Information Content of the Voluntary Disclosure on Stock Returns: Evidence from Listed Commercial Banks in Thailand

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Abstract

The objective of this study was to investigate the information value of voluntary disclosure over stock returns. The study developed a self–constructed and unweighted voluntary disclosure index to the literature. The index comprised 185 information items and was used to measure the level of voluntary disclosure of listed commercial banks in Thailand over the 2016–2019 reporting period. Data collection was based on annual reports, the SET Market Analysis and Reporting Tool and other sources that were from the most recent year for which data were available at the time. The research data were analyzed using content analysis and descriptive and multiple regression analyses including pooled, fixed effects and random effects. The findings indicated the voluntary disclosures were significant and had a positive effect on stock returns while non–performing loans demonstrated a positive effect to the total voluntary disclosures which simultaneously affected on stock returns in a positive manner. Conversely, capital reserve to total risk–weighted assets, net profit to total number of employees, net profit to total equity, and liquid assets to total deposits had no significant impact on stock returns. The study is beneficial to both bank managers and investors seeking to improve their wealth from using voluntary disclosure information.

Keywords: CAMEL; non–performing loans (NPL); voluntary disclosure

Introduction

The acronym "CAMEL" refers to the five components of a bank's condition that are assessed: Capital adequacy, Asset quality, Management, Earnings, and Liquidity.

In 1997, Thailand faced a financial crisis that caused economic turmoil for ASEAN countries and countries around the world. It took at least two years for the Thai Government to resolve this problem. MacDonald (1998) stated that the main problem was the lack of transparency and disclosure in financial and corporate affairs resulting in international financial and foreign currency turmoil. Subsequently, the Bank of Thailand required all Thai commercial banks to disclose significant financial information to the public, especially non–performing loan information (Lauridsen 1998; Leightner 2007).

The Stock Exchange of Thailand (SET) has been recognized as the fundamentals of Thai economy since its inception. At the end of 2020, the statistic records showed that SET index around 1,500 points and its index was the fourth of in ASEAN. The daily P/E ratio of the overall of listed companies was about 30 times. Thailand market capitalization accounted for 102.8% of its Nominal GDP in December 2020. The data reached an all–time high of 116.1% of GDP in December 2017 and a record low of 1.7% of GPD in December 1975 (BOT, 2021). Even if Thai economy was somewhat insignificant comparing with efficeint markets; however, in the middle of 1997, Thai economic turmoil caused the World economic unstable so–called "Tom Yum Kung crisis". Its root causes included the concealment of non–performing loans, currency exchange rate and hot money by a Thai commercial bank (MacDonald, 1998).

The banking industry plays an important role in the Thai economy and it has considered as the fundamental of SET because banks hold a large amount of financial assets and their business activities are related to economic agents, which are household savings and business sector investments (Prayoonrattana, Laosuthi and Chaivichayachat, 2020). Also, banking industry has been supporting other businesses, especially the property sector (Mahathanaseth and Tauer 2019). The total assets of commercial banks represent 45% of the total assets of Thai financial institutions. Of the 30 commercial banks operating in Thailand, 11 are Thai local banks and 19 are foreign banks. The 11 Thai commercial banks, all listed in SET, aim to support the Thai economy, while the 19 foreign banks serve as multinational subsidiaries. The total market capitalization of the 11 local banks represents 10% of the Stock Exchange of Thailand and their total assets represent 87% (16,895 Trillion Thai baht out of 21,587 Trillion Thai baht) of commercial capital located in Thailand.

It can be concluded that the 11 Thai commercial banks not only represent the state of the Thai economy, but they significantly contribute to it as well (BOT, 2021).

