



The relationship between corporate social responsibility disclosures and financial performance: a mediating role of employee productivity

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Abstract

This study is trying to explore the relationship between corporate social responsibility (CSR) disclosures and financial performances (FP) through mediating role of the employee productivity (EP). This study classifies the CSR performances into four contexts, for instance, environment social governance (ESG), environmental improvement activity scores of CSR, social welfare activity score, and governance structure improvement score. The banking performance is classified into three different aspects such as returns on assets (ROA), returns on equity (ROE), and nominal interest margin profit (NIMP). The study covers the data set start from 2008 to 2019 regarding thirty commercial banks of China. The study uses the linear, non-linear, and quadratic techniques to explore the association between CSR disclosures and banking performances. The linear model result shows that the governance score is significant influencing the banking performance. Moreover, the employee productivities are also positive significant affecting the baking performances. The non-linear results of model show that composite score of ESG with employee productivity has significant influence on financial performance.

Keywords Corporate social responsibility · Corporate social performance · Corporate environmental improvement score · Social welfare score · Governance improvement score · Banking performances · Employee productivity

JEL classification D50 · E10

Introduction

The CSR is an ideology that delineates the relationship between a company and its stakeholders. An organization has to offer its shares to the society in terms of its well-being which can, in turn, lead to a common benign relationship between the

firm and the society (Wheelen and Hunger 2012). The early twentieth century marked the outset of CSR ideology in the USA. CSR has been defined in several ways such as, the assimilation of voluntary concerns related to society, the environment in business and with other shareholders (Fahy et al. 2005), business communities using communal practices to

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attain mutually beneficial goals (Rendtorff and Mattsson 2012), and viewing business organizations as human institutions which work toward the betterment of society through the production of goods and offering services (Freeman and Ginea 2015). Moreover, taking an organization as a system, the performance of this system is dependent on its parts, their relationships, and purpose, i.e., stakeholders in an organization (Freeman et al. 2020). Furthermore, the CSR consists of three important factors including the practice standard of CSR, the response of the organization to social causes, and the outcome of collective behavior (Ahamed et al. 2014). All these components work toward the better output of an organization.

To enhance fiscal output is the major concern for all organizations. After the inclusion of the social responsibility concept in SDGs, CSR has now become a widely accepted indicator for the financial performance of firms (Chung et al. 2018). The dramatic increase in CSR investments, reports, and research analyses has prioritized the value of CSR in business literature, and organizations can have abundant gains because of better performance in the social and environmental sectors. The banking zone has been considered as the “heart of society” and therefore should depict a higher level of social responsibility (Chambers and Day 2009). Banks use CSR to achieve a higher level of credibility (Lin et al. 2011) and to magnify their positive image (Mocan et al. 2015; Tewari 2011) which helps in attracting more clients and ultimately increase their profits (Polychronidou et al. 2014). Generally, banks have a higher ranking on the index of international CSR investment (Pérez and Del Bosque 2013). It is also argued that firms coordinate their social objectives with their corporate targets where CSR acts as means of marketing (Burianová and Paulík 2014) and a strategic mechanism to increase the overall value of all stakeholders.

It is also well documented that CSR performance can be an efficient approach for companies to cultivate positive terms with their employees (Kim et al. 2010). CSR puts a significant influence on job performance of employees (Story and Castanheira 2019) and is considered as a purpose of a firm’s behavior toward its stakeholders, thereby including employees as a major entity (Campbell 2007; Cooper 2017) which contributes toward employee job satisfaction (Edmans 2011) and development, thereby proving as an important element of business success (Bates 1990; Colombo and Grilli 2005; Shane and Stuart 2002). Therefore, a higher level of workers’ productivity will have a progressive influence on the firm’s operating performance (Banker and Mashruwala 2007; Ouimet and Simintzi 2018). A greater number of workers increase firm profits which will ultimately improve financial performance (Ahamed et al. 2014). An organization can be viewed as a production machine that takes input from dealers, stockholders, and workers and gives output to the clients (Donaldson and Preston 1995). Stakeholders such as

employees, local and national authorities, and citizens have the right to expect and claim socially justifiable and favorable behavior from firms and their leaders (Kujala et al. 2019). Employee rights include liberty and safety at the workplace, right to meaningful work, respect, and equality (Bowie 1998).

The study has utilized the framework of stakeholder theory which was developed considering the corporate world and general course of value addition; it suggested that the foremost significant component of analysis for a firm is the relationship of stakeholders and its connections which collectively measure business success (Freeman et al. 2020). Stakeholder theory well explains that CSR is a multidimensional concept focusing on four major stakeholders: (1) social and non-social stakeholders, (2) employees, (3) customers, and (4) government. In this study, we have used concept no. 2, that is, employee’s productivity as a mediator, and conjecture that CSR leads to an increase in employee productivity, which further tends to improve the banking performance.

High employee turnover, low motivation, and absenteeism at the workplace are the common issues faced by organizations (Ali et al. 2010) which can be resolved through CSR as a contributing factor. Greenwood and Freeman (2011) suggested a dynamic relationship between a firm’s success and employees, as employees are affected to a great extent by the progress or decline of the organization. Following this statement, considering today’s modern business world, it can be assumed that the personal success and satisfaction of employees within an organization tend to be answerable for the progress and financial success of the organization as well. The current study addresses the relationship between CSR and employee productivity, which is a key area of stakeholder theory and a neglected area of research. Greenwood and Freeman (2011) argued that the term “stakeholder” has been often used in the employment context; however, it has been neglected that employees are rightful stakeholders in the firm. Employees have been identified as stakeholders with a particular role, as they represent the organization (Crane and Matten 2004), as powerful influencers and claimant stakeholders (Kaler 2002).

Established on the problem description, due to dubious relations and the absence of information, the fundamental objective of this research paper is to study the relation between CSR on the company’s financial performance taking employee productivity as a mediating factor. Based on our research purpose and to find out about the relationship between CSR, bank performance, and employee productivity, the research question has been drawn out, respectively. How CSR affect employee productivity which in turn affects a bank’s monetary performance?

The investigation of CSR and financial performance taking employee productivity as a mediating factor could help in assisting between practice and scholastic theory (Cornelius

and Gagnon 1999). The current study also contributes toward an insufficiently researched area of stakeholder theory, i.e., human and behavioral aspects that need to be developed and considered for analysis and further lead to exploring the actual behavior of stakeholders (Freeman et al. 2020). There is no comprehensive study available that builds up a relationship between CSR and financial performance while taking employee productivity as a mediating factor. However, based on the arguments and studies, none of the above studies have used employee productivity as a mediating factor between CSR and the organization's financial performance. This is the importance and significance of this study that employee productivity and the impact of CSR on financial performance have been examined jointly within the context of China.

Therefore, the current study will be beneficial for bank managers who are active participants in CSR activities, financial analysts, and policymakers. Research focusing on the organization-level influence of CSR practices beneficial for stakeholders, i.e., employees including employee productivity, satisfaction, and motivation on financial performance, has become popular recently. This study has invigorated the interest in the domain of employee productivity and its impact on the financial performance of organizations. This study provides a valuable contribution and knowledge on how CSR affects financial performance within an organization with employee productivity as a mediating factor. The current study adds to the flourishing scope of recent research studies on the subject by providing vital information to academicians and organizational managers in the banking sector to encourage employee motivation and satisfaction for better employee productivity leading to fruitful outcomes for the organization's monetary performance. The organization of literature review in different areas helps to map out the study, i.e., a relationship between CSR and financial performance, CSR and employee productivity, employee productivity and financial performance, and stakeholder theory and previously used methodologies for studying the area under research.

