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Bank-specific and macroeconomic factors related to bank profitability and stock return in Thailand

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Abstract

The study investigated the relationship of bank-specific and macroeconomic factors on bank profitability and stock return of commercial banks listed in Stock Exchange of Thailand (SET). The study used multiple regression of quarterly data from 2004-2013. Bank profitability and stock return were used as dependent variables. While, bank-specific and macroeconomic variables were used as independent variables. The dummy variable of Financial Sector Master Plan also used in the study.

The results showed that asset size, capital adequacy, liquidity, main source of banks funding have positive and significant relationship on bank profitability. Dummy variable has positive and significant relationship on stock return. While, operational efficiency, credit risk, inflation rate and real interest rate have negative and significant relationship on bank profitability and stock return. Asset quality and GDP are insignificant to bank profitability and stock return.

Keywords: Bank-Specific, Macroeconomic, bank profitability, stock return

Introduction

Banking industry is important for an economic activity. Banks contribute to the allocation of funds from people who deposit money and those who need funds for their business activity and thus support the economic growth of a country. However, banking sector performance also might suffer both from the mistake decision of bank management and financial crisis that happened in a country. Therefore, the assessment on bank profitability and stock return is important because of its importance to financial stability and economic growth.

After the 1997 financial crisis, the Government of Thailand had an intention to bring Thai commercial banks back to profitability (ADB Report 2011). The implementation of Financial Sector Master Plan (FSMP) phase I and II (2004-2014) results few players in banking sector. The study aimed to know the extent to which bank internal and external factors related to Thailand commercial bank profitability and stock return during the period.

Bank's ultimate goal is to get profit and maximize shareholders wealth. Many literatures have done study on bank profitability before and after the crisis in Thailand. However, there is still little attention on the effect of the implementation of FSMP on both bank profitability and stock return. In addition, the study combined bank-specific and macroeconomic factors to see the relationship on bank profitability and stock returns in Thailand.

The research tried to identify the extent to which the bank-specific (such as asset size, capital adequacy, asset quality, liquidity, main source of banks funding, operational efficiency and credit risk) and macroeconomic factors (such as GDP growth rate, inflation, real interest rate and dummy FSMP) have significant relationship on the Return on Assets, Return on Equity, Net Interest Margin and stock return. The scope of the study focused commercial banks listed in Stock Exchange of Thailand over the period of 2004-2013.

Literature review

Group of country studies on the determinants of bank profitability

Previous studies evaluate the determinants of bank profitability on group of country. Molyneux & Thornton (1992) used capital ratio, liquidity ratio and interest rate as determinants of bank profitability across 18 European countries between 1986 and 1989. Bonin et al (2005) used ROA as dependent variable on bank performance for 11 transition countries from 1996-2000. Albertazzi & Gambacorta (2009) found that GDP growth rate exerts a positive effect on ROE of 10 industrialized countries from 1981-2003. Karim et al (2010) found that economic growth and inflation have positive and significant effect on Islamic bank profitability in Africa from 1999-2009.

The study of 10 Middle East and North Africa countries during the period of 2000-2008 by Olson & Zoubi (2011) confirmed that bank size has positive impact on the bank profitability. Li (2013) in the study of accounting-based and market-based performance of banks in 8 Asian emerging markets showed that

ROA and NIM are significantly positively associated to capital adequacy. Perera et al (2013) showed that bank size is positively associated with bank profitability in South Asian countries. Yilmaz (2013) found that credit risk is important determinants of bank profitability in emerging markets. Finally, Almazari (2014) used comparative study between Saudi Arabia and Jordan to find the impact of internal factors on bank profitability from 2005-2011.

Single country studies on the determinants of bank profitability

Others based their study of bank profitability on single country. Mamatzakis and Remoundos (2003) concluded that variables related to management decision have major impact on Greek commercial banks profitability. Athanasoglou et al (2008) found the evidence that the profitability of Greek banks is shaped by bank-specific and macroeconomic factors. Kosmidou et al (2005) found that efficiency in expense management and bank size are significant determinants of banks profitability in United Kingdom. Javaid et al (2011) showed that total assets, equity to total assets, deposit to total assets and loans to total assets are the major determinants of banks profitability in Pakistan. Some literatures showed positive relationship between size and bank profitability (Sufian, 2009; Davydenko, 2010; Sufian, 2011; Alper & Anbar, 2011; Muda et.al, 2013; Tabari et al., 2013). Other showed negative relationship (Ben Naceur & Goaied, 2008; Sufian & Chong, 2008; Syafri, 2012). Even effect on bank size is not important (Athanasoglou et al, 2008) or insignificant (Zeitun, 2012).