Information disclosure would solve an asymmetry concern. Bergh et al. (2018) defined information asymmetry as a situation in which a party in an association has more or better information than another. In management studies, asymmetry problems occur between management and investors. Previous studies have been carried out to solve asymmetry problems. Among the resolutions, disclosure of information is a successful countermeasure. Disclosures are of principal importance and involve generating opportunities for greater access to information for outsiders. Normally, information disclosures can be divided into two main categories: mandatory and voluntary disclosures. Awadh and Alareeni (2018) stated that mandatory disclosures cover all law and regulation requirements including accounting standards, while voluntary disclosures relate to information that an entity is not required to disclose, but it is in that entity's initiative to provide valuable information to meet the needs of those who benefit from it. Studies on the informative value of mandatory disclosures have been carried out over a wide range (Bischof and Daske, 2013). However, studies on the information content of voluntary disclosures are quite limited, especially in the banking sector. This provides a research gap for this study.

In addition, previous studies identified the determinants of voluntary disclosures (Kahl and Belkaoui, 1981; Hossain and Hammami, 2009; Bhasin, Makarov and Orazalin, 2012; Abeywardana and Panditharathna, 2016). However, not much research has been directed to exploring the informative value of voluntary disclosures. This is the main reason for this study, which was intended to focus on the informative value of voluntary disclosures, specifically with respect to stock returns.

The main objective of this study, then, is to present contemporary voluntary disclosures in the banking sector and to observe the information content of voluntary disclosures on stock returns. Also, the CAMEL rating system were employed in the analysis. The dataset contained all 11 commercial banks listed on the Stock Exchange of Thailand from 2016 to 2019. This study successfully developed a self–constructed and unweighted voluntary disclosure index for literature. The voluntary disclosure indices were classified in three layers: the total voluntary disclosures, the extra voluntary disclosures, and the non–extra voluntary disclosures. All of the three voluntary disclosures are significant and have positive effects on stock returns. Furthermore, the random–

effect analysis pinpointed that non–performing loans negatively influence stock returns. Surprisingly, no other CAMEL rating had an effect on stock returns.

The remainder of this study is arranged as follows: Section 2 discusses the literature review and hypothesis including voluntary disclosures and the CAMEL rating. Section 3 presents the study design including sample and data considerations and definitions of variables and model specification. Section 4 provides multiple regression results. Section 5 presents robustness tests of this study. Finally, Section 6 presents a discussions and the conclusion

Objective of this study

was to investigate the information value of voluntary disclosure over stock returns. The study developed a self–constructed and unweighted voluntary disclosure index to the literature.

Literature Review and Hypotheses

The aim of this present study was to investigate the informative value of voluntary disclosures on stock returns in the banking industry. The literature review covers two main areas: bank voluntary disclosures in overall, bank voluntary disclosures in this study, and the CAMEL rating in the study.

1 Bank voluntary disclosures

In contrast to mandatory disclosures, voluntary disclosures contain information that an entity is not required to disclose, but it is in an entity's best interests to provide valuable information to meet the needs of those who benefit from it. A study of voluntary disclosures was initially introduced by Spero (1979). He attempted to indicate the determinants of voluntary disclosures of financial information in European capital markets. Subsequently, researchers have been conducting similar studies in various countries in both financial and non–financial sectors.

Initially, in the banking sector, Kahl and Belkaoui (1981) conducted the very first empirical study to determine the level of disclosure in commercial banking of eighteen different countries. The study found a positive relationship between the level of disclosure and the size of the commercial bank; however, the level of information disclosures from the commercial bank was different in each country. Hamid (2004) continued the study in Malaysia in an effort to find the relationship of corporate characteristics and the level of disclosures on social information. The results showed significant positive relationships between the firm's size, its listing status, and length of

establishment to the level of social information disclosed. Hossain and Taylor (2007), Hossain (2008), and Hossain and Hammami (2009) extended the study in Asian countries. The results showed strong correlations between bank fundamentals and the level of voluntary disclosures. The fundamentals included profitability, bank size and asset–in–place. The following studies explored the determinant of voluntary disclosures.

Maingot and Zeghal (2008) investigated the level of information disclosure of eight Canadian banks. The evaluation was conducted using a coding mechanism, where, if the information was disclosed, it was scored as 1, otherwise, it was scored as zero. The research was conducted on finding the relationship between bank size and the level of information disclosure. The results indicated that larger banks tended to disclose more information on their websites, while smaller banks utilized annual reports and the proxy circulars to provide the disclosed information to the public. Additionally, this research found that a positive relationship exists between bank size and the amount of information disclosed.

