The Relationship Between Corporate Social Responsibility Financial Performance, Financial Inclusion and Financial Stability in Developing Countries: An Empirical Analysis

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Abstract

This study investigates the influence of corporate social responsibility (CSR) on financial performance, financial inclusion, and financial stability in the banking sector, using annual data from 30 financial institutions in Tunisia over the period 2007–2018. Employing a dynamic panel Generalized Method of Moments (GMM) estimation technique, the study accounts for endogeneity and dynamic relationships between variables. The findings reveal that CSR, alongside institutional factors such as age and size, positively impacts financial performance, inclusion, and stability. Conversely, high leverage adversely affects financial inclusion and stability, while asset tangibility is negatively associated with financial inclusion. These results underscore the strategic importance of CSR as a mechanism for enhancing financial sustainability and inclusiveness in emerging markets. The study contributes to the literature by offering empirical evidence on the interconnectedness of CSR and financial metrics in the context of the Tunisian banking sector, providing practical insights for policymakers and financial institutions.

Key words: Corporate Social Responsibility, Financial Performance, Financial Inclusion, Financial Stability, Developing Countries.

JEL: G32, G34, L25, M14

Introduction

The financial industry is very important to the economy. The primary function of the Bank is to collect and distribute CSR public funds to promote economic growth, and financial stability. Because of the Bank's critical role as a development agent, it must continually enhance its performance and the long-term viability of its operations. CSR is one of the tools available to banks to help them improve their financial value (Ramzan et al. 2021). Siueia et al. (2019) also found that a company's engagement in CSR may encourage improvements in performance.

A strong performance inspires investors to continue investing to reap the benefits of long-term stability. The greater a bank's budget allocated to CSR activities, the greater the benefits to the bank's internal and external confidence (Gangi et al.,2019). Financial inclusion may promote human development by enabling adults who are not currently connected to banking institutions to become users of banking, products and services, thereby supporting a country's economic growth (Vo et al., 2020).

According to one study, CSR can provide businesses with risk mitigation as well as long-term performance benefits (Nellis (2011) Chollet and Sandwidi (2018). Financial stability is another consideration for investors when deciding which companies to invest in.

Based on the preceding framework, the purpose of this research is to look into the impact of corporate social responsibility on financial performance, financial inclusion, and financial stability in the Tunisian banking sector. This study makes several contributions to the literature on corporate social responsibility (CSR) and its implications for the financial sector. First, it provides empirical evidence on the positive relationship between CSR and key financial metrics, including financial performance (FP), financial inclusion (FI), and financial stability (FS), in the context of an emerging market. Second, by employing dynamic panel GMM estimation, the study addresses endogeneity issues, offering robust insights into the dynamic interactions between CSR and financial outcomes. Third, it highlights CSR as a strategic tool for promoting sustainable growth, particularly in banking institutions, thereby linking ethical practices with financial sustainability. Finally, the research offers practical implications for policymakers and financial practitioners, emphasizing the need to integrate CSR into decision-making processes to foster ethical behavior and long-term stability in the financial sector.

The following sections are addressed in the paper's outline. The first section contains a review of the literature and our research hypotheses. The second section examines the methodological aspects. In the third section, we attempt to interpret and discuss our results. Finally, we summarise the most important findings and discuss the research's limitations and opportunities.

2. Literature review

2.1 Corporate social responsibilities

Corporate social responsibility (CSR) is defined as a company's engagement in long-term economic development to enhance quality of life and the environment. CSR activities are carried out by businesses in developed countries to gain financial and non-financial benefits. Improved financial performance (PF), financial stability (FS), and financial inclusion are examples of financial returns (FI). This CSR should be viewed as affecting modern businesses in developing countries, such as banks, because it is designed to address the interests of stakeholders who aim to maximise business profits (Paltrinieri et al. 2020). This could be useful for the banking sector, which deals with social environment, for example, through CSR activities.

Porter and Kramer's (2011) significant contribution lies in their assertion that the corporation's purpose should be redefined as the creation of shared value. They emphasize that the first step towards achieving this goal is identifying societal needs and understanding the benefits or harms that a business's products embody. Also, the authors outline three ways to create shared value: reimagining products and markets, redefining productivity in the value chain, and establishing supportive industry clusters in the company's operational areas.

On the other hand, Porter and Kramer (2011) did not directly introduce the concept of Corporate Social Responsibility (CSR), they called for a shift in business strategies, emphasizing the generation of shared value as a primary objective. This perspective aligns with what Trapp (2012) referred to as the third generation of CSR. Trapp explains this as a phase in which corporations integrate concerns about social and global issues into their activities, even when these concerns may not be directly related to their core business. While this may resemble the philanthropic responsibilities of companies, as described in Carroll's (1991) CSR Pyramid's fourth level, it stems from a distinct understanding of corporate roles in their social context.

Carroll (1991) views companies engaging in activities to enhance their social context with a philanthropic and discretionary lens, making this perspective less emphasized than the other CSR categories in the Pyramid. In contrast, Trapp (2012) builds upon Marrewijk's (2003) historical CSR framework to describe the third generation of CSR as a consequence of evolving roles and responsibilities in a society where the private, public, and social sectors are increasingly interdependent. Consequently, the third generation of CSR, as proposed by Trapp (2012), is the outcome of corporations recognizing and embracing their new roles and responsibilities toward society.