Literature review

Impact of CSR on financial performance

Several studies have led to analyze the influence of CSR on financial performance and have suggested that CSR has a positive impact on financial performance (Ahamed et al. 2014; Bird et al. 2007; Kim and Kim 2014; Maqbool and Zameer 2018; Platonova et al. 2018; Preston and O'bannon 1997; Waddock and Graves 1997; Wheelen and Hunger 2012). It has also been proven that total productive maintenance (including system, equipment, processes, and employees) has a positive relationship with business monetary performance (Banker et al. 2014). However, contrary studies are imposing no

relationship between CSR and financial performance (Cordeiro and Sarkis 1997; Hemingway and Maclagan 2004; Wright and Ferris 1997). There are also researchers opting for a neutral stance when it comes to the relationship between financial performance and CSR (Griffin and Mahon 1997; Kraft and Hage 1990; McWilliams and Siegel 2000). CSR activities are argued to generate favorable results for firms by increasing customer adherence through paying remittances and bringing lower risk to prestige, which collectively improves profitability (Peloza and Shang 2011). A recent study using a linear model indicates that CSP (corporate social performance) and returns on assets do not have a positive relationship, while the non-linear model of CSP and accounting base performance as CFP have a positive association in the area for future (Shabbir et al. 2020).

Influence of CSR on employee productivity

CSR activities help the organizations to improve the environment and fulfill the needs of internal publics which leads to better performance. Several steps can be taken up to satisfy employee needs which reduce negative conduct in employees and develop positive behavior. Employee productivity and productivity improve with positive behavior which increases profits and leads to good fame of the organization. The business caters to human needs including physical, mental, and spiritual needs (Freeman and Ginena 2015). The firms can provide benefits to employees as part of CSR that includes meeting their employment demands, improved health care facilities, training and development, superior wages to incentivize (Ouimet and Simintzi 2020), and retirement benefits which will ultimately improve employee morale, job satisfaction, and employee productivity (Edmans 2011; Roberts and Dowling 2002). While taking employee productivity in terms of employee in-role and extra-role behavior, it was found that employees' perception of CSR and their performance and giving up intentions are linked along with the identification of two mediators including (OBSE) organization-based self-esteem and (OJ) organizational justice (Ho 2012). CSR proves to enhance the condition of work-life which leads to productive employees (Razaq et al. 2011).

Employees demand CSR which can lead to a favorable influence on their performance (McWilliams and Siegel 2001) including charismatic leadership which is one of the attributes which plays a positive role in every organization for employee engagement (Vlachos et al. 2013). It was studied using a qualitative comparative analysis method that employee needs including (existence, relatedness, and growth, or ERG) which are fulfilled by the organization's CSR initiatives affect job satisfaction and retention among employees (Lee and Chen 2018). Robust CSR performance in companies gives a strong outcome in employee aid (Trevino and Nelson 2016; Valentine and Fleischman 2008), thereby employees working in

organizations who are socially responsible achieve better operating performance than their fellows working in organizations with a less socially responsible performance (Li Sun 2015). It is also proposed in a study that employing in CSR can also prove to be more fruitful for organizations that aim for the job satisfaction of their aging and senior workforce because CSR activities cater to those sensitive requirements which are a priority of older age (Wisse et al. 2018). Therefore, CSR should not be considered as an alternative exercise, rather it should be implemented as a futuristic business plan (Maqbool and Zameer 2018).

Employee productivity has been measured by a variety of factors in various researches, i.e., level of engagement, motivation, commitment, integrity, and reputation. It is proposed in research that positive approach of employees regarding the CSR initiatives enhance the engagement, motivation, and commitment level of employees which plays a fundamental role in commitment to their organization as well as corporate performance (Ali et al. 2010; Greening and Turban 2000; Iqbal et al. 2012; Maignan and Ferrell 2001; Petersen 2009; Singh 2019). The high level of CSR in a company promotes a better reputation which in turn enhances positive attitude and integrity among employees and leads to improved employee engagement (Gross and Holland 2011; Turban and Greening 1997). An improvement in the motivation standard of employees advances to greater innovation and creativity (Mocan et al. 2015). A shred of further evidence is from a study that supports the idea of employees working in an organization with strong sense of purpose to the society being 34% more confident of growth in their organization.

Using ordinary least squares regression, the relation between CSR and employee productivity led to finding an affirmative relation between CSR and employee productivity as employees are willing to work for lesser privileges in socially responsible companies, indicating a positive relationship between employee productivity and CSR (Porter and Kramer 2006; Sun and Yu 2015). A significantly positive relationship between CSR actions and employee organizational commitment, CSR and organizational performance, and employee organizational commitment and organizational performance was observed in a study conducted in Pakistan using an exploratory approach with the structural equation model (SEM) technique (Ali et al. 2010). Survey findings of research suggested a positive correlation between corporate social responsibility and organizational citizenship behavior, and negatively with job switching intention among employees of the Telecom sector in Pakistan (Khan et al. 2014). Another study establishes the relationship between job satisfaction and organizational engagement among university employees of Pakistan using a survey (Asrar-ul-Haq et al. 2017). CSR leads to higher employee retention (Kim and Park 2011), attraction, and engagement which are of

utmost importance as companies with high employee engagement also demonstrated higher growth in earnings per share. A strong correlation has been observed between employee engagement and CSR which can ultimately improve the financial performance of the organization (Glavas 2016; Gross and Holland 2011; Ur Rehman et al. 2020; Mishra and Suar 2010).

Influence of employee productivity on financial performance

Few pieces of research have been conducted to analyze the relation between CSR influences on employee benefits which leads to improved employee productivity and an increase in the organization's financial performance. It has been observed that employee contentment and employee productivity can positively arbitrate in the relationship of the learning organization to monetary performance using the partial least square statistic method (Hatane 2015). It was analyzed that organizational commitment and corporate culture have a significant correlation and they both have an impact on the financial performance of organizations (Rashid et al. 2003). It has also been supported that an organization's workforce has a positive influence on financial performance and market worth (Bontis et al. 2005). Service profit chain linking employee-customer contentment and allegiance, and financial performance has been supported using panel data (Loveman 1998).

Some studies have suggested no clear relation between employee productivity and monetary performance. Using structural equation modeling (SEM) it has been examined that there is no forthright considerable influence of employee satisfaction on financial performance (Abbas 2020). However, there is an oblique relationship between constructs, which is arbitrated by customer satisfaction (Chi and Gursoy 2009). Therefore, employees being an integral part of organization and management have their livelihood and jobs connected to the organization. In return for the services and loyalty they offer the organization, they expect safety, benefits, earnings, and purposeful work. Employees are important as they are the face of the organization which ordains many responsibilities on their shoulders. Therefore, a productive employee-company relationship is beneficial as it points out toward an improvement in the long-term performance of an organization.

