

The Cyclical Behavior of Price-cost Margin in Indonesian banking: Does Ownership matter?

Dadang Lesmana

Research and Innovation Agency East Kutai, Sangatta, Indonesia
E-mail: dadanglesmana89@gmail.com

ABSTRACT

The purpose of this study is to examine the effect of the business cycle on price-cost margins in Indonesian banking. The research method used is the System Generalized Method Moment (SYS-GMM) to analyze 94 conventional banks in Indonesia for the period 2011-2020. The results of the study indicate that credit is countercyclical to the price-cost margin. This result indicates the financial accelerator mechanism in Indonesian banking. In the control variable, liquidity and market concentration have a significant effect on price cost-margin.

Keywords

Business cycle;
price-cost margin;
financial
accelerator;
banking.

1. INTRODUCTION

The banking sector has a mediated function to link the financial sector and the real sector. The role of banks can also turn deposits into productive investments through credit channels. Monetary policy has implications for the supply of bank credit, which can affect investment decisions and company production in a project. In developing countries, medium and small level banks are highly dependent on funding from the banking sector (Turgutlu, 2010).

Developing countries will experience higher growth through economic reform, financial development, financial integration, privatization, liberalization and consolidation than developed countries. Investors take advantage of available opportunities by looking at growth rates to enter emerging markets. The banking sector in developing countries has an important role to play in the success or failure of these initiatives (Shaban & James, 2018). In base theory Bernanke & Gertler (1989) carried out a conceptual framework called "financial accelerator". This conceptual framework shows that in a modern economy, the role of financial institutions, especially banks with an intermediary function, has an impact on the real economy.

Then according to Bernanke et al. (1999) This is because the "external financial premium" (the difference in expenses originating from external and internal resources) and the wealth of the prospective borrower (liquid assets plus collateral) are related to the value of the assets less the outstanding liabilities. The loan model concludes that the financing premium from has an inverse relationship with the prospective borrower's wealth when looking at the credit market and the amount of financing necessary is constant. This is due to the fact that when a prospective borrower has less wealth to contribute in financing compared to wealth from external parties, external parties have the ability to raise borrowing charges. In order for the lender to be compensated, increased agency charges must be paid at a higher premium. The external finance premium will be counter-cyclical to the degree that the borrower's net worth is pro-cyclical (due to returns and asset prices, for example), as the borrower increases the loan's swing to investment, spending, and output.

Several studies have linked the influence of GDP and credit as a business cycle on margin bank. However, the results of these studies are still being debated. Where when GDP increases it will increase bank margins (Maria & Agoraki, 2010). Meanwhile, other studies have shown that increasing GDP can reduce bank margins (Aliaga-Díaz & Olivero, 2010; Altunbas et al., 2016; Tarus et al., 2012; Turgutlu, 2010). In addition, research Altunbas et al., (2016) by shows that credit results have a negative effect on price-cost margins in European banks. Similar to the research of Jordà et al., (2013) revealed that the role of credit from banks has a very vital role in the modern business cycle, when a leverage boom is linked to poorer growth, investment spending, and credit expansion than typical. The buildup of credit in a recession can increase the vulnerability of the economy.

However, there are still few that discuss financial accelerators in the banking sector. The research by Altunbas et al., (2016) focuses on cross-country in European banking. Furthermore, Turgutlu (2010) focused single country on Turkish banking. Smiliarly, Aliaga-Díaz & Oli vero (2010) focuses on single country in US banking. However, in the banking sector in Asia, no one has discussed financial accelerators even though after the 2007/2008 crisis, banks in Asia contributed to the global economy (Soedarmono et al., 2013). Then, our focusing in Indonesian banking, cause Indonesian banking has the highest performance compared to banks in Asia (Santoso et al., 2020; Vinayak et al., 2016; Yusgiantoro et al., 2019). To fill this research gap, this research contributes to discussing the financial accelerator mechanism in indonesian banking. Then, Similar research conducted by Trinugroho et al (2014) which focused on the behavior of margins in the 97/98 crisis showed that the net interest margin in banking in Indonesia was very high during the crisis, thus causing a slowdown in economic revival.

