

Effect of Corporate and Dividend Income Tax Rates on Bank Capital

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ABSTRACT

The study uses quantitative method to estimate the effect of Corporate- and Dividend-Income-Tax rates on Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital ratios. The samples are banks from ASEAN-4 countries, i.e. Indonesia, Malaysia, The Philippines, and Thailand, taken in 2020 . The effects of Corporate- and Dividend-Income-Tax on Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital ratios were analyzed using cross-section regression . We placed Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital ratios as the dependent variable. Corporate- and Dividend-Income-Tax rates were placed as the independent variable. Both Corporate- and Dividend-Income-Tax rates are statistically significant and positively affect the Total-Bank-Capital and Tier-1-Bank-Capital. The findings suggest that high Corporate- and Dividend-Income-Tax rates reduce banks' significant risks. Corporate-Income-Tax rates and negatively affect Tier-2-Bank-Capital. The finding suggests that lower tax rates will induce banks to increase their Tier-2-Bank-Capital ratio. However the effect of Dividend-Income-Tax rates on Tier-2-Bank-Capital is not statistically significant.

SARI PATI

Penelitian ini bertujuan mengestimasi pengaruh pajak penghasilan korporasi dan dividen pada rasio Total Modal Bank, Modal Bank Tier-1, dan Modal Bank Tier-2. Sampel penelitian adalah bank di negara ASEAN-4, yaitu Indonesia, Malaysia, Filipina, dan Thailand pada tahun 2020. Analisa pengaruh pajak penghasilan korporasi dan dividen terhadap rasio modal bank menggunakan metode statistik regresi cross-section. Besaran modal bank adalah rasio Total Modal Bank, Modal Bank Tier-1, dan Tier-2 sebagai variabel dependen. Tarif pajak penghasilan korporasi dan pajak dividen sebagai variabel independen. Temuan ini menyatakan bahwa tarif pajak penghasilan korporasi dan pajak dividen mempunyai pengaruh yang positif dan secara statistik signifikan terhadap rasio Total Modal Bank dan Modal Bank Tier-1. Temuan menunjukkan tarif pajak yang tinggi mengurangi resiko bank. Tarif pajak penghasilan korporasi berpengaruh negatif dan secara statistik signifikan dengan Modal Bank Tier-2. Temuan ini menyatakan penurunan tarif pajak penghasilan korporasi mendorong bank untuk meningkatkan rasio Modal Bank Tier-2. Pengaruh tarif pajak penghasilan dividen pada Modal Bank Tier-2 tidak terbukti signifikan secara statistik.

INTRODUCTION

This paper estimates the effect of Corporate- and Dividend-Income-Tax rates on Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital ratios. This research is important because real-world tax policy is more complex than tax policy in the theoretical world. Capital Structure Irrelevant Theorem (Modigliani & Miller, 1958; Modigliani & Miller, 1963) does not differentiate the effect of Corporate- and Dividend-Income-Tax rates on firm capital structure. In reality, countries assign different tax rates, i.e., Corporate- and Dividend-Income-Tax rates (Then, Gunawan, Fong, & Teja, 2019).

The Modigliani and Miller capital structure irrelevant theorem implicitly assumes that the capital structure irrelevant theorem applies to all firms, i.e. banks or financial institutions and manufacturing firms. Heckemeyer and Mooij (2013) do not find statistical evidence that banks and non-banks have different biases toward debt financing. Hence, the capital structure theory can be applied to banks and non-bank capital structures (Gale & Gottardi, 2020). Heckemeyer and Mooij (2013) find that non-banks have non-monotonic or U-Shaped relations between Corporate-Income-Tax rates and asset size. On the contrary, as bank asset size becomes more prominent, their responsiveness to Corporate-Income-Tax rates declines. Specifically, a bank with abundant capital is more responsive to changes in Corporate-Income-Tax rates.

