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Article

Profitability Determinants and Performance Analysis of Latin American Banks: A Pre-COVID19 Period

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Abstract

This study has examined the profitability of banks in Latin America, focusing on various performance factors. Using data from 2015 to 2019 prior to COVID-19, the research analyzes key variables such as NIM, ROA, and their relevance variables with macroeconomic indicators. Findings suggest that while asset size positively affects profitability, management efficiency and soundness indicators play a crucial role. Therefore, it needs to examine the various factors that affect the profitability and can confirm the level of financial market expansion prior to COVID-19. Banks have been actual operated in various forms such as domestic, foreign, private, public and so on. Then it has been conducted it that sort each other category in Latin America region. Total banks on Latin America have positive effect in Total Assets in terms of bank's size. But in considerable by each model which are NIM, ROA, it has a different feature in each other model. And it has also conducted by LRGL, NLTA which effect different effect kind of banks in Latin America. Therefore, Bank in Latin America region have less positive drive for expansion of finance market. It is also significant that basic asset' management is necessary like deposit than expanding loans in foreign and public banks of Lain America specially.

Keywords

Banks, Classification, Latin America, Profitability, NIM, ROA, Financial market expansion

Introduction

In global economy, many regional economic situations had changed inside of macro circumstance. Specially, as it is deepening on global financial crisis in the world, we had to consider that global financial market has a fluctuant movement and respond to reduce a risk by

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negative shock in financial market.

Then we should check the remarkable sectors about financial major volatility in terms of macro variable. Macro variable about finance is various but it is important variable which is related with profitability of financial institution. Because financial institution has major effect in entire economic situation of each country. This is also correlated with qualification of financial market in country. Therefore, we need to check the profitability of financial institution which is related with household economy intensively.

Recently, main effective institution of finance market may be banking institution because banking activity include a various role is concerned of household, corporation and government activities that can decide to the way to economy of country. And banks also have role those in deposit for household fundamentally, as this is priority role of banks for favorable economic circumstance. And it supports a corporation in associated with financial and trade transaction which are charge in almost transaction in private economic activity in country.

And we recent have interest in sustainable economic development. This mission may be common subject for global economy. In this view, developing country's role is more essential because advanced countries are almost limited with in sustainable growth recently. Therefore, Latin America region need to check the status of finance market that can support the sustainable development of global economy. And this analysis is necessary to examine except COVID-19 period because these were special expertise impact in economic sector.

Then it basically has examined the current situation of profitability of bank in Latin America. And it has indicated current circumstance of finance market for using profitability of bank and it suggest the way of policy in financial market on Latin America.

Theory and Existing Research

Bank's Profitability Theory

Deposits are an element that incurs various regulatory and management costs and has the characteristic of incurring procurement costs. Therefore, the government's monetary policy and banking regulations often have the effect of reducing the profitability of banks due to an increase in management costs. However, since deposits are generally safe products and have a lower interest rate than marketable receipts, in the bank's position, the higher the proportion of funds raised by deposits, the more likely it is to reduce costs and increase the profitability of the bank.

Capital can be viewed as the ratio of equity to total assets, and high capital holdings lead to more banks' profitability because more liquid resources are available. In addition, it is possible to determine and operate the securitization portion of the loan according to standardized capital ratio regulations. Berger (1995) argues that the increase in the proportion of capital holdings is generally opposite to that of the capital stock itself. And it can note that the proportion of capital holdings alone cannot guarantee profitability. As the risk factor increases, the increase in liquidity surplus funds rather increases the proportion of capital and leads to an increase in the profitability of banks.

Rapid economic growth appears to increase profitability in number of countries (Demirgüç-Kunt & Huizinga, 1999). GDP drives the rise and fall of the business cycle and has a direct impact on the profitability of banks. Changes in the business cycle directly affect deviations in GDP, and an increase in the share of GDP per capital guarantees the permanence of economic development. On the other hand, an increase in GDP may have a negative effect on profitability by increasing competition in interest rates and reducing entry barriers in the banking market.

Positive and negative views are sharply opposed to the enlargement of banks. The reasons for promoting the enlargement of banks include cost reduction through the realization of economies of scale and scope, risk distribution through business districts and diversification, and opportunities to create new revenue sources. On the other hand, increased inefficiency due to the rigidity of large-scale organizations, increased possibility of system risk, and contraction of SME loans are pointed out as side effects of bank enlargement. As described above, the number of empirical studies has been conducted so far in a situation where the theoretical level of discussions that there can be benefits and losses in the enlargement of banks are in tight conflict. Abreu and Mendes (2001) showed that banks with large funds are more profitable.