Capital adequacy used as internal determinants of bank profitability (Aburime, 2008; Athanasoglou et al 2008). Most literatures showed that capitalization have a positive impact on bank profitability (Sufian & Chong, 2008; Ben Naceur & Goaied, 2008; Sufian, 2009; Davydenko, 2010; Syafri, 2012; Tabari et al., 2013). Some study showed that better capitalized bank seems to be more profitable (Dietrich & Wanzenried, 2009). Ali et al (2011) find that ROA negatively affected by capital while ROE positively affected by capital. Bilal et al (2013) find that capital ratio has significant association with ROE.

Asset quality is important determinants of bank profitability. Some literature showed positive and significant on bank profitability (Kosmidou et al., 2005) while other showed negative and significant on bank profitability (Alper & Anbar, 2011). However, Sufian & Kamarudin (2012) concluded that all bank-specific determinants influence the profitability of the Bangladeshi banking sector except asset quality. Liquidity also used as the determinants of bank profitability. Some literatures show that liquidity has negative impact to profitability (Davydenko, 2010; Hasan et al, 2013) or positively related to profitability (Sufian, 2011). Other found that it is varied among the types of bank studied (Sufian, 2009).

Deposits are the main source for the financing of the banks. Some literatures showed the positive and significant relationship between deposit and profitability (Javaid et al, 2011; Gul et al., 2011). Other found the negative relationship (Davydenko, 2010). Cost-income ratio used to measure the impact of efficiency on bank profitability. Guru et al (2002); Kosmidou et al (2005) and Sastrosuwito & Suzuki (2011) showed that efficient expenses management is significant factor in explaining bank profitability.

Previous literatures showed that cost-income ratio has negative effect on profitability (Syafri, 2012; Tabari et al., 2013; Hasan et al, 2013).

Credit risk is used as determinants of bank profitability. Theory suggests that increased exposure to credit risk is normally associated with decrease firm profitability. Chantapong (2005) found that domestic and foreign banks in Thailand reduced their credit exposure during the crisis years and improved their profitability during the post-crisis years. Some literatures showed that credit risk is negatively related to bank profitability (Athanasoglou et al 2008; Sufian & Chong, 2008; Davydenko, 2010; Sufian, 2011; Ali et al, 2011; Bilal et al, 2013). Others found the positive relationship between credit risk and profitability (Sufian, 2009; Syafri, 2012)

Factors affect profitability of banking sector might change when there is changes in macroeconomic environment. Previous study showed macroeconomic factors as the profitability determinants (Abduh et al, 2012). Some study found positive relationship (Dietrich & Wanzenried, 2009; Sufian, 2011; Ali et al., 2011; Alper & Anbar, 2011; Gul et al, 2011). Others found negative relationship (Sufian & Chong, 2008; Sufian & Kamarudin, 2012; Hasan et al, 2013).

Previous studies on bank-specific, macroeconomic factors and stock return

Stock return is the benefits enjoyed by the investor over an investment made. Return is the motivating factors that cause investor to invest money in stocks. Return means the profit earned as a result of increase in stock prices (Jeyanthi & William, 2010, p. 86). Previous studies showed that bank-specific and macroeconomic factors are determinants of stock return. For example, Kasman & Kasman (2011) used some bank specific variables and efficiency to find the relationship for stock performance. Drobetz et al (2007) examined the importance of bank-specific fundamental variables in explaining the cross-section of expected bank stock return. In addition, macroeconomic factors are widely used on study of stock returns (Tangjitprom, 2012). There is significant relationship between macroeconomic factors and stock returns (Cole et al, 2008; Ibrahim & Agbaje, 2013; Saeed & Akhter, 2012). However, others found insignificant relationship (Tu & Li, 2013; Luthra & Mahajan, 2014).

Data and methodology

Data

The study used secondary data of 11 Thai commercial banks listed in Stock Exchange of Thailand. The data consists of 440 observations of quarterly data from 2004-2013 with some missing data. The bank-specific and stock return data were obtained from banks website and Stock Exchange of Thailand Market Analysis and Reporting Tool (SETSMART). Macroeconomic data were obtained from Bank of Thailand website.