Conceptual framework and hypothesis

Stakeholder theory emphasizes keeping a balance among all stakeholders, thereby working for the welfare of all. A narrow definition of stakeholder describes a group that is important to the success and survival of the organization, and a broader

definition includes an association of members who can influence or are influenced by the organization (Freeman and McVea 2001). Employees can be included in both definitions of stakeholders. By exploring the employment relationship in stakeholder theory, in a way, we attempt to analyze the ethical analysis of HRM offered by stakeholder theory, while emphasizing employees working in an organization as responsible persons with “names and faces”(Greenwood and Freeman 2011). According to stakeholder theory, employee commitment combined with the rightful treatment of employees represents the case of ethical HRM. According to Greenwood and Freeman (2011), the gap identified in studying employees as stakeholders under the light of stakeholder theory is the neglected role of stakeholder theory and its relationship with HRM in this debate which has been overlooked.

Several studies show employee productivity positively linked to financial performance (Bontis et al. 2005; Hatane 2015; Javed et al. 2020; Loveman 1998; Rashid et al. 2003). However, grounded in the above literature review, it is clear that none of these studies take employee productivity as a mediating factor for studying the influence of CSR on financial performance using the theoretical framework of stakeholder theory which offers the potential to explore an employee-organization relationship. Therefore, this study fills the gap and adds to the existing knowledge of stakeholder theory as suggested by a recently published overview of the theoretical framework by Freeman et al. (2020) that the human and behavioral aspects of stakeholder theory need to be developed and considered for analysis which can lead to exploring the actual behavior of stakeholders.

Keeping in mind the presence of employee productivity as an intervening factor between CSR and bank performance, a business model can be developed which can serve the purpose of enhanced firm performance (Figs. 1 and 2).

The popular methods previously used to measure CSR in both academic and professional environments have been surveying (Ali et al. 2010), content analysis (Ahamed et al. 2014; Karagiorgos 2010; Platonova et al. 2018; Shabbir and Rehman 2015; Ramasamy et al. 2007), and case studies (Fatma et al. 2014). Also, indicators of pollution provided by some agencies, measures of attitudes and values, measures

of reputation, behavioral measures or audit (Dkhili and Ansi 2012), and amount of allowance or endowment contributed by the company for social work (Ehsan and Kaleem 2012) have been used as different methods of measuring CSR. The company’s financial performance has been generally measured through financial statements of annual reports. So far, accounting-based measures have provided the most positive correlation between CSR and corporate financial performance (Aras et al. 2010; Saleem et al. 2020; Iqbal et al. 2012; Sun 2012); stock or measures supported by the market (Boesso et al. 2013; Lioui and Sharma 2012) have also been utilized.

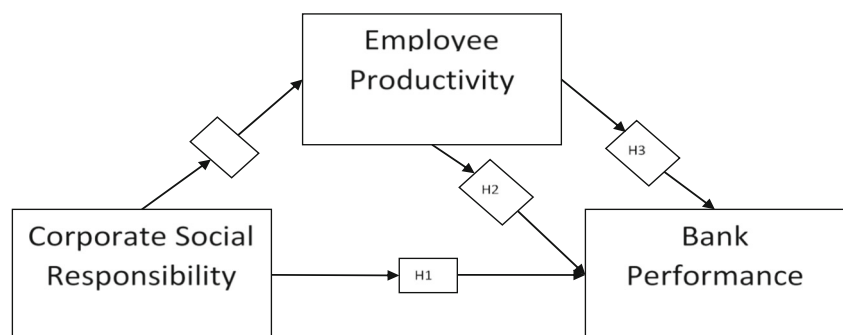
Hypothesis

- H1a: There is significant positive and linear association between the CSR disclosures and banking performance.
- H1b: There is significant positive and non-linear association between the CSR disclosures and banking performance.
- H2a: There is significant positive and linear association between the employee productivity and banking performances.
- H2b: There is significant positive and non-linear association between the employee productivity and banking performances.
- H3a: There is a linear and significant positive effect of the CSR disclosures with employee productivity on the banking performances.
- H3b: There is a non-linear and significant positive effect of the CSR disclosures with employee productivity on the banking performances.

Methodology

This study explores the “linear and non-linear” association between CSR disclosures as proxy corporate social performance (CSP) and banking performance (BP) as proxy financial performance (FP) with the moderator effect of employee productivity. This study measures the employee productivity

Fig. 1 Theoretical relationship



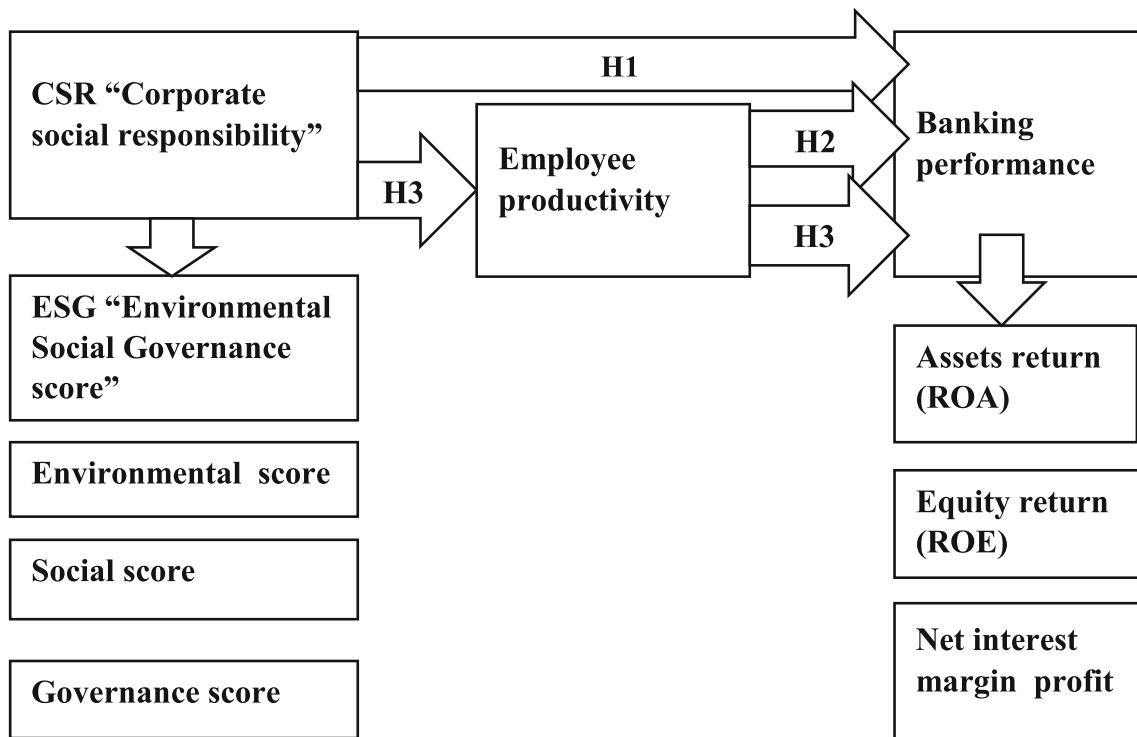


Fig. 2 Hypothetical framework

through sales force or product sale of employees from published annual reports. However, financial institutions give specific targets to their employees regarding monthly, quarterly, semi-annually, and annually basic. Moreover, every employee has to achieve their desire targets to get more incentives from their institutions. Furthermore, this study measures employee productivity from annual total sales over the number of total employees, whereas the human resource (HR) department of an organization also analyzes the individual employee productivity in different ways, where employee performance and their incentives are measured according to their work nature.