Furthermore, our contribution analyze the effect of business cycle on price-cost margin within ownership type. Our research focuses on RDB and private banks. Accordance Shaban & James (2018) shows that in the Indonesian banking industry, private bank ownership performs better and is more efficient than state banks. Then, Yudaruddin (2017b) stated that the regional development bank has a unique operation in that it only operates on a regional basis, but has an impact on both national and international levels.

The remainder of the study will be organized as follows: Section 2 Methodology. Section 3 result. Section 4 discuss with empirical studies. Section 5 concludes the research and offers

2. METHOD

2.1. Data Description

The main purpose of the research is to investigate mekanisme financial accelerator di perbankan Indonesia. The study data includes commercial banks in Indonesia. Our focus on Indonesian banking is p Indonesian conventional banks were included in our primary analysis from 2011 to 2020. The primary data are the audited yearly financial reports of each bank. The data on macroeconomic factors collected from the Indonesian Statistics Agency.

2.2. Model

In this study to analyze the role business cycle on price-cost margin in Indonesian banking, the model as follow empirical study:

$$PCM_{i,t} = \beta_0 + \beta_1 PCM_{i-1,t} + \beta_2 * Growth(BC) + \sum k_1 \delta_i * W_{i,t} + \epsilon_{i,t}$$

In this model, i and t are banks and year, respectively, for which we use annual bank-level from Financial Services Authority for 94 conventional banks for the period 2011-2020. Besides that, we estimate $PCM_{i-1,t}$ is entered into a regressor to control lagged PCM which can emerge as a determinant of PCM at this time, it is indicated that PCM is more significant at low levels of competition for several periods.(Turgutlu, 2010)

2.3. Dependent Variabel

On this model (1) the dependent variable of this study, we use a price-cost margin ratio measure premium financial external1. To measure price-cost margin, we follow (Altunbas, 2016;

Turgutlu, 2010; Aliaga-Diaz, 2010) on the following formula:

$$\text{Price - cost margin } 2_{i,t} = \frac{\text{Interest income Total} - \text{Interest expenses}}{\text{Price - cost margin } 3_{i,t} = \frac{\text{Interest income Total} - \text{Interest loan expenses}}{\text{Price - cost margin } 3_{i,t}} \quad (3)$$

$$\text{Price - cost margin } 3_{i,t} = \frac{\text{Interest income Total} - \text{Interest loan expenses}}{\text{Price - cost margin } 3_{i,t}} \quad (4)$$

2.4. Independent Variable

We construct a variable, business cycle (BC), which is measured by GDP and Total Loan, in order to measure business cycle as our main variable independent (Altunbas, 2016; Turgutlu, 2010; Aliaga-Diaz, 2010).

2.5. Control Variable

Monetary policy, bank-specific and bank risk as control variables are also considered in this study. Monetary policy include interest rate, Bank-specific control variables include the natural logarithm of total assets (Size), the ratio of total loan to total deposits (LDR), bank risk control variable use concentration ratio level 3 big banks.

In addition, We use interest rates are always related to bank business activities in deposit and credit, because the intermediation of banks incurs spread costs from interest rates (Turgutlu, 2010). This study adds SIZE as a control variable because banks with large sizes are more involved in managing larger assets than small banks, causing the effect of "too big to fail subsidies"(Beck, 2013; Yusgiantoro et al., 2019). However, liquidity is main important while the economics is down, the bank increases its liquidity level in order to keep large customer

withdrawals from occurring, but incurs more costs that depress bank margins (Adelopo et al., 2017; Altunbaş et al., 2016). Finally, we add bank risk measured concentration as control variable, Market concentration can also pose a risk in competition which causes a decrease in bank margins.

2.6. Methodology

To achieve the objectives in this study, we use the GMM system to regress including business cycle, bank specific, and bank risk to price-cost margin in Indonesia banking. Then we regress three stages. In the first stage, we perform regression of Business cycle indicator as GDP, bank specific, and bank risk on price-cost margin in Indonesia banking. In the second stage, we perform regression of Business cycle indicator as Total Loan, bank specific, and bank risk on price-cost margin in Indonesia banking. Third, we perform regression of Business cycle indicator as Total Loan, bank specific, and bank risk on price-cost margin in Indonesia banking divided by type of ownership, including regional development banks and private banks. Furthermore, we only use the cost-price margin 1 as a measure of the cost-price margin in the third stage2.