However, banks may experience only Corporate-Income-Tax rates or Corporate- and Dividend-Income-Tax rates altogether (Then, Gunawan, Fong, & Teja, 2019). The former is mandatory to be paid each fiscal year when the bank gains fiscal profit. The latter can be deferred as long as shareholders are willing to defer their dividend payment. Since Corporate- and Dividend-Income-Tax has different payment periods, timing choice may affect bank capital structures.

Research on the relations between tax and bank capital structure does not differentiate the effects

of Corporate- and Dividend-Income-Tax rates. The research primarily focuses on only Corporate-Income-Tax rates. Schepens (2016) studied the effect of creating a tax shield for bank equity, called Notional Interest Deductive (NID), on bank funding preferences in Belgium in 2006. He finds that the introduction of NID reduces bank preferences for debt funding. Gambacorta, Ricotti, Sundaresan, and Wang (2018) study the effect of different Corporate-Income-Tax rates on Credit-Cooperative-Bank liability structure in Italia. They find bank reduce their reliance on the non-deposit debt ratio when the government reduces Corporate-Income-Tax rates that effectively reducing the debt tax shield. Horváth (2020) study the effect of different levels of Corporate-Income-Tax rates on bank leverage. Using a sample from 71 countries, He finds that banks in countries that impose higher Corporate-Income-Tax rates tend to have higher leverage and lower average asset risk. Diemer (2017) find bank change their asset risk due to different government tax policies for secured and unsecured debt.

Research on the relations between country tax policy to bank capital is inconclusive. Keen (2011) and Gambacorta et al. (2018) suggest that tax rates, specifically Corrective-Tax rates that penalize the bank for obtaining risky funding, i.e., non-deposit-debt, have positive relations to the structure of bank liabilities. Schepens (2016) finds that tax rates that benefit shareholders result in lower bank leverage and increase bank financial stability. Martin-flores and Moussu (2017) find that tax incentive to increase bank capital is effective in Italia.

However, Keen (2011) and Beirne and Friedrich (2017) discuss the importance of government regulations to increase bank capital alongside the Corrective-Tax rates in increasing bank capital rather than only focusing on the structure of bank liabilities. Bremus, Schmidt, and Tonzer (2020) also suggest that the effectiveness of Corporate-Income-Tax rates in altering bank risky behaviour may be increased by regulatory tools to increase bank capital. Fan, Titman, and Twite (2010) find that

firms operating in countries with robust legal and tax systems rely more on equity and long-term debt financing. Lee and Hsieh (2013) find that substantial bank capital positively contributes to profitability.

Schandlbauer (2017) research the effect of Corporate-Income-Tax rates on US banks. The effect of changes in tax subsidies, i.e., increase or decrease, is not linear. He finds that well-capitalized bank increased their non-deposit debt to gain maximum debt tax subsidies from the government. Fan, Titman, and Twite (2010) studied 39 developed and developing countries that tend to maximize their debt tax saving. On the contrary, the bank maintains its non-deposit debt even though debt tax subsidies decrease.

Based on the research mentioned, research on the combined effect of Corporate- and Dividend-Income-Tax rates on a different definition of bank capital has not yet been done. Hence, the research questions are (1) Do Corporate- and Dividend-Income-Tax affect Total-Bank-Capital? (2) Do Corporate- and Dividend-Income-Tax affect Tier-1-Bank-Capital? and (3) Do Corporate- and Dividend-Income-Tax rates affect Tier-2-Bank-Capital?

We intend to analyze ASEAN (Association of Southeast Asian Nations) countries' banks. However, our screening criteria in S&P Capital IQ only result in ASEAN-4 countries, i.e., Indonesia, Malaysia, The Philippines, and Thailand. The countries have different Corporate- and Dividend-Income-Tax rates. Indonesia imposes a Corporate-Income-Tax rate of 25% and a Dividend-Income-Tax rate of 15%. Malaysia imposes a Corporate-Income-Tax rate of 25% and a 0% Dividend-Income-Tax rate. The Philippines imposes a Corporate-Income-Tax rate of 30% and a Dividend-Income-Tax rate of 30%. Thailand imposes a Corporate-Income-Tax rate of 20% and a Dividend-Income-Tax rate of 20%. The sample provides an exciting setting to understand the relative importance of corporate and dividend income tax rates on bank capital.