Bhasin, Makarov and Orazalin (2012) investigated the determinants of voluntary disclosure and disclosure categories in financial and non–financial reports of banking companies listed on the Kazakhstan Stock Exchange. The empirical results suggested that the number of outside directors had the most significantly positive impact on the disclosure score, and that an increase in bank size also leads to a higher degree of voluntary reporting. Abeywardana and Panditharathna (2016) developed a voluntary disclosure index to identify the determinants of voluntary disclosure level. Their study found that banks preferred to disclosure general information and information about the corporate environment, financial performance, and risk management. Furthermore, the study found that firm size, profitability, the firm's length of establishment, leverage and board independence were determinants of voluntary disclosure level, and that, among them, firm size, profitability and its length of establishment had positive relationships, while leverage and board independence had negative relationships.

Later, after researchers had widely carried out what were the determinants of voluntary disclosures, the literature moved into questions of what were the value relevance of voluntary disclosures. In measuring the value relevance of voluntary disclosures, prior studies mostly used market volatility to observe the informative value of voluntary disclosures. However, few studies focused on measuring the informative value of voluntary disclosures on stock returns. Studies,

closely related to this study, that observed the informative value of voluntary disclosures are reviewed as follows.

Dhaliwal et al. (2011) stated that firms with a high cost of equity capital in the previous year tended to initiate the disclosure of corporate social responsibility activities in the current year and later years. Firms with superior social responsibility performance were more likely to reduce their costs of equity capital. Bischof and Daske (2013) found that one–time mandatory disclosures increased the likelihood of voluntary disclosures in subsequent years and voluntary disclosures increased companies market liquidity. Elbannan and Elbannan (2015) studied voluntary risk disclosures in the financial crisis environment. They found that balanced scorecard information positively associated with a bank's operating performance using market valuation. Recently, Birindelli et al. (2020) pointed out that healthy banks were more likely to provide intellectual capital, non–qualitative and forward–looking information in a high–quality manner, while distressed banks generally disclosed the information in a poor manner.

2. Banking voluntary disclosure in this study

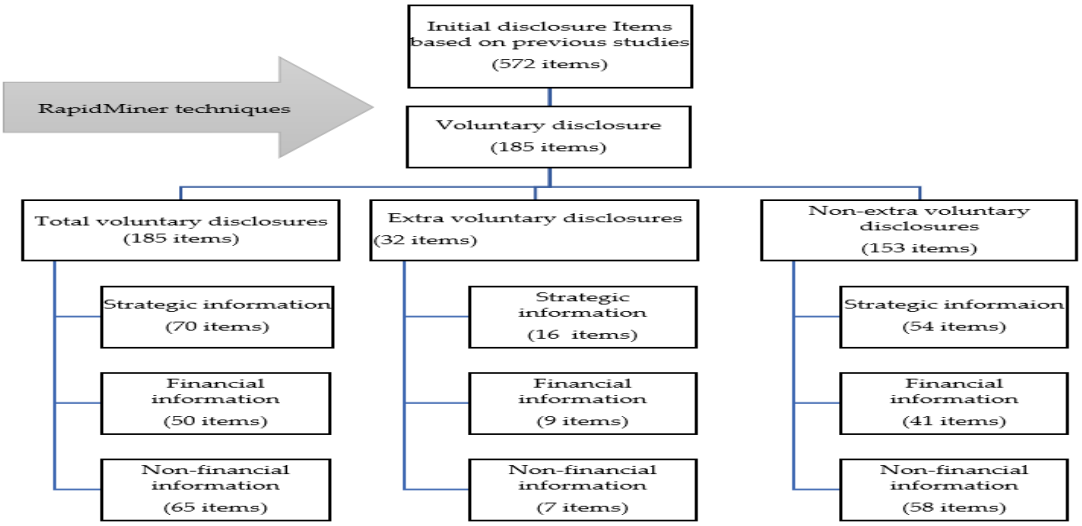
This study initially developed the voluntary disclosure checklists, then further explored the informative value of the voluntary disclosure index on stock returns. The study firstly replicated the work of Meek, Roberts and Gray (1995). The study carried out voluntary disclosure studies for a wide range and classified 85 voluntary disclosures into three main types: strategic, financial, and nonfinancial information. The study successfully identified the determinants of voluntary disclosures including size, country/region, listed status and industry. Then, checklists were developed to gather voluntary disclosures from similar subsequent studies. Initially, the checklists combined 572 criteria. Then, using the RapidMiner techniques together with the authors' previous experience in the Thai banking industry, the 185 unweighted checklists were concluded and the voluntary disclosure checklists were classified into three layers: 1) the total voluntary disclosures, 2) the extra voluntary disclosures making up the top 25% of total voluntary disclosures, and 3) the non–extra voluntary disclosures making up less than the top 25% of total voluntary disclosures. The extra voluntary disclosures were classified as the top 25% of total voluntary disclosures as recommended by the study of Borghei, Leung and Guthrie (2018). Within each layer, the three classifications introduced by Meek et al. (1995) including strategic, financial and non–financial dimensions were prepared. The flow chart of work procedures to identify the voluntary disclosures of this study is shown in Figure 1. The Appendix shows the extra voluntary disclosures and non–extra voluntary disclosures