In particularly, the number of empirical research results are accumulating on what kind of relationship exists between bank enlargement and cost efficiency, represented by an increase in asset size. Naceur (2003) showed that the enlargement of banks is related to net interest income and profitability.

On the other hand, it is true that whether the enlargement of banks contributes to profitability has been relatively neglected by researchers, and an agreed conclusion has not been reached on the relationship between the two side. Berger (1995) showed a positive relationship between wealth and profitability in the US in the 1980s, contrary to the traditional wealth relationship.

Existing Research

Logan (2016) discussed about factor of profitability of financial institutions in Latin America and Caribbean. It has performed to check whether is difference on profitability of bank between Caribbean and Latin America and consider relationship between the source of revenues and balance sheet composition. Period set in 1998-2013 and it is used in bank focus in 400 deposits of financial institution. Thus, it noted that performing of profitability has activated in non-traditional activity and less-stable macroeconomic environments.

Demirgüç-Kunt and Huizinga (1999) analyzed the relationship between profitability and banks with large assets in 80 countries from 1988 to 1995. When the increase of banking assets and market concentration are accompanied, the results show that the profitability of the bank increases. On the other hand, when the market concentration is low, the profitability of the banks that operate high-scale assets is low.

Saona (2016) discussed about profitability of bank in Latin America during 1995~2012. It has find evidence of several major relationships involving bank profitability which is an inverse U-shaped relationship, a positive relationship between diversification and a negative relationship between revenue diversification and so on. This study noted that assessing these relationship using data on Latin America bank estimating their model using a system GMM.

Guillén et al.(2014) study about bank profitability which estimate the determinants of Latin American banks' profitability and, try to understand the reasons. Using data envelopment Analysis to better exploit the information of several variables at the same time and, by employing a sample of 200. It insists that banks in Latin America been profiting from their oligopolistic position in detriment of their clients in particular and of their whole economy in general.

Hordones and Sanvicente (2021) had conducted which evaluate the influence of market structure on the competition between banks and to determine whether competition affects their profitability in different countries in Latin America. The study also seeks to compare, between 16 countries in the continent, the levels of concentration, competition, and profitability of the respective banking sectors. To evaluate competition, the Panzar-Rosse model was used. Concentration was measured by the Herfindahl-Hirschman index and CR5 ratio. And this study was tested, via a sample of 16 countries in Latin America, covering the period from 2011 to

2017, using panel data regression. This result that rejected the premises of the structure-conduct-performance (SCP) model, which affirm that concentration reduces competition, causing higher profitability in the sector. In the comparison of the studied variables between the countries

Iskandar et al. (2019) conducted an analysis of the impact on profitability of commercial banks in Malaysia using annual data from 2011 to 2017. Focusing on ROA and ROE, capital adequacy has little effect on profitability, and efficiency, liquidity, and credit-related variables have a significant effect on profitability, thus claiming the difference from traditional theory.

Research Methods and Materials

Research Methods

For examine, profitability of banks in the Latin America region, all bank of Latin America region was classified separately from Bank Focus. It has considered that banks of Latin America have almost performed banking activity in developing country. Then developing country have each other characteristic in scope of performance for profitability of bank. Therefore, representative country of developing country region, Latin America, it needs to confirm the status for finance market by banking performance.[1]

Firstly, for examining the difference affecting the NIM and ROA[2], which are representative profitability and variables of banks. And the performance of the banks was determined using ND (loan-to-deposit ratio), which is the bank's efficiency variable, and the effect of the ratio of total loans to deposits was analyzed. The size of a bank is represented by the size of its total assets (TAS) which has been analyzed. In addition, asset-related effects were examined in consideration of the effect of NLTA, which indicates loan management capability. The soundness variables are to confirm the effect of the soundness of the bank on profitability by using provision for loan loss reserve to gross loss (LRGL)[3] and total equity to total assets (TETA)[4].

Finally, there are the macro-environmental factors of the region was considered by using GDP and inflation (INF) which represent the economic scale of the country, as priority macro-environmental variables.