Chandler and Werther's (2013) recognize the significance of creating shared value, a constant theme in previous editions. They highlight its importance by modifying the book's subtitle from "Stakeholders in a Global Environment" to "Stakeholders, Globalization, and Sustainable Value Creation." In this edition, Chandler and Werther (2013) assert that Strategic CSR (SCSR) has the potential to

generate sustainable value and that the initial step is identifying social problems for which the company can create market-based solutions efficiently and responsibly.

In the fourth edition of the book, Chandler (2016) reflects on the evolution of CSR and its growing acceptance as central to a company's strategic decision-making and daily operations. Chandler (2016) emphasizes that generating sustainable value is a primary objective of SCSR. The subtitle of the fourth edition, "Sustainable Value Creation," encapsulates Chandler's (2016) new perspective on SCSR, where value creation must be embraced rather than avoided. A key aspect is Chandler's (2016) reliance on Porter and Kramer (2006) to assert that firms create the most value by focusing on their core operations.

Besides, Chandler (2016) introduces an updated perspective on SCSR that centers on optimizing value over the long term. He argued that profit maximization or trade-offs are no longer acceptable objectives. Instead, companies should aim to optimize value by focusing on their areas of expertise, leading to a reorientation towards the creation of shared value rather than profit maximization. To underscore the importance of integrating the five major components of SCSR into a corporate framework, the author emphasize that it should be part of day-to-day operations and corporate culture.

In 2015, Carroll revisited his work on CSR, providing an overview of its evolution and its relationship with other concepts. He highlighted how CSR has become intertwined with stakeholder engagement and management, business ethics, corporate citizenship, corporate sustainability, and shared value creation. He emphasized that these concepts are interrelated and overlapping, with CSR serving as a benchmark and central component of the socially responsible business movement.

Thus, corporate social responsibility (CSR), financial inclusion, and financial performance are three important concepts that have received a lot of attention in the literature. Several studies have explored the relationship between these three concepts, and the findings have been mixed.

Some literature suggests that CSR initiatives can have a positive impact on financial performance. Indeed, Margolis and Walsh (2003) found that companies that engage in CSR activities tend to have higher financial performance than those that do not. Similarly, Orlitzky et al. (2003) demonstrated that companies that are socially responsible tend to have higher financial returns.

Other literature suggests that financial inclusion can also have a positive impact on financial performance. In fact, Demirguc-Kunt, and Levine (2007) found that financial inclusion is positively associated with economic growth and development. Additionally, Allen et al. (2016) found that greater financial inclusion is associated with higher levels of bank profitability.

On the other hand, other literature suggests that the relationship between CSR, financial inclusion and financial performance is not always straightforward. Definitely, He and Lepak (2017) recognized that CSR initiatives can have a negative impact on financial performance when they are not aligned with the company's strategic goals. Correspondingly, Gramegna et al. (2021) recognized that financial inclusion can have a negative impact on financial performance if it is not properly managed. Overall, the literature suggests that the relationship between CSR, financial inclusion, and financial performance is complex and depends on various factors such as the company's strategic goals, the nature of the CSR initiatives, and the level of financial inclusion in the market. More research is needed to fully understand the relationship between these three concepts and their impact on financial performance.

2.2 Financial Stability

Financial stability is another key consideration for investors when deciding which companies to invest in (Cömert et al. 2018). According to one study, corporate social responsibility can help businesses reduce risk and improve performance over time (Chollet and Sandwidi 2018). As risks increase a firm's performance decline undermining its stability. Financial stability is a macroeconomic indicator of a country's financial performance. According to Ramzan et al. (2021), CSR affect positively financial stability (SF), implying that going up CSR's financial activities will raise bank stability (SF). Equally, Shah and Khan (2019), consumers' perceptions of a company's CSR had a positive and significant impact on long-term client engagement.

In the same way, Odhiambo (2019) examines the relationship between CSR and financial stability in a sample of African countries. The study finds a positive relationship between CSR and financial stability, particularly in terms of reducing bank fragility.

On the contrary, Rahman (2018) discussed the relationship between CSR, bank risk, and financial performance in the banking sector of Bangladesh. The study finds that CSR is negatively related to bank risk, and positively related to financial performance, suggesting that CSR may contribute to financial stability. This outcome is consistent with previous studies (Zhang (2008); McMillan (2018)).

These studies provide evidence of a positive relationship between CSR and financial stability in various industries and countries, particularly in terms of reducing bank risk and systemic risk. However, more research is needed to fully understand the mechanisms behind this relationship and the potential role of CSR in promoting financial stability.

2.3 Financial inclusion

Financial inclusion may promote human development by enabling people already connected to banking institutions to become active users of the financial services that support a country's economic growth. Vo et al. (2020) found a link between bank

structure and individual financial inclusion, based on a 10-year study across 83 countries. This link can be attributed to increased access to deposit and credit accounts, as well as to the largest banking sector (Owen and Pereira, 2018).

Moreover, previous studies primarily concentrate on quantifying the degree of financial inclusion, treating it as a multifaceted concept evaluated through the construction of index systems (e.g., Demirgüç-Kunt et al. 2015). Drawing from earlier research, the assessment of financial inclusion generally encompasses three facets: access, awareness, and utilization. These dimensions can be contemplated from a supply-demand perspective. Access pertains to service provision, encompassing the geographical reach of service outlets and the ease of accessing financial services (Demirgüç-Kunt et al. 2015; Han and Melecky 2013; Hannig and Jansen 2010). Awareness refers to an individual's financial literacy, which influences their inclination and ability to fully engage with financial services. From a demand perspective, awareness encompasses the behaviors required to make informed and sophisticated financial decisions, fostering financial well-being (Atkinson and Messy 2013; Guo and Ding 2015). Utilization, on the other hand, involves the actual consumption of financial services, spanning savings, credit, insurance, and more (Fungáčová and Weill 2015). Utilization is contingent upon both the supply and demand for services and reflects the quality and efficacy of financial inclusion efforts.