The novelty of our research is: (1) we extend the research from Gambacorta, Ricotti, Sundaresan, and Wang (2018) and Horváth (2020) by adding a new variable, i.e., Dividend-Income-Tax rates, (2) we test a more comprehensive dependent variable, i.e., Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital as opposed to Equity-to-Bank-Capital, and (3) we use the most recent data, i.e., 2020. Gambacorta et al. (2018) study the effect of IRAP (Imposta Regionale Sulle Attività Produttive) on bank liability structure. The IRAP provides different Corporate-Income-Tax rates to different regions in Italia. Horváth (2020) studied the effect of Corporate-Income-Tax rates on bank leverage in 71 countries from 1997 to 2011.

There are several research findings. First, Corporate- and Dividend-Income-Tax have a positive effect and are statistically significant on Total-Bank-Capital and Tier-1-Bank-Capital ratios. Second, Corporate-Income-Tax has a negative effect and is statistically significant on the Tier-2-Bank-Capital ratio. Third, Dividend-Income-Tax does not affect the Tier-2-Bank-Capital ratio. The findings suggest that high tax rates, i.e., Corporate- and Dividend-Income-Tax rates reduce bank risks.

METHODS

The object of the research is ASEAN countries' banks in 2020. The consideration for choosing ASEAN countries' banks is that each country has different Corporate- and Dividend-Income-Tax rates. However, we exclude Singapore considering the country is already categorized as a developed country while the other country is categorized as a developing country. The Corporate- and Dividend-Income-Tax rates data were obtained from PricewaterhouseCoopers (2018). The Corporate- and Dividend-Income-Tax rates are used as the independent variable. The data is shown in Table 1.

The consideration for choosing the year 2020 is the latest full-year (1) financial data available, while 2021 financial data is not yet fully updated by the S&P Capital IQ, and (2) there is no change

Table 1. Corporate and Dividend Income Tax Rates

Country	Corporate-Income-Tax Rates	Dividend-Income-Tax Rates
Indonesia	25%	15%
Thailand	20%	20%
Malaysia	25%	0%
Singapore**	17%	0%
Philippines	30%	30%
Vietnam*	22%	0%
Myanmar*	35%	0%
Cambodia*	20%	14%
Brunei Darussalam*	20%	0%
Laos*	24%	10%

Source: PricewaterhouseCoopers (2018)

Notes: *, ** means data not available and excluded, respectively.

in Corporate- and Dividend-Income-Tax rates in each ASEAN countries for 2016-2020. Since the Corporate- and Dividend-Income-Tax rates are constant, the first-differencing methods in panel data regression analysis will result in zero change for Corporate- and Dividend-Income-Tax rates for all countries. Hence, we can only use cross-section data regression analysis.

We obtain the bank's financial data from S&P Capital IQ using several screening criteria. First, industry classifications: Banks, (2) geographic locations: Indonesia, Malaysia, The Philippines, Thailand, Vietnam, Cambodia, Laos, Myanmar, and Brunei Darussalam, (3) company type: public company, and (4) dependent variable, i.e., Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital Total-Bank-Capital consists of Tier-1-Bank-Capital and Tier-2-Bank-Capital, Tier-1-Bank-Capital consists of equities and retained earnings, Tier-2-Bank-Capital consist of revaluation reserves, hybrid capital instruments, subordinated debt, and loan-loss reserves. All data should have positive values.

The S&P Capital IQ screening criteria do not provide Vietnam, Cambodia, Laos, Myanmar, and Brunei

Darussalam data. The S&P Capital IQ provide 99 data for four countries only, i.e. Indonesia with 35 banks, Malaysia with 15 banks, The Philippines with 19 banks, and Thailand with 30 banks. We name the country with available data as ASEAN-4.