In estimating the above model, this study uses dynamic panel data analysis in several previous studies (Altunbaş et al., 2016; Santoso et al., 2020; Soedarmono et al., 2013; Turgutlu, 2010b; Yusgiantoro et al., 2019). However, the relationship between price-cost margin, business cycle, bank specific and bank risk in the banking sector may lead to reverse callus problems. Therefore, we use dynamic panel data model analysis to solve this problem. In using GMM there are two steps, namely (general moment method) or the GMM system following Blundell & Bond (1998) to produce more efficient estimates than using Difference GMM Arellano & Bover (1995) (Baltagi, 2005). Furthermore, this study takes into account the limited sample correction proposed by Windmeijer (2005). then this research is said to be valid if the AR(2) test and the Hansen-J test are not rejected as a whole.

3. RESULTS AND DISCUSSION

3.1. Descriptive Statistic

This study shows descriptive statistics in this study of Price-cost Margin 1 (PCM1), Price-cost Margin 2 (PCM2), Growth Gross Domestic Product (GDP), Growth Credit (Credit), BI Rate, Bank Size (Size), Liquidity, and Market Concentration (Concentration). The descriptive statistics consist of Observations (Obs), the average value (Mean), standard deviation (Std.dev), the minimum value (Min) and the maximum value (Max) of the different variables are presented in the table below.

Table 1.
Descriptive Statistics

Variables	Obs.	Mean	Std. Dev	Min.	Max.
PCM1	940	0.0783525	0.0812455	-1.70347	0.2993739
PCM2	940	0.0775328	0.0377168	-0.0565089	0.4874935
GDP	940	4.586585	2.260877	-2.069544	6.169784
Credit	940	6.99597	0.7157291	4.537328	8.94482
BI Rate	940	5.94335	1.065672	4.25	7.54
Size	940	16.59627	1.615216	11.98129	21.07518
Liquidity	940	100.3268	64.35668	0	996.74
Concentration	940	37.57714	1.507326	35.3322	40.42132

According to the research findings in table 2, only GDP and Market Concentration have a greater value with 0.7029. If the correlation between two variables is 0.9 or above, the model has a multicollinearity problem (Ali & Puah, 2018; Arif & Anees, 2012; Masood & Ashraf, 2012). As a result of the results, the dependent variable in table 2 does not exceed the minimum threshold level, indicating that multicollinearity is not an issue in this study.

Table 2.
Correlation Matrix

	GDP	Loan	BI Rate	Size	Liquidity	Concentration
GDP	1.0000					
Loan	0.1617	1.0000				
BI Rate	0.5156	0.1199	1.0000			
Size	-0.1287	-0.1616	-0.1284	1.0000		
Liquidity	-0.0093	0.0733	0.0030	-0.0688	1.0000	
Concentration	-0.7029	-0.1890	-0.6650	0.1982	-0.029	1.0000

Table 3.
Business Cycle and Price-cost margin; Baseline

Explanatory Variables	Variabel Dependen: Price-cost Margin					
	PCM1	PCM1	PCM2	PCM2	PCM3	PCM3
PCM1-1	0.731*	0.589***				
	(2.49)	(3.91)				
PCM2-1			1.211***	0.714***		
			(3.87)	(5.42)		
PCM3-1					0.697***	0.717***
					(4.37)	(4.77)
Business Cycle:						
1. GGDP	-0.00124		-0.000499		-0.000589	
	(-1.71)		(-1.74)		(-1.69)	
2. Loan		-0.0414***		-0.00833**		-0.0399***
		(-7.26)		(-3.07)		(-7.89)
BI Rate	0.000216	0.000495	0.000531	-0.0000239	0.000261	-0.000286
	(0.21)	(0.87)	(1.20)	(-0.07)	(0.35)	(-0.47)
Size	-	-0.00111	0.000164	-0.000454	-0.000164	-0.000606
	0.000880	(-1.31)	(0.35)	(-1.22)	(-0.31)	(-1.03)
	(-0.28)					
Liquidity	-	-	0.000102*	0.0000727*	-	0.00000852
	0.000186	0.000299***	(2.51)	(2.36)	0.0000529	(0.19)
	(-0.87)	(-3.94)			(-1.26)	