Methodology

The study used linear regression models with white heteroskedasticity consistent-standard errors and covariance based on the equations as follows:

Model 1: Bank-specific and macroeconomic determinants of bank profitability as measured by ROA

$$ROA_{i,t} = \beta 0 + \beta 1(lnA_{i,t}) + \beta 2(CA_{i,t}) + \beta 3(LLR\_GR_{i,t}) + \beta 4(LQD_{i,t}) + \beta 5\,(DA_{i,t}) + \beta 6\,(CIR_{i,t}) + \beta 7(LLP\_TL_{i,t}) + \beta 8(GDPGR_t) + \beta 9\,(INF_t) + \beta 10(RI_t) + \beta 11 D_t + \varepsilon_{i,t}$$

Model 2: Bank-specific and macroeconomic determinants of bank profitability as measured by ROE

$$ROE_{i,t} = \beta 0 + \beta 1(lnA_{i,t}) + \beta 2(CA_{i,t}) + \beta 3(LLR\_GR_{i,t}) + \beta 4(LQD_{i,t}) + \beta 5\,(DA_{i,t}) + \beta 6\,(CIR_{i,t}) + \beta 7(LLP\_TL_{i,t}) + \beta 8(GDPGR_t) + \beta 9\,(INF_t) + \beta 10(RI_t) + \beta 11 D_t + \varepsilon_{i,t}$$

Model 3: Bank-specific and macroeconomic determinants of bank profitability as measured by NIM

$$NIM_{i,t} = \beta 0 + \beta 1(lnA_{i,t}) + \beta 2(CA_{i,t}) + \beta 3(LLR\_GR_{i,t}) + \beta 4(LQD_{i,t}) + \beta 5\,(DA_{i,t}) + \beta 6\,(CIR_{i,t}) + \beta 7(LLP\_TL_{i,t}) + \beta 8(GDPGR_t) + \beta 9\,(INF_t) + \beta 10(RI_t) + \beta 11 D_t + \varepsilon_{i,t}$$

Model 4: Bank-specific and macroeconomic determinants on stock return

$$SR_{i,t} = \beta 0 + \beta 1(lnA_{i,t}) + \beta 2(CA_{i,t}) + \beta 3(LLR\_GR_{i,t}) + \beta 4(LQD_{i,t}) + \beta 5\,(DA_{i,t}) + \beta 6\,(CIR_{i,t}) + \beta 7(LLP\_TL_{i,t}) + \beta 8(GDPGR_t) + \beta 9\,(INF_t) + \beta 10(RI_t) + \beta 11 D_t + \varepsilon_{i,t}$$

Where,

β = Co-efficient of regression;

ROE = Return on Equity (net income/total equity)

ROA = Return on Assets (net income/total assets)

NIM = Net Interest Margin (Net Interest and Dividend Income /Total Earning Assets)

SR = Stock Return (natural log of price at time t divided by price at time t-1)

LNA = Asset size (natural log of total assets)

CA = Capital adequacy (total equity/total assets)

LLR_GR = Asset quality (loan loss reserve/gross loans)

LQD = Liquidity (total loans/total customer deposits)

DA = Main source of banks funding (deposit/total assets)

CIR = Operational Efficiency (total operating expenses/total operating income)

LLP_TL = Credit risk (loan loss provision/total loans)

GDPGR= Quarterly real Gross domestic product growth rate

INF = Quarterly inflation rate (Consumer Price Index)

RI = quarterly real Interest rate

D = Dummy variables for FSMP (phase I equals to 0, and phase II equals to 1)

ε = error term

The study also runs the regression of larger, medium and small banks in order to see the size effect on bank profitability and stock return. Table 1 shows the category of banks according to its asset size:

Table 1 Names, Abbreviation and Size of Thai Commercial banks Listed in Stock Exchange of Thailand

No	Name of the Bank	Abbreviation of the Bank	Size	Year of Observations
1	Bangkok Bank Public Company Limited	BBL	Large	2004q1-2013q4
2	Krung Thai Bank Public Company Limited	KTB	Large	2004q1-2013q4
3	Siam Commercial Bank Public Company Limited	SCB	Large	2004q1-2013q4
4	Kasikornbank Public Company Limited	KBANK	Large	2004q1-2013q4
5	Bank of Ayudhya Public Company Limited	BAY	Medium	2004q1-2013q4
6	TMB Bank Public Company Limited	TMB	Medium	2004q1-2013q4
7	Thanachart Bank Public Company Limited	TBANK	Medium	2004q1-2013q4
8	CIMB Thai Bank Public Company Limited	CIMBT	Small	2004q1-2013q4
9	Kiatnakin Bank Public Company Limited	KKP	Small	2004q1-2013q4
10	Land and Houses Bank Public Company Limited	LHBANK	Small	2004q1-2013q4
11	Tisco Bank Public Company Limited	TISCO	Small	2004q1-2013q4

Source: Bank of Thailand and Stock Exchange of Thailand.