of this study. It should be noted that the total voluntary disclosures represents the combination of those two lists and is not shown in the Appendix. Figure 1. The voluntary disclosures in this study (the details shown in Appendix) The hypothesis to prove the informative value of voluntary disclosures on stock returns is as follows:

H_1: There is a positive association with voluntary disclosures on stock returns in the banking sector.

3. CAMEL as bank fundamentals

To reduce the likelihood of omitted variable bias, the study included significant control variables. Bartov, Gul, and Tsui (2000) stated that omitting control variables caused failure, which led to the rejection of the hypothesis. In addition, CAMEL (Capital adequacy analysis, Asset quality analysis, Management capability analysis, Earnings analysis, and Liquidity analysis) ratios were employed in this study. CAMEL was introduced by the Federal Financial Institutions Examination Board in 1979 to evaluate the sustainability of individual banks in the USA. Many academic studies have examined whether CAMEL is useful. These studies found that CAMEL ratings were based on publicly available information that showed the condition and performance of banks and they were a better indicator of bank failure. In addition, CAMEL was clearly useful in the supervisory monitoring



of bank conditions (Barker and Holdsworth, 1993; Cole and Gunther, 1998 and Hirtle and Lopez, 1999). Taherinia and Baqeri (2018) found a direct relationship among the capital adequacy ratio, bank reserves and growth opportunities and profit volatility. Sangmi and Nazir (2010) and Nguyen, Nguyen and Pham (2020) determined that capital adequacy, asset quality, liquidity and

management efficiency affected commercial bank performance in emerging markets. Nugroho, Halik and Arif (2020) investigated the effect of CAMEL ratings on stock prices for state banks listed on the Indonesian Stock Exchange. Their study found that partial capital adequacy ratio had a significant effect on the share prices of the state banks. Meanwhile, non–performing loans, net profit margin, return on asset, and loan to deposit ratios did not have a significant effect on stock prices.

In summary, previous studies indicate that CAMEL provides informative value to various aspects, but the results are still controversial. Therefore, this study aimed to explore the informative value of CAMEL on stock returns. The hypothesis of the informative value of CAMEL on stock returns is stated as follows:

H_2: There is a relationship between CAMEL and stock returns in the banking sector.

Research Design

1. Sample and data consideration

This research was designed as an empirical study using panel data consisting of both cross–sectional and time series data from 2016 to 2019 observed from the population. Data collection was limited to commercial banks listed on the Stock Exchange of Thailand, consisting of 11 banks in total, including Bank of Ayudhya (BAY), Bangkok Bank (BBL), CIMB Thai Bank (CIMBT), Kasikorn Bank (KBANK), Kiatnakin Bank (KKP), Krung Thai Bank (KTB), LH Financial Group Bank (LHBANK), Siam Commercial Bank (SCB), Thanachart Capital Bank (TCAP), Tisco Financial Group Bank (TISCO), and TMB Bank (TMB). The 19 foreign banks were not included in the dataset because they are local subsidiaries of their multinational parent companies based. Also, they are less likely to voluntarily disclose information. Inclusive data on voluntary disclosures, bank fundamentals and stock returns information were extracted from the annual reports issued during 2016– 2019, totalling 44 observations from the SET Market Analysis and Reporting Tool (SETSMART) and other sources, which were from the most recent year for which data were available at the time. The data analysis employed both descriptive statistics and multiple regressions.