Explanatory Variables	Variabel Dependen: Price-cost Margin					
	PCM1	PCM1	PCM2	PCM2	PCM3	PCM3
Concentration	- 0.00282*	-0.00120*	-0.00103*	- 0.00113***	-0.000482	- 0.00190***
	(-2.21)	(-2.08)	(-2.08)	(-3.39)	(-0.76)	(-3.62)
Constanta	0.0221	0.125**	0.0150	0.0576**	0.0489	0.108**
	(0.31)	(2.80)	(0.50)	(2.76)	(1.40)	(3.07)
Observations	620	573	582	546	599	561
AR(2) test	0.512	0.307	0.362	0.215	0.214	0.107
Hansen-J test	0.337	0.118	0.391	0.372	0.192	0.369

Based on Table 3, the following presents the results of research on business cycle, interest rate, and bank-specific to price-cost margin in Indonesian banking. Table 3 shows the results of the dynamic panel specification test where when one instrument does not meet the requirements, this model is not dynamic. The AR2 and Hansen J test has p value > 0.05 These results indicate that this study meets the requirements of the dynamic panel specification test, so the model in this study is panel dynamic (Yusgiantoro, 2019).

We find the effect of gross domestic product on PCM 1 has a negative coefficient of - 0.000513 and a significance value of 0.087, on PCM 2 has a negative coefficient of -0.000499 and a significant value of 0.082, on PCM 3 has a negative coefficient of -0.000589 and a significant value of 0.090. Overall, the effect of gross domestic income has a negative but not significant effect on the price-cost margin in Indonesian banking.

Then, we document the effect of credit on PCM 1 having a negative coefficient of -0.0414 and a significant value of 0.000, on PCM 2 having a negative coefficient of -0.00833 and a significant value of 0.002, on PCM 3 having a negative coefficient of -0.0399 and a significant value of 0.000. Overall, credit has a negative and significant effect on price-cost margins in Indonesian banking.

In addition, as a control variable that has an influence on PCM is liquidity which has two effects, the first has a positive coefficient of 0.000102 and 0.0000727 with a significance value of 0.012 and 0.018 for PCM 2. Second, liquidity has a negative coefficient of -0.000299 with a significance value of 0.000 for PCM 1. Then, market concentration has more consistent results on PCM, the results of this study indicate market concentration has a negative effect with coefficients -0.00282 and -0.00120 with a significance value of 0.027 and 0.038 for PCM 1, then coefficients -0.00103 and -0.00113 with a significance value of 0.012 and 0.001 against PCM 2, the last coefficient is -0.000482 and -0.00190 with a significance value of 0.447 and 0.000 against PCM 3.

Table 4.
Business Cycle and Price-cost margin; Ownership type

Explanatory Variables	Variabel Dependen: Price-cost Margin			
	Regional Development Bank		Private Bank	
	PCM1	PCM1	PCM1	PCM1
PCM1-1	0.685***	0.620***	0.556***	0.528**
	(3.45)	(3.54)	(3.72)	(3.29)
Business Cycle:				
1. GGDP	-0.00109		-0.0000804	
	(-1.59)		(-0.19)	
2. Loan		-0.0417***		-0.0126***
		(-8.02)		(-4.65)
BI Rate	0.000295	0.000541	0.000712	0.000586
	(0.30)	(0.89)	(1.10)	(0.89)
Size	-0.00222	-0.00104	-0.000196	-0.000410
	(-0.84)	(-1.21)	(-0.35)	(-0.75)

Liquidity	-0.000330	-0.000288***	-0.000448***	-0.000411***
	(-1.95)	(-4.21)	(-6.24)	(-4.75)
Concentration	-0.00272**	-0.00106	0.000968	0.000369
	(-3.05)	(-1.67)	(1.77)	(0.67)
Constanta	0.204**	0.115*	0.0343	0.0614
	(2.64)	(2.26)	(0.95)	(1.55)
Observations	573	573	446	446
AR(2) test	0.751	0.311	0.246	0.729
Hansen-J test	0.677	0.331	0.805	0.842

Based on Table 4, the following presents the results of research on business cycle, interest rate, and bank-specific to price-cost margin in Indonesian banking on ownership type. Table 4 shows the results of the dynamic panel specification test where when one instrument does not meet the requirements, this model is not dynamic. The AR2 and Hansen J test has p value >

0.05 These results indicate that this study meets the requirements of the dynamic panel specification test, so the model in this study is panel dynamic (Yusgiantoro, 2019).