Result

Descriptive statistics

Table 2 presents descriptive statistics of 11 Thai Commercial banks from 2004-2013. The mean and standard deviation are as follows: ROA (M=0.31% and std. dev=1.04%), ROE (M=1.09% and std. dev= 16.52%), NIM (M=0.74% and std. dev= 0.25%) and stock return (M=0.004 baht and std. dev= 0.177 baht).

Table 2 Descriptive statistics for the variables (All banks)

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
ROA (%)	0.311813	0.277345	8.627452	-9.738176	1.044303	424
ROE (%)	1.097587	2.787533	18.44371	-294.8919	16.52576	424
NIM (%)	0.745191	0.718391	2.914342	0.100217	0.258330	417
SR	0.004882	0.009132	0.693147	-0.559616	0.177845	387
LNA	20.34511	20.49317	26.90116	15.58090	1.947320	426
CA (%)	9.423572	9.266485	23.55120	0.692824	3.471764	426
LLR_GR (%)	4.638160	3.944792	18.92611	0.736721	3.129989	423
LQD (%)	**103.1510**	92.39290	472.8956	46.33655	48.99016	423
DA (%)	70.10208	73.72712	89.01517	17.99371	13.24599	426
CIR (%)	56.47683	49.65991	662.3022	-228.3687	**49.09812**	418
LLP_TL (%)	0.245834	0.162052	4.390573	-0.310925	0.345506	413
GDPGR (%)	3.920000	4.650000	19.10000	-8.900000	4.725288	440
INF (%)	3.107500	3.100000	7.500000	-2.800000	2.021257	440
RI (%)	**-0.402019**	-0.379426	2.614286	-3.025000	0.728288	440

Among independent variables liquidity (LQD) has the highest mean (M=103.15%), followed by main source of banks funding (DA), operational efficiency (CIR) and asset size (LNA). Operational efficiency (CIR) shows the highest standard deviation.

Table 3 shows the descriptive statistics of large banks with the mean and standard deviation as follows: ROA (M= 0.35% and std. dev= 0.12%), ROE (M=3.86% and std. dev= 1.37%), NIM (M= 0.78% and std. dev=0.11%) and SR (M= 0.017 baht and Std. dev=0.15 baht). Among the independent variables, liquidity has the highest mean (M=86.71%) and followed by main source of banks funding and operational efficiency and asset size. Liquidity has the highest standard deviation.

Table 4 shows the descriptive statistics for medium and small banks with the mean and standard deviation as follows: ROA (M= 0.28% and Std. dev=1.31%), ROE (M=0.58% and Std. dev =20.75%), NIM (M=0.72% and Std. dev =0.31%) and SR (M=0.004 baht and Std. dev =0.19 baht). Liquidity (LQD) shows the highest mean and standard deviation. It follows by main source of banks funding (DA), operational efficiency (CIR) and asset size (LNA).

Table 3 Descriptive statistics for the variables (Large Banks)

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
ROA **(%)**	0.357131	0.354361	0.903490	0.028996	0.129601	160
ROE **(%)**	3.866516	3.849557	9.074298	0.374847	1.378490	160
NIM **(%)**	0.783135	0.777938	1.045453	0.477637	0.112599	160
SR	0.016798	0.027324	0.656172	-0.463347	0.147791	160
LNA	21.06745	21.06170	21.64066	20.42881	0.320576	160
CA **(%)**	9.276758	9.605197	12.29461	6.027822	1.613565	160
LLR_GR **(%)**	4.956696	4.288536	14.19797	2.660617	2.280264	160
LQD **(%)**	**86.71783**	87.93261	108.0425	64.79348	**8.247051**	160
DA **(%)**	77.98231	77.11576	89.01517	65.62941	4.886695	160
CIR **(%)**	44.75006	43.64254	62.12509	28.48289	5.571327	160
LLP_TL **(%)**	0.195974	0.153458	1.322520	0.033501	0.164321	160
GDPGR **(%)**	3.920000	4.650000	19.10000	-8.900000	4.734734	160
INF **(%)**	3.107500	3.100000	7.500000	-2.800000	2.025298	160
RI **(%)**	-0.402019	-0.379426	2.614286	-3.025000	0.729744	160