S&P Capital IQ is also used to screen data to calculate control variables. The screening criteria is the data USD millions and is greater than or equal to zero for Total-Interest-Income, Total-Interest-Expense, Total-Non-Interest Income, Total-Non-Interest-Expense, Total Assets, Net Income, Total Deposits, and Total Loans. All data should have positive values.

The variable obtained was used to calculate: (1) Return-on-Assets Ratio (ROA), (2) Loan-to-Deposit Ratio (LDR), (3) Net-Interest-Income to Total-Bank-Capital Ratio (NITCap), Net-Interest-Income to Tier-1-Bank-Capital Ratio (NIT1Cap), Net-Interest-Income to Tier-2-Bank-Capital Ratio (NIT2Cap), Non-Interest-Income to Total-Bank-Capital Ratio (NonNITCap), Non-Interest-Income to Tier-1-Bank-Capital Ratio (NonNIT1Cap), and Non-Interest-Income to Tier-2-Bank-Capital Ratio (NonNIT2Cap). The formula for calculating the variable is shown in Table 2.

Table 2. Variable Definition, Abbreviation, and Formula/Information

Variable	Abbreviation	Formula/Information
Dependent Variable		
Total-Bank-Capital	TCap	$\frac{\text{Total - Bank - Capital}}{\text{Total Assets}}$
Total-Bank-Capital	TCap	$TCap = T1Cap + T2Cap$
Tier-1-Bank-Capital	T1Cap	$\frac{\text{Tier - 1 - Bank - Capital}}{\text{Total Assets}}$
Tier-2-Bank-Capital	T2Cap	$\frac{\text{Tier - 2 - Bank - Capital}}{\text{Total Assets}}$
Independent Variable		
Corporate-Income-Tax Rates	CTax	Country tax rates data from PriceWaterHouseCooper (2018)
Dividend-Income-Tax Rates	DTax	Country tax rates data from PriceWaterHouseCooper (2018)
Control Variable		
Return-on-Assets Ratio	ROA	$\frac{\text{Net Income}}{\text{Total Assets}}$
Loan-to-Deposit Ratio	LDR	$\frac{\text{Total Loans}}{\text{Total Deposits}}$
Net-Interest-Income to Total-Bank-Capital	NITCap	$\frac{\text{Net Interest Income}}{\text{Total - Bank - Capital}}$
Non-Net-Interest-Income to Total-Bank-Capital	NonNITCap	$\frac{\text{Non - Net - Interest - Income}}{\text{Total - Bank - Capital}}$
Net-Interest-Income to Tier-1-Bank-Capital	NIT1Cap	$\frac{\text{Net Interest income}}{\text{Tier - 1 - Bank - Capital}}$
Non-Net-Interest-Income to Tier-1-Bank-Capital	NonNIT1Cap	$\frac{\text{Non Net Interest income}}{\text{Tier - 1 - Bank - Capital}}$
Net-Interest-Income to Tier-2-Bank-Capital	NIT2Cap	$\frac{\text{Net Interest income}}{\text{Tier - 2 - Bank - Capital}}$
Non-Net-Interest-Income to Tier-2-Bank-Capital	NonNIT2Cap	$\frac{\text{Non Net Interest income}}{\text{Tier - 2 - Bank - Capital}}$

We use the cross-section regression to estimate the effects of Corporate- and Dividend-Income-Tax rates on Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital to bank *i* in country *j*. The regression models are as follows:

$$TCap_{ij} = \alpha_{ij} + \beta_1 CTax_{ij} + \beta_2 DTax_{ij} + \beta_3 ROA_{ij} + \beta_4 LDR_{ij} + \beta_5 NITCap_{ij} + \beta_6 NonNITCap_{ij} + \varepsilon_{ij} \dots \dots \dots (1)$$