We find the results of the effect of the business cycle on the price-cost margin in regional development banks. First, the effect of gross domestic product on PCM has a negative coefficient of -0.00109 and a significance value of 0.118. second, the effect of loan on PCM has a negative coefficient of -0.0417 and a significance value of 0.000.

We find the results of the effect of the business cycle on the price-cost margin in private banks. First, the effect of gross domestic income on PCM has a negative coefficient of - 0.0000804 and a significance value of 0.848. second, the effect of loan on PCM has a negative coefficient of -0.0126 and a significance value of 0.000. In addition, control variables that have consistent results are liquidity and concentration, have a significant negative effect on price- cost margin.

3.2. Discussion

Based on the results of the analysis in this study, it was found that credit has a negative and significant effect on Price-cost margin in Indonesian banking. This indicates that there is a financial acceleration mechanism in Indonesian banking. These findings suggest that when the economy is contracting, banks react by holding potential loans in order to pay high interest rates, and by charging higher fees to risky borrowers in order to enhance their price-cost margins. This reaction has the potential to enhance macroeconomic shocks. In Indonesia, as a developing country, the banking industry is the most important route of financial intermediation. The bank's countercyclical behavior might limit lending prospects as well as a company's investment and production plans. This practice has the intrinsic result of deepening the economic crisis.

Then these results support Bernanke et al., (1999) and Bernanke & Gertler (1989) the “financial acceleration” framework of the theory of revealed that When a borrower has less funds to put into a project, the possibility for a conflict of interest between the borrower and the external funder is greater. As a result of the increased costs, the lender must compensate for the higher fees by charging a higher premium.

The results of this study are in accordance with research (Aliaga-Díaz & Olivero, M.P., 2010; Altunbas et al., 2016; Turgutlu, 2010) by which shows that credit has a significant negative effect on price-cost margins in European banks. This indicates that credit has an opposite cycle to bank price-cost margins, when credit begins to experience the decline due to weak demand for credit caused by the economic downturn, banks actually increased their price- cost margins. In addition, the results of This research is in line with the findings of (Jordà et al., 2013) revealed that credit has a negative effect on bank margins during a recession. When the demand for credit experiences a very extreme decline during a crisis, banks will increase fees on new borrowers or hold their funds to avoid the risk of borrower default.

Furthermore, we find the effect of business cycle on price cost margin in ownership type. Our result show GDP has no significant effect on the price-cost margin in regional development banks

and private banks. This result supporting Turgutlu (2010) and Yudaruddin (2017) which shows that GDP is too large a measure so that it does not affect the price-cost margin. Moreover, loan as business cycle has a significant negative effect on price-cost margin. These results indicate that during the crisis, private banks and regional development banks reduced their loan volumes due to bad loans during the crisis, thereby increasing bank profitability. Similarly, Yudaruddin (2017a) argued when the economy declines due to the crisis, credit distribution also decreases. In line with Altunbas et al., (2016), Turgutlu (2010) and Yudaruddin (2017) which shows Loan has a significant negative effect on profitability.

Besides that, our result liquidity had a negative and significant effect on Price-cost margin 1 in Indonesian banking. These results indicate that banks always increase liquidity in order to hold deposits, it can actually reduce the bank's price-cost margin, this is because the more banks increase liquidity during a declining business cycle, it actually increases costs, thereby suppressing the bank's margin. The results of the study according by Adelopo et al., (2017) and Altunbas et al., (2016) which shows that liquidity has a negative influence on bank profitability during times of crisis. This indicates that when the economy experiences a downturn, the higher the liquidity of the bank, the more the bank's margin will decrease. This is due to banking concerns about the risk of default so that banks must maintain very high liquidity to meet depositors' demands, so banks increase high interest rates to cover the additional risk.