Table 4 Descriptive statistics for the variables (Medium and Small banks)

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
ROA (%)	0.284348	0.191949	8.627452	-9.738176	1.319800	264
ROE (%)	-0.580552	2.008596	18.44371	-294.8919	20.75104	264
NIM (%)	0.721567	0.656389	2.914342	0.100217	0.314815	257
SR	-0.003517	-0.007491	0.693147	-0.559616	0.196171	227
LNA	19.91061	19.59551	26.90116	15.58090	2.348489	266
CA (%)	9.511881	8.582856	23.55120	0.692824	4.212780	266
LLR_GR (%)	4.444374	3.478054	18.92611	0.736721	3.538995	263
LQD (%)	**113.1484**	101.0671	472.8956	46.33655	**59.65892**	263
DA (%)	65.36209	69.16511	87.15188	17.99371	14.38814	266
CIR (%)	63.74924	55.71583	662.3022	-228.3687	61.26575	258
LLP_TL (%)	0.277366	0.176738	4.390573	-0.310925	0.418993	253
GDPGR (%)	3.920000	4.650000	19.10000	-8.900000	4.728366	280
INF (%)	3.107500	3.100000	7.500000	-2.800000	2.022574	280
RI (%)	-0.402019	-0.379426	2.614286	-3.025000	0.728763	280

Correlation analysis

Table 5 shows the correlation among variables used in the regression analysis of all banks. The correlation matrix shows the multicollinearity problem between liquidity (LQD) and main source of banks funding (DA). Anderson et al. (2011) by using "rule of thumb" test suggest that any correlation coefficient exceeds 0.7 or below -0.7 indicate potential problem with multicollinearity, which is the case here. It will be problematic to include both variables into the model. So, main source of banks funding (DA) was dropped from the model.

Table 5 Correlation analysis (All banks)

	LNA	**CA**	**LLR_GR**	**LQD**	**DA**	**CIR**	**LLP_TL**	**GDPGR**	**INF**
CA	-0.023								
LLR_GR	0.119	-0.133							
LQD	-0.286	0.179	-0.325						
DA	0.348	-0.383	0.311	**-0.822**					
CIR	-0.050	-0.078	0.035	0.030	-0.058				
LLP_TL	-0.011	-0.184	0.065	-0.064	0.050	0.320			
GDPGR	0.027	0.011	0.079	-0.128	0.152	-0.088	-0.013		
INF	0.021	-0.004	0.091	0.068	-0.043	-0.039	-0.083	0.361	
RI	-0.014	-0.009	-0.046	-0.000	0.001	0.051	0.001	-0.008	0.079

Table 6 shows the correlation among variables of large banks. The multicollinearity problems found between asset quality (LLR_GR) and liquidity (LQD). Therefore, asset quality (LLR_GR) was dropped from the model.

Table 6 Correlation analysis (Large Banks)

	LNA	**CA**	**LLR_GR**	**LQD**	**DA**	**CIR**	**LLP_TL**	**GDPGR**	**INF**
CA	0.076								
LLR_GR	-0.386	0.180							
LQD	0.275	-0.204	**-0.764**						
DA	-0.606	-0.209	0.530	-0.639					
CIR	0.016	-0.320	-0.096	0.059	0.044				
LLP_TL	-0.005	-0.137	-0.117	0.117	0.050	-0.065			

GDPGR	-0.096	-0.011	0.185	-0.208	0.183	-0.082	-0.042		
INF	-0.170	0.006	0.067	0.058	0.089	-0.053	-0.059	0.391	
RI	0.069	-0.015	-0.001	0.006	-0.015	-0.005	0.029	-0.004	0.107

Table 7 presents the correlation among variables of medium and small banks. The correlation analysis shows multicollinearity problem between liquidity (LQD) and main source of banks funding (DA). So, this study drops main source of banks funding (DA) from the model.

