks, which both followed the presented trend on the environmental chapter and scored highly-correlated coefficients throughout the different quartiles (negative and positive,

respectively). Regarding size, this variable is only relevant for the explanation for post-pandemic social scores in the higher quartile-positioned banks.

In the other hand, the governance evaluation registered once again very distinctive results from the other subjects, with no significant correlation to shariah-compliance in any of the presented quartiles. Given that, it is also relevant to mention that it shows significant correlations with all the other variables for any of the three quartiles, with size and pre-pandemic governance scores positively influencing the dependent variable, while leverage degree showing an opposite contribution.

Furthermore, it is possible to observe in the appendix section the figures for these distinct quartile regressions, with u-shaped plots in aggregate, environmental and social analysis showing Islamic overperformance for lower and higher ESG levels. It is also important to mention that the size of the blue zone reflects the explanatory power of the variable, with the dispersion on the governance one suggesting lower Islamic correlation.

Table 15 – Governance Score (2021) Quantile Regression

Variables	Governance Score (2021)		
	25%	50%	75%
Islamic	-1.201	0.586	0.136
	(-0.761)	(0.145)	(0.059)
Size	0.820**	1.663**	1.190**
	(2.566)	(2.036)	(2.536)
Leverage	-1.768***	-1.566**	-1.706***
	(-7.453)	(-2.581)	(-4.895)
Governance Score (2019)	0.812***	0.804***	0.779***
	(41.647)	(16.130)	(27.212)
Country		Yes	
Observations		137	
Pseudo R-squared	0.632	0.587	0.554

Note: ***, **, * respectively represent significance levels below 1%, 5% and 10%. The first value represents the beta coefficient of each explanatory variable, while the one between parenthesis represents its t-statistic.

5. CONCLUSION

The analysis conducted in order to conclude whether the islamic banks had shown a better reaction to the exogenous shock caused by the COVID pandemic, the results came out inconclusive, since the performed testing did not allow to confirm whether there was a significant effect of the Islamic factor on the post-pandemic environmental, social or governance scores.

Following this impossibility of rejecting the irrelevance of the shariah-compliance factor, a two-step approach was adopted in order to confirm the obtained results in the ordinary models. The mentioned model included several macro-economic variables related to environmental, social and governance matters, with an instrumental role that was used to tackle potential endogeneity problems within the original regression. This option came inconclusive as well for the aggregate, environmental and social factors, showing in the other hand a moderately significant negative correlation within the governance component and revealing that Islamic banks underperformed European conventional financial institutions on this field in the post-COVID period.

Given the inconclusive and robust through instrumental variables results obtained within these previous testing stages, a final approach was chosen in order to understand whether this relationship was linear through several different sustainability scores' levels. The model answer was quite conclusive, with aggregate, environmental and social testing presenting very significant and positive correlation between shariah-compliance and corporate sustainability scores for the 25% and 75% quartiles, meaning there is a strong correlation between these concepts for the smaller and larger-sized financial institutions within Europe and Middle East.

These results corroborate the empirical findings by Paltrinieri et al. (2020), which observed the overperformance shown by firms following the Islamic doctrine in the social and environmental matters within a study conducted in Asia, while simultaneously confirming for smaller and larger-sized banks the theory proposed by Hassan et al. (2022) which states that shariah-compliance could help explaining the general firms' reaction to exogenous social and natural shocks.

REFERENCES

Abdul-Rahman, A., & Gholami, R. (2020*). Islamic finance and COVID-19 recovery: The role profit-loss sharing contract*. Jurnal Pengurusan, 59, 7-10.

Agnew, H., Klasa, A., Mundy, S., "*How ESG investing came to a reckoning*". Financial Times, 6 Jun. 2022. Available on: https://www.ft.com/content/5ec1dfcf-eea3-42af-aea2-19d739ef8a55

Ahmed, A. (2010). *Global financial crisis: an Islamic finance perspective*. International Journal of Islamic and Middle Eastern Finance and Management.

