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The impact of corporate social responsibility on stock price volatility of the US banks: a moderating role of tax

Mashiyat Tasnia, Syed Musa Syed Jaafar AlHabshi and Romzie Rosman
Institute of Islamic Banking and Finance, International Islamic University Malaysia, Kuala Lumpur, Malaysia

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Abstract

Purpose – Corporate social responsibility (CSR) is considered one of the crucial branding and promotional tools for banks to legitimise their role in society to become socially and environmentally responsible corporate citizen. The purpose of this study is to investigate the effect of CSR on stock price volatility of the US banks. This study further examined the moderating role of tax on the relationship between CSR and stock price volatility.

Design/methodology/approach – This study uses the random-effects panel regression estimation technique to test the hypotheses. The authors include a sample of 37 US banks from 2013 to 2017 with 144 bank-years observation. The authors consider the environmental, social and governance (ESG) scores from Refinitiv as a proxy for CSR. The financial data are also collected from the Refinitiv Datastream database.

Findings – This study finds a significant and positive relationship between CSR and stock price volatility, which indicates that shareholders of the US banks may not prefer excess concentration on CSR because of the additional cost of investment associated with implementing CSR. Also, tax payments and stock price volatility show a significant positive association, which implies that there is a higher possibility of an increase in stock price volatility if the tax rate increases. Generally, shareholders are not interested in paying more taxes, so they may swap the market instead of paying more tax. On the other hand, the authors find a non-significant moderating effect of tax payment on CSR-volatility nexus.

Originality/value – Previous studies mainly focussed on CSR and financial performance of banks. Conversely, studies focussing on CSR and stock volatility are limited. This study will fill the gap in the literature by considering the effect of CSR on the stock price volatility of the US banks.

Keywords CSR, CSP, ESG, Stock price volatility, Bank risk, Tax

Paper type Research paper

1. Introduction

The banking sector is considered one of the main areas that contribute to the economy. It plays a dynamic role in the development of economic and social growth of countries by promoting investment policies and projects, ensuring the security of risk and determining where to finance (Miralles-Quiros *et al.*, 2019). According to Beck *et al.* (2010), performing such activities, the banking sector constructs a positive impact on society. Investors are more driven to participate in banks that adopt corporate social responsibility (CSR) policies because of their enhanced governance, transparency in management and social awareness (Santis *et al.*, 2016).

CSR and stock price volatility are two vital issues after the global financial crisis because of the downfall of many corporate giants, for example, Lehman Brothers, Merrill Lynch,

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Tyco and Vivendi. The collapse occurred because of deregulation, accounting fraud, poor governance practices and top managers' negligence, which led to reputational and financial damage and resulted in a share price crash. Under these circumstances, it is crucial to revise the banking regulation, maintain a transparency and reporting standard. Moreover, Buallay (2019) stated that banks that disclosed financial and non-financial information perform exceptionally.

Furthermore, CSR and taxation share a common characteristic, which is welfare to society by involving in social and environmental activities. The characteristics are in line with the stakeholders and legitimacy theory. Stakeholder theory explains the relationship between stakeholders and the firm, while legitimacy theory legitimises the bond between the bank and society. Stakeholders' theory considers the welfare of society the bank is operating and emphasises on the development of community well-being, which includes a board range of stakeholders base, such as employees, customers and communities (Freeman and Dmytriyev, 2017). Besides, legitimacy theory explains the behaviour of banks to fulfil the social and environmental responsibilities to society to achieve organizations' objectives by gaining stakeholders' trust and safeguards themselves during unstable situation (Schiopoiu Burlea and Popa, 2013). Previous studies argued that CSR and corporate tax payments are related only in terms of their contribution to the broader community (Avi-Yonah, 2008; Williams, 2007). CSR activities may reduce the tax liabilities of banks, which may improve the market value of banks.