Table 7 Correlation analysis: Medium and small banks

	LNA	**CA**	**LLR_GR**	**LQD**	**DA**	**CIR**	**LLP_TL**	**GDPGR**	**INF**
CA	0.001								
LLR_GR	0.183	-0.201							
LQD	-0.201	0.189	-0.336						
DA	0.189	-0.422	0.313	**-0.842**					
CIR	0.055	-0.085	0.055	-0.017	0.032				
LLP_TL	0.074	-0.199	0.110	-0.112	0.135	0.320			
GDPGR	0.058	0.019	0.021	-0.157	0.191	-0.114	-0.007		
INF	0.080	-0.010	0.108	0.081	-0.076	-0.057	-0.107	0.337	
RI	-0.027	-0.010	-0.075	-0.004	0.013	0.070	-0.009	-0.011	0.052

Regression results

Table 8 shows the regression result of all banks using least squares with White heteroskedasticity-consistent standard errors & covariance. The AR terms were added to correct the serial correlation problem.

Asset size (LNA) has positive and significant relationship on ROE. It suggests that banks with large assets could have higher degree of product and loan diversification than small banks (Avaravci & Çalim, 2013) and thus achieves higher profitability (Alper & Anbar, 2013). Capital adequacy (CA) has positive and significant relationship on ROA and NIM, indicates banks ability to absorb the potential losses and could increase bank profitability.

Operational efficiency (CIR) has negative and significant relationship on ROA, ROE and NIM. It is consistent with the previous studies (Almazari, 2014; Athanasoglou et al, 2008; Syafri, 2012 and Zeitun, 2012). It indicates that the efficient bank will generate huge profit than inefficient banks due to high expenses. Credit risk (LLP_TL) has negative and significant relationship on ROA and ROE. This result is consistent

to previous study (Athanasoglou et al, 2008; Sufian 2011). The increased exposure to credit risk is normally associated with decreased profitability. However, credit risk is positively and significantly related to NIM. It is not as expected because the larger the credit risk, the higher the profitability (Syafri, 2012).

GDP is insignificant to bank profitability and stock return. Inflation (INF) and interest rate (RI) have negatively and significantly related to stock return. The dummy variable has positive and significant relationship on stock return; means the implementation of FSMP give favorable condition to increase bank stock return.

Table 8 Regression result (All banks)

Independent variables	Dependent variables			
	ROA (Model 1)	ROE (Model 2)	NIM (Model 3)	SR (Model 4)
Constant				
Coefficient	-2.304528	-15.96007	0.633708	-0.089878
P-Value	(0.2061)	(0.2915)	(0.0008)***	(0.4963)
LNA				
Coefficient	0.118783	0.506589	0.000739	0.003897
P-Value	(0.1327)	(0.0703)*	(0.9241)	(0.5123)
CA				
Coefficient	0.038442	1.020928	0.020304	-0.000374
P-Value	(0.0007)***	(0.2138)	(0.0293)**	(0.9024)
LLR_GR				
Coefficient	0.029900	-0.026205	-0.005913	0.004598
P-Value	(0.2703)	(0.9509)	(0.3866)	(0.2342)
LQD				
Coefficient	-0.000336	0.004284	-0.000128	-0.000136
P-Value	(0.8969)	(0.6622)	(0.7999)	(0.4881)
CIR				
Coefficient	-0.006465	-0.057510	-0.000830	-0.000144
P-Value	(0.0225)**	(0.0058)***	(0.0029)***	(0.7105)
LLP_TL				
Coefficient	-0.426344	-8.919082	0.114655	-0.014788

P-Value	(0.0040)***	(0.0017)***	(0.0022)***	(0.5913)
GDPGR				
Coefficient	0.004700	-0.049914	-0.000193	0.003133
P-Value	(0.3922)	(0.4284)	(0.9197)	(0.1100)
INF				
Coefficient	0.001673	0.293149	0.000728	-0.020240
P-Value	(0.8710)	(0.2888)	(0.9292)	(0.0010)***
RI				
Coefficient	0.007328	-0.415626	-0.011753	-0.070887
P-Value	(0.7537)	(0.2226)	(0.3256)	(0.0001)***
DUMMYFSMP				
Coefficient	0.072203	2.411372	-0.069221	0.087144
P-Value	(0.4393)	(0.1854)	(0.2519)	(0.0003)***
R-Squared	0.572929	0.195202	0.384110	0.224007
Prob (F-statistic)	0.000000	0.000000	0.0000000	0.000000
Durbin-Watson	1.736005	2.028702	2.117681	1.986144
Observation	386	398	398	353