Ahmed, H. (2007). *Waqf-based microfinance: realizing the social role of Islamic finance*. World Bank, 6-7.

Al Ansari, R., & Alanzarouti, F. (2020). *ESG and Islamic Finance: An Ethical Bridge Built on Shared Values*. Journal of Islamic Financial Studies, 6(1).

Alamer, A. R. A., Salamon, H. B., Qureshi, M. I., & Rasli, A. M. (2015). *CSR's measuring corporate social responsibility practice in Islamic banking: A review*. International Journal of Economics and Financial Issues, 5(1), 198-206.

Ali, M., Nazir, M. I., Hashmi, S. H., & Ullah, W. (2022). *Financial inclusion, institutional quality and financial development: Empirical evidence from OIC countries*. The Singapore Economic Review, 67(01), 161-188.

Aliani, K., Al-kayed, L., & Boujlil, R. (2022). *COVID-19 effect on Islamic vs. conventional banks' stock prices: Case of GCC countries*. The Journal of Economic Asymmetries, 26, e00263.

Andriyana, Y., Gijbels, I., & Verhasselt, A. (2018). *Quantile regression in varying-coefficient models: non-crossing quantile curves and heteroscedasticity*. Statistical Papers, 59(4), 1589-1621.

Anwer, Z., Azmi, W., Mohamad, S., & Paltrinieri, A. (2021). *Why CEOs invest in Corporate Social Responsibility initiatives: evidence on Shariah compliant firms*. Applied Economics Letters, 28(8), 655-662.

Ashraf, B. N., Tabash, M. I., & Hassan, M. K. (2022). *Are Islamic banks more resilient to the crisis vis-à-vis conventional banks? Evidence from the COVID-19 shock using stock market data.* Pacific-Basin Finance Journal, 101774.

Ayub, M. (2020). *Issues in Theory and Practice of Islamic Finance and the Reform Agenda*. Journal of King Abdulaziz University: Islamic Economics, 33(2), 81-92.

Budalamah, L., El-Kholei, A. & Al-Jayyousi, O. (2020). *Harnessing value-based financing for achieving SDGs: Social innovation model for Arab municipalities*. Arab Gulf Journal of Scientific Research, 37(3), 1-19.

Corporate Social Responsibility, European Commission, 2011. Available on: https://ec.europa.eu/info/sites/default/files/recommendations-subgroup-corporate-social-responsibility_en.pdf

Dursun-de Neef, H. Ö., & Schandlbauer, A. (2021). *COVID-19 and lending responses of European banks*. Journal of Banking & Finance, 133, 106236.

Dusuki, A. (2008). *Banking for the poor: the role of Islamic banking in microfinance initiatives*. Humanomics, 24(1), 49-66.

Elkington, J. (1998). *Cannibals with forks: Triple bottom line of 21st century business.* Environmental Quality Management, 8(1), 37-51.

Engle, R. F., & Manganelli, S. (2004). *CAViaR: Conditional autoregressive value at risk by regression quantiles*. Journal of business & economic statistics, 22(4), 367-381.

European SRI study, EUROSIF, 2010. Available on: https://www.eurosif.org/wp-content/uploads/2022/03/Eurosif_SRI_study_2010.pdf

Filho, W., Azul, A. M., Wall, T., Vasconcelos, C. R., Salvia, A. L., do Paço, A., ... & Frankenberger, F. (2021). *COVID-19: the impact of a global crisis on sustainable development research*. Sustainability science, 16(1), 85-99.

Gaio, C., & Gonçalves, T. C. (2022). Gender diversity on the board and firms' corporate social responsibility. *International Journal of Financial Studies*, 10(1), 15.

Gaio, C., Gonçalves, T., & Azevedo, R. (2020). Earnings management: Evidence of listed and unlisted companies in europe. *Innovar*, 30(76), 77-90.

Gaio, C., Gonçalves, T., & Pereira, A. (2021). Financial crisis and impairment recognition in non-financial assets. *Revista Brasileira de Gestão de Negócios*, 23, 370-387.