All banks of Latin America were classified into a kind of all which is available data in Bank Focus. And it has classified by corporate banks which exclude offices and branches. More, nature of bank is basically different, then bank that is other objects which discriminated by domestic, foreign, public and private bank.[5]

This study' subject is to confirm all bank's profitability in Latin America region and diagnose status of financial market in basically. But there are some banks that are not included in the data, and the data classification was conducted in a thorough investigation, and there may be some restrictions on data that not to be applied to all banks. And Covid-19 was special things for our financial market. Then, we have examined default status of Latin America's financial market by profitability of banks before 2019 that except an exogeneous effect. Entire period of analysis conduct from 2015 to 2019 after 2011~2014 period have some restriction of data insufficient about NIM.[6]

Data

Most of the data used in this study was collected by Bank Focus, which has data on the management of banks around the world. In addition, there may be restrictions on data consisting only of banks in the database as there are many banks that do not agree to provide bank

Table 1. Data description and source

Division	Item	Variable	Variable Description	Period	Source
Dependent Variable	Profitability	NIM	Net Interest Margin	2015~2019	Bank Focus
		ROA	Return on Assets	2015~2019	Bank Focus
Independent Variable	Efficiency	ND	Rate of loan to deposit	2015~2019	Bank Focus
	Macro Environment	INF	Inflation index	2015~2019	IMF
		GDP	Real size of GDP	2015~2019	World Bank
	Asset	NLTA	Net Loans to Total Assets	2015~2019	Bank Focus
		TAS	Bank Size	2015~2019	Bank Focus
	Soundness	LRGL	Loan Loss Reserve to Gross Loan	2015~2019	Bank Focus
		TETA	Total Equity to Total Asset	2015~2019	Bank Focus

information to Bank Focus. In addition, macroeconomic variables such as the scale of economic growth (GDP) and inflation index (INF) were based on data from the IMF and World Bank.

Total Asset was used as an asset variable representing the size of the bank. ROA (return to total assets) and NIM (net interest margin to total assets) were used as key profitability variables. For details on the bank's main business conditions, the introduction of the banking corporation and the operation report were referenced through each bank's website.[7]

Analysis Method

Based on the above discussion, an estimation equation to examine the effect of bank performance factors on profitability can be established as shown in Equation (1) below.

$$Y_{i,t} = \alpha_i + \beta_1 BV_{i,t} + \beta_2 MV_{i,t} + e_{i,t} \quad (1)$$

In equation (1), the dependent variable Y represents the profitability of the bank and the variables NIM and ROA, BV is the bank performance variable, BV=[ND, NTTA, TAS, LRGL, TETA], and MV is controlled As a variable, it means MV=[INF, GDP]. In this study, we proceed to be based on some methodologies. First, we can consider the pooled least square method (pooled LS) of Eq. (1). At that time, the t-value is calculated using the modified variance-covariance matrix using White's method to consider heteroscedasticity. Second, to consider the unique characteristics of individual countries, the analysis is performed using a fixed effect model (FEM) and a random effect model (REM). If the effect of unobserved area and year is added to the basic model of equation (1), it is as in equation (2) below. At that time, the Hausman test is conducted to confirm the suitability of the model.[8]

$$Y_{i,t} = \alpha_i + \beta_1 BV_{i,t} + \beta_2 MV_{i,t} + \gamma_i + \delta_t + e_{i,t} \quad (2)$$

Third, in this study, to check the dynamic effects of bank profitability and factors, we estimate using the system GMM model among the dynamic panel analysis methods proposed by Arellano

and Bover (1995) and Blundell and Bond (1998). The dynamic panel model uses the past value of the dependent variable as an explanatory variable, and the general panel's linear regression model is as Equation (3) below.[9-11]

$$Y_{i,t} = \alpha_i + \beta_1 BV_{i,t-1} + \beta_2 MV_{i,t} + u_{i,t} \quad (3)$$
$$u_{i,t} = v_i + e_{i,t}$$

($u_{i,t}$: error term, v_i: Individual country effect, $e_{i,t}$: discrete disturbance)

In general, in the case of the fixed-effect model and the random-effect model, which are used in panel data analysis, inconsistent estimation occurs because both models have a correlation between the explanatory variable and the error term as the lag variable of the dependent variable is used as the explanatory variable that is known to be. For this reason, dynamic panel analysis should be used to obtain consistent estimates. Arellano and Bond (1991)'s first difference dynamic generalized moment method (GMM) is a differential GMM using a first-order difference model as shown in Equation (4). This is a method of obtaining a coincidence estimate by using it as an instrumental variable of the endogenous explanatory variable of the model.

$$\Delta Y_{i,t} = \beta_1 \Delta Y_{i,t-1} + \beta_2 \Delta X_{i,t} + \Delta e_{i,t} \quad (4)$$