Furthermore, some research have delved into the ramifications of financial inclusion and highlighted the pivotal role of financial inclusion in fostering economic growth (Sharma 2016; Kim et al. 2018; Sethi and Acharya 2018), particularly in remote and rural areas, where it bolsters regional economic activities. Moreover, financial inclusion serves as a potent tool for mitigating income inequality and maintaining social stability (Neaime and Gaysset 2018). What's more, the impact of financial inclusion extends to employment, consumption and production (Dupas and Robinson 2013), and even credit risk (Chen et al. 2018).

Also, there is a growing body of research focused on financial inclusion within the Chinese market. Some studies have examined the expansion of banking outlets and financial services by tracing the historical development of the Chinese banking system (Bai et al. 2018; Peng et al. 2014; Sparreboom and Duflos 2012). Others have scrutinized the use of formal credit in China, underscoring the significance of financial inclusion (Chen and Jin 2017; Fungáčová and Weill 2015). Additionally, few studies have explored the impact of financial inclusion on commercial banks in China (Chen et al. 2018; Yang and Zhang 2020).

According to Ramzan et al. (2021), CSR activities in the banking sector in Pakistan can help increase financial inclusion. In their research, Vo et al. (2020) discovered that higher levels of financial inclusion, in the form of access to banking services, may contribute positively and significantly to the stability of the banking sector, thus increasing the firm's resilience.

The number of studies on the impact of CSR and financial inclusion is still relatively small. According to Kim et al. (2018), financial inclusion and economic growth rates have a significant and positive relationship, while CSR and financial inclusion have a significant and positive relationship, according to Ramzan et al. (2021).

In the same vein, Bhaduri (2020) examines the relationship between CSR and financial inclusion in the context of microfinance institutions in India. The study suggests that CSR can play an important role in promoting financial inclusion. The results are consistent with those of Sharma (2018); Amin (2019) and Ngugi (2020).

These studies provide insights into the relationship between CSR and financial inclusion in different contexts and industries. However, there is a need for further research to fully understand the potential role of CSR in promoting financial inclusion and achieving sustainable development goals.

2.4 Financial performance

Strong financial performance boosts investor confidence encouraging continued investment to realise the benefits of long-term stability. CSR is one of factor that can affect firm's performance. Belastri et al. (2020) found a positive and significant relationship between CSR and bank efficiency. Similar to the findings of Ramzan et al. (2021) .CSR in Pakistan has a beneficial impact on financial performance.

Many of the meta-analyses included in the study focus on the relationship between CSR (Corporate Social Responsibility) and financial performance, specifically examining the CSR-financial performance link. Within this context, it is common to distinguish between two types of performance measures: accounting-based (e.g., Return on Assets, ROA) and market-based (e.g., Tobin's Q). Some researchers also categorize financial performance proxies into accounting-based, market-based, and perception-based measures (Orlitzky et al. 2001).

Numerous studies provide evidence of a positive and significant impact of CSR on financial performance (Vishwanathan et al. 2020; Busch and Friede 2018; Plewnia and Guenther 2017; Hou et al. 2016; Lu and Taylor 2016; Friede et al. 2015; Wang et al. 2016; Quazi and Richardson 2012; Allouche and Laroche 2005; Orlitzky et al. 2003; Frooman 1997). For example, Busch and Friede (2018) conducted an extensive review of 25 prior meta-analyses and found evidence of a bidirectional link between CSR and financial performance. According to Hou et al. (2016), this impact is even stronger when environmental and operational performance are included. However, a recent study based on 437 included studies (Huang et al. 2020) did not find significant results linking CSR and financial performance. Also, Orlitzky and Benjamin (2001) noted a positive bidirectional link between CSR and firm risk.

Many moderator variables have been identified in these studies. For instance, Vishwanathan et al. (2020) examined 344 studies and identified factors such as firm reputation, stakeholder reciprocation, firm risk mitigation, and innovation level as

relevant moderators. Plewnia and Guenther (2017) concluded that time lags, region (specifically U.S. settings), continuous time horizons, controls for advertising intensity, and public ownership control can moderate the CSR-financial performance link. Lu and Taylor (2016), based on 198 CSR studies, pointed to the relevance of long-term effects, environmental performance, non-U.S. settings, studies conducted before 2000, and multi-industries as moderators. Other moderators include journal quality (Busch and Friede 2018), company size (Hou et al. 2016), the nature of the company (SMEs, private firms, and developing firms), environmental performance, and the country's level of development (Wang et al. 2016), as well as sample size (Quazi and Richardson 2012).

Moreover, Orlitzky (2011) reviewed 388 CSR studies and noted that economics journals tend to concentrate on publishing positive and significant results, which could contribute to a publication bias issue. The various measures used for both CSR and financial performance also serve as significant moderators in the meta-analyses (Busch and Friede 2018; Hou et al. 2016; Lu and Taylor 2016; Allouche and Laroche 2005; Orlitzky et al. 2003; Orlitzky and Benjamin 2001). Orlitzky's (2001) primary research objective indicated that firm size does not moderate the CSR-financial performance relationship. Finally, Huang et al. (2020) addressed two main challenges in prior business case research, namely, economic fluctuations and endogeneity concerns, which impact the reliability of archival CSR research. They found that when these challenges are properly addressed, there is a positive link between CSR and financial performance.