The data has been collected from annual published reports of every bank, handbook of statistics of the Chinese economy, the central bank of China, and Wind database. The “linear and non-linear” and disaggregated approach is used for information investigation to more likely understand the impact of CSP consequences on BP. This research uses annual dataset starting from 2008 to 2019 for thirty (30) Chinese commercial banks. The details of variables and measurement instruments are discussed as follows (Table 1).

The economics equation of this study is as below.

Banking sector performances_{it}

$$= \beta_0 + \beta_1 CSR_{it} + \beta_2 EP_{it} + \beta_3 \text{Control variables}_{it} + U_{it}$$

The econometrics equations of this study are as follows.

$$ROA_{it} = \beta_0 + \beta_1 \text{ESG disclosure scores}_{it} + \beta_2 \text{Crisis}_{it} + \beta_3 \text{Risk}_{it} + \beta_4 \text{Sales}_{it} + \beta_5 \text{R\&D}_{it} + \beta_6 EP_{it} + \beta_7 ROA (t-1)_{it} + \beta_8 \text{ESG} (t-1)_{it} + U_{it} \quad (1)$$

$$ROE_{it} = \beta_0 + \beta_1 \text{ESG disclosure scores}_{it} + \beta_2 \text{Crisis}_{it} + \beta_3 \text{Risk}_{it} + \beta_4 \text{Sales}_{it} + \beta_5 \text{R\&D}_{it} + \beta_6 EP_{it} + \beta_7 ROE (t-1)_{it} + \beta_8 \text{ESG} (t-1)_{it} + U_{it} \quad (2)$$

$$NIMP_{it} = \beta_0 + \beta_1 \text{ESG disclosure scores}_{it} + \beta_2 \text{Crisis}_{it} + \beta_3 \text{Risk}_{it} + \beta_4 \text{Sales}_{it} + \beta_5 \text{R\&D}_{it} + \beta_6 EP_{it} + \beta_7 NIMP (t-1)_{it} + \beta_7 \text{ESG} (t-1)_{it} + U_{it} \quad (3)$$

$$ROA_{it} = \beta_0 + \beta_1 \text{ESG disclosure scores}_{it} + \beta_2 \text{Crisis}_{it} + \beta_3 \text{Risk}_{it} + \beta_4 \text{Sales}_{it} + \beta_5 \text{R\&D}_{it} + \beta_6 EP_{it} + \beta_7 ROA (t-1)_{it} + \beta_8 \text{ESG}^2_{it} + U_{it} \quad (4)$$

Table 1 Description and measurement instruments of variables

Variable measurement			
Sr.	Variable name	Measurement	Sign
Dependent variable			
1	Return on assets	Net profit/total assets	ROA
2	Return on equity	Net profit/total equity	ROE
3	Annual excess nominal interest margin profit (NIMP)	Market base performances	NIMP
Independent variable			
4	ESG disclosure score	Composite score of environmental, social and governance	ESG
5	Environmental score	Environmental disclosure score	ENV
6	Social scores	Environmental disclosure score	SOC
7	Governance score	Governance disclosure score	GOV
Moderate variable			
8	Employee productivity	Employee goal completion	EP
Control variable			
9	Risk	Leverage return uncertainty	Risk
10	Sales	Sales revenues	Sales
11	Research and development expenses	Research and Development expenditure	R&D
12	Previous year Return on assets	Previous year net profit/total assets	ROA _(t-1)
13	Previous year Return on equity	Previous year net profit/previous year total equity	ROE _(t-1)
14	Previous year Annual excess nominal interest margin profit (NIMP)	Previous year market base performances	NIMP _(t-1)
15	Previous year ESG disclosure score	Previous year composite score of environmental, social, and governance	ESG _(t-1)
16	Previous year environmental score	Previous year environmental disclosure score	ENV _(t-1)
17	Previous year social scores	Previous year social disclosure score	SOC _(t-1)
18	Previous year governance score	Previous year governance disclosure score	GOV _(t-1)
Interactive variable			
19	Interactive of governance score and environmental score	Governance score × environmental scores	GOV×ENV
20	Interactive of governance score and social score	Governance score × social scores	GOV×SOC
21	Interactive of previous year governance score and previous year environmental score	Previous year governance score × previous year environmental scores	GOV×ENV _(t-1)
22	Interactive of previous year governance score and previous year environmental score	Previous year governance score × previous year environmental scores	GOV×SOC _(t-1)

$$\begin{aligned}
 ROE_{it} = & \beta_0 + \beta_1 \text{ESG disclosure scores}_{it} \\
 & + \beta_2 \text{Crisis}_{it} + \beta_3 \text{Risk}_{it} + \beta_4 \text{Sales}_{it} + \beta_5 \text{R\&D}_{it} \\
 & + \beta_6 \text{EP}_{it} + \beta_7 \text{ROE}_{(t-1)it} + \beta_8 \text{ESG}^2_{it} + U_{it} \quad (5)
 \end{aligned}$$

$$\begin{aligned}
 NIMP_{it} = & \beta_0 + \beta_1 \text{ESG disclosure scores}_{it} \\
 & + \beta_2 \text{Crisis}_{it} + \beta_3 \text{Risk}_{it} + \beta_4 \text{Sales}_{it} + \beta_5 \text{R\&D}_{it} \\
 & + \beta_6 \text{EP}_{it} + \beta_7 \text{NIMP}_{(t-1)it} + \beta_8 \text{ESG}^2_{it} \\
 & + U_{it} \quad (6)
 \end{aligned}$$

$$\begin{aligned}
 ROA_{it} = & \beta_0 + \beta_1 \text{ENV}_{it} + \beta_2 \text{SOC}_{it} + \beta_3 \text{GOV}_{it} \\
 & + \beta_4 \text{GOV}^2_{it} + \beta_5 \text{ENV} * \text{GOV}_{it} \\
 & + \beta_6 \text{SOC} * \text{GOV}_{it} + \beta_7 \text{Crisis}_{it} + \beta_8 \text{Risk}_{it} \\
 & + \beta_9 \text{Sales}_{it} + \beta_{10} \text{R\&D}_{it} + \beta_{11} \text{EP}_{it} \\
 & + \beta_{12} \text{ROA}_{(t-1)it} + \beta_{13} \text{ENV}_{(t-1)it} \\
 & + \beta_{14} \text{SOC}_{(t-1)it} + \beta_{15} \text{GOV}_{(t-1)it} \\
 & + \beta_{16} \text{GOV} * \text{ENV}_{(t-1)it} \\
 & + \beta_{17} \text{GOV} * \text{SOC}_{(t-1)it} + U_{it} \quad (7)
 \end{aligned}$$