However, CSR disbursement cost is used from the shareholders' fund, and the costs need to borne by shareholders, and shareholders may raise concern over such activities. Previous studies find a positive correlation between CSR and bank risk, where they anticipate that over-prioritizing on CSR investment might decrease firms' competitiveness and increase production costs, which may lead firms to face corporate failure and loss of shareholders (Bouslah *et al.*, 2013; Nguyen and Nguyen, 2015). On the other hand, Davis *et al.* (2016) argue that corporate tax payments tend to reduce firms' profitability, which shrinks the development of infrastructure, job creation, the income level of the employees and payment to suppliers. Moreover, corporate scandals associated with taxation could affect an organisation's stock price. For example, the UBS group, Google, Starbucks and Amazon are accused of billions in dollars of tax evasion and face adverse reactions from the customers and the stakeholders, which leads to a decrease in firm performance (Morris, 2019). Furthermore, shareholders may penalise companies in the market because of the negligence in tax filing (Blaufus *et al.*, 2016; Wei Ling and Abdul Wahab, 2018).

In this study, we analyse the effects of CSR on stock price volatility in the US banking sector. Further, we examine the moderating effect of tax on the relationship between CSR and stock price volatility. In spite of many issues at the national level, the USA is still the largest economy in the world. In 2018, the gross domestic product (GDP) was worth US$20.49tn in the USA, which is 33.06% of the global economy (Trading Economics, 2019). Moreover, the banking sector of the USA contributes significantly to the US economy. However, the banking sector of the USA faced extreme criticism from the stakeholders after the global financial crisis because of banks' involvement in the subprime mortgage crisis. Previous literature shows a correlation between CSR and financial performance in the banking industry (Cornett *et al.*, 2016; Shakil *et al.*, 2019; Wu and Shen, 2013). Besides, previous studies show positive, negative and insignificant relationship of CSR on firm risk (Benlemlih *et al.*, 2018; Chollet and Sandwidi, 2018; Cui *et al.*, 2017). However, studies on CSR on stock price volatility in the context of the US banks are limited. This study, therefore, investigates the impact of CSR on the stock price volatility of US banks. It also tests whether tax moderates the CSR–stock price volatility nexus. We use the random-effects panel regression model to test the hypothesis to control for omitted variable bias (Baltagi, 2008; Birindelli *et al.*, 2019). Moreover, we consider two-stage least squares (2SLS) regression estimation to check the consistency of findings of the random-effects regression models. We find a significant and positive relationship between CSR and stock price volatility. The results also show a significant and positive relationship between tax payments and stock price volatility. However, we find an insignificant moderating effect of tax on CSR–stock price volatility nexus.

This study contributes to the literature on CSR and risk by showing a significant effect of CSR on stock price volatility. The findings of the study support the legitimacy and signalling theory, which implies that banks should care about the interest of stakeholders and society. Any negligence and misappropriation of stakeholders' resources may increase the share price volatility in the market. In addition, the findings will be beneficial for regulators, portfolio managers and investors. Investors may choose banks based on CSR performance and avoid investing in banks that misuse investors' and shareholders' wealth. The tax authorities may revise the tax rate based on CSR practices of banks. The tax authorities may also introduce tax rebates to banks that are performing legitimate CSR practices. The findings may also benefit regulators to come with a policy on CSR disclosure, as it is currently crucial for firms to move into the sustainability direction.

The study is divided into the following sections: Section 1 discusses the problem statement, background and contribution of the study. Then, Section 2 discusses the literature review, hypotheses development and conceptual framework. This is followed by Section 3 elaborating research methodology and data source. Further, Section 4 explains the results and discussions. Section 5 concludes with discussing policy implications and future research direction.