The initial analysis found that the independent variables were potentially against multiple regression assumptions. Therefore, the study employed MM Estimations to transform the data. Susanti et al. (2014) stated that MM Estimation could extend the maximum likelihood method; it was a robust estimation, and this method was significantly affected by small changes in the data.

Also, the data were subjected to natural logarithmic transformation. After using MM Estimation and natural logarithmic transformation, Pearson's correlations as shown in Table 1 and VIF as shown in indicated no concern arising from the multiple regression assumptions.

Table 1. Pearson's correlations among all variables

Variables	Ln_SR	MCAR	MMER	MNPL	MROE	MLQ	Ln_ MTVDIS	Ln_ MEXTRA	Ln_ MNONEX
Ln_SR	1.000								
MCAR	−.057	1.000							
MMER	−.052	−.134	1.000						
MNPL	.059	−.107	−.241*	1.000					
MROE	−.019	−.192	.500** *	.101	1.000				
MLQ	−.091	.069	.229*	−.622** *	−.243 *	1.000			
Ln_MTVDIS	.877** *	.028	−.149	−.002	−.022	−.134	1.000		
Ln_MEXTRA	.851** *	−.026	.113	.010	.097	−.112		1.000	
Ln_MNONEX	.910** *	.014	−.067	.047	−.008	−.114			1.000

Note: significant at * $p = 0.10$, ** $p = 0.05$, *** $p = .01$ level. SR refers to stock returns; CAR refers to capital reserve to total risk weighted assets; MER refers to net profit to total number of employees; NPL stands for the amount of non–performing loans; ROE is net profit to total equity, LQ is liquid assets to

2 Definitions of variables and model specification

The definitions and operationalization of variables are shown in Table 2.

Table 2. Summary of definitions and operationalization of variables.

Variables	Acronym	Measurement	Expected signs
Dependent variable:			
Stock returns	SR	Dividend yield plus capital gain yield, whereas capital gain yield = (closed price$_t$ – closed price$_{t-1}$)/ closed price$_{t-1}$	
Interesting variables:			
Total voluntary disclosures	TVDIS	Total voluntary disclosure index score (%)	+
Extra voluntary disclosures	EXTRA	Extra voluntary disclosure score of top 25% of the total voluntary disclosure	+
Non–extra voluntary disclosures	NONEX	Non–extra voluntary disclosure score less than top 25% of the total voluntary disclosure	+
Control variables:			
Capital adequacy reserve	CAR	Capital reserve to total risk weighted assets	+
Management efficiency ratio	MER	Net profit to total number of employees	+
Non–performing loans	NPL	Amount of non–performing loans	–
Return on equity	ROE	Net profit to total equity	+
Liquidity	LQ	Liquid assets to deposit ratio	+

The three regression models are identified as follows:

$$SR = \alpha + \beta_1 TVDIS_{it} + \beta_2 CAR_{it} + \beta_3 MER_{it} + \beta_4 NPL_{it} + \beta_5 ROE_{it} + \beta_6 LQ_{it} + \mu_{it} \text{.....(1)}$$

$$SR = \alpha + \beta_1 EXTRA_{it} + \beta_2 CAR_{it} + \beta_3 MER_{it} + \beta_4 NPL_{it} + \beta_5 ROE_{it} + \beta_6 LQ_{it} + \mu_{it} \text{.....(2)}$$

$$SR = \alpha + \beta_1 NONEX_{it} + \beta_2 CAR_{it} + \beta_3 MER_{it} + \beta_4 NPL_{it} + \beta_5 ROE_{it} + \beta_6 LQ_{it} + \mu_{it} \text{.....(3)}$$