****, ** and * indicate significance level at 1%, 5% and 10% respectively.*

Table 9 Regression result of large and medium and small banks

Independent variables	**Dependent variables**							
	ROA (Model 1)		**ROE (Model 2)**		**NIM (Model 3)**		**SR (Model 3)**	
	Large banks	Medium & Small banks	Large banks	Medium & Small banks	Large banks	Medium & Small banks	Large banks	Medium & Small banks
Constant								
Coefficient	3.694106	-2.539684	39.09838	-22.72747	-0.828586	0.576012	1.932277	-0.086780
P-Value	(0.0093)***	(0.2009)	(0.0011)***	(0.2541)	(0.4645)	(0.0023)***	(0.1485)	(0.5606)
LNA								
Coefficient	-0.129478	0.121223	-1.125182	0.500039	0.016065	-0.004955	-0.057130	0.003235
P-Value	(0.0183)**	(0.1330)	(0.0079)***	(0.0882)*	(0.7439)	(0.4616)	(0.1768)	(0.6368)
CA								
Coefficient	0.014837	0.046918	-0.286881	1.179439	0.016861	0.026248	0.001125	-0.000988
P-Value	(0.0053)***	(0.0033)***	(0.0000)***	(0.2101)	(0.0216)**	(0.0026)***	(0.8999)	(0.7311)

LLR_GR								
Coefficient		0.026344		0.000278		0.001214		0.002639
P-Value		(0.4204)		(0.9996)		(0.8304)		(0.4905)
LQD								
Coefficient	0.000330	-0.000567	0.000869	0.001074	0.006250	0.000509	-0.001916	-4.21E-05
P-Value	(0.8089)	(0.8176)	(0.9560)	(0.9069)	(0.0000)***	(0.1091)	(0.4133)	(0.7875)
DA								
Coefficient	-0.002718		-0.023519		0.008166		-0.007630	
P-Value	(0.3482)		(0.4719)		(0.0003)***		(0.1188)	
CIR								
Coefficient	-0.010696	-0.006433	-0.131499	-0.038354	-0.001391	-0.000870	0.002041	-9.84E-05
P-Value	(0.0000)***	(0.0290)**	(0.0000)***	(0.0802)*	(0.0365)**	(0.0033)***	(0.3878)	(0.8050)
LLP_TL								
Coefficient	-0.411670	-0.431755	-5.208284	-9.024258	-0.001075	0.136231	-0.025400	-0.015721
P-Value	(0.0000***	(0.0161)**	(0.0000)***	(0.0074)***	(0.9585)	(0.0042)***	(0.6371)	(0.6002)
GDPGR								
Coefficient	0.001629	0.006931	0.020417	-0.137411	0.000298	0.000244	0.003300	0.004065
P-Value	(0.2654)	(0.4595)	(0.2611)	(0.3068)	(0.6726)	(0.9427)	(0.2017)	(0.1442)
INF								
Coefficient	-0.002233	0.007487	-0.029331	0.787773	0.003065	-0.008108	-0.024483	-0.022462
P-Value	(0.5318)	(0.6638)	(0.4790)	(0.2414)	(0.2867)	(0.5482)	(0.0002)***	(0.0087)***
RI								
Coefficient	0.006197	0.006520	0.075515	-0.949017	-0.006863	-0.021143	-0.038890	-0.106685
P-Value	(0.1702)	(0.8670)	(0.2149)	(0.1214)	(0.0816)*	(0.3404)	(0.0358)**	(0.0000)***
DUMMYFSMP								
Coefficient		0.226987		5.935536		-0.052474		0.087191
P-Value		(0.2318)		(0.1475)		(0.5009)		(0.0092)***
R-Squared	0.762497	0.572005	0.702824	0.189876	0.818693	0.318723	0.184567	0.255909
Prob (F-statistic)	0.000000	0.000000	0.000000	0.000001	0.000000	0.000000	0.000263	0.000000
Durbin-Watson	2.305994	1.752977	2.210029	2.018208	2.455756	2.215905	2.045864	1.958721
Observation	159	226	159	245	159	244	160	200

****, ** and * indicate significance level at 1%, 5% and 10% respectively.*

Table 9 shows the regression result of large banks, medium and small banks using least squares with White heteroskedasticity-consistent standard errors & covariance. The AR terms were added to correct the serial correlation problem. Asset size (LNA) of large banks has negative and significant relationship on ROA and ROE. However, asset size (LNA) has positive and significant relationship on ROE for medium and small banks. This result is also consistent with previous study (Sufian & Chong, 2008; Syafri, 2012) which showed that the negative coefficient indicates that larger (smaller) banks tend to generate lower (higher) profits. While, positive coefficient shows the economies of scale for medium and small banks.