2. Literature review and hypotheses development

CSR is a social and environmental responsibility of firms and financial institutions to society. The adoption of CSR will benefit both micro and macro performance of organisations. Macro performance defines environmental development and balancing social equality. On the other hand, micro performance describes the status improvement, the potentiality to control a quality price for the service and products, and the upgraded ability to hire qualified workers. The prime goal of a bank is to maximize profit, which can be justified by the adoption of CSR. CSR can be explained as the social responsibility of a corporation. The concept of CSR has formed not only to be confined in the companies but also for societal welfare (Bowen, 1953). Accordingly, implementing CSR in corporate strategy would be an advantageous decision, which can create a win–win condition for an organisation. In a recent study, Al Mubarak *et al.* (2019) find that CSR activities strengthen the corporate reputation of a bank. Moreover, Wu and Shen (2013) find a positive relationship between CSR and financial performance of banks. Furthermore, CSR approaches play an influential role in risk reduction in the banking sector. This relationship is more persuasive in a high dynamism environment than in a low dynamism environment (Sun and Cui, 2014). Previous studies find a negative effect of CSR on firm risk reduction (Benlemlih and Girerd-Potin, 2017; Chollet and Sandwidi, 2018). Studies on CSR and bank risk is limited in the existing literature.

However, Nguyen and Nguyen (2015) find a positive influence of aggregate CSR index on firms' risk. Besides, Adascalitei (2015) studied the relationship between socially responsible companies in terms of stock prices. They find that the companies that are adopting socially responsible concepts face lower stock price volatility. Previous studies focus on CSR practices and their effect on market and firms' financial performance (Martinez-Conesa *et al.*, 2017; Serebour and Abraham, 2017; Zhu *et al.*, 2014). Investors value the CSR practices of firms, and they penalise firms that have insignificant CSR activities. Also, investors may turn away to another firm, which is alarming for the existing firm. For that reason, firms that have poor CSR practices have experienced higher pressure from the stakeholders (Lourenço *et al.*, 2012). Likewise, firms that disclose sustainability practices are rewarded in the financial markets, which illustrates the investors' interest in social and environmental issues (Berthelot *et al.*, 2012). Besides, Cormier *et al.* (2011) study whether environmental and social disclosure has an effect in reducing information asymmetry and evidenced irregularity between executives and stockholders, and find that the disclosure decreases the information asymmetry among managers and shareholders.

Moreover, tax is considered one of the essential components of CSR, which can help to balance the corporate performance and stock price volatility. Davis *et al.* (2016) investigate whether corporate tax payments and CSR elements work as complements or as a substitute. Margolis *et al.* (2009) suggest that firms should be involved in socially responsible activities rather than maximising profit. Besides, taxation is considered as a social contract between the organisation and society. This social contract is based on whether the organisation is in line with social bonds and norms and able to meet social needs (Deegan and Samkin, 2008). Prior studies on tax investigate the mediating and moderating role of tax on CSR–market valuation nexus (Wei Ling and Abdul Wahab, 2018, 2019). Wei Ling and Abdul Wahab (2018) examine the roles of tax planning in market valuations of CSR. They discuss how tax planning activities play mediating and moderating role between CSR and market valuation. Tax planning is essential for both organisation and shareholders. It is believed that tax planning could undermine public perceptions of firms' CSR. Besides, a few studies focus on the impact of CSR on banking performance (Buallay *et al.*, 2020; Mallin *et al.*, 2014; Shakil *et al.*, 2019; Wu and Shen, 2013). Previous studies emphasise on company performance and other factors such as cost of capital, company risk, and company image (Benlemlih and Girerd-Potin, 2017; Jia, 2020; Kim *et al.*, 2020; Yeh *et al.*, 2019).

CSR disclosure and taxation are interconnected (Lin *et al.*, 2017). Previous studies find CSR activities to be playing a significant role in reducing tax aggressiveness, which renders a positive sign for a firm's financial performance (Lanis and Richardson, 2012; Price and Sun, 2017; Wang *et al.*, 2015). Some studies investigate the effect of CSR on firm risk (Lee, 2016; Luo and Bhattacharya, 2006; Sun and Cui, 2014). Other studies show that there was a significant association between CSR and tax (Christensen and Murphy, 2004; Davis *et al.*, 2016; Lanis and Richardson, 2012). Prior studies are mainly based on CSR and company financial performance. Comparatively, studies on CSR and stock price volatility in the case of the banking sector are limited. Moreover, the role of tax as a moderator between CSR and stock price volatility is not explored yet. This study, therefore, tries to fill the gap in the literature by examining the direct effect of CSR on stock price volatility and moderating role of tax on CSR–stock price volatility nexus.