$$\begin{aligned}
 ROE_{it} = & \beta_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} \\
 & + \beta_4 GOV^2_{it} + \beta_5 ENV * GOV_{it} \\
 & + \beta_6 SOC * GOV_{it} + \beta_7 Crisis_{it} + \beta_8 Risk_{it} \\
 & + \beta_9 Sales_{it} + \beta_{10} R\&D_{it} + \beta_{11} EP_{it} \\
 & + \beta_{12} ROE(t-1)_{it} + \beta_{13} ENV(t-1)_{it} \\
 & + \beta_{14} SOC(t-1)_{it} + \beta_{15} GOV(t-1)_{it} \\
 & + \beta_{16} GOV * ENV(t-1)_{it} + \beta_{17} GOV * SOC(t-1)_{it} \\
 & + U_{it}
 \end{aligned} \tag{8}$$

$$\begin{aligned}
 NIMP_{it} = & \beta_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} \\
 & + \beta_4 GOV^2_{it} + \beta_5 ENV * GOV_{it} \\
 & + \beta_6 SOC * GOV_{it} + \beta_7 Crisis_{it} + \beta_8 Risk_{it} \\
 & + \beta_9 Sales_{it} + \beta_{10} R\&D_{it} \\
 & + \beta_{11} EP_{it} + \beta_{12} NIMP(t-1)_{it} + \beta_{13} ENV(t-1)_{it} \\
 & + \beta_{14} SOC(t-1)_{it} + \beta_{15} GOV(t-1)_{it} \\
 & + \beta_{16} GOV * ENV(t-1)_{it} \\
 & + \beta_{17} GOV * SOC(t-1)_{it} + U_{it}
 \end{aligned} \tag{9}$$

$$\begin{aligned}
 ROA_{it} = & \beta_0 + \beta_1 ENV_{it} + \beta_2 ENV^2_{it} + \beta_3 SOC_{it} \\
 & + \beta_4 SOC^2_{it} + \beta_5 GOV_{it} + \beta_6 GOV^2_{it} \\
 & + \beta_7 Crisis_{it} + \beta_8 Risk_{it} + \beta_9 Sales_{it} \\
 & + \beta_{10} R\&D_{it} + \beta_{11} EP_{it} + \beta_{12} ROA(t-1)_{it} \\
 & + U_{it}
 \end{aligned} \tag{10}$$

$$\begin{aligned}
 ROE_{it} = & \beta_0 + \beta_1 ENV_{it} + \beta_2 ENV^2_{it} + \beta_3 SOC_{it} \\
 & + \beta_4 SOC^2_{it} + \beta_5 GOV_{it} + \beta_6 GOV^2_{it} \\
 & + \beta_7 Crisis_{it} + \beta_8 Risk_{it} + \beta_9 Sales_{it} \\
 & + \beta_{10} R\&D_{it} + \beta_{11} EP_{it} + \beta_{12} ROE(t-1)_{it} \\
 & + U_{it}
 \end{aligned} \tag{11}$$

$$\begin{aligned}
 NIMP_{it} = & \beta_0 + \beta_1 ENV_{it} + \beta_2 ENV^2_{it} + \beta_3 SOC_{it} \\
 & + \beta_4 SOC^2_{it} + \beta_5 GOV_{it} + \beta_6 GOV^2_{it} \\
 & + \beta_7 Crisis_{it} + \beta_8 Risk_{it} + \beta_9 Sales_{it} \\
 & + \beta_{10} R\&D_{it} + \beta_{11} EP_{it} + \beta_{12} NIMP(t-1)_{it} \\
 & + U_{it}
 \end{aligned} \tag{12}$$

The above table displays the descriptive statistics which includes observation, mean, standard deviation, and minimum and maximum values of the variable in the study. The ESG

score mean values are 22.40 with the minimum values as (6.39) and max value as (80.15) for the study period in Chinese banks. Table 2 tells that there are clear differences in sub-components of ESG like environmental score mean value as 21.47, social development activity scores show the lowest mean value 18.12, and governance scores show the highest mean value as 52.59 shows the significant difference in the sub-component of ESG. Furthermore, governance is impartially stable as shown by a lower standard deviation of 6.02 in the ESG sub-component, while ENV “environmental disclosure score” is highly volatile as shown in standard deviation 16 and Soc “social disclosure score” is volatile as shown in standard deviation 15 but less volatile as compared with the Env score. Moreover, the performance measures also show that the higher difference in the three performance indicators like the ROA means as 6.30, ROE mean value as 11.09, and NIMP mean value as 4.47 specified that higher difference occurs among the indicator of the financial performance. Similarly, the ROE and ROA are highly volatile and NIMP is less volatile as shown in the standard deviation.

The employee productivity mean value for the banking sector of China is 21 with a standard deviation of up to 35% among the banks with a minimum value of 33.20 and maximum value 651.

The risk shows the profit volatility in the banks is 21 average and standard deviation 16.42 higher difference in the risk among the banks with minimum value 0 and the largest amount of risk is 149. The sales show average sales of the banking firm of China is 16,060.9 with a higher deviation of 33,011.90, whereas research and development expense mean value is 605, and a higher difference occurs in the research expenses with a minimum value 0 and maximum value 11,009.

Table 3 shows further descriptive statistics of ESG throughout the study from 2008 to 2019. The upward trend is shown from 2008 to 2010. The mean value increases from 22.25 to 24.840. An intercept occurs in 2011, a small decrease from 24.840 to 23.415, and increase from 2012 and 2013 with mean value as 23.420 and 24.4. Furthermore, in 2014, a small decrease occurs, and the average value of ESG decreases from 24.44 to 23.9. From 2015 to 2019, smaller up and down occurs in the ESG. The lower volatility occurs in the ESG scores in 2008, and in year 2015, the higher variation occurs in the ESG scores among the banks in China. The smallest score of the ESG is 6.137 in 2008 and largest score of ESG is 9.827 in 2015 in Chinese banks.

Table 4 shows the further descriptive statistics of the ESG sub-component (ENV “environmental disclosure scores”, SOC “social disclosure scores and governance disclosure scores”). The environmental score trend shows it is moving upward from 2008 to 2016 and smaller decline from 2017, 2018, and 2019. The governance score variation among firms is lower in 2009 and higher volatility exists among banking

Table 2 Descriptive statistics of variables

Variable	Observations	Mean	Std. deviation	Min	Max
ESG	360	22.40	12.73	6.39	80.15
ENV	360	21.47	16.26	1.10	83.77
SOC	360	18.120	15.41	2.42	79.70
GOV	360	52.59	6.02	12.98	81.85
ROA	360	6.30	6.83	- 31.80	44.20
ROE	360	11.09	13.12	- 36.90	224
NIMP	360	4.47	43.47	- 34.75	758
EP	360	18.52	35.74	33.20	651
Risk	360	21.40	16.42	0.000	149
Sales	360	16,060.9	33,011.90	69.85	428,915.00
R&D	360	605.69	1298.55	0.000	11,009.00

employees in 2015. The smallest score took by a firm is 0.865 in 2009, and the largest score took by a firm is 89.756 in 2017.