Gaio, C., Gonçalves, T., & Venâncio, A. (2022). Cash holdings in start-ups: The role of founder sociodemographic characteristics. *Journal of Business Research*, 139, 520-528.

Gaio, C., Gonçalves, T., & Sousa, M. V. (2022). Does corporate social responsibility mitigate earnings management?. *Management Decision*.

Global Freedom Scores, Freedom House, 2021. Available on: https://freedomhouse.org/countries/freedom-world/scores

Gonçalves, T. C. (2022). The Impact of Discretionary Measurement Criteria on Investors' Judgement and Decisions. *Games,* 13(1), 3.

Gonçalves, T., Barros, V., & Serra, G. (2022). Political elections uncertainty and earnings management: Does firm size really matter?. *Economics Letters*, 214, 110438.

Gonçalves, T. C., Dias, J., & Barros, V. (2022). Sustainability Performance and the Cost of Capital. *International Journal of Financial Studies*, 10(3), 63.

Gonçalves, T. C., & Gaio, C. (2023). Corporate sustainability disclosure and media visibility: Mixed method evidence from the tourism sector. *Journal of Business Research*, 155, 113447.

Gonçalves, T., Gaio, C., & Costa, E. (2020). Committed vs opportunistic corporate and social responsibility reporting. *Journal of Business Research*, 115, 417-427.

Gonçalves, T., Gaio, C., & Ferro, A. (2021). Corporate social responsibility and earnings management: Moderating impact of economic cycles and financial performance. *Sustainability*, 13(17), 9969.

Gonçalves, T., Gaio, C., & Robles, F. (2018). The impact of Working Capital Management on firm profitability in different economic cycles: Evidence from the United Kingdom. *Economics and Business Letters*, 7(2), 70-75.

Gonçalves, T., Pimentel, D., & Gaio, C. (2021). Risk and performance of European green and conventional funds. *Sustainability*, 13(8), 4226.

Guidance on Social Responsibility, ISO 26000, ISO, 2010. Available on: https://www.iso.org/standard/42546.html

Hasan, M. M., & Dridi, J. (2010). *The effects of the global crisis on Islamic and conventional banks: A comparative study*. Available at SSRN 1750689.

Hassan, M., Chiaramonte, L., Dreassi, A., Paltrinieri, A., & Pisera (2022). *The religious fringe of Corporate Social Responsibility.* International Review of Economics and Finance, 80, 243-265.

Hong, H., Kubik, J. D., & Scheinkman, J. A. (2012). *Financial constraints and corporate goodness*. National Bureau of Economic Research.

Ibrahim, A. & Shirazi, N. (2020). *The Role of Islamic Finance in Fostering Circular Business Investments: the Case of OIC Countries*. Journal of Economic Cooperation and Development, 41(1).

Jouti, A. (2019). *An integrated approach for building sustainable Islamic social finance ecosystems*. International Journal of Islamic Finance.

Kasri, N. & Ismail, S. (2019). *Social Enterprise and Waqf: An Alternative Sustainable Vehicle for Islamic Social Finance*. Proceedings of the 7th ASEAN Universities International Conference on Islamic Finance (7th AICIF 2019) - Revival of Islamic Social Finance to Strengthen Economic Development Towards a Global Industrial Revolution.

Liang, H., & Renneboog, L. (2017). *On the foundations of corporate social responsibility*. The Journal of Finance, 72(2), 853-910.

Madime, E., & Gonçalves, T. C. (2022). Consequences of Social and Environmental Corporate Responsibility Practices: Managers' Perception in Mozambique. *International Journal of Financial Studies*, 10(1), 4.

Madime, E., & Gonçalves, T. C. (2022). Determining Factors For Social and Environmental Practices of Corporate Responsibility in Mozambique. *Revista de Gestão Social e Ambiental-RGSA*, 16(2), e03002-e03002.

Mergalyiev, A., Asutay, M., Aydukic, A. & Karbhari, Y. (2019). *Higher Ethical Objective (Maqasid al-Shari'ah) Augmented Framework for Islamic Banks:*

Assessing Ethical Performance and Exploring Its Determinants. Journal of Business Ethics, 170 (4), 797-834.