2.1 Direct relationship between corporate social responsibility disclosure and stock price volatility of banks

The relationship between CSR and stock price volatility can be explained by legitimacy theory and signalling theory. "Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995 p. 574). Legitimacy theory explains the behaviour of banks to fulfil the social and environmental responsibilities to society to achieve organizations' objectives by gaining stakeholders' trust and safeguards themselves during volatile situations (Schiopoiu Burlea and Popa, 2013). Besides, signalling theory refers to the equilibrium and information-related issues in terms of production and labour market. The objective of the signalling theory is to lessen the information asymmetry through the transfer of the information from the existing information the parties have (Ross, 1977). In line with the theory, Xu and Liu (2018) discuss in their study that CSR disclosure successfully decreases the stock price volatility and customer behaviour changes after the CSR disclosure. However, Kochhar (1996) argues that a lack of monitoring on CSR can increase agency conflict, which may influence the stock price fluctuations because of the conflict between managers and shareholders. Watson *et al.* (2002) argue that by proving more information on management disclosure helps firms to reduce capital costs and lower the uncertainty. When a firm discloses more about their CSR activities, they obtain a good reputation. Shareholders are interested in investing in those firms as they prefer to contribute to socially responsible firms. Under these circumstances, shareholders may withdraw the investment from the market and penalize firms that are not socially responsible, which may increase the stock price volatility. Several studies examine the relationship between CSR and firm risk and performance (Chang *et al.*, 2019; Chollet and Sandwidi, 2018; Jo and Na, 2012). Rashid (2018) examines whether CSR and related exposure enhanced organizations' performance in the listed companies in Bangladesh and finds CSR exposure significantly affects firm performance. Chollet and Sandwidi (2018) explain that involvement in CSR practices reduces the financial risk of firms and strengthens the commitment of firms for good governance and sustainable environmental practice. Based on the prior studies, CSR can influence the stock price volatility and risk positively and negatively (Chollet and Sandwidi, 2018; Nguyen and Nguyen, 2015; Utz, 2018). However, studies on CSR and stock price volatility focussing on the banking sector are limited. Thus, we set a non-directional hypothesis as follows:

H1. There is a significant relationship between CSR disclosure and stock price volatility of banks.

2.2 Moderating effect of tax in corporate social responsibility–stock price volatility nexus of banks

Stakeholder theory discussed the relationship between the firm and stakeholders. Freeman (1984) defines a stakeholder as an individual or a person who gets affected by the success of the organisation's goals. Stakeholder theory explains the CSR and bank relationship, where CSR plays a vital role to build a bank's strong reputation and performance. Investors and shareholders are careful in their investment decision. A well-reputed bank gains a positive reputation by disclosing more information on CSR performance. Stakeholders' concern is not limited to the amount of profit or dividend a bank is generating and paying, but also how the bank is contributing to the welfare of society. Particularly appropriate taxation will render a substantial impact not only on the bank performance and risk but also harmonise the balance of the economy. Responsible shareholders and investors do not want to invest their capital in such a bank who acts carelessly towards the environment and society. Lanis and Richardson (2015) analyse the connection between CSR activities and tax aggressiveness and their results indicated that social commitment and CSR eases tax aggressiveness, which indicates that the increase of CSR activities reduces tax aggressiveness. Similarly, Davis *et al.* (2016) find that CSR is positively related to tax lobbying expenditure, which may result in an increase in stock price volatility of the firm because of tax lobbing. Huseynov and Klamm (2012) suggest that tax avoidance and tax management should integrate with CSR. Besides, Kiesewetter and Manthey (2017) add that good corporate governance is responsible for the lower tax rate. Consequently, based on stakeholder theory, there will be an assumption that tax can moderate the relationship between CSR and stock price volatility and the hypothesis is presented as follows:

H2. There is a significant moderating effect of tax on the association between CSR disclosure and stock price volatility of banks.