Besides, Malik et al. (2019) revealed that the bank's CSR budget has the potential to increase not only current profits, but also future profits. Siueia et al. (2019) discovered a significant and positive relationship between an organization's CSR and financial performance in their research using the ROA and ROE ratio. This finding agrees with that of Rynes (2003); Connaughton (2017); Tjahjono (2018) and Gomes (2019) who argue that to improve their financial performances, companies have more capital available to invest in areas of social performance, namely, employee relations, environmental issues, or the community partnerships.

These studies provide evidence of a positive relationship between CSR and financial performance in various industries and countries. However, there is still some debate among scholars about the strength and nature of this relationship, and further research is needed to fully understand the mechanisms behind it.

CSR strategies or their constituent components have the potential to enhance future CSR performance, emphasizing the intricate connections among various CSR variables. This proposition was articulated by Gabriel and Nathwani (2014), with a more pronounced effect observed in the case of proactive CSR strategies. Concerning the association between CSR reporting and CSR performance, Gallardo-Vazquez et al. (2019) did not uncover any statistically significant findings. Nevertheless, region,

company size, and the type of CSR disclosure were identified as noteworthy moderating factors (Gallardo-Vazquez et al. 2019).

Additionally, there are indications of a positive correlation between green supply chain management and CSR performance (Fang and Zhang 2018; Qorri et al. 2018; Geng et al. 2017). In their research design, the authors employed fixed-effects models. Key moderators in this context encompass industry, ISO certification, export orientation, and cultural factors such as uncertainty avoidance (Fang and Zhang 2018), as well as region, industry, and company size (Qorri et al. 2018; Geng et al. 2017).

Doan and Sassen (2020) documented a weak adverse influence of environmental performance on environmental reporting, with various proxy variations serving as a significant moderating variable. According to Erauskin-Tolosa et al. (2020), environmental management practices contribute to improve environmental performance, with this relationship moderated by the presence of mature certification and environmental innovation. Ultimately, CSR performance leads to enhanced brand loyalty (Aljarah and Ibrahim 2020), improved customer relationship quality (Aljarah et al. 2020), and heightened employee attitudes and behavior (Zhao et al. 2020). The strength of the link between CSR and brand loyalty is attenuated by factors such as innovation levels and involvement in the manufacturing industry, whereas cultural collectivism, product types characterized by experiential attributes, and the use of online survey designs reinforce this connection (Aljarah and Ibrahim 2020). Furthermore, the relationship between CSR and customer relationship quality is intensified when customer trust serves as a proxy (Aljarah et al. 2020).

3. The hypotheses development

Ramzan et al. (2021) found a positive relationship between CSR and financial performance measures substitutes for banks in Pakistan. Similar findings were reported by Siueia et al. (2019), who found a positive relationship between CSR and bank performance in Africa, using the ROA and ROE ratios. A Chinese study found a significant and positive relationship between CSR and ROA in the banking industry (Wu et al. 2020).

Das's (2019) research also shows that CSR has a positive impact on private bank behavior in India. Based on this explanation, the following hypothesis is proposed:

H1: Corporate social responsibility has a positive impact on the financial performance of Tunisia's banking sector.

Many studies have examined the impact of CSR on financial inclusion. OngoNkoa and Song (2020), for example, found that institutional quality can improve financial inclusion in Africa by increasing access to, penetration of, and use of financial services. Also, Haldar et al. (2016) published additional findings on CSR and financial inclusion, claiming that private commercial banks are better able than state-run banks to increase financial inclusion through CSR. Throughout their research, Le et al. (2019) exposed that financial inclusion positively impact financial viability in 31

Asian countries. Ramzan et al. (2021) found a positive relationship between CSR and financial inclusion in Pakistan banks. Thus, we assume that:

H2: Corporate social responsibility has a positive impact on financial inclusion in Tunisia's banking sector's.

Shah and Khan (2019) identified a link between CSR and client engagement. Hence, the bank's CSR will be able to reduce client engagement, allowing the bank to gain a long-term competitive advantage with implications for financial profit and stability. The findings are consistent with those of Ramzan et al. (2021), who concluded that as CSR activities increase, the bank's financial health will improve.

On the other, hand Chollet and Sandwidi (2018) concluded from their research that CSR can provide long-term risk mitigation as well as performance benefits. This could imply that reducing risks will benefit the company's financial stability. Therefore, the assumption will be formulated as follows:

H3: Corporate social responsibility positively impacts the financial stability of Tunisia's banking sector.

4. The methodology

4.1. Model

The variables used to assess the impact of corporate social responsibility on financial performance (FP), financial inclusion (FI), and financial stability (FS) in the Tunisian banking sector from 2007 to 2018 are defined below.

4.1.1. Dependent Variable: Financial Performance, Financial Inclusion and Financial Stability

The financial performance of firms is the first dependent variable in this study. Tobin's q (TOBINQ), return on assets (ROA), return on equity (ROE), and earnings per share (EPS) were among the accounting and financial ratios used as indicators of business performance ((Iqbal et al. 2012); Torugsa et al. (2012); Uadiale and Fagbemi, 2012; Fang et al. 2013; Cavaco and Crifo, 2014; Zhou et al. 2015; Nobanee and Ellili, 2016). In this study, in order to measure firm performance, we use return on assets (ROA), return on equity (ROE), and earnings per share (EPS).