Miklaszewska, E., Kil, K., & Idzik, M. (2021). *How the COVID-19 pandemic affects bank risks and returns: evidence from EU members in central, eastern, and northern Europe*. Risks, 9(10), 180.

Mirzaei, A., Saad, M., & Emrouznejad, A. (2022). *Bank stock performance during the COVID-19 crisis: does efficiency explain why Islamic banks fared relatively better?*. Annals of Operations Research, 1-39.

Nogueira, J. (2011). *Corporate Social Responsibility in Islamic Financial Institutions*. Mimeo ISCTE.

Oseni, U., Hassan, M., Matri, D. (2013). *An Islamic Finance Model for The Small and Medium-Sized Enterprises in France*. Journal of King Abdulaziz University: Islamic Economics, 26(2), 153-180.

Paltrinieri, A., Dreassi, A., Migliavacca, M. & Piserà, S. (2020). *Islamic finance development and banking ESG scores: Evidence from a cross-country analysis*. Research in International Business and Finance, 51, 101100.

Qoyum, A., Sakti, M., Thaker, H. & AlHashfi, R. U. (2021). *Does the Islamic label indicate good environmental, social, and governance (ESG) performance? Evidence from sharia-compliant firms in Indonesia and Malaysia*. Borsa Istanbul Review, 22(2), 306-320.

Saraiva, T., & Gonçalves, T. C. (2022). Should I Play or Should I Go? Individuals' Characteristics and Preference for Uncertainty. *Games*, 13(2), 31.

Saraiva, T., & Gonçalves, T. C. (2022). The Role of Emotions and Knowledge on Preference for Uncertainty: Follow Your Heart but Listen to Your Brain!. *Risks*, 11(1), 1-15.

Tasnia, M., Alhabshi, S. & Rosman, R. (2021). *Corporate social responsibility and Islamic and conventional banks performance: a systematic review and future research agenda*. Journal of Sustainable Finance & Investment, 1-21.

The World Bank Data (2022). [Female Labour Force, 2020]. Available on:
    https://data.worldbank.org/

The World Bank Data (2022). [Carbon Emissions per capita, 2020]. Available on:
    https://data.worldbank.org/

The World Bank Data (2022). [Energy Consumption per capita, 2021]. Available on:
    https://data.worldbank.org/

Thomson Reuters Eikon. (2022). [Islamic Finance Indicator, 2021]. Available on:
    https://eikon.thomsonreuters.com/index.html

Thomson Reuters Eikon. (2022). [ESG Index, 2019 - 2021]. Available on:
    https://eikon.thomsonreuters.com/index.html

Thomson Reuters Eikon. (2022). [Environmental Index, 2019 - 2021]. Available on:
    https://eikon.thomsonreuters.com/index.html

Thomson Reuters Eikon. (2022). [Social Index, 2019 - 2021]. Available on:
    https://eikon.thomsonreuters.com/index.html

Thomson Reuters Eikon. (2022). [Governance Index, 2019 - 2021]. Available on:
    https://eikon.thomsonreuters.com/index.html

Thomson Reuters Eikon. (2022). [Total Assets, 2021]. Available on:
    https://eikon.thomsonreuters.com/index.html

Thomson Reuters Eikon. (2022). [Total Debt, 2021]. Available on:
    https://eikon.thomsonreuters.com/index.html

Tovar García, E. (2011). *Consequences of financial globalization in financial system efficiency*. Problemas del desarrollo, 42(167), 147-174.

United Nations Development Reports (2022). [Human Development Index, 2021] Available on: https://hdr.undp.org/data-center/human-development-index#/indicies/HDI

Who cares wins, UN, 2005. Available on: https://documents1.worldbank.org/curated/en/444801491483640669/pdf/113850-BRI-IFC-Breif-whocares-PUBLIC.pdf

WJP Rule of Law Index 2021, World Justice Project, 2021. Available on: https://worldjusticeproject.org/sites/default/files/documents/WJP-INDEX-21.pdf

Yesuf, A. & Aassouli, D. (2020). *Exploring synergies and performance evaluation between Islamic funds and socially responsible investments (SRIs) in light of the Sustainable Development Goals (SDGs)*. Heliyon, 6(8), e04562.