$$T1Cap_{ij} = \alpha_{ij} + \beta_1 CTax_{ij} + \beta_2 DTax_{ij} + \beta_3 ROA_{ij} + \beta_4 LDR_{ij} + \beta_5 NIT1Cap_{ij} + \beta_6 NonNIT1Cap_{ij} + \varepsilon_{ij} \dots \dots \dots (2)$$

$$T2Cap_{ij} = \alpha_{ij} + \beta_1 CTax_{ij} + \beta_2 DTax_{ij} + \beta_3 ROA_{ij} + \beta_4 LDR_{ij} + \beta_5 NIT2Cap_{ij} + \beta_6 NonNIT2Cap_{ij} + \varepsilon_{ij} \dots \dots \dots (2)$$

We perform a multicollinearity test using Value Inflation Factors (VIF). We also perform a heteroscedasticity test using Breusch-Pagan/Cook-Weisberg test. We correct heteroscedasticity through Robust Standard Error. Test for multicollinearity and heteroscedasticity is available in Stata Program. Heteroscedasticity correction through Robust Standard Error is also available in Stata Program.

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics for ASEAN-4 countries' 99 bank data are shown in Table 3.

Notes: Total-Bank-Capital to Total-Asset (TCap), Tier-1-Bank-Capital to Total-Asset (T1Cap), Tier-2-Bank-Capital to Total-Asset (T2Cap), Corporate-Income-Tax Rates (CTax), Dividend-Income-Tax Rates (DTax), Return-on-Assets Ratio (ROA), Loan-to-Deposit Ratio (LDR), Net-Interest-Income to Total Bank-Capital Ratio (NIMTCap), Net-Interest-Income to Tier-1-Bank-Capital Ratio (NIT1Cap), Net-Interest-Income to Tier-2-Bank-Capital Ratio (NIT2Cap), Non-Interest-Income to Total-Bank-Capital Ratio (NonNITCap), Non-Interest-Income to Tier-1-Bank-Capital Ratio (NonNIT1Cap), and Non-Interest-Income to Tier-2-Bank-Capital Ratio (NonNIT2Cap).

Based on table 3 above, we can see that banks in Indonesia, Malaysia, The Philippines, and Thailand are already well-capitalized. Basel III requires banks to have a minimum Tier-1-Bank-Capital 6% relative to Risk-Weighted-Assets (RWAs) (Lim & Reyes, 2014). In 2020, Tier-1-Bank-Capital was Indonesia at 16.88%, Malaysia at 8.97%, The Philippines at 11.58%, and Thailand at 10.92%. Tier-1-Bank-Capital consist of common stock and retained earnings relative to RWAs from credit, market, and operational.

Tier-2-Bank-Capital consists of revaluation reserves obtained from the bank's asset revaluation, financing from the hybrid financial instrument, such as convertible bonds and preferred stock, and junior debt or debentures. The value of revaluation reserves is not stable and contingent on volatile market sentiment. Hence, there are two measures of Tier-2-Bank-Capital, i.e. upper- and lower Tier-2-Bank-Capital. However, S&P Capital IQ only provides one measure. The data on Tier-2-Bank-Capital obtained from S&P Capital IQ are as follows: Indonesia 0.93% or 5.22% of Total-Bank-Capital, Malaysia 2.01% or 18.31% of Total-Bank-Capital, The Philippines 0.96% or 7.65% of Total-Bank-Capital, and Thailand 2.25% or 17.10% of Total-Bank-Capital.

Regression Results

The cross-section regression results for Total-Bank-Capital (TCap), Tier-1-Bank-Capital (T1Cap), and Tier-2-Bank-Capital (T2Cap) are presented in table 4. Our model has a large R². All models have R² larger than 40%.