2.3 Conceptual framework

The conceptual framework of the study is presented in Figure 1.

3. Sample, data and methodology

This study considers a sample of US banks available in Refinitiv Datastream. The final sample includes 37 US banks from 2013 to 2017. The reason to choose 2013 is the endorsement of "UN Guiding Principles on Business and Human Rights" ("UNGPs") on 16 June 2011 by the United Nations (UN) (George, 2019; United Nations, 2011). The CSR disclosures consisting of UNGPs guidelines are available from 2013. Besides, the sample ends in 2017 because of the most current year with available data during the data collection. The hypothesis of this study is tested by using random-effects panel regression models. This study uses the random-effects panel regression model to control omitted variable bias (Baltagi, 2008; Birindelli *et al.*, 2019). This study further considers 2SLS regression estimation to check the robustness of findings of the random-effects regression estimation.

This study includes four types of data. The first type of data is CSR data, collected from the Refinitiv Datastream database (Chollet and Sandwidi, 2018; Shakil *et al.*, 2019). Environmental, social and governance (ESG) score of Refinitiv is used as a proxy for CSR by following previous literature (Chollet and Sandwidi, 2018; Ioannou and Serafeim, 2012; Shakil *et al.*, 2019). The second data type is tax payment (effective tax rate; ETR), collected from the Refinitiv Datastream database and the third data type is stock price volatility, also collected from Refinitiv Datastream (Muhammad *et al.*, 2015).

3.1 Regression models

Based on *H1*, the regression model is presented as follows:

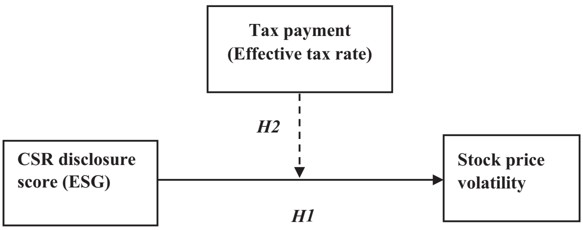

Figure 1.
Conceptual framework

$$VOL_{it} = \alpha_0 + \alpha_1\ CSR_{it} + \alpha_2\ TAX_{it} + \alpha_3 LVG_{it} + \alpha_4 MVB_{it} + \alpha_5 DY_{it} + \alpha_6 ROA_{it} + \alpha_7 BANK\ \ SIZE_{it} + \varepsilon_{it} \qquad \text{Model (1)}$$

where *VOL* is stock price volatility, *CSR* is corporate social responsibility, *TAX* is the tax payment, *LVG* is leverage, *MVB* is market to book value, *DY* is the dividend yield, *ROA* is a return on assets and *BANK SIZE* is the log of total assets.

Based on *H2*, the regression model is developed as follows:

$$VOL_{it} = \alpha_0 + \alpha_1\ CSR_{it} + \alpha_2\ TAX_{it} + \alpha_3 LVG_{it} + \alpha_4 MVB_{it} + \alpha_5 DY_{it} + \alpha_6 ROA_{it} + \alpha_7 BANK\ \ SIZE_{it} + \alpha_8 CSR{*}TAX_{it} + \varepsilon_{it} \qquad \text{Model (2)}$$

where *VOL* is stock price volatility, *CSR* is corporate social responsibility, *TAX* is the tax payment, *LVG* is leverage, *MVB* is market to book value, *DY* is the dividend yield, *ROA* is a return on assets, *BANK SIZE* is the log of total assets and *CSR**TAX* is the moderating variable.

3.2 Variable description

This study uses ESG performance score (ESG) of Refinitiv as a proxy of CSR. Refinitiv is the most reliable and trustworthy data source for ESG (Ioannou and Serafeim, 2012; Shakil *et al.*, 2019). The database provides ESG score based on 46 environmental, 39 social and 33 governance indicators. To measure banks' tax payment, ETR is used as a proxy by following previous literature (Davis *et al.*, 2016; Lanis and Richardson, 2012). ETR is the average taxation rate for a bank at which its earnings are taxed. Previous studies also use ETR as a proxy for tax payment (Abdul Wahab and Holland, 2012; Davis *et al.*, 2016; Lanis and Richardson, 2012). Further, volatility is considered as a proxy for stock price volatility and the data is collected from the Refinitiv Datastream database.