The financial inclusion of firms is the second dependent variable in this study. Two measures are used to evaluate financial inclusion such as, Nbr of branches and Nbr of ATM (Kim et al. 2018).

The financial stability of firms is the third dependent variable in this study. Three measures are used to estimate financial stability, namely, Z-score, Za and Ze (Beck et al. 2013; Dwumfour 2017).

4.1.2. Independent Variable

The Corporate Social Responsibilities (CSR): We use corporate donations and actual spending on CSR activities as a proxy variable for CSR measurements (Oyewumi et al. 2018).

Most studies, as discussed in the literature review, divide CSR practices into social and environmental performance scores. Similarly to Oyewumi et al. 2018, we will use corporate donations and actual spending on CSR activities as a proxy variable for CSR measurements.

4.1.3. Control Variables

In terms of control variables, we used five variables that are related to the firm's characteristics and influence the endogenous variables, namely financial performance, financial inclusion, and financial stability. Leverage, tangibility, firm age and firm size and inflation (As a macroeconomic variable) are the five control variables. Table 1 also includes all variables and their measurements.

We will then move on to regression models, which will be based on specific data. For our sample, we employ dynamic panel model estimation techniques using the generalised method of moments (GMM). Thus, Holtz-Eakin et al. (1988), Arrelando and Bond (1991), and Arrelando and Bover (1992) pioneered the generalised method of moments (GMM) (1995).

As a result, we estimate the following model equations:

$$FP_{i,t} = \alpha_0 + \beta_1 \mathrm{Csr}_{i,t} + \beta_2 \mathrm{Leverage}_{i,t} + \beta_3 Tangibility_{it} + \beta_4 \mathrm{Size}_{it} + \beta_5 Age_{it} + \beta_6 \mathrm{Inf}_{it} + \varepsilon_{i,t} \quad (1)$$

$$FI_{i,t} = \alpha_0 + \beta_1 \mathrm{Csr}_{i,t} + \beta_2 \mathrm{Leverage}_{i,t} + \beta_3 Tangibility_{it} + \beta_4 \mathrm{Size}_{it} + \beta_5 Age_{it} + \beta_6 \mathrm{Inf}_{it} + \varepsilon_{i,t} \quad (2)$$

$$FS_{i,t} = \alpha_0 + \beta_1 \mathrm{Csr}_{i,t} + \beta_2 \mathrm{Leverage}_{i,t} + \beta_3 Tangibility_{it} + \beta_4 \mathrm{Size}_{it} + \beta_5 Age_{it} + \beta_6 \mathrm{Inf}_{it} + \varepsilon_{i,t} \quad (3)$$

4.2. Data

The study's data consist of annual observations for 30 Tunisian banks from 2007 to 2018. Bank financial data are drawn from the Bank scope and Bureau van Dijk data bases, as well as from annual reports. The World Bank provides macroeconomic data including the inflation rate.

Table 1 defines each variable and its corresponding data source.

Table 1.Variable definitions and data sources.

Variables	Acronym	Definition	Sour
Main variables			
Financial Performance	ROA	Return on assets	Bank autho
	ROE	Return on equity	Bank autho
	EPS	Net Earnings/Total Number of Shares Outstanding	Bank autho
Financial inclusion	Nbr of branches	Number of bank branches	Bank autho
	Nbr of ATM	Number of ATMs	Bank autho
Financial stability	Zscore	Total Z_Score for ROA and Z_Score for ROE	Bank autho
	ZA	The inverse of Z_Score for ROA= (ROA+ETA)/σROA.	Bank autho
	ZE	The inverse of Z_Score for ROE= (ROE+ETA)/σROE.	Bank autho
Independent variables :			
Corporate social responsibilities	CSR	Corporate Philanthropy. The natural log of the actual amount spent on CSR activities	autho
Control variables			
Bank Leverage	Leverage	Total Debt/ Total Assets	Bank autho
Bank Tangibility	Tangibility	Noncurrent Assets to Total Assets	Bank autho
Bank age	AGE	Number of operating years	Bank autho
Bank size	SIZE	Logarithm of total assets	Bank autho
Country macro specific indicator			
Inflation	INF	Annual inflation rate	Worl autho

5. Statistics tests used

5.1. Test for the Presence of Individual Effects (Hausman test)

This test aims to verify if there are individual effects in our model. Therefore, we test the following two hypotheses:

H0: There is a common intercept, no individual effects.

H1: Against H0, there are individual effects.

If H0 is rejected, meaning there are individual effects.

The first step is to check for the presence of individual effects in our model. According to Appendix 1 and based on the Fisher statistic, for this test, the probability >F = 0.000 is less than 5%. Therefore, it is significant at the 5% threshold, and consequently, there are individual effects.

The second step is to model the presence of individual effects, in other words, to determine the type of effect, which can be either fixed or random. This is done by referring to the Hausman test.

The Hausman test is a statistical method used in econometrics to assess the validity of estimates obtained from two different estimation methods, typically ordinary least squares regression (OLS) and generalized least squares regression (GLS) or instrumental variables regression (IV).

The fundamental idea behind the Hausman test is to determine whether the differences in estimates obtained by these two methods are due to random chance (i.e., sampling errors) or systematic bias in one of the methods. If the estimates are consistent between the two methods, it suggests that the OLS estimates are efficient and unbiased, and the Hausman test indicates a preference for the OLS model. Conversely, if the estimates significantly differ between the two methods, it suggests that OLS may be biased, and the Hausman test recommends using the GLS or IV model.