Notes: Total-Bank-Capital to Total-Asset (TCap), Tier-1-Bank-Capital to Total-Asset (T1Cap), Tier-2-Bank-Capital to Total-Asset (T2Cap), Corporate-Income-Tax Rates (CTax), Dividend-Income-Tax Rates (DTax), Return-on-Assets Ratio (ROA), Loan-to-Deposit Ratio (LDR), Net-Interest-Income to Total Bank-Capital Ratio (NIMTCap), Net-Interest-

Table 3. Bank Descriptive Statistics

Description	Indonesia		Malaysia		The Philippines		Thailand	
	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation
TCap	0.1781	0.1078	0.1098	0.0334	0.1255	0.0222	0.1316	0.0142
T1Cap	0.1688	0.1089	0.0897	0.0265	0.1158	0.0225	0.1092	0.0126
T2Cap	0.0093	0.0083	0.0201	0.0086	0.0096	0.0065	0.0225	0.0085
ROA	0.0102	0.0076	0.0071	0.0030	0.0105	0.0052	0.0092	0.0056
LDR	0.9435	0.3308	0.9460	0.1544	0.7510	0.2024	1.0040	0.0945
NITCap	0.2753	0.1356	0.1351	0.0427	0.3252	0.1014	0.2322	0.0414
NonNITCap	-0.1185	0.0865	0.0178	0.0420	-0.0925	0.0634	-0.0537	0.0190
NIT1Cap	0.3023	0.1616	0.1644	0.0508	0.3551	0.1138	0.2815	0.0578
NonNIT1Cap	-0.1324	0.1063	0.0218	0.0509	-0.1009	0.0681	-0.0661	0.0270
NIT2Cap	6.4456	5.7829	0.7956	0.3225	5.3841	2.1409	1.6577	0.9696
NonNIT2Cap	-2.6120	2.3438	0.1043	0.2453	-1.3889	1.0472	-0.3379	0.0956

Source: S&P Capital IQ and author calculations.

Table 4. Regression Results

Dependent Variable	TCap	T1Cap	T2Cap
Independent Variable			
CTax	0.3627*	0.4256**	-0.0719***
DTax	0.1372**	0.1522***	0.0001
Control Variable			
ROA	2.5381	2.948	0.0428
LDR	0.1569**	0.1480**	0.0090***
NITCap	-0.2864		
NonNITCap	0.1264		
NIT1Cap		-0.3263	
NonNIT1Cap		-0.0887	
NIT2Cap			-0.0007***
NonNIT2Cap			0.0010***
R^2	0.4235	0.4387	0.4728

Source: S&P Capital IQ and author calculations.

Income to Tier-1-Bank-Capital Ratio (NIT1Cap), Net-Interest-Income to Tier-2-Bank-Capital Ratio (NIT2Cap), Non-Interest-Income to Total-Bank-Capital Ratio (NonNITCap), Non-Interest-Income to Tier-1-Bank-Capital Ratio (NonNIT1Cap), and Non-Interest-Income to Tier-2-Bank-Capital Ratio (NonNIT2Cap). ***, **, * means significant at alpha 1%, 5%, and 10% respectively.

We find that Corporate-Income-Tax rates have an effect and are statistically significant to Total-Bank-Capital, Tier-1-Bank-Capital and Tier-2-Bank-Capital. However, the Corporate-Income-Tax do not have a similar effect to bank capital. Corporate-Income-Tax has a positive effect on Total-Bank-Capital and Tier-1-Bank-Capital. Corporate-Income-Tax has a negative effect on Tier-2-Bank-Capital.

We find that Dividend-Income-Tax has a positive effect and is statistically significant to Total-Bank-Capital and Tier-1-Bank-Capital. Dividend-Income-Tax is statistically not significant to affect Tier-2-Bank-Capital.

We use two control variables, i.e. Return on Assets and Loan-to-Deposit ratio, on Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital. We find that only the Loan-to-Deposit ratio has a positive effect and is statistically significant at Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital.