Later, Arellano and Bover (1995) and Blundell and Bond (1998) further developed a dynamic panel model using GMM and proposed a System GMM that uses the level variable of the dependent variable and the differential parallax variable as instrument variables. System GMM is an estimation form that combines the level equation as in Equation (3) and the difference equation in Equation (4). The first difference equation uses the level lag variable of the explanatory variable, and the level equation uses the difference lag variable of the explanatory variable. Use it as a variable. This has the advantage that System GMM using additional tool variables can obtain more efficient coincidence estimates than existing differential GMMs. On the other hand, in using the parallax variable in using the instrumental variable, it is necessary to test the autocorrelation for the error term because the condition that there is no autocorrelation in the error term must be satisfied. Therefore, in this study, Sargan test is performed to test the suitability of model setting and use of instrument variables. Also, in general, if the number of instrument variables is larger than the number of endogenous explanatory variables, over-identification estimation can be made, so a test is required, and the most widely used Hansen test is additionally performed. The null hypothesis of the over-identification test indicates that all selected instrument variables are not correlated with the error term, indicating that there is a problem in the suitability of the over-identified model if the null hypothesis is rejected. However, the Sargan test is valid only when the error term is iid.(independent and identically distributed), and due to the problem of heteroscedasticity, the null hypothesis can be rejected in the Sargan test result. To this end, when heteroscedasticity exists, the suitability of the model and the use of instrument variables can be confirmed through the Hansen test method. Therefore, in this study, there is a limitation of studies that fail to pass the Hansen test or the autocorrelation test (AB) in most cases depending on the small sample.

Empirical Analysis

Latin America Bank's Profitability Factor Analysis

As analyzing the effect on the profitability of banks in the Latin America region from 2015 to 2019, an analysis of the performance factors of banking activity was conducted. We used regression analysis using panel data is used to analyze the fixed effects model that contribute the prudential result considering endogenous problems between countries. And we examine the robustness of factors that affect the profitability of banks through the Generalized Method of Moments (GMM) that takes the system effects of bank profitability.

Then, it can note that the basic statistic below. It was reported by criteria of fixed effect model which has most amount sample. It is note that has conducted appropriately in estimate, various variables show that is nothing high level coefficient level both equation NIM and ROA.

Profitability and Analysis of Latin America Bank

Analysis of Profitability and Factors of Banks in the Latin America Region

The following table shows the factors affecting the profitability of all banks in the Latin America region. When looking at the impact on the net interest margin (NIM) of All banks operating in the Latin America region in paneled model, the results of the paneled analysis appear to have a significant effect in most of them except for some variables. In addition, it can note that

Table 2. Basic summary statistics (NIM)

Variable	NIM	ND	NLTA	LRGL	INF	GDP	TAS	TETA
Average	15.3	119.0	55.9	7.1	5.6	27.4	11.4	21.4
Maximum	18.9	123.8	20.4	22.9	6.9	1.3	2.6	15.6
Minimum	-67.2	-736.5	-2.0	-0.9	-0.9	21.3	4.0	-34.7
Standard Deviation	668.9	998.9	104.7	823.4	53.5	28.2	19.9	97.6
Obs.	6777	6777	6777	6777	6777	6777	6777	6777

Table 3. Correlation (NIM)

Variable	ND	NLTA	LRGL	INF	GDP	TAS	TETA
ND	1						
NLTA	-0.2888	1					
LRGL	0.0601	0.0685	1				
INF	-0.0101	-0.0106	0.0068	1			
GDP	0.0107	0.135	-0.0283	0.368	1		
TAS	-0.0102	-0.0567	0.0138	0.2122	-0.3011	1	
TETA	-0.2635	0.0589	-0.0234	0.0192	-0.0414	0.287	1

Table 4. Description of Statistics (ROA)

Variable	ROA	ND	NLTA	LRGL	INF	GDP	TAS	TETA
Average	2.1	117.7	56.0	7.2	5.4	27.3	11.5	21.2
Maximum	4.4	122.1	20.5	23.0	6.7	1.4	2.6	15.5
Minimum	-102.2	-972.0	-2.0	-0.9	-0.9	21.3	4.0	-34.7
Standard Deviation	39.2	998.9	104.7	823.4	53.5	28.2	20.0	99.0
Obs.	7267	7267	7267	7267	7267	7267	7267	7267

Table 5. Correlation (ROA)

Variable	ND	NLTA	LRGL	INF	GDP	TAS	TETA
ND	1						
NLTA	-0.2964	1					
LRGL	-0.0017	0.0939	1				
INF	-0.0078	-0.0391	0.0296	1			
GDP	0.0147	0.1106	-0.0344	0.2733	1		
TAS	-0.0078	-0.0713	0.0598	0.2332	-0.2687	1	
TETA	-0.2621	0.0614	0.0027	0.0203	-0.0376	0.271	1

statistically significant variables show that the significant values in ROA are generally a lot than those in NIM. In other words, it can see that Latin America banking corporations are less affected by interest income activities than non-interest factors in the profitability of banks.