Capital adequacy (CA) has positive and significant relationship on ROA and NIM of large banks. In addition, capital adequacy (CA) has negative and significant relationship on ROE of large banks. It indicates that higher equity to asset ratio tends to reduce the risk of equity and therefore lower the equilibrium expected ROE required by investors (Staikouras & Wood, 2011). For medium and small banks, CA has positive and significant relationship on ROA and NIM. It indicates the ability to resist potential losses and generate higher profit.

Asset quality (LLR_GR) is insignificant to bank profitability and stock return of medium and small banks. Liquidity (LQD) has positive and significant relationship on NIM of large banks. It possibly means that larger banks have more chance to invest in different kinds of short term liquid assets (Acaravci & Çalim, 2013). Moreover, main source of banks funding (DA) has positive and significant relationship on NIM of large banks. It indicates that deposit for funds can achieve better profit. Therefore, banks normally should make a great effort to attract more deposit as source of banks funding (Acaravci & Çalim, 2013).

Operational efficiency (CIR) has negative and significant relationship on ROA, ROE and NIM of large, medium and small banks. It is consistent with previous studies of Almazari (2014), Athanasoglou et al (2008), Syafri (2012) and Zeitun (2012). The efficient bank will generate huge profit than inefficient banks. Next, credit risk (LLP_TL) has negative and significant relationship on ROA and ROE of large, medium and small banks. It indicates that the increase exposure to credit risk normally associated with decreased bank profitability. However, credit risk has positive and significant relationship on NIM of medium and small banks. This is not expected since the larger credit risk, the greater the profit (Syafri, 2012).

GDP is insignificant for all models. Inflation is negatively and significantly related to stock return of large, medium and small banks. It indicates that constant increase in price would lead to the saving ability of people which in turn lead to a decrease in the demand of stock. Interest rate has negative and significant relationship on stock return of large, medium and small banks. It means the increase interest rate would result the low demand of people on buying stock. People prefer to save their money than make an investment on stock (Tu & Li, 2013). Lastly, dummy FSMP is positively and significantly related to stock return of medium and small banks.

Conclusion and discussion

The study examines the relationship of bank-specific and macroeconomic factors on bank profitability and stock return in Thailand over the period of 2004-2013. The sample includes 11 commercial banks listed in Stock Exchange of Thailand. It is important to notice that regression result of asset size different between large banks and medium and small banks. It means that there are economies of scale for small (and medium) banks and diseconomies of scale for large banks (Sufian & Chong, 2008).

Capital adequacy of large banks also found to be negative and significant to ROE. Capital adequacy requirement limits the risk profile of investment of large banks and thus affect on its ability to reach their target level of profitability (Almazari, 2013). Liquidity of large banks has positive and significant relationship to bank profitability. It indicates that large banks have more opportunities to invest in short term liquid assets. In addition, DA of large banks is positive and significant to bank profitability. Banks normally should make great effort to attract more deposit as source of banks funding (Acaravci & Çalim, 2013). Larger banks possibly more involve in fulfilling depositor's obligations than investment (Ongore & Kusa, 2013).

Another important result is that operational efficiency is negatively and significantly related to bank profitability of large, medium and small banks. The inefficient banks will generate small profit even it is larger, medium or small banks (Syafri, 2012). Credit risk is negatively and significantly related to bank profitability. The possibility is that banks in Thailand during the implementation of FSMP have increased their loan loss provision for future economic uncertainty due to large amount of non-performing loans. This argument is supported by the report released by Bank of Thailand which stated that banks increased the ratio of actual loan loss provision to regulatory loan loss provision to 168.3% (BOT press release No.4/2014).

The findings are considered important for policy makers and bank managers. Recommendations were given based on the empirical results: First, banks need to maintain its liquidity due to their ability to meet its obligations when depositors want to withdraw funds and also when borrowers want to make sure that their cash needs will be met by banks. Second, banks need to reduce the cost of operations as it will minimize the incidence of bank failure and thus strengthen shareholder confidence and the public through the better performance of banks. Third, the study recommends the necessity to improve other activities as sources of funds. Fourth, banks need to carefully identify the potential risks amidst growing economic risk and rising bad loans by maintaining higher loan loss provision as it will sustain banks for the worst scenarios in economic conditions.

This study only focuses on commercial banks listed in Stock Exchange of Thailand. For future study, all banks need to include in order getting more picture of the impact of the implementation of FSMP. Periods before the implementation of FSMP are also important to consider.

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