We use two unique control variables for each measure of bank capital. The control variables are the ratio Net-Interest-Income and Non-Net-Interest-

Table 5. Value Inflation Factor Multicollinearity Test

Dependent Variable	Tcap	T1Cap	T2Cap
Independent Variable			
CTax	1.18	1.16	1.25
DTax	1.29	1.25	1.12
Control Variable			
ROA	1.25	1.25	1.09
LDR	1.18	1.17	1.15
NITCap	2.28		
NonNITCap	1.81		
NIT1Cap		2.34	
NonNIT1Cap		2.01	
NIT2Cap			1.91
NonNIT2Cap			1.77
Mean	1.50	1.53	1.38

Source: S&P Capital IQ and author calculations.

Income to Total-Bank-Capital, Tier-1-Bank-Capital, and Tier-2-Bank-Capital. However, only the ratio Net-Interest-Income and Non-Net-Interest-Income to Tier-2-Bank-Capital that statistically significant. Net-Interest-Income to Tier-2-Bank-Capital has a negative effect, and Non-Net-Interest-Income to Tier-2-Bank-Capital has a positive effect.

Notes: Total-Bank-Capital to Total-Asset (TCap), Tier-1-Bank-Capital to Total-Asset (T1Cap), Tier-2-Bank-Capital to Total-Asset (T2Cap), Corporate-Income-Tax Rates (CTax), Dividend-Income-Tax Rates (DTax), Return-on-Assets Ratio (ROA), Loan-to-Deposit Ratio (LDR), Net-Interest-Income to Total Bank-Capital Ratio (NITCap), Net-Interest-Income to Tier-1-Bank-Capital Ratio (NIT1Cap), Net-Interest-Income to Tier-2-Bank-Capital Ratio (NIT2Cap), Non-Interest-Income to Total-Bank-Capital Ratio (NonNITCap), Non-Interest-Income to Tier-1-Bank-Capital Ratio (NonNIT1Cap), and Non-Interest-Income to Tier-2-Bank-Capital Ratio (NonNIT2Cap).

Table 5 shows that multicollinearity is not a significant issue. The Value Inflation Factors (VIF) have low values with VIF TCap (Total-Bank-Capital-to-Total-Assets) mean of 1.50, T1Cap (Tier-1-Bank-Capital-to-Total Assets) mean of 1.53, and T2Cap (Tier-2-Bank-Capital-to-Total-Assets) mean of 1.38.

Model 1 with the dependent variable TCap and model 2 have heteroscedasticity issues. We correct the heteroscedasticity issues through a robust standard error command in Stata. The robust standard error only corrects the heteroscedasticity issues and changes the alpha but maintains the beta coefficient value. The results after heteroscedasticity issues correction are presented in Table 4.

Discussion

Modigliani and Miller Capital Structure Irrelevant Theorem discuss only one tax rate. Implicit in the theory are firm financiers always consider total tax rates, not partial tax rates, i.e. Corporate- and Dividend-Income-Tax rates. However, government provide a different definition of capital and incentive for Corporate- and Dividend-Income-Tax rates.

Our research findings find that bank structures their capital based on the level of Corporate- and Dividend-Income Tax rates. The bank should pay Corporate-Income-Tax when they have profit. However, they may defer the Dividend-Income-Tax obligation by not paying a dividend as long as the shareholder is willing. Hence, Corporate- and Dividend-Income-Tax positively affect Total-Bank-Capital and Tier-1-Bank-Capital since they are related directly to bank operational profitability.

The level of Corporate-Income-Tax rates is also directly related to the amount of debt tax savings. Our study shows that banks operating in higher Corporate-Income-Tax rate countries, such as Indonesia and The Philippines, have a higher Total-Bank-Capital ratio relative to banks operating in lower Corporate-Income-Tax rate countries, such as Malaysia and Thailand. The debt tax saving from a higher Corporate-Income-Tax rate with a lower debt ratio may result in almost the same amount of debt tax saving in a lower Corporate-Income-Tax rate with a higher debt ratio.