Zakarneh, S., Khasawneh, Y., Al-Hakim, M., & Khrais, I. (2023). *The Impact of the Coronavirus (COVID-19) Pandemic on the Profitability of Islamic and Conventional Banks (Comparative Study).* In International Conference on Business and Technology (pp. 1384-1394). Springer, Cham.

APPENDICES

Table A.1 – List of Sampled Financial Institutions

Bank	Doctrine
ABN Amro Bank NV	Non-Islamic
Abu Dhabi Commercial Bank PJSC	Non-Islamic
Abu Dhabi Islamic Bank PJSC	Islamic
Ahli Bank SAOG	Non-Islamic
Ahli United Bank BSC	Non-Islamic
Ahli United Bank KSCP	Islamic
Aib Group PLC	Non-Islamic
Ajman Bank PJSC	Islamic
Akbank TAS	Non-Islamic
Aktia Bank Abp	Non-Islamic
Al Ahli Bank of Kuwait KSCP	Non-Islamic
Al Baraka Group BSC	Islamic
Al Rajhi Banking & Investment Corporation SJSC	Islamic
Al Salam Bank BSC	Islamic
Alandsbanken Abp	Non-Islamic
Albaraka Turk Katilim Bankasi AS	Islamic
Alinma Bank SJSC	Islamic
Alior Bank SA	Non-Islamic
Alpha Services and Holdings SA	Non-Islamic
Arab Bank PLC	Non-Islamic
Arab National Bank	Non-Islamic
Arbuthnot Banking Group PLC	Non-Islamic
Arion banki hf	Non-Islamic
Bahrain Islamic Bank BSC	Islamic
Banca Carige SpA Cassa di Risparmio di Genova e Imperia	Non-Islamic
Banca Monte dei Paschi di Siena SpA	Non-Islamic
Banca Popolare Di Sondrio SpA	Non-Islamic
Banca Transilvania SA	Non-Islamic
Banco Bilbao Vizcaya Argentaria SA	Non-Islamic
Banco BPM SpA	Non-Islamic
Banco Comercial Portugues SA	Non-Islamic
Banco de Sabadell SA	Non-Islamic
Banco Espirito Santo SA em Liquidacao	Non-Islamic
Banco Santander SA	Non-Islamic
Bank Albilad Sjsc	Islamic
Bank Aljazira SJSC	Islamic
Bank Dhofar SAOG	Non-Islamic
Bank Handlowy w Warszawie SA	Non-Islamic

Bank Hapoalim BM	Non-Islamic
Bank Leumi Le Israel BM	Non-Islamic
Bank Linth LLB AG	Non-Islamic
Bank Millennium SA	Non-Islamic
Bank Muscat SAOG	Non-Islamic
Bank Nizwa SAOG	Islamic
Bank of Bahrain and Kuwait BSC	Non-Islamic
Bank of Cyprus Holdings PLC	Non-Islamic
Bank of Georgia Group PLC	Non-Islamic
Bank of Ireland Group PLC	Non-Islamic
Bank Polska Kasa Opieki SA	Non-Islamic
Bank VTB PAO	Non-Islamic
Bankinter SA	Non-Islamic
BankNordik P/F	Non-Islamic
Banque Cantonale de Geneve	Non-Islamic
Banque Cantonale Vaudoise	Non-Islamic
Banque Saudi Fransi SJSC	Non-Islamic
Barclays PLC	Non-Islamic
Basellandschaftliche Kantonalbank	Non-Islamic
BAWAG Group AG	Non-Islamic
BNP Paribas SA	Non-Islamic
Boubyan Bank KSCP	Islamic
Bper Banca SpA	Non-Islamic
BRD Groupe Societe Generale SA	Non-Islamic
Cairo Amman Bank PSC	Non-Islamic
Caixabank SA	Non-Islamic
Close Brothers Group PLC	Non-Islamic
Commercial Bank International PJSC	Non-Islamic
Commercial Bank of Dubai psc	Non-Islamic
Commercial Bank of Kuwait KPSC	Non-Islamic
Commercial Bank PSQC	Non-Islamic
Commerzbank AG	Non-Islamic
Credit Agricole SA	Non-Islamic
Credito Emiliano SpA	Non-Islamic
Danske Bank A/S	Non-Islamic
Deutsche Bank AG	Non-Islamic
DNB Bank ASA	Non-Islamic
Doha Bank QPSC	Non-Islamic
Dubai Islamic Bank PJSC	Islamic
Emirates Islamic Bank PJSC	Islamic
Emirates NBD Bank PJSC	Non-Islamic
Erste Group Bank AG	Non-Islamic
Eurobank Ergasias Services and Holdings SA	Non-Islamic
FinecoBank Banca Fineco SpA	Non-Islamic