Results

1. Descriptive statistics

The descriptive statistics for all the variables of this study relating to listed banks in Thailand and shows some intriguing fundamental information. The capital adequacy ratio (CAR) results

average 17.94%, ranging from 22.91% to 13.71%. Management efficiency ratio (MER) results show a wide range in labor to net profit overhead costs, with an average of 135,160 million baht per employee. Non–performing loans (NPL) results show significant amounts of potential loan losses at an average loss of 39,390 million baht, ranging from 2,766 to 106,370 million baht. Return on equity (ROE) ratio results point to a very high return to shareholders averaging 10.66%. Liquid assets to total deposits (LQ) ratio results show good management of loans given to customers at an average of 103.32%, ranging from 79.76% to 150.90%. Also shows the total voluntary disclosures, extra voluntary disclosures, and non–extra voluntary disclosures scores of the dataset. The total voluntary disclosures averaged 69.20% ranging from 51.35% to 92.97%. The extra voluntary disclosures averaged 19.74% ranging from 3.13% to 59.38%. The non–extra voluntary disclosures averaged 79.52% ranging from 60.78% to 100%.

2 Pooled OLS Preliminary Assumption

2.1 Model 1 – Total voluntary disclosures

Indicates the analysis of CAMEL and the total voluntary disclosures on stock returns. It was found that the model showed a goodness of fit as indicated by coefficient of determination adjusted R^2 with a value of 0.755. The outcomes of the multiple regression test indicated statistically significant variables influencing the stock returns included only the total voluntary disclosures (Ln_MTVDIS) (β = 0.932, p = .001), while banking fundamentals are not significantly related to stock returns. This means that banks with more total voluntary disclosures tend to result in higher stock returns.

2.2 Model 2 – Extra voluntary disclosures

This indicates the analysis of CAMEL and the extra voluntary disclosures on stock returns. It was found that the model showed goodness of fit as indicated by the coefficient of determination adjusted R^2 with a value of 0.732. The outcomes of the multiple regression test indicated statistically significant variables influencing the stock returns included only the extra voluntary disclosures (Ln_MEXTRA) (β = 1.159, p = .001), while banking fundamentals are not significantly related to stock returns. This means that banks with more extra voluntary disclosures tend to result in higher stock returns.

2.3 Model 3 – Non–extra voluntary disclosures

Lastly, indicates the analysis of CAMEL and the non–extra voluntary disclosures on stock returns. It was found that the model showed a goodness of fit as indicated by coefficient of

determination adjusted R^2 with a value of 0.795. The outcomes of the multiple regression test indicated statistically significant variables influencing the stock returns included only the non–extra voluntary disclosures (Ln_MNONEX) (β = 0.657, p = .001), while banking fundamentals are not significantly related to stock returns. This means that banks with more non–extra voluntary disclosures tend to result in higher stock returns.

Fixed effects and random effects

Generally, the main three types of panel data models are the pooled Ordinary Least Squares (OLS) model (assumes constant coefficients), the fixed effects model (assume that the individual specific effects are correlated with independent variables), and the random effects model (assumes that individual specific effects are not correlated with independent variables). Fixed effects analysis enable correlation of non–stationary or explainable variables that change over time by eliminating the effect of time variables, while random effects analysis is required to introduce other control variables to solve endogeneity or unexplained variables relating to explainable variables or relating to dependent variables resulting in regression coefficients in errors (beta bias in the estimation). To select the appropriate panel model, the Hausman test, a well–known test, was applied to identify whether pooled OLS or fixed or random effect analysis was more appropriate. The Hausman test determines normality, no–autocorrelation (or stationarity) and homoscedasticity (Grozdic et al., 2020). If the Hausman test shows that the p–value is equal to or greater than 0.05, the analysis cannot reject the null hypothesis, which implies that no correlation between the error term and independent variables has been found, so random effect analysis is the preferred model.

In this study, the dataset composed only four short panels, so the autocorrelation problem could be ignored. The study also tested heteroscedasticity using residual plots. No problem was encountered when observing residual plots. As a result, the pooled OLS results in this study are considered to be the preliminary assumption results. However, even if the pooled OLS models represented the preliminary assumption, this study also developed models using fixed effects and random effect analyses.