Besides, other bank-specific variables may have influence on stock price volatility. By omitting variables that can influence the stock volatility may give misleading findings. Being consistent with other studies, this study, therefore, includes bank leverage, market to book value, dividend yield, return on asset and bank size as control variables because of their significant effect on stock price volatility (Benlemlih *et al.*, 2018; Chollet and Sandwidi, 2018; Shakil *et al.*, 2019).

Variable	Mean	SD	Minimum	Maximum	VIF
VOL	1.1521	0.3694	0.2583	2.0207	
CSR	3.9183	0.3942	2.5619	4.4903	2.10
TAX	0.2528	0.3568	−3.8500	0.4900	1.06
LEV	0.0715	0.0580	0.0001	0.3416	1.25
MVB	1.2665	0.4041	0.5800	2.7600	1.27
DY	2.2825	1.1870	0.0000	7.4700	1.19
ROA	1.1364	0.3477	−0.1400	2.8500	1.15
BANK SIZE	7.9052	0.6544	6.9631	9.4105	2.22

Notes: VOL is stock price volatility, CSR is corporate social responsibility, TAX is the tax payment, LVG is leverage, MVB is market to book value, DY is the dividend yield, ROA is a return on assets and BANK SIZE is the log total assets

Table 1.
Descriptive statistics

4. Results and discussions

The variables used in this study are presented in the descriptive statistics. Table 1 shows that the mean value of stock price volatility is 1.1521, where the minimum value is 0.2583 and the maximum value is 2.0207. The highest value of the CSR disclosure is 4.4903 where the lowest value is 2.5619 and the mean value of CSR disclosure is 3.9183, which is in line with the prior study of Chollet and Sandwidi (2018). The mean value of the tax is 0.2528. The maximum value of the tax is 0.4900 and the minimum value is −3.8500. The mean value of the leverage ratio is 0.0715. The average market to book values is 1.2665. Dividend yield, return on asset and bank size mean values are 2.2825, 1.1364 and 7.9052, respectively. Besides, Table 1 shows the variance inflation factor (VIF) to check for multicollinearity between continuous variables. The result of VIF shows that the value of continuous variables is below 5, which shows there is no severe multicollinearity presence among variables (Hair *et al.*, 2006).

Table 2 represents the pairwise Pearson correlation coefficients of the variables. It shows a significant positive correlation between CSR and stock price volatility. However, the correlation between CSR and stock volatility is below the benchmark level of 0.90, which shows there is no severe correlation between CSR and stock volatility (Hair *et al.*, 2006). Besides, the correlation between volatility and other variables is below 0.90, which exhibits no serious problem of multicollinearity.

Table 3 estimates the results from models 1 and 2 and reports the effect of CSR disclosure and tax on stock price volatility. This analysis discovers that the coefficients on CSR disclosure and stock price volatility are statistically significant and share a positive association, which is in line with *H1*. The result shows that stock price volatility rises with an increase in the level of CSR disclosure. It may happen because of banks' extreme focus on CSR. CSR practices involve high expenditure for banks, and shareholders generally bear the costs. Barnea and Rubin (2010) highlighted that extensive social responsibility carries a substantial increase in costs. Thus, over-emphasis on CSR may lead to a high level of volatility. However, our findings are not in line with previous studies on CSR and stock price volatility. Previous studies find a negative relationship and argue that CSR disclosure helps reduce stock price volatility and risk (Benlemlih *et al.*, 2018; Chollet and Sandwidi, 2018; Jo and Na, 2012; Xu and Liu, 2018). Similarly, there is a positive and statistically significant correlation between tax and stock price volatility at a 1% significance level. It suggests that with the increase in the tax rate, stock price volatility also increases. Our findings are in line with the study of Guenther *et al.* (2016). Guenther *et al.* (2016) find that higher tax rates cause greater stock volatility. Tax is a liability for an organisation. The increase in tax rate may