The social score related to CSR activities is moving upward from 2008 to 2019 with mean value increases from 17.873 to 28.125. The governance score variation among firms is lower in 2009, and higher volatility exists among firms in 2019. The smallest point of the social scores of the banking firms in China is 2.462, and the largest score gained by a firm in social activity is 85.023 in 2019. The governance score related to CSR activities is moving upward from 2008 to 2019 with mean value increases from 54.897 to 61.026. The governance score variation among firms is lower in 2009, and higher volatility exists among firms in 2019. The smallest point of the governance scores of the banking firms in China is 21.135, and the largest score gained by a firm in social activity is 87.763 in 2019.

Correlation analysis

Table 5 shows the correlation among all variables. The environmental score is negatively significant correlated with the

ESG composite scores. The social scores are positively significant correlated with ENV score and insignificant correlated with ESG composite scores with values of 0.24 and 0.066, respectively, while the GOV score is positively significant correlated with ESG composite scores and negatively significant correlated with ENV scores. ROA is negatively significant correlated with the ESG composite scores and GOV while insignificantly correlated with ENV and SOC. ROE is positively significant correlated with the ESG composite scores and insignificantly correlated with the ENV scores, GOV scores, SOC scores, and ROA (Iftikhar et al. 2020). However, the NIMP is negatively significant correlated with the ESG composite scores and ROE while insignificantly correlated with the ENV scores, GOV scores, SOC scores, and ROA. Employee productivity is positively correlated with ESG composite scores, ENV scores, GOV scores, SOC scores, ROE, NIMP, and negatively correlated with ROA. Risk is positively correlated with all the dependent and independent variable of the study. Sales revenue is negatively correlated with ESG composite scores, Gov scores, ROA,

Table 3 ESG disclosure score for the sample period 2008–2019

Years	Observations	Mean	Standard deviation	Minimum	Maximum
2008	360	22.257	11.059	6.137	78.752
2009	360	22.960	11.659	6.357	79.072
2010	360	24.840	12.310	8.335	80.335
2011	360	23.415	13.141	9.250	84.050
2012	360	23.420	12.774	7.450	80.445
2013	360	24.433	13.925	8.975	82.037
2014	360	23.991	13.026	7.493	83.751
2015	360	24.780	14.280	9.827	84.974
2016	360	23.886	13.776	8.660	84.986
2017	360	25.229	14.210	7.900	82.577
2018	360	24.732	13.570	8.756	83.448
2019	360	25.022	13.893	8.986	84.288

Table 4 The disclosure score of ENV, SOC, and GOV

Variables	Years	Observations	Mean	Standard deviation	Minimum	Maximum
ENV	2008	360	20.021	13.965	0.865	62.977
ENV	2009	360	20.301	14.345	0.870	64.137
ENV	2010	360	22.049	16.019	0.980	65.346
ENV	2011	360	22.373	15.412	1.025	75.372
ENV	2012	360	24.977	16.859	1.295	78.932
ENV	2013	360	25.479	17.160	1.310	83.645
ENV	2014	360	29.356	18.975	1.895	85.980
ENV	2015	360	30.760	19.362	1.965	87.518
ENV	2016	360	31.876	20.876	1.654	88.965
ENV	2017	360	30.645	19.368	1.736	89.756
ENV	2018	360	29.356	18.987	1.886	88.980
ENV	2019	360	28.643	18.326	1.786	87.437
SOC	2008	360	17.873	13.548	2.462	71.724
SOC	2009	360	18.776	14.324	2.895	72.826
SOC	2010	360	19.079	15.851	2.265	73.510
SOC	2011	360	21.768	17.536	3.145	75.863
SOC	2012	360	22.744	17.973	3.669	76.180
SOC	2013	360	23.245	18.855	3.914	78.216
SOC	2014	360	24.431	18.931	3.305	82.757
SOC	2015	360	25.329	19.109	3.655	85.726
SOC	2016	360	25.768	18.457	3.234	83.867
SOC	2017	360	26.657	19.565	3.876	84.356
SOC	2018	360	27.986	19.787	4.123	84.867
SOC	2019	360	28.125	20.014	4.236	85.023
GOV	2008	360	54.897	4.024	20.873	76.862
GOV	2009	360	55.733	4.132	21.135	77.212
GOV	2010	360	56.777	4.979	23.225	79.722
GOV	2011	360	56.929	5.018	23.439	80.652
GOV	2012	360	57.796	5.649	25.755	81.550
GOV	2013	360	57.990	6.112	26.465	83.858
GOV	2014	360	58.466	6.127	27.785	85.046
GOV	2015	360	59.726	6.664	30.445	86.867
GOV	2016	360	59.898	6.987	30.676	86.943
GOV	2017	360	60.129	7.324	31.276	87.567
GOV	2018	360	60.756	7.756	31.687	87.393
GOV	2019	360	61.026	7.981	31.978	87.763

NIMP, and risk. Research and development costs are positively correlated with ESG composite scores, ENV score, SOC score, GOV score, ROA, ROE, NIMP, SALES, and employee productivity, while it is negatively significant correlated with the risk that shows the research and development decreases the chances of the risk in the organization. The overall conclusion of the correlation results shows that the multicollinearity among the study variable does not exist.

Table 6 shows the regression results of the impact of ESG “environmental, social, and governance disclosure scores” on banking financial performances in the form of linear and

quadratic models in Chinese banks. The linear model result of association among ESG “environmental, social, and governance disclosure scores” and banking financial performance indicator (ROA, ROE, and NIMP) show in orders (1)–(3). The nonlinear (quadratic) model of ESG “environmental, social, and governance disclosure scores” and banking financial performances indicator (ROA, ROE, and NIMP) show in orders (4)–(6).

The *R*-squared for the linear model (orders (1) to (3)) is fit for study and the value of *R*-squared for the impact of ESG “environmental, social, and governance disclosure scores”

Table 5 Correlation coefficient between the variables

Spearman correlation	ESG	ENV	SOC	GOV	ROA	ROE	NIMP	EP	Risk	Sales	R&D
ESG	1.000										
ENV	-0.312 (0.000)	1.000									
SOC	0.066 (0.125)	0.249 (0.000)	1.000								
GOV	0.247 (0.000)	-0.331 (0.000)	0.027 (0.624)	1.000							
ROA	-0.126 (0.074)	0.119 (0.109)	-0.057 (0.359)	-0.193 (0.000)	1.000						
ROE	0.136 (0.039)	-0.026 (0.723)	0.031 (0.654)	0.012 (0.835)	-0.056 (0.315)	1.000					
NIMP	-0.129 (0.018)	0.028 (0.709)	-0.036 (0.428)	-0.077 (0.648)	0.057 (0.257)	-0.491 (0.000)	1.000				
EP	0.253 (0.017)	0.036 (0.653)	0.043 (0.464)	0.016 (0.485)	-0.026 (0.535)	0.034 (0.351)	0.762 (0.087)	1.000			
Risk	0.238 (0.015)	0.181 (0.439)	0.875 (0.00)	0.329 (0.279)	0.299 (0.257)	0.375 (0.197)	0.449 (0.000)	1.000			
Sales	-0.09 (0.031)	0.015 (0.0322)	0.325 (0.132)	-0.058 (0.044)	-0.08 (0.042)	0.038 (0.183)	-0.059 (0.097)	-0.489 (0.000)	1.000		
R&D	0.307 (0.349)	0.159 (0.458)	0.25 (0.197)	0.295 (0.78)	0.283 (0.55)	0.290 (0.189)	0.210 (0.026)	-0.191 (0.043)	0.466 (0.00)	1.000	