Initially, the robustness checks of Model 1, Model 2, and Model 3 as shown in were performed. The analysis began with the pooled OLS model to confirm that the total voluntary disclosures, the extra voluntary disclosures and the non–extra voluntary disclosures were significantly related to stock returns. It was found that the three models showed a goodness of fit

as indicated by coefficient of the high determination adjusted R^2 with a value of 0.763, 0.724 and 0.823, respectively. The outcomes of the regression test confirmed that the total voluntary disclosures, the extra voluntary disclosure and the non–extra voluntary disclosure significantly related to stock returns (Ln_MTVDIS, β = 1.067, p = .001), (Ln_MEXTRA, β = 1.494, p = .001), (Ln_NONMEX, β = .696, p = .001).

Then, fixed effects analysis was applied by adding the individual effects of bank dummy and year dummy into the models of the total voluntary disclosures, the extra voluntary disclosure and the non–extra voluntary disclosure. It was found that Hausman tests were statistically insignificant at a level of .05. Therefore, random effects models were more appropriate.

Lastly, with the concern that SIZE and NPL may affect stock returns in banking industry, the study separately added SIZE (Model 1a, 2a and 3a) and NPL (Model 1b, 2b and 3b) into the random effects analysis as shown in the analysis showed that the Hausman tests for the random effects models were insignificant which indicated that random effects models were appropriate. Based on a goodness of fit as indicated by coefficient of determination adjusted R^2 and explainable variables, the most appropriate models in indentifying the stock returns are Models 1b, 2b and 3b. The analysis showed a goodness of fit as indicated by coefficient of the higher in determination adjusted R^2 with a value of 0.806, 0.865 and 0.841, respectively. In addition, the regression outcomes confirmed that the total voluntary disclosures (Ln_MTVDIS, β = .828, p = .001) and NPL (β = –7.009, p = .002) significantly related to stock returns in Model 1b, the extra voluntary disclosures (Ln_MEXTRA, β = 1.076, p = .001) and NPL (β = –7.267, p = .006) significantly related to stock returns in Model 2b, and the non–extra voluntary disclosures (Ln_MNONEX) (β = .584, p = .001) and NPL (β = –4.906, p = .022) significantly related to stock returns in Model 3b. The results indicated that all levels of volutary disclosures had statistically significant positive effects whereas non–performing loans demonstrated a statistically significant negative effect on stock returns.

Discussions

Based on the hypothesis testing, the total voluntary disclosures, the extra voluntary disclosures, and the non–extra voluntary disclosures introduced in this study had a statistically positive effects on the stock returns at a significant level of .01. In addition, the extra voluntary

disclosures had the greatest impact on stock returns, followed by the total voluntary disclosures, and the non–extra voluntary, respectively. This finding agreed with the study of Mita, Silalahi and Halimatussadiah (2018) which found that Thai commercial banks disclosed the highest corporate social responsibility information in the ASEAN trade bloc. In addition, the findings that the voluntary disclosures affected the stock returns in this study were consistent with the valuation concept of ordinary shares, that is, the appropriate or intrinsic value of ordinary shares is derived from the present value of the expected net cash flows from investing in that stock. The discount rate used in calculating the present value depends on the expected risk incurred by investing in that stock. If investors assess that investing in stocks poses a high risk, then investors need higher returns to compensate for the increased risk level. As a result, the discount rate used in the calculation is higher, resulting in a decrease in the intrinsic value of common stock. Therefore, the expected future cash flow and the expected investment risk are reflected in the current share price. Investors forecast the future cash flows and expected relevant risk from the voluntarily disclosed information. Also, banks are more inclined to voluntarily disclose information that benefits their businesses. That is why voluntary disclosure results in higher stock prices and an increase the stock returns.