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) VOL	1.000							
(2) CSR	0.536*	1.000						
(3) TAX	0.050	−0.025	1.000					
(4) LEV	−0.275*	0.117	0.043	1.000				
(5) MVB	−0.323*	−0.204*	0.010	−0.257*	1.000			
(6) DY	−0.332*	−0.253*	0.022	0.291*	0.156	1.000		
(7) ROA	−0.161	0.079	0.162	0.167*	0.192*	0.160	1.000	
(8) BANK SIZE	0.369*	0.762*	0.083	0.183*	−0.293*	−0.175*	0.081	1.000

Notes: VOL is stock price volatility, CSR is corporate social responsibility, TAX is the tax payment, LVG is leverage, MVB is market to book value, DY is the dividend yield, ROA is a return on assets and BANK SIZE is the log total assets. *Significance at the 0.05 level

Table 2.
Pairwise correlations

Variables	(2) Model 1 VOL	(3) Model 2 VOL
CSR	0.011*** (0.002)	0.003 (0.006)
TAX	0.134*** (0.015)	−1.341 (1.027)
LEV	−1.732*** (0.562)	−1.645*** (0.573)
MVB	−0.112** (0.056)	−0.124** (0.060)
DY	−0.033 (0.033)	−0.032 (0.033)
ROA	0.005 (0.039)	0.024 (0.045)
BANK SIZE	−0.014 (0.077)	−0.026 (0.076)
CSR*TAX		0.029 (0.020)
Constant	0.860*** (0.203)	1.270*** (0.376)
Observation	144	144
R-squared	0.2452	0.2598
Estimator	Random-effects	Random-effects

Notes: Standard errors are in parentheses. VOL is stock price volatility, CSR is corporate social responsibility, TAX is the tax payment, LVG is leverage, MVB is market to book value, DY is the dividend yield, ROA is a return on assets, BANK SIZE is the log total assets and CSR*TAX is the moderating variable. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 3.
Regression results

reduce the profitability of banks, which results in a lower level of dividend payment to shareholders. Thus, an increase in tax may influence the stock price volatility in the market because of the withdrawal of invested capital by the investors. However, there is no moderating effect of tax prevailing on the relationship between CSR disclosure and stock price volatility. Besides, *Table 3* presents the results of the control variables. Leverage and market to book value show a negative relationship with stock price volatility at significance level of 1% and 5%, respectively.

The results of this research show a significant and positive association between CSR disclosure and stock price volatility. The reason behind the positive relationship between CSR disclosure and stock price volatility would be the over-investment in CSR by banks. When the investment cost increases for CSR, shareholders may not prefer that action. For instance, sometimes excess financing for CSR turn away valuable corporate assets. These investments could be used for other projects, such as upgrading product and service lines, investing in research and development (Barnea and Rubin, 2010). More focus on environmental and social activities may cause excess operational costs to banks. That would be detrimental to the bank's performance relative to its competitors (Nguyen and Nguyen, 2015). Thus, more emphasis on CSR can be a reason for corporations' failure and may cause a greater risk to shareholders. Moreover, previous studies argue that CSR's social components, such as employee relation, diversity, human rights and corporate governance, escalate the risk to shareholders (Bouslah *et al.*, 2013; Nguyen and Nguyen, 2015). The findings of our study are in line with the study of Nguyen and Nguyen (2015). Nguyen and Nguyen (2015) indicate that CSR activities relating to diversity and employee relations are linked to higher risk. CSR is a business strategy of banks and involves long-term investment. It generally lessens the profitability of banks for the short-term because of banks' involvement in CSR, but in the long-run CSR creates value and increases goodwill and profitability of banks. Short-term investors are more inclined towards profit and shift their interest based on the dividend they receive; thus they may harm the stock price of banks by moving their investment to a more profitable industry. Such steps taken by the short-term investors increase the volatility of the stock price. Thus, banks should focus on legitimate CSR practices and lessen the information asymmetry by disclosing detailed and value-enhancing CSR plans. The communication of comprehensive CSR practices of banks will help them to reduce information asymmetry and increase investors' trust, which results in lower stock volatility to banks. The summary of the tested hypothesis is shown in Table 4.