The Hausman test is used to assess whether the estimates obtained from two different estimation methods are consistent or not. Specifically, it tests a null hypothesis and an alternative hypothesis.

Null Hypothesis (H0): The differences between the estimates obtained from the two methods (typically the ordinary least squares regression model, OLS, and the generalized least squares regression model, GLS, or the instrumental variables model, IV) are due to random chance (i.e., sampling errors). In other words, there is no systematic bias in either of the methods.

Alternative Hypothesis (H1): The differences between the estimates obtained from the two methods are not due to random chance but result from systematic bias in one of the methods.

The Hausman test compares the estimates of coefficients obtained from the two methods and examines whether the differences between these estimates are statistically significant. If the differences are statistically significant, it suggests that the null hypothesis (H0) is rejected, indicating the presence of systematic bias in one of the methods, and the alternative hypothesis (H1) is accepted. In such a case, it is generally

recommended to use the method that is unbiased. The results of Hausman test are summarized in table 2.

Table 2. Hausman Test

Breusch-Pagan Lagrange Multiplier Panel Heteroskedasticity Test
H0: Panel Homoskedasticity – Ha: Panel Heteroskedasticity
chi2(5) = 1.30
Prob>chi2 =0.9344

The probability of the test statistic is greater than 10%. Therefore, there is no systematic difference between the two models. In such a situation, it's suggested that the choice of either model should be rigorously justified, and it depends on each author's conviction regarding the relevance of one model compared to the other. Hence, the random-effects model is more appropriate than the fixed-effects model.

5.2. Heteroskedasticity Test

Heteroskedasticity is a situation frequently encountered in simple or multiple regression econometric models. To test this technique, we generally use two of the most commonly used techniques in econometrics: the White test and the Breusch-Pagan test.

The main idea of this test is to determine if the variance of the model's residuals is not constant. Therefore, we test the following two hypotheses:

H1: $\sigma^2 e = 0$ (homoskedasticity)

H1: $\sigma^2 e \neq 0$ (heteroskedasticity)

Referring to the Breusch-Pagan test to test for heteroskedasticity, according to table 3, the prob>chisq = 0.0000, which is less than 5%. Therefore, there is a problem of heteroskedasticity of errors.

After verifying the assumptions of the regression model, we can conclude that the estimation by the generalized least squares method is the best estimation for our model to detect and correct the problem of heteroskedasticity of errors.

Table 3. Heteroskedasticity Test

Breusch-Pagan Lagrange Multiplier Panel Heteroskedasticity Test
H0: Panel Homoskedasticity – Ha: Panel Heteroskedasticity
chi2(1) = 324.16
Prob>chi2 = 0.0000

5.3. Multicollinearity test

From table 4 we can see that, the intercorrelations for all the explanatory variables have been examined by applying the variance inflation factors (VIF) analysis, which revealed no sign of multicollinearity. When a VIF value exceeds 10, it indicates a potential multicollinearity problem. These findings are deemed statistically appropriate, demonstrating that there is no multicollinearity.

Table 4. VIF test

Variable	VIF	1/VIF
Leverage	1.34	0.744086
Csr	1.30	0.771852
Size	1.29	0.775695
Age	1.23	0.813721
Tangibility	1.04	0.965833
Inflation	1.03	0.968563
Mean	1.20	

6. Regression analysis

6.1. Descriptive statistics

Table 5 displays the descriptive statistics results. The average value of performance show that the bank is profitable and performing well. The average ROA of 0.670 is between -47.148 and -47.148. The average ROE of 6.993 ranges from -44.054 to 218.009. The EPS ratio has an average value of 67.485, with values ranging from 0 to 99.753. The average value of bank branches is 48.683, with values ranging from -23

to 80; this is greater than the Nbr of ATM mean of 46.016, with values ranging from 33 to 66.

The average FS is 8.513, with values ranging from -56.555 to 278.315. CSR has a range of values from 0 to 15.13089, with an average value of 1673.626; debt levels have a range of values from 0 to 1.673, with an average value of 0.022. Finally, tangibility has a value range of -0.012 to 0.594, with 0.027 being the average.

Table 5. Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
ROA	225	0.6701	3.973	-47.148	33.654
ROE	225	6.9938	18.431	-44.054	218.009
EPS	225	67.485	141708.7	0	99.753
Nbr of branches	225	48.683	13.672	23	80
Nbr of ATM	225	46.016	7.983	33	66
ZSCORE	225	8.513	32.562	-56.555	278.315
ZE	225	2.028	6.867	-7.252	93.156
ZA	225	7.856	29.525	-49.303	251.097
CSR	225	33.845	214.988	0	1673.626
LEVERAGE	225	0.022	0.139	0	1.673
TANGIBILITY	225	0.027	0.063	-0.012	0.594
SIZE	225	6.849	1.671	3.750	11.267
AGE	225	38.941	22.781	14	132
INFLATION	225	4.024	0.651	2.966	5.3162

6.2. The Pearson correlation coefficients

Table 6 shows the Pearson correlation coefficients between the variables in our analysis. Correlation coefficients are typically less than 0.8, indicating a low level of correlation between the variables. According to Kennedy (2008), multicollinearity is a serious problem when the correlation is greater than 0.8. Table 6 examines the relationships between variables through a correlation matrix. While some coefficients are weak or insignificant, this analysis primarily serves to diagnose potential multicollinearity among predictors. For instance, the correlations between CSR and financial performance variables are weak, indicating limited multicollinearity issues. To provide robust insights, the study employs dynamic panel GMM, which allows for causal inference by addressing endogeneity and dynamic relationships that correlations alone cannot capture. Furthermore, the GMM results presented in

subsequent sections provide a clearer and more precise understanding of the variables' impacts.