These are also similar in GMM, there are more significant variable than NIM. Specially, GDP effect is differently in each model. It has only the negative effect in paneled ROA except NIM. But it has positive effect in GMM of NIM, coefficient value is bigger in paneled model of ROA. This has implicit of reduction of financial market of Latin America. Simply, market pursuit the revenue of operating of banking fixed assets that is related of non-interest revenue. Financial market of Latin America's pure role is not performed.

It has a positive effect of all models in each paneled and GMM in TETA. Then bank of Latin America is affected by soundness and transparency on management of banking activity. In TAS that is Total Assets, all of ROA model support the significant positive effect on ROA model, this means that banking activity is concerned with non-finance that is related in operating like fixed assets.

This is table of private banks below. Private banks list is displayed that public bank is exceptional in all banks list. public bank has different character with private bank those in managing assets instead public banks has major authorities in financial market in each country. This classification is for identifying the pure effect to financial market.

The table of Private bank is also check that significant variable is more in ROA than NIM model Paneled regression. In case of private sector, it is also financial sectors activity that is few in financial market because GDP variable is not significant in NIM, but is significant on ROA, GDP has clearly negative effect. It means that reduction of financial activity is being when GDP increase, revenue of interest-related financial asset does not increase because there is not enough

Table 6. Profitability analysis of all banks in Latin America[12]

Variable	All of Banks		All of Banks	
	Fixed Effect Regression		GMM	
	NIM	ROA	NIM	ROA
	Fe	Fe		
L1			-0.210 (0.003)	**0.055**** **(0.021)**
ND	0.002 (0.002)	**-0.002***** **(0.000)**	0.001 (0.003)	-0.000 (0.000)
NLTA	**-0.212***** **(0.019)**	**0.022***** **(0.004)**	-0.039 (0.040)	0.006 (0.007)
LRGL	-0.002 (0.013)	**-0.012***** **(0.003)**	0.081 (0.044)	**-0.034***** **(0.006)**
INF	**-0.149***** **(0.050)**	0.021 (0.012)	0.041 (0.066)	0.004 (0.014)
GDP	-10.028 (8.448)	**-8.535***** **(1.684)**	**1.486***** **(0.354)**	-0.257 (0.654)
TAS	-0.022 (0.622)	**1.967***** **(0.147)**	**-1.644***** **(0.377)**	**1.478***** **(0.180)**
TETA	**0.180***** **(0.033)**	**0.233***** **(0.008)**	**0.194***** **(0.036)**	**0.302***** **(0.012)**
C	298.737 (229.564)	**206.939** **(45.678)**	-6.301 (8.242)	-14.423 (18.454)
obs	6777	7267	5198	5695
Num. of Banks	1723	1731	1674	1682
R2	0.032	0.138	0.000	0.000
Sargan			0.000	0.000
Hansen (Hausman)	0.000	0.000	0.005	0.000
AB1			0.711	0.981
AB2			0.497	0.638

Note: ( ) means standard errors, ***, ** means 1, 5 percent significance level, respectively.

for performing in financial market.

We can see that TAS has only increased in ROA. It means that Total Asset has the effect to the financial and non-financial performing those in enduring revenue. But these effects have been ROA model that endure positive effect to revenue. Then scale of economy in finance related in banking activity is significant in non-finance activity of bank. TETA is also significant result on all of model and regression method. TETA is equity to total assets which soundness of performing of banks management. As increasing of soundness effect to profitability of bank, bank activity can contribute to increase profit in finance. And we has to check the coefficient of TETA value which in high value in ROA model than value in NIM model. There is more efficiency in ROA related in non-interest profit.

It can see the result of analysis of domestic bank' profitability below. It can check the many influence significances in paneled model in ROA. These means that private bank in Latin America is significant in some variable which in LRGL, TETA, TAS and so on. But these are different between paneled and GMM model. One point is GDP variable that is significant in