Table 6 CSP-BP relationship in linear and quadratic models (ESG composite score)

Independent variables	(1) ROA	(2) ROE	(3) NIMP	(4) ROA	(5) ROE	(6) NIMP
ESG _t	0.067 (0.455)	0.058 (0.539)	-0.069 (0.389)	-0.0225* (0.094)	-0.0320** (0.034)	-0.366 (0.580)
ESG _t ²	-	-	-	0.055* (0.092)	0.00125 (0.082)	0.00438 (0.619)
Risk _t	-0.239*** (0.000)	-0.144*** (0.000)	-1.369*** (0.000)	-0.240*** (0.000)	-0.143*** (0.000)	-1.351*** (0.000)
Sales _t	0.000049 (0.074)	0.000098 (0.004)	-0.000049 (0.759)	-0.000042* (0.076)	0.000093*** (0.007)	-0.0000457 (0.742)
R&D _t	-0.000070 (0.367)	0.00236** (0.033)	0.0161*** (0.006)	0.00071 (0.332)	0.0232** (0.033)	0.0159*** (0.004)
EP _t	2.570** (0.000)	1.863*** (0.007)	13.95* (0.006)	2.570** (0.000)	1.980** (0.005)	-13.83*** (0.000)
Crises _t	-1.861*** (0.008)	-13.97*** (0.006)	-2.566*** (0.000)	-1.859*** (0.007)	-13.85*** (0.000)	-13.86*** (0.000)
ROA _{t-1}	0.498*** (0.002)	-	-	0.487*** (0.000)	-	-
ROE _{t-1}	-	0.622*** (0.012)	-	-	0.617*** (0.021)	-
NIMP _{t-1}	-	-	-0.252*** (0.003)	-	-	-0.247*** (0.002)
ESG _{t-1}	-0.244 (0.491)	-0.0607 (0.235)	-0.0162 (0.951)	-	-	-
Constants	6.480*** (0.000)	7.998*** (0.000)	29.71*** (0.000)	7.977*** (0.000)	9.490*** (0.000)	33.44*** (0.000)
Observations	360	360	360	360	360	360
R-squared	0.342	0.623	0.139	0.346	0.629	0.133

with moderating effect of employee productivity on banking financial performances (ROA, ROE, and NIMP) is 0.342, 0.623, and 0.139 that show the ESG with moderating effect of employee productivity also explained the ROA, ROE, and NIMP by 34, 62, and 13.9%, respectively. The R -squared for a non-linear model (orders (4) to (7)) is fit for study and the value of R -squared for the quadratic model for the impact of ESG “environmental, social, and governance disclosure scores” with moderating effect of employee productivity on banking financial performances (ROA, ROE, and NIMP) is 0.346, 0.629, and 0.133 that show the ESG with moderating effect of employee productivity also explained the ROA, ROE, and NIMP by 34.6, 62.9, and 13.9%, respectively.

The ESG is no linear association with the ROA, ROE, and NIMP. However, in the quadratic model, the non-linear association also exists among the ESG and ROA, and ROE while the insignificant association with the NIMP. The square ESG is a significantly positive impact return on assets and equity return with coefficient values 0.055* and 0.00125*, while ESG^2 is insignificant influencing the NIMP. The employee productivity is a significant positive effect on the financial performances of the Chinese banks in both the linear and non-linear models of study. The risk is negatively influencing the ROA, ROE, and NIMP of banks in both types of model, linear (coefficient values -0.239 , -0.144 , and -1.369) and non-linear (coefficient values -0.239 , -0.144 , and -1.369), of the study. The sales are not significant influencing the financial performances in the linear and non-linear models of the study, whereas the research and development costs moving upward the performances of the banks in China exclude the financial performance indicator ROA that is not significant influencing due to R&D expenditure. In the phase of crises, the financial performances are moving down that is confirmed in both linear and non-linear model results of this research. The $ROA_{(t-1)}$ and $ROE_{(t-1)}$ significantly positively affect on ROA and ROE, while $NIMP_{(t-1)}$ is negatively significant influencing the NIMP in both types linear and non-linear models. The $ESG_{(t-1)}$ is negatively insignificant influencing the financial performances of the banks in China.

Table 7 shows the regression results of the impact of the ESG sub-component (ENV “environmental disclosure scores”, SOC “social disclosure scores and governance disclosure scores”) on banking financial performances in the context of a linear and quadratic method in Chinese banks. The linear model result of association among ESG sub-component (ENV “environmental disclosure scores”, SOC “social disclosure scores and governance disclosure scores”) on banking financial performance indicator (ROA, ROE, and NIMP) is shown in orders (7)–(9). The non-linear (quadratic) model result of association among ESG sub-component (ENV “environmental disclosure scores”, SOC “social disclosure

scores and governance disclosure scores”) on banking financial performance indicator (ROA, ROE, and NIMP) is shown in orders (10)–(12).

The R -squared for the linear model (orders 7 to 9) is fit for study, and the values of R -squared for the impact of ESG sub-component (ENV “environmental disclosure scores”, SOC “social disclosure scores and governance disclosure scores”) on banking financial performances indicator (ROA, ROE, and NIMP) are 0.350, 0.480, and 0.1380 that show the ESG sub-component (ENV “environmental disclosure scores”, SOC “social disclosure score and governance disclosure scores”) with moderating effect of employee productivity also explained the ROA, ROE, and NIMP by 35, 48, and 13.8%, respectively, in a linear model.

The R -squared for a non-linear model (order 10 to 12) is fit for study and the values of R -squared for the quadratic model for the impact of ESG sub-component (ENV “environmental disclosure scores”, SOC “social disclosure scores and governance disclosure scores”) on banking financial performances indicator (ROA, ROE, and NIMP) are 0.345, 0.480, and 0.136 that show the sub-component of ESG with moderating effect of employee productivity also explained the ROA, ROE, and NIMP by 34.5, 48.9, and 13.6%, respectively, in the non-linear model.

The environmental scores have no meaningful relationship with financial performances in both linear and quadratic model equations (Shabbir 2019). Only in nonlinear, the ROA is affecting due to the environmental score that shows the environmental improvement activities not affecting the performance of Chinese banks from 2008 to 2019. That also revealed the CSR environmental-related activities are not significantly changing the financial performances of banks in China. However, the square value of the environmental scores is significantly moving upward to the performance of the banks.

Similarly, the social welfare scores of the banks are not associated with the financial performances in both models, linear and non-linear models. The square value of the social welfare score is also not considerable influencing on ROA and NMIP excluding the ROE that is negatively affected due to SOC^2 . The governance score is a positive linear effect on the ROE and NIMP of the Chinese banks, except with the ROA that does not significantly influence due to governance scores. On the other hand, in the quadratic model, financial performances are not influencing due to governance score. The square value of the governance score is a negative effect on the asset and equity return, while the NIMP is not affected due to governance square value. However, in the linear model, the square governance’s value is not affecting the financial performances.