To assess potential multicollinearity among the independent variables, we calculated Variance Inflation Factors (VIFs). As shown in Table 4, all VIFs are below the threshold of 10, with a mean value of 1.20, indicating that multicollinearity is not a significant issue. This, coupled with the correlation matrix in Table 6, ensures that the variables included in the dynamic panel GMM model are appropriate for robust estimation. The GMM approach further mitigates concerns of endogeneity and provides reliable insights into the dynamic relationships between corporate social responsibility (CSR) and financial performance metrics

Table 6. Correlation matrix

	ROA	ROE	EPS	N.branches	N ATM	ZSCORE	ZE	ZA	CSR	LEVRGE	TANGBITY	SIZE	AGE	NFLATION
ROA	1.000													
ROE	-0.352	1.000												
	0.000													
EPS	-0.008	0.019	1.000											
	0.892	0.754												
Nbr of branches	0.050	-0.165	-0.056	1.000										
	0.411	0.006	0.336											
Nbr of ATM	0.184	0.206	0.275	-0.022	1.000									
	0.002	0.000	0.000	0.694										
ZSCORE	0.010	0.046	-0.049	-0.132	0.019	1.000								
	0.869	0.441	0.399	0.019	0.735									
ZE	0.003	-0.011	-0.036	-0.139	0.044	0.821	1.000							
	0.952	0.848	0.557	0.022	0.473	0.000								
ZA	0.010	0.055	-0.045	-0.152	0.038	0.991	0.737	1.000						
	0.870	0.363	0.464	0.012	0.535	0.000	0.000							
CSR	-0.058	-0.000	-0.010	-0.045	-0.054	0.050	0.043	0.0591	1.000					
	0.344	0.997	0.862	0.431	0.350	0.387	0.485	0.3401						
LEVERAGE	-0.026	-0.062	-0.068	0.108	0.022	-0.032	-0.03	-0.032	0.396	1.000				
	0.664	0.307	0.269	0.074	0.710	0.595	0.622	0.596	0.000					
TANGIBILITY	-0.023	-0.085	-0.028	-0.015	-0.122	0.238	0.302	0.371	0.046	0.046	1.000			
	0.708	0.164	0.631	0.790	0.037	0.000	0.000	0.000	0.433	0.456				
SIZE	-0.071	-0.095	-0.433	0.297	-0.344	-0.049	-0.091	-0.056	-0.025	0.150	-0.001	1.000		
	0.250	0.122	0.000	0.000	0.000	0.398	0.143	0.369	0.662	0.014	0.980			
AGE	-0.072	-0.047	-0.146	0.077	-0.333	-0.074	-0.074	-0.089	-0.035	-0.036	-0.056	0.405	1.000	
	0.233	0.438	0.012	0.174	0.000	0.192	0.223	0.1430	0.5403	0.5500	0.3410	0.0000		
INFLATION	0.075	0.027	0.014	-0.006	0.014	0.056	0.042	0.059	0.041	0.125	0.081	0.062	-0.008	1.000
	0.212	0.650	0.805	0.915	0.807	0.321	0.494	0.337	0.472	0.038	0.168	0.292	0.886	

6.3. The impact of the CSR on financial performance

Table 7 reports the impact of CSR on ROA, ROE and EPS, with the leverage effect and tangibility as control variables.

At the 1% significance level, the partial regression estimate indicated a significant positive relationship between ROA and CSR. According to Siueia et al. (2019) and Ramzan et al. (2021) banks that engage in more CSR activities will increase their financial profits. With a 1% ROA, leverage and tangibility have a significant negative impact on ROA implying that high leverage can reduce ROA.

CSR has a significant positive effect on ROE at the 1% level, indicating that a bank's investment in CSR would increase its revenues, supporting the findings of Siueia et al. (2019) and Ramzan et al. (2021). The level of leverage or tangibility has no effect on ROE growth. Because the control variables have an additive effect on the ROE, the result of a 1% level simultaneous regression estimation shows the CSR, leverage effect, and tangibility. The regressions results in column 3 table 4 shows that at the 1% level, CSR has a significant positive effect on EPS, indicating that increasing banks' investment in CSR activities improves banks' image. These findings are consistent with previous research (Flammer ,2013; Ofori et al., 2014; Ramzan et al., 2021).

Table 7. Effect of CSR on Financial Performance

Variables	**Financial performance**		
	(1)	**(2)**	**(3)**
	ROA	**ROE**	**EPS**
L.ROA	0.144** (2.02)		
L.ROE		-0.1000 (-1.48)	
L.EPS			0.877*** (87.73)
CSR	0.000756*** (0.24)	0.0136*** (-1.02)	9.214*** (1.45)
TANGIBILITY	-12.73*** (-1.13)	-37.31*** (-0.79)	-49144.1* (1.72)
LEVERAGE	-0.568** (-0.12)	-7.838** (0.36)	-11314.2* (-0.74)
SIZE	0.582**** (1.29)	0.415*** (-0.23)	8064.6*** (-5.68)
AGE	0.0215* (0.28)	0.0163* (0.05)	722.7*** (3.53)
INFLATION	-0.928* (-1.95)	3.334* (1.77)	4618.2*** (3.40)
N	211	211	223

6.4. The CSR's Financial Inclusion Effect

Table 8 presents the CSR influence model on financial inclusion, measured by the number of branches and ATMs, with leverage and bank tangibility as control variables. At the 1% significance level, regression estimates indicated a positive effect of the number of branches on CSR. Indeed, banks that invest more in CSR activities have more loans, a noted by to the findings of OngoNkoa and Song (2020), and Ramzan et al. (2021).