4.1 Additional analysis

Table 5 shows the robustness check of the regression results. This study considers 2SLS regression technique to test for robustness. This study uses the 2SLS model to control for endogeneity bias. The findings of this analysis are in line with the main results and found a significant positive impact of CSR and tax on stock price volatility. Similarly, in 2SLS estimation results, we do not find any moderating effect of tax on the relationship between CSR and stock volatility.

5. Conclusion

The purpose of this study is to investigate the effect of CSR on stock price volatility of the US banks. This study further examines the moderating role of a tax on the relationship

Table 4.
Summary of the tested hypothesis

No.	Hypothesis	Remark
H1	There is a significant relationship between CSR disclosure and stock price volatility of banks.	Accepted
H2	There is a significant moderating effect of tax on the association between CSR disclosure and stock price volatility of banks.	Rejected

Table 5.
Additional analysis

Variables	(2) Model 1 VOL	(3) Model 2 VOL
CSR	0.012^{***} (0.002)	0.004 (0.006)
TAX	0.115^{*} (0.061)	−1.323 (0.956)
LEV	-2.466^{***} (0.418)	-2.403^{***} (0.417)
MVB	-0.288^{***} (0.060)	-0.303^{***} (0.060)
DY	−0.008 (0.020)	−0.012 (0.020)
ROA	−0.094 (0.066)	−0.071 (0.067)
BANK SIZE	−0.075 (0.053)	−0.086 (0.053)
CSR*TAX		0.028 (0.019)
Constant	1.147^{***} (0.138)	1.570^{***} (0.312)
Observation	144	144
R-squared	0.520	0.528
Estimation	2SLS	2SLS

Notes: Standard errors are in parentheses. VOL is stock price volatility, CSR is corporate social responsibility, TAX is the tax payment, LVG is leverage, MVB is market to book value, DY is the dividend yield, ROA is a return on assets, BANK SIZE is the log total assets and CSR*TAX is the moderating variable. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

between CSR and stock price volatility. Our findings are consistent with legitimacy and signalling theory, which show that banks should give more focus on wealth management rather than emphasizing aggressively on CSR, and suggest that CSR disclosure should be kept in a controlled way. Overemphasizing on CSR activities may incur excess expenses for banks, which may lead to financial deficiency and loss of competitiveness in the market.

Therefore, the US banking authority should revise its CSR disclosure policy and amend CSR disclosure to lessen unnecessary costs and focus on improving the social and environmental conditions of society and people rather doing greenwashing. Besides, shareholders do not prefer the increased rate of tax, although it is considered one of the components of CSR disclosure. The change in tax rate also increases the stock price volatility of banks. Also, the findings will be beneficial for regulators, portfolio managers and investors. Investors may choose banks based on CSR performance and avoid investing in banks that misuse investors' and shareholders' wealth. The tax authorities may revise the tax rate based on CSR practices of banks. The tax authorities may also introduce tax rebates to banks that are performing legitimate CSR practices. The findings may also benefit regulators to come with a policy on CSR disclosure, as it is currently crucial for banks to move into the sustainability direction.

Future research may consider the moderating role of permanent and temporary tax differences between CSR and stock volatility in the multicounty context. Moreover, a future study may investigate the moderating role of chief executive officers' power between CSR and bank risk in the context of emerging and developed countries banks. Also, exploring the role of CSR on firm risk in the case of Islamic and conventional banks in the future will contribute to the literature of CSR in Islamic banks, as the literature in the context of Islamic banks is limited.

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Corresponding author
Mashiyat Tasnia can be contacted at: mashiyat.tasnia@live.iium.edu.my