Table 7. Profitability analysis of private bank in Latin America

Variable	Private Banks		Private Banks	
	Fixed Effect Regression		GMM	
	NIM	ROA	NIM	ROA
	Fe	Fe		
L1			-0.203 (0.138)	**0.057***** **(0.022)**
ND	0.003 (0.002)	**-0.002***** **(0.000)**	0.002 (0.004)	-0.000 (0.000)
NLTA	**-0.219***** **(0.020)**	**0.024***** **(0.004)**	-0.047 (0.042)	0.008 (0.007)
LRGL	-0.002 (0.014)	**-0.011***** **(0.003)**	0.080 (0.044)	**-0.032***** **(0.006)**
INF	**-0.144***** **(0.052)**	0.022 (0.012)	0.036 (0.069)	-0.004 (0.015)
GDP	-10.575 (8.899)	**-8.395***** **(1.766)**	**1.477***** **(0.355)**	-0.294 (0.676)
TAS	-0.162 (0.643)	**1.961***** **(0.151)**	**-1.539***** **(0.402)**	**1.406***** **(0.187)**
TETA	**0.176***** **(0.035)**	**0.241***** **(0.008)**	**0.190***** **(0.037)**	**0.310***** **(0.012)**
C	316.220 (242.061)	**203.342***** **(47.956)**	-6.842 (8.419)	-12.676 (19.057)
Obs	6585	6935	4974	5430
Num. of Banks	1646	1654	1599	1606
R2	0.032	0.145		
Sargan			0.000	0.000
Hansen (Hausman)	0.000	0.000	0.000	0.000
AB1			0.004	0.001
AB2			0.780	0.977

Note: ( ) means standard errors, ***, ** means 1, 5 percent significance level, respectively.

ROA of paneled regression and NIM of GMM regression. But there is negative effect in ROA of paneled model and positive effect in NIM of GMM model.

We can induce that difference of result of NIM and ROA in GDP variable is difference of role in finance activity, that means difference of expansion of finance market on Latin America. Then, in paneled model, we can see that domestic bank in Latin America have possibility of reduction of finance market, contrast of NIM in GMM. Instance of, domestic bank is more positive effect on finance utility than all of bank or private bank market. Therefore, it would check the foreign bank sector.

We can see the result of foreign bank' profitability model in <Table 9>. It is also that can confirm the paneled model which has a positive result on ROA. This is some different result contrast of domestic bank model. Instance, foreign bank doesn't have the effect the financial expansion by economic scale increasing. Fundamentally, a foreign bank decides to invest the other country when it occurs the profit in interest revenue activity. In Latin America financial market, foreign bank doesn't take a reason in analysis result table as it can examine to enter the

Table 8. Profitability analysis of domestic bank in Latin America

Variable	Domestic Banks		Domestic Banks	
	Fixed Effect Regression		GMM	
	NIM	ROA	NIM	ROA
	Fe	Fe		
L1			-0.207 (0.139)	**0.065***** **(0.022)**
ND	0.002 (0.002)	**-0.002***** **(0.000)**	0.001 (0.003)	-0.000 (0.000)
NLTA	**-0.220***** **(0.020)**	**0.022***** **(0.004)**	-0.041 (0.042)	0.008 (0.007)
LRGL	-0.003 (0.014)	**-0.011***** **(0.003)**	0.080 (0.044)	**-0.003***** **(0.006)**
INF	**-0.162***** **(0.053)**	0.017 (0.013)	0.037 (0.072)	-0.006 (0.015)
GDP	-9.825 (8.826)	**-9.370***** **(1.756)**	**1.533***** **(0.358)**	-0.381 (0.639)
TAS	-0.136 (0.641)	**1.999***** **(0.150)**	**-1.649***** **(0.413)**	**1.442***** **(0.189)**
TETA	**0.188***** **(0.034)**	**0.237***** **(0.008)**	**0.190***** **(0.036)**	**0.310***** **(0.012)**
C	295.294 (240.069)	**229.668***** **(47.680)**	-7.371 (8.420)	-10.679 (18.168)
obs	6546	6999	5915	5480
Num. of Banks	1664	1670	1615	1623
R2	0.034	0.144		
Sargan			0.000	0.000
Hansen (Hausman)	0.000	0.000	0.000	0.000
AB1			0.005	0.000
AB2			0.680	0.996

Note: ( ) means standard errors, ***, ** means 1, 5 percent significance level, respectively.

finance market on Latin America.

Generally, we can expect result of public bank to perform as role of public activity. Then we can check the result in table. GDP is only significant in ROA of GMM positively. This means that increase of economic scale rises the profit in concern with non-interest finance performing. But public banks have entirely positive effect related in TAS which means scale of total assets of banks. Therefore, public bank's role are significant and we can also check that soundness related with TETA is not strong effect which public bank used to expense enormous asset for public finance.

Impact on Profitability Factors of Banking Corporations

It is for robustness for result in profitability analysis, we can check the more significant result that examine between two model. Because in various study, result in related with positive or negative in model can differ in various study. Then it has checked the result that satisfy both two model.