This study examined banking businesses listed on the Stock Exchange of Thailand, which are considered potential equities for investment in a large and highly liquid industry. The market price is therefore independently determined by the level of supply and demand of the common shares. As a result, the market price tends to adjust to the equilibrium price or its intrinsic value. Investors and security analysts tend to use various information that indicates future growth, such as a bank's strategic information disclosure and non–financial information disclosure. The result of this study is supported by previous research that found such voluntary disclosures provide informative value to investors (Elbannan and Elbannan, 2015; Birindelli et al., 2020).

These findings contribute an important body of knowledge to the literature being that higher voluntary disclosures lead to more stock returns. This is because when investors perceive all voluntary information relating to a bank's future performance, it can help them forecast future returns. Therefore, management should consider providing voluntary disclosures to the public. When the public acknowledges all important information, then they will be keen to invest. On the other hand, when the public lacks information, they might invest using their own judgement and eventually fail in the long–term. The implication of this study indicated that central banks and the stock exchange commissions should encourage banks to disclose useful information to the public.

This is to reduce the issue of asymmetry. Also, monitoring and enforcement should be continuously observed. Moreover, the reward schemes should be taken into consideration. This is to motivate banks to disclose all essential information to the public. Finally, investors should consider voluntary disclosures as vital information before making any decisions, especially when trading stocks. Voluntary disclosures could increase wealth and sustainability in the long run. Secondly, the voluntary disclosures introduced in this study give a pathway for management to share their voluntary disclosures, then develop their own voluntary disclosures. Thirdly, from the perspective of stakeholders and the public, it is essential to note that existing indicators such as CAMEL may not bring the expected effect of preventing corporate executives and major shareholders from abusing their rights and powers on short–sighted activities. Therefore, self–awareness and independent monitoring systems should be viewed as top priorities.

Lastly, the study indicated that non–performing loans positively related to the total voluntary disclosure, which simultinously positively related to the stock returns in a positive manner. It would interpret that when non–performinf loans increase, banks would shleter themselve by voluntalily disclosing other information with the hope that investors play no attention to non–performing loans level. Therefore, central banks and the stock exchange commissions should closely and continuously monitor the level of non–performing loans. This is because non–perforing loans were a pre–warning signal of banking crises as it affected the economic growth of the nation by decreasing credit development (Ivanovic, 2016).

Conclusion

The limitation of this study was that it attempted to develop a voluntary disclosure index by reference to previous studies and the authors' experience; however, the criteria might be subjective and arguable because they were based on judgements. Also, the development of voluntary disclosures has been changed from time to time. Therefore, the voluntary disclosure checklists should be revised regularly. Even if the observations of this study are considered narrow, the dataset included all possible data collected from all Thai listed commercial banks and during the study period there were no changes made to the rules and regulations regarding disclosure required by the Bank of Thailand. In otherwords, if the study period were extended, the outcomes of the study may be different. This should be considered an appropriate dataset. In addition, the narrow observations were sufficient to produce a robust estimation, as evidenced by the maximum

number of independent variables (i.e. equal to 2) in the random effect models. In addition and importantly, the minimum sample size for regression models depends on variance rather than on sample size. With very low variance, both false positive and false negative occurred at N<8, while if N ≥ 25, the dataset was clearly identified and accurate inference was stable. Those outcomes were consistent at different effect sizes (Jenkins and Quintana–Ascencio, 2020). Hence, the sample size in this study was sufficient to be analysed. Therefore, the conclusion of this study should be considered as a set of fundamental findings for further studies.

New knowledge

This study revealed that non–performing loans had a significantly negative influence on stock returns. However, the ratios determined under the concept of CAMEL demonstrated seemed no effect on stock returns. These indicated that CAMEL ratings, which were derived from past operation results, were already recognized by investors and reflected in the share price by the time CAMEL ratings were announced. The information may have a minor effect on investors' decision making and no effect on stock returns. Especially in a highly competitive environment of rapid and intense technological changes, future disclosures of strategic and non–financial information are more likely to influence investors to trade on stocks, rather than past information (i.e. CAMEL). In addition, CAMEL may not have incremental value on stock returns. Babu and Viswanathan (2018) stated that current rating system (i.e. CAMEL) may no longer accurately assess the banking environment because the ratios were potentially manipulated. The study recommends to apply close monitoring systems together with CAMEL. Furthermore.

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