First Abu Dhabi Bank PJSC	Non-Islamic
Getin Holding SA	Non-Islamic
Getin Noble Bank SA	Non-Islamic
Gulf Bank KSCP	Non-Islamic
Haci Omer Sabanci Holding AS	Non-Islamic
Housing Bank for Trade and Finance PSC	Non-Islamic
HSBC Bank Oman SAOG	Non-Islamic
HSBC Holdings PLC	Non-Islamic
ING Bank Slaski SA	Non-Islamic
ING Groep NV	Non-Islamic
Intesa Sanpaolo SpA	Non-Islamic
Israel Discount Bank Ltd	Non-Islamic
Ithmaar Holding BSC	Islamic
Jordan Ahli Bank PSC	Non-Islamic
Jordan Islamic Bank Co PLC	Islamic
Jyske Bank A/S	Non-Islamic
KBC Ancora BV	Non-Islamic
Kbc Groep NV	Non-Islamic
Khaleeji Commercial Bank BSC	Islamic
Komercni Banka as	Non-Islamic
Kuwait Finance House KSCP	Islamic
Kuwait International Bank KSCP	Islamic
Liechtensteinische Landesbank AG	Non-Islamic
Lloyds Banking Group PLC	Non-Islamic
Luzerner Kantonalbank AG	Non-Islamic
Mashreqbank PSC	Non-Islamic
Masraf Al Rayan QPSC	Islamic
mBank SA	Non-Islamic
Mediobanca Banca di Credito Finanziario SpA	Non-Islamic
Metro Bank PLC	Non-Islamic
Mizrahi Tefahot Bank Ltd	Non-Islamic
Moneta Money Bank as	Non-Islamic
Moskovskiy Kreditnyi Bank PAO	Non-Islamic
National Bank of Bahrain BSC	Non-Islamic
National Bank of Fujairah PJSC	Non-Islamic
National Bank of Greece SA	Non-Islamic
National Bank of Kuwait SAKP	Non-Islamic
National Bank of Oman SAOG	Non-Islamic
National Bank of Ras Al Khaimah PSC	Non-Islamic
Natwest Group PLC	Non-Islamic
Nordea Bank Abp	Non-Islamic
OTP Bank Nyrt	Non-Islamic
Permanent TSB Group Holdings PLC	Non-Islamic
Piraeus Financial Holdings SA	Non-Islamic