There are two clusters of the bank. First, the bank that operates with high tax rates country does not rely on Tier-2-Bank-Capital, such as Indonesia, with Corporate- and Dividend-Income-Tax rates equal to 25% and 15%, respectively, and The Philippines,

Table 6. Breusch-Pagan/Cook-Weisberg Heteroscedasticity Test

Breusch-Pagan/Cook-Weisberg Test	TCap	T1Cap	T2Cap
Chi2	141.6400	134.9000	0.4300
Prob>Chi2	0.0000	0.0000	0.5105

Source: S&P Capital IQ and author calculations.

with the Corporate- and Dividend-Income-Tax rates equal to 30% and 30%, respectively. Second, the bank that relies on Tier-2-Bank-Capital, such as Malaysia with Corporate- and Dividend-Income-Tax rates equal to 25% and 0%, respectively, and Thailand with Corporate- and Dividend-Income-Tax rates equal to 20% and 20%, respectively. The higher the tax rates, the higher the bank tax obligation from revaluation reserves, i.e. non-cash profit.

Since the Tier-2-Bank-Capital function as an additional layer of capital and cannot be distributed as a dividend, the Dividend-Income-Tax rates should be insignificant and confirmed by the statistical results.

Banks have a significant variation of strategies to gain profits. As measured by Return on Assets (ROA), their profitabilities are relatively the same. The mean value of the Loan-to-Deposit ratio across countries is very different, and within countries, the standard deviation is also relatively large. The same also applies for Net-Interest-Income to Tier-1-Bank Capital and Non-Net-Interest-Income to Tier-1-Bank-Capital. The findings suggest that the bank's business model is unique, and there are many alternatives to make profits beyond Net-Interest-Income.

MANAGERIAL IMPLICATION

Research from Afrianto (2018) and Redoano (2014) find that ASEAN countries compete to lower their tax rates to attract Foreign Direct Investment. Our research finds the positive effect of Corporate- and Dividend-Income-Tax rates on Total-Bank-Capital and Tier-1-Bank-Capital ratio. Combining both results suggests that banks can reduce their Total-Bank-Capital and Tier-1-Bank-Capital ratio when the government reduces Corporate- and Dividend-Income-Tax rates. If this happens, the tax competition brings unintended consequences of higher bank risk from lower bank capital.

Government has other tools to prevent the bad outcome from materializing. Besides tax policy, monetary authority regulations are also significant

determinants of the level of bank capital. Banks should comply with the monetary authority's minimum level of bank capital (Ashcraft, 2008). However, monetary authorities need to make sure that they do not over-regulate. Over regulations may negatively affect bank growth.

The experience of The Philippines' bank can be an important lesson for Indonesia's, Malaysia's, and Thailand's banks to alter their business model beyond Net-Interest-Income without reducing banks' profitability. At the same time, The Philippines may resume their business model path by increasing the profit contribution beyond Net-Interest-Income.

CONCLUSION

The Modigliani-Miller Capital Structure Irrelevant Theorem suggest that firm, including bank, react to government tax rates to gain tax subsidy. ASEAN-4 countries, i.e. Indonesia, Malaysia, The Philippines, and Thailand, have different Corporate- and Dividend-Income-Tax rates. Hence, we expect different bank capital decisions. Our study confirms the expectations. The findings suggest that banks consider the amount of debt tax saving from Corporate-Income-Tax rates.

Within high Corporate-Income-Tax rate countries, banks are reluctant to use Tier-2-Bank-Capital because the capital consists of revaluation reserve, convertible bond, preferred stock, junior debt, and debenture. Banks do not want to be exposed to high tax obligations that reduce bank capital. Tier-2-Bank-Capital is not affected by Dividend-Income-Tax rates because the capital cannot be distributed to shareholders as a cash dividend.

The countries' competition to lower tax rates, both Corporate- and Dividend-Income-Tax rates, provide a window to understand the implication of tax competition to bank capital and business model. Lowering tax rates may result in lower bank capital and higher bank risks.

ASEAN-4 countries' banks may learn each other business models to improve banks' profitability without increasing banks' risk. The Phillipines banks' experience suggests that it is possible to reduce the banks' reliance on Net-Interest-Income and maintain their profitability. ■

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