However, the interactive variable $GOV \times ENV$ “governance disclosure scores \times environmental disclosure scores” is a negative impact on the ROA and ROE, while

Table 7 CSP–BP relationship in linear and quadratic models (ESG sub-components scores)

Independent variables	(7) ROA	(8) ROE	(9) NIMP	(10) ROA	(11) ROE	(12) NIMP
ENV _t	0.183 (0.941)	0.232 (0.423)	0.0722 (0.975)	-0.00520 (0.0941)	0.111 (0.229)	-0.682 0.119
ENV _t ²	-	-	-	0.000117* (0.0923)	-0.00122 (0.361)	0.0110* (0.097)
SOC _t	0.06335 (0.782)	-0.229 (0.464)	-0.243 (0.884)	-0.0248 (0.723)	0.0690 (0.475)	-0.0557 (0.913)
SOC _t ²	-	-	-	0.000363 (0.702)	-0.00121*** (0.006)	-0.0000456 (0.748)
GOV _t	-0.00067 (0.362)	0.00237** (0.033)	0.0162*** (0.002)	0.00075 (0.334)	0.0233 (0.337)	-0.00108 (0.872)
GOV _t ²	0.123 (0.323)	0.0235 (0.887)	0.219 (0.811)	-0.228* (0.094)	-1.620** (0.034)	2.105 (0.602)
GOV* ENV _t	0.00233*** (0.020)	0.0136** (0.028)	-0.0165 (0.627)	-	-	-
GOV* SOC _t	-0.000405 (0.913)	-0.00323 (0.481)	-0.00140 (0.972)	-	-	-
Risk _t	-0.489*** (0.000)	-0.396*** (0.000)	-1.399*** (0.000)	-0.472*** (0.000)	-0.372*** (0.000)	-1.650*** (0.000)
Sales _t	-0.443*** (0.004)	-0.352*** (0.000)	-1.784*** (0.000)	-0.422*** (0.000)	-0.349*** (0.000)	-1.742*** (0.000)
R&D _t	0.00005* (0.074)	0.00010*** (0.004)	-0.00009 (0.953)	0.00005* (0.063)	0.00009*** (0.002)	-0.00003 (0.872)
EP _t	0.00008 (0.919)	0.00182* (0.075)	0.0150*** (0.005)	0.00001 (0.975)	0.00172* (0.071)	0.0152*** (0.001)
Crises _t	0.00009 (0.920)	0.00182* (0.069)	0.0150*** (0.003)	0.00005 (0.975)	0.00168* (0.071)	0.0153*** (0.002)
ROA _{t-1}	0.428*** (0.000)	-	-	0.427*** (0.000)	-	-
ROE _{t-1}	-	0.493*** (0.000)	-	-	0.495*** (0.000)	-
NIMP _{t-1}	-	-	0.202*** (0.000)	-	-	0.204*** (0.000)
ENV _{t-1}	-0.122 (0.759)	-0.325 (0.471)	-0.151 (0.962)	-	-	-
SOC _{t-1}	-0.240 (0.462)	0.266 (0.273)	0.523 (0.431)	-	-	-
GOV _{t-1}	-0.349* (0.043)	-0.272 (0.242)	-0.432 (0.343)	-	-	-
GOV × ENV _{t-1}	0.00278 (0.453)	0.00572 (0.285)	0.00352 (0.232)	-	-	-
GOV × SOC	0.00257 (0.345)	-0.00460 (0.314)	-0.00419 (0.426)	-	-	-
Constants	10.485* (0.047)	14.990* (0.038)	27.431 (0.490)	35.174 (0.034)	56.354 (0.064)	-59.429 (0.580)
Observations	360	360	360	360	360	360
R-squared	0.350	0.480	0.138	0.345	0.480	0.136

Table 8 Hypothesis results

Hypothesis	Accept/ reject
H1A	Reject
H1B	Accept
H2A	Accept
H2B	Accept
H3A	Reject
H3B	Accept

the NIMP is not influenced due to $GOV \times ENV$, and the previous year $GOV \times ENV$ has no significant impact on the banking performances, whereas the $GOV \times SOC$ “governance disclosure scores \times social disclosure scores” is not significant influencing the performances similarly as the $GOV \times SOC_{(t-1)}$ is not significant associated with the performances of banks in China.

The previous year’s financial performances are a positive impact on the financial performances of the banks that show the consistency that occurs in the profit in both equations, linear and non-linear. The earlier year score of the ENV “environmental disclosure scores” and SOC “social disclosure scores and governance disclosure scores” is not influencing the financial performances in the linear model. The employee productivity is significantly positive influencing the ROE and NIMP, while the ROA is not affected due to employee productivity significantly. The control variable like the risk also negatively affects performance that shows the debt return doubtfulness also down the financial performance; the higher the doubt of leverage return the higher the profit down. The higher sales also backward the performances that is also against the natural situation (Shabbir and Keife 2020). However, the research and development expenses also boost the performances of the banks in China. The crisis phases also boost the performances of the banks (Table 8).

Conclusion

This study tries to investigate the influences of CSR performances on financial performance with the moderating effect of employee productivity because the employee productivity is also a backbone to grow a firm. This study explores the CSR performances into four dimensions like composite ESG scores, environmental line scores, social line scores, and governance line scores. This study is conducted on the financial sector of the China through a commercial bank from 2008 to 2019. We did not find any comprehensive study on topic earlier in the Chinese banking industry. The study uses the linear and non-linear disaggregated method to examine the relationship between CSR with financial performances.

The descriptive result of the CSR shows that the ESG includes environmental, governance, and social score trend which shows that the Chinese banks also improved the trend to the involvement of the CSR activity, and governance activity score is the higher growing side of the CSR and environmental side of the CSR is lower realized by the banking sector of China. In the linear method, the governance disclosure score is the only CSR variable that is significantly influencing on the equity return and NIMP. The moderating variable employee productivity is positively significant influencing all the performances. Similarly, the research and development expenditure and sales revenue are positively significant influencing on the financial performances while the risk and crises are negatively influencing on the financial performances of the commercial banks. The control variable is also significant influences on the financial performances.

The non-linear model shows that the composite score of ESG is significant influencing the financial aspect of the banking firms, while the sub-component of the ESG is not significant influencing the financial performances of the banking firms of China. The employee productivity is significantly influencing the financial performances of the banking firms. The study also revealed that in linear model, the employee productivity also significantly influences the financial performances, while in relation with CSR is not significant influencing the financial performances. This study is limited only toward the financial sector of China. However, future researchers may conduct research toward non-financial sector. They can make a comparative study between financial and non-financial sector of china. The future research may also be conducted in the context of financial sector regarding management issues or lower labor performances indicator.

Authors’ contributions Mr. Raza Ali Tunio has completed the analysis part, while Mr. Riaz Hussain Jamali wrote introduction part; Mr. Aamir Ali Mirani has written literature review part; Mr. Ghansham Das wrote methodology section; Mr. Mushtaque Ahmed Laghari wrote the conclusion and abstract parts and A/Professor Jin Xiao proofreads the whole paper and adjusts the paper according to journal format.

Data availability The data is available on request from corresponding author.

Compliance with ethical standards

Ethical approval and consent to participate This study did not use any kind of human participants or human data, which require any kind of approval.

Consent to publish Our study did not use any kind of individual data such as video and images.

Competing interests The authors declare that they have no conflicts of interest.

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