Powszechna Kasa Oszczednosci Bank Polski SA	Non-Islamic
ProCredit Holding AG & Co KGaA	Non-Islamic
Qatar First Bank LLC	Islamic
Qatar International Islamic Bank QPSC	Islamic
Qatar Islamic Bank QPSC	Islamic
Qatar National Bank Alahly SAE	Non-Islamic
Qatar National Bank QPSC	Non-Islamic
Raiffeisen Bank International AG	Non-Islamic
Ringkjoebing Landbobank A/S	Non-Islamic
Riyad Bank SJSC	Non-Islamic
Safwa Islamic Bank PSC	Islamic
Santander Bank Polska SA	Non-Islamic
Saudi British Bank SJSC	Non-Islamic
Saudi Investment Bank SJSC	Non-Islamic
Saudi National Bank	Non-Islamic
Sberbank Rossii PAO	Non-Islamic
Secure Trust Bank PLC	Non-Islamic
Sekerbank TAS	Non-Islamic
Skandinaviska Enskilda Banken AB	Non-Islamic
Societe Generale SA	Non-Islamic
Sohar International Bank SAOG	Non-Islamic
Spar Nord Bank A/S	Non-Islamic
Sparebank 1 Nord-Norge	Non-Islamic
Sparebank 1 Ostlandet	Non-Islamic
Sparebank 1 SMN	Non-Islamic
Sparebank 1 SR Bank ASA	Non-Islamic
Sparebanken Sor	Non-Islamic
Sparebanken Vest	Non-Islamic
Sparekassen Sjaelland-Fyn A/S	Non-Islamic
St Galler Kantonalbank AG	Non-Islamic
Standard Chartered PLC	Non-Islamic
Svenska Handelsbanken AB	Non-Islamic
Swedbank AB	Non-Islamic
Sydbank A/S	Non-Islamic
Tatra Banka as	Non-Islamic
TCS Group Holding PLC	Non-Islamic
TF Bank AB	Non-Islamic
Turkiye Garanti Bankasi AS	Non-Islamic
Turkiye Halk Bankasi AS	Non-Islamic
Turkiye Is Bankasi AS	Non-Islamic
Turkiye Vakiflar Bankasi TAO	Non-Islamic
UBS Group AG	Non-Islamic
Unicaja Banco SA	Non-Islamic
UniCredit SpA	Non-Islamic

United Arab Bank PJSC   Non-Islamic
Valiant Holding AG   Non-Islamic
Vestjysk Bank A/S   Non-Islamic
Virgin Money UK PLC   Non-Islamic
Yapi ve Kredi Bankasi AS   Non-Islamic

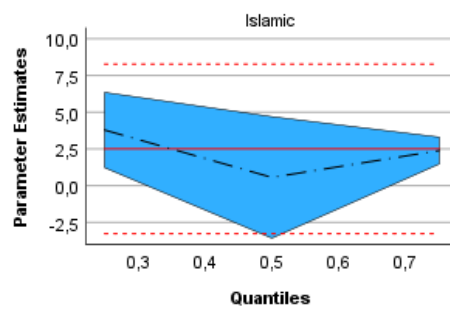Figure A.2 - Plot of the Estimated Islamic Parameter (ESG Score Quantile Regression)

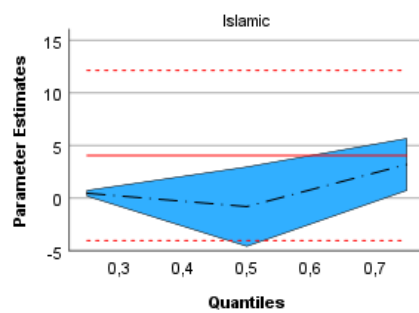Figure A.3 - Plot of the Estimated Islamic Parameter (Environmental Score Quantile Regression)

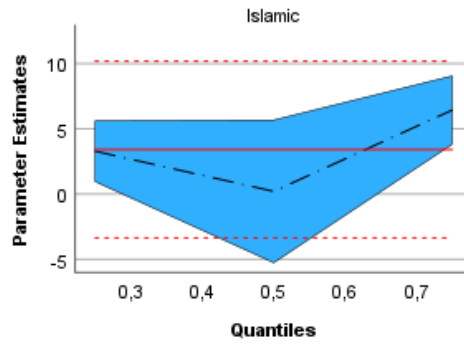Figure A.4 - Plot of the Estimated Islamic Parameter (Social Score Quantile Regression)

Figure A.5 - Plot of the Estimated Islamic Parameter (Governance Score Quantile Regression)