LRGL has a negative (-) effect on almost ROA model that only except foreign bank. Foreign

Table 9. Profitability of foreign bank in Latin America

Variable	Foreign Banks		Foreign Banks	
	Fixed Effect Regression		GMM	
	NIM	ROA	NIM	ROA
	Fe	Fe		
L1			-0.043 (0.205)	**0.764***** **(0.155)**
ND	-0.017 (0.013)	**0.019***** **(0.006)**	**-0.058***** **(0.023)**	0.004 (0.004)
NLTA	**0.089***** **(0.038)**	**-0.109***** **(0.021)**	0.056 (0.041)	**-0.038***** **(0.009)**
LRGL	**0.493***** **(0.166)**	**-0.240***** **(0.102)**	**0.734***** **(0.332)**	-0.045 (0.065)
INF	-0.004 (0.049)	0.028 (0.031)	**0.115***** **(0.045)**	0.032 (0.018)
GDP	-4.353 (12.053)	**14.168***** **(5.262)**	-1.065 (0.732)	-0.368 (0.229)
TAS	**-2.971***** **(1.295)**	**-2.131***** **(0.772)**	0.563 (0.409)	0.210 (0.132)
TETA	**0.292***** **(0.091)**	**-0.218***** **(0.056)**	**0.547***** **(0.167)**	**0.183***** **(0.051)**
C	169.981 (320.789)	**-335.673***** **(139.466)**	18.747 (19.700)	6.571 (4.779)
obs	179	209	139	167
Num. of Banks	47	49	47	47
R2	0.283	0.263		
Sargan			0.012	0.000
Hansen (Hausman)	0.000	0.000	0.212	0.003
AB1			0.029	0.015
AB2			0.254	0.045

Note: ( ) means standard errors, ***, ** means 1, 5 percent significance level, respectively.

banks note positive (+) effect in NIM only. This means that operating ability of foreign bank can acquire earning from financial market. Almost banks in Latin America be considered in non-interest sector is not effective operating.

It notes that result all of model that is satisfied both significance model. In all of banks, there are most significant variables are TETA. It is only positive (+) effect in ROA model in foreign bank.

And the TAS is significant in almost ROA model. This is also bank in Latin America that has effect on scale of economic, but it is only non-interest investment. This means that scale of economy effectiveness has a restriction for expanding profit. Because all of banks do not have significant effect in NIM model.

GDP and INF are not significant in all of model that don't has effected profitability clearly. But it has discussed about expansion of financial market in Latin America. And specially, foreign banks have not significant result on GDP, then it need a more discussion to utilize financial market effectively.

Table 10. Profitability of public bank in Latin America

Variable	Public Banks		Public Banks	
	Fixed Effect Regression		GMM	
	NIM	ROA	NIM	ROA
	Fe	Fe		
L1			0.486 (0.245)	-0.048 (0.080)
ND	**-0.010***** **(0.004)**	-0.000= (0.002)	-0.003 (0.007)	-0.003 (0.003)
NLTA	0.024 (0.045)	-0.013 (0.018)	0.043 (0.029)	**-0.070***** **(0.032)**
LRGL	-0.047 (0.165)	**-0.158***** **(0.064)**	0.010 (0.026)	**-0.453***** **(0.109)**
INF	**-0.216***** **(0.082)**	-0.032 (0.038)	0.001 (0.073)	-0.055 (0.052)
GDP	-4.971 (14.293)	-9.508 (5.074)	1.071 (0.709)	**10.550***** **(1.908)**
TAS	**6.834***** **(1.371)**	**2.650***** **(0.577)**	-1.429 (1.051)	**2.764***** **(0.489)**
TETA	**0.290***** **(0.087)**	0.048 (0.036)	0.065 (0.079)	**0.162***** **(0.060)**
C	42.899 (380.841)	221.135 (134.333)	-6.954 (11.990)	**-319.204***** **(58.107)**
obs	240	273	184	217
Num. of Banks	65	65	63	64
R2	0.234	0.125		
Sargan			0.000	0.000
Hansen (Hausman)	0.000	0.000	0.084	0.000
AB1			0.001	0.190
AB2			0.497	0.638

Note: ( ) means standard errors, ***, ** means 1, 5 percent significance level, respectively.

Table 11. Analysis of impacts on corporate bank performance in ASEAN

Variable	Latin America									
	All Bank		Foreign Bank		Private Bank		Domestic Bank		Public Bank	
	NIM	ROA	NIM	ROA	NIM	ROA	NIM	ROA	NIM	ROA
ND										
NLTA				(-)						
LRGL		(-)	(+)			(-)		(-)		(-)
INF										
GDP										
TAS		(+)				(+)		(+)		(+)
TETA	(+)	(+)	(+)		(+)	(+)	(+)	(+)		

Note: It expressed that only significant effect in model.