Then, we documented market concentration has a negative and significant effect on Price-cost margin 1 and Price-cost margin 2 in Indonesian banking. These findings suggest that the more concentrated the market is by large banks, and the less competition there is, the higher the risk of competition, which leads to a drop in bank price-cost margins. The study's findings, following research by (Altunbas et al., 2016) showed that market concentration had a negative effect on bank price-cost margins. This shows that market concentration can also pose a risk in competition which causes a decrease in bank margins. In contrast, The results of this study contradict the research of Khan et al., (2018) analyzing market structure on bank performance. The findings show that market concentration has a positive effect on bank performance. This indicates that the more concentrated a market creates anti-competition which leads to higher profits. Similar to the research of Trinugroho et al., (2014) which states that large banks can manage very high profit margins in the market depending on their monopoly power.

4. CONCLUSION

In this paper, we investigate the effect of business cycle on price-cost margin in Indonesian banking. The study employs a panel of 94 banks in Indonesia during the period 2011-2020. To achieve this goal, we use the dynamic panel system GMM (Blundell & Bond, 1998) to address the problem of reverse causality and endogeneity.

Our research shows that the business cycle, particularly credit, has a negative effect on cost-price margins at Indonesian banks. Then, more specifically we find lending as a business cycle has a significant negative effect on the cost-price margin in regional development banks and private banks. These results indicate that there is a financial accelerator mechanism in Indonesian banks after being controlled, reducing liquidity and reducing market concentration.

Limitation and suggestions

This research only focuses on Indonesian banking with limited control variables, this research can be expanded by discussing cross-country at the ASEAN or Asian Banking level. Our research suggests that the banking sector can encourage lending to the real sector in Indonesia so that the recovery after the health crisis can accelerate. In addition, larger business volumes increase bank interest income with a lower level of risk in a more conducive economy.

REFERENCES

- Adelopo, I., Lloydking, R., & Tauringana, V. (2017). Determinants of bank profitability before, during and after the financial crisis. *International Journal of Managerial Finance*, 14(4).