Leverage and tangibility levels have no effect on branch Nbr. This demonstrates that the amount of leverage and tangibility has no effect on the number of loans that banks hold. The estimation of the results revealed a significant and positive relationship between ATM Nbr and CSR at a level of 1%.

According to Haldar et al. (2016), OngoNkoa and Song (2020) and Ramzan et al. (2021), banks that spend more on CSR activities are more financially integrated. The level of leverage has no effect on ATM Nbr, however at the 1% significance level, the tangibility rate has a significant negative effect on ATM Nbr. This implies that tangibility can reduce the use of automatic counters.

Table 8. Effect of CSR on Financial Inclusion

Variables	**Financial inclusion**	
	(1)	**(2)**
	Nbr of branches	**Nbr of ATM**
L. Nbr of branches	1.023*** (14.43)	
L. Nbr of ATM		0.953*** (19.41)
CSR	0.000145*** (0.11)	0.000238*** (0.23)
TANGIBILITY	0.927** (-0.17)	-3.568** (0.76)
LEVERAGE	0.914* (-0.32)	0.165* (-0.07)
SIZE	-0.311 (-0.46)	0.240 (0.53)
AGE	0.0373 (0.43)	-0.0328 (-0.47)
INFLATION	0.00318 (0.01)	0.360 (1.61)
N	225	225

6.5. The impact of the CSR on financial stability

Table 9 shows the CSR regression results on the FS, where the CSR is the independent variable and the FS is the dependent variable, with the effect of size, tangibility, age, and size as independent and control variables. The findings show a significant positive relationship between FS and CSR at the 1% level, implying that as banks increase their investments in CSR activities, they become more financially stable.

At a 10% significance level, leverage has a negative relationship with bank FS, indicating that higher indebtedness is associated with in lower returns, as we've seen in our outcome, which could lead to a drop in bank FS. Tangibility has no relationship with FS, means implying that banks are indifferent to haveing more fixed assets than current assets.

At the 1% level, bank age and size show a strong positive relationship with FS, implying that as banks grow older and larger in terms of economic resources, they become more financially stable. H2 is also supported by Chollet and Sandwidi's (2018) findings, which indicate significant relationship between CSR and the bank's FS.

Table 9. Effect of CSR on Financial Stability

Variables	Financial stability		
	(1)	(2)	(3)
	ZSCORE	ZA	ZE
L.ZSCORE	1.112***		
	(11.22)		
L.ZA		0.397	
		(0.76)	
L.ZE			0.532
			(0.85)
CSR	0.0365***	0.00696***	0.000617***
	(3.79)	(0.67)	(0.60)
TANGIBILITY	290.7	224.6	22.57
	(6.38)	(6.14)	(5.91)
LEVERAGE	-22.86	-5.865	-1.909
	(-0.96)	(-0.31)	(-1.06)
SIZE	12.06***	9.348**	0.604*
	(2.92)	(2.12)	(1.82)
AGE	2.387***	1.820**	0.133**
	(-3.68)	(-2.51)	(-2.41)
INFLATION	0.462	0.339	-0.00836
	(0.21)	(0.20)	(-0.05)
N	225	206	206

7. Conclusion and managerial implications

This study examines the effects of corporate social responsibility (CSR) on financial performance (FP), financial inclusion (FI), and financial stability (FS) in the Tunisian banking sector, using data from 30 financial institutions over the period 2007–2018. The findings show that banks investing in CSR strengthen customer, reduce financial risks, and enhance stability. These results emphasize CSR as a strategic tool for promoting sustainable growth in the financial sector.

The study offers several contributions. It highlights CSR's pivotal role in aligning financial performance with ethical and socially responsible practices, demonstrating how these initiatives benefit both institutions and society. By examining interconnections among CSR, FP, FI, and FS, this work provides actionable to help for banks redesign their practices to foster ethical behavior and sustainable business strategies.

The implications of this research extend to multiple stakeholders. For practitioners, particularly investors and stakeholders, the findings underscore the importance of CSR in evaluating financial performance and identifying growth opportunities. For regulators and policymakers, the study offers a framework to assess the integration of CSR in banking operations, enabling the development of policies that encourage socially responsible financial practices.

Despite its contributions, this paper acknowledges certain limitations. First, the analysis focuses on a single country (Tunisia), potentially limiting the generalizability of findings across different CSR practices globally. Second, CSR is measured using proxies like corporate donations and actual spending on CSR activities, which might not capture the full spectrum of CSR initiatives.

Future research should consider expanding the sample size to include a broader range of countries and testing additional CSR-related variables to provide a more comprehensive view of its impact. Further studies could also investigate other factors, such as governance structures or cultural differences, that may influence the relationship between CSR practices and financial performance.

In conclusion, this study underscores CSR's role as a driver of financial performance, inclusion, and stability, offering insights that can guide banks, investors, and policymakers in fostering ethical and sustainable financial ecosystems.

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