Conclusion

The global economy continues to change with diversity, and the role of the Latin America region that developing country is becoming more important and considerable. The Latin America region is being priority role of economic growth, and the need for an economic role is emerging as the global economy, such as the international economy North America and Europe, is facing its limitations. And global financial market had experienced COVID-19 and overcome. In addition, with the growth of the global economy and various kinds of volatility, the international financial market is growing and the need for a new financial market with high growth potential has been raised like a Latin America. But Latin America region have some doubt to continue sustainable growth contrast of other developing countries.

Therefore, it is for clearly check about profitability affecting the bank's profitability of the Latin America Banks, a quantitative analysis has conducted on the affecting the bank's profitability of banks from 2015 to 2019 because it needs to check pure effect to profit until COVID-19.

As a result, there is a significant relationship with NLTA, LRGL, TAS and TETA. NLTA is a management variable that the ratio of loans to assets and is terms of operating techniques of bank. Management capabilities of bank have the impact on the bank's profitability is different. In particularly, it has only a statistically consistent ROA's negative (-) effect in the foreign and Private bank. Therefore, the improvement of the management techniques of Latin America banks have limited or non-effect.

LRGL have note that is negative (-) effect in ROA model. But it only notes that is positive (+) effect in NIM of foreign bank. That is possibility that foreign banks' operating ability can support the finance improvement of Latin America.

TAS is the total asset size and is a variable that decide the scale of a bank. Larger banks have a positive (+) effect on public, domestic and private bank in ROA only. This means that effect of increasing non-interest income, causing a decrease in profitability of deposit and loan in the long term, which is a factor in the reduction of financial market in the Latin America. Increasing non-interest income lowers the profitability of financial assets and has the effect of increasing the gap between bank deposit and loan interest, and increasing interest income has the effect of reducing the gap between deposit and loan interest. It can note that economics of scale caused by assets in ROA in the Latin America region's banking corporations are counterproductive while NIM doesn't affect to profit. This means that most banks can operate inner transaction in a country and have a restriction for developing and improving financial activity.

On the other hand, in general, along with the theory that as the economic scale (GDP) increases partially in domestic and Private model and so on, the bank's profitability increases, and in the Latin America's financial market, the increase in the financial transaction of the country appears to increase the profitability of the bank. But Latin America bank has limitation that occurred by positive in Domestic and Private of ROA.

When looking at the financial market in the Latin America region, focusing on banking activity, management capacity for loans and soundness is the main factor affecting profitability, and the growth capacity of the national economy is strongly acting as an exogenous factor. But Bank performance capacity may have limited role in financial market in Latin America. This factor may cause various exogenous sectors which in policy, international relationship, social factors. In focusing finance, fundamental factor, banking is major institution for sustainable economic development. Latin America's policy for renovation is necessary to focusing banking capacity for extending adaptable liquidity, because bank activity have played to reduce financial market size until COVID-19.

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Conflict of Interests

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Notes

1. Firms in each country or financial center is important role for advancing of commercial bank(Buch, 2000)
2. ROE can be also subjected to variable for profitability. But has to consider endogenous restriction which related in key independent variable like TETA. then it has excluded to be caused ROE has a possibility to overshoot resultant of analysis and is possibly in leverage effect.
3. Commercial bank is most affected by default risk (Angbazo, 1997) and it is related with loan loss reserve to gross loan in this paper.
4. Bourke (1989) shows that concentration of bank is related in profitability in US. Domestic, then variable of concentration was except in research.
5. It has conducted to check bank' classification by website, general information of bank focus and financial statement and so on. These are all enumeration basically. Then it may have been little errors.
6. The data of bank in Latin America have arranged in bank focus, but it has amount blanks in 2012~2014. It is expressed that major variable in NIM. Therefore, it has chosen resent period because main discuss is comparable between NIM and ROA model,
7. It has referenced in website and annual report for separating foreign and domestic banks.
8. The study has included in fixed effect model and GMM because pooled LS model has strongly significant resultant in entire model. It is considered for high significant result for soundness.
9. The resultant of Hausman test has rejected in all of model. This means that these models may have less effective analysis that it can't include enough effect in error term while Random effect. Whereas GMM have considered endogenous of defendant variable, then this method has been considered both restrictions adopting more strengthening soundness.
10. The Models are constituted with IV variables that all of independent variable, ND, LRGL, NLTL, INF, GDP, TETA, TAS. It has considered that standard assumption among all of variable.
11. All models include rejection of Hansen which can't take overidentification, but it has overcome restriction of Hansen because stationarity of model in Sargan has adopted strongly.
12. This study is for analysis of classification banks. The table would only refer entire result because AB1 don't accept statistically in Model. But each model except only this are significant in statistically.

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