- Ali, M., & Puah, C. (2018). The internal determinants of bank profitability and stability: An insight from banking sector of Pakistan. *Management Research Review*, 42(2).
- Aliaga-Díaz, R., & Olivero, M.P. (2010). Macroeconomic Implications of “Deep Habits” in Banking. *Journal of Money, Credit and Banking*, 42(8), 1495–1521.
- Aliaga-Díaz, Roger, & Olivero, M. P. (2010). Is there a financial accelerator in US banking?: Evidence from the cyclical behavior of banks’ price–cost margins. *Economics Letters*, 108(2), 167–171. <https://doi.org/10.1016/J.ECONLET.2010.04.037>
- Altunbas, Y., Tommaso, C., & Thornton, J. (2016). Is there a financial accelerator in European banking?. Elsevier Inc., *Finance Research Letters*, 7(5), 1–4.
- Altunbaş, Y., Tommaso, C. Di, & Thornton, J. (2016). Is there a financial accelerator in European banking? *Finance Research Letters*, 17, 218–221. <https://doi.org/10.1016/j.frl.2016.03.020>
- Arellano, M., & Bover, O. (1995). Another Look at the Instrumental Variables Estimation of Error Component Models. *Journal of Econometrics*, 68(1), 29–51.
- Arif, A., & Anees, A. . (2012). Liquidity risk and performance of banking system. *Journal of Financial Regulation and Compliance*, 20(2), 182–195.
- Baltagi, B. (2005). *Econometric Analysis of Panel Data*, Ed.3,. John Wiley & Sons.
- Beck, T. (2013). Islamic vs. conventional banking: Business model, efficiency and stability. *Journal of Banking & Finance*, 37(2), 433–447.
- Bernanke, B., & Gertler, M. (1989). Agency costs, net worth and business fluctuations. *American Economic Review*, 79(1), 14–31.
- Bernanke, B., Gertler, M., & Gilchrist, S. (1999). *The Financial Accelerator In A Quantitative Business Cycle Framework*. Princeton University.
- Bernanke, Ben, & Gertler, M. (1989). Agency costs, net worth, and business fluctuations. *American Economic Review*, 79(1), 14–31. <https://doi.org/10.2307/1804770>
- Blundell, R., & Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics*, 8(7), 115–143.
- Jorda, O., Schularick, M., & Taylor, A. M. (2013). When credit bites back. *Journal of Money, Credit and Banking*, 45(SUPPL2), 3–28. <https://doi.org/10.1111/jmcb.12069>
- Khan, H. H., Ahmad, R. B., & Chan, S. G. (2018). Market structure, bank conduct and bank performance: Evidence from ASEAN. *Journal of Policy Modeling*, 40(5), 934–958. <https://doi.org/10.1016/j.jpolmod.2018.02.001>
- Maria, K., & Agoraki. (2010). The determinants of net interest margin during transition. *Journal of Financial Economics*, 4(2).
- Masood, O., & Ashraf, M. (2012). Bank-specific and macroeconomic profitability determinants of Islamic banks. *Qualitative Research in Financial Markets*, 4(3), 255– 268.
- Risfandy, T., Tarazi, A., & Trinugroho, I. (2020). Competition in dual markets: Implications for banking system stability. *Global Finance Journal*. <https://doi.org/10.1016/j.gfj.2020.100579>
- Santoso, W., Yusgiantoro, I., Soedarmono, W., & Prasetyantoko, A. (2020). The bright side of market power in Asian banking: Implications of bank capitalization and financial freedom. *Research in International Business and Finance*, 56(November 2020), 101358. <https://doi.org/10.1016/j.ribaf.2020.101358>
- Shaban, M., & James, G. A. (2018). The effects of ownership change on bank performance and risk exposure: Evidence from indonesia. *Journal of Banking and Finance*, 88, 483– 497. <https://doi.org/10.1016/j.jbankfin.2017.02.002>
- Soedarmono, W., Machrouh, F., & Tarazi, A. (2013). Bank competition, crisis and risk taking: Evidence from emerging markets in Asia. *Journal of International Financial Markets, Institutions and Money*, 23(3), 196–221.
- Tarus, D. K., Chekol, Y. B., & Mutwol, M. (2012). Determinants of Net Interest Margins of Commercial Banks in Kenya: A Panel Study. *Procedia Economics and Finance*, 2(Af), 199–208. [https://doi.org/10.1016/S2212-5671\(12\)00080-9](https://doi.org/10.1016/S2212-5671(12)00080-9)
- Trinugroho, I., Agusman, A., & Tarazi, A. (2014). Why have bank interest margins been so high in

- Indonesia since the 1997/1998 financial crisis? *Research in International Business and Finance*, 32, 139–158. <https://doi.org/10.1016/j.ribaf.2014.04.001>
- Turgutlu, E. (2010). Cyclical behaviour of price-cost margins in the Turkish banking industry. *Jurnal Econ.*, 27(1), 368–374.
- Turgutlu, E. (2010a). Cyclical behavior of price-cost margins in the Turkish banking industry. *Economic Modelling*, 27(1), 368–374. <https://doi.org/10.1016/j.econmod.2009.09.016>
- Turgutlu, E. (2010b). Cyclical behavior of price-cost margins in the Turkish banking industry. *Economic Modelling*, 27(1), 368–374. <https://doi.org/10.1016/j.econmod.2009.09.016>
- Vinayak, H. V., Lee, G., & Rajendran, S. J. (2016). *Weathering the Storm Asia-Pacific*. McKinsey & Company.
- Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics*, 126(1), 25–51.
- Yudaruddin, R. (2017a). Economic conditions and lending Behavior; Evidence from the regional development banks in Indonesia. *International Journal of Economic Research*, 14(13), 105–114.
- Yudaruddin, R. (2017b). The impact of economic conditions on bank profitability of regional development bank in Indonesia. *International Journal of Applied Business and Economic Research*, 15(19), 1–12.
- Yusgiantoro, I., Soedarmono, W., & Tarazi, A. (2019). Bank consolidation and financial stability in Indonesia. *International Economics*, 5(8), 94–104.