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Factors Influencing on Bank Credit: A Comparative Study of Leading Banks Operating in India and Indonesia

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Abstract: ***This paper empirically investigates the determinants of bank credit in commercial banks of India and Indonesia from 2005 to 2017and to compares findings of both these countries. Results revealed that interest rate, deposit, and loan deposit ratios have a significant positive impact on bank credit for both countries. However, gross domestic product (GDP) and capital adequacy ratio have a significant positive impact on Indonesia and Indian banks respectively. It was revealed that bank credit growth was more declined in Indian banks compared to Indonesian banks after the global financial crisis. Further, the study revealed that the growth of bank credit and deposit both were higher in private banks in India after and before the recession period which was lower in private banks than public banks during this period. Opposite results were found in Indonesian banks compared to Indian banks. This study indicated that the deposit and loan deposit ratio has a positive significant impact on bank credit both in public and private banks in India and Indonesia. Moreover, GDP has a negative and significant impact on the public banks of India, while the same factor has a positive and significant impact on bank credit granted by public banks in Indonesia.***

JEL Classification: G01, G21

Keywords: Bank credit (BC), Bank ownership, Internal and External factors, Emerging economy

1. Introduction

Banks play an important role in the economic development for the sustainable growth of any society. Commercial banks are the most crucial part of the economic system both in developed countries and in emerging countries. Bank credits are one of the most important sources of long-term financing in most countries. There is a relationship between economic growth and financial development in the country (Levine,1997). Levine (2002) showed that the regulated financial structure contributes to the provision of information about the possible investment opportunities, the proper allocation of capital, facilitates the process of trading.Bank receives customer deposits and builds growth using that funds to grant loans to borrowers or invest in other assets (McCarthyet.al,2009).Banks grant advances and loans to individuals, government, and business organizations (Mousa and Chedia, 2016). The importance of bank lending and the provision of credit facilities is in the fact that the more banks that perform better, the more different sectors of the economy can benefit more and, thus, achieve an ample growth rate (Freixas and Rochet,2008). The issue of determining factors, which may affect the level of lending and have a strong impact or less, impact are still debatable (Akinlo and Oni, 2015). In this present scenario, it is important to determine the factors that influence bank credits.

Both India and Indonesia are two emerging countries in the world.India, the second most populated country, is one of the world's fastest-growing economy countries and commercial banks dominated the Indian economy (Makkar and Hardeep, 2018). Another hand, Indonesia is the fourth most populated country in the world and the largest economy in Southeast Asia. In addition, Indonesia is the world's sixteenth largest economy and the seventh-largest in purchasing-power-parity terms (Antara News, 2nd Nov. 2019).Both countries are members of the G20 and the International Monetary Fund (IMF). According to the Asia-pacific banking review report risk cost factor (loan loss provisions to average assets) of India and Indonesia is -14.7% and -1.0% respectively. Another hand, the cost efficiency (the operating cost to average total assets) of India (-2.9%) is much less than Indonesia (2.8%). Moreover, return on equity (ROE) was declined from 2014 to 2018 in Asia-Pacific emerging markets including China, Japan, Taiwan, with aggregate ROE of banks in India declining from 11.3 % to -2 % and in Indonesia from 17.4percent to 13.2 %(Dahl et.al, 2019). However, ROE was increased in Singapore and South Korea in the same period. Improvement in risk cost margins has supported better ROE in Indonesian banks compared to the Indian bank sector (Dahl et.al, 2019). Banking Industry mainly consists of Commercial Banks and Co-operative Banks in India. As per the data for 2016, public banks accounted for about 73% of the total assets of the banking system (and about 47% of the total assets of the financial system) (Arora and Wondemu, 2018). The banking sector in Indonesia holds 78.6% of the total assets of all financial institutions in June 2014 (Volz,2015). However, 98% of all banking assets are held by

commercial banks. Among the commercial banks, about 70% of total banking assets are concentrated in the ten largest banks (Volz, 2015). We selected banksin India and Indonesia for our studies as there are similarities of banking structures, socio-economic status, poverty, population, and inadequate infrastructure between two countries, and both countries are bank-based and emerging economies (Schmukler and Vesperoni, 2001; Levine, 2008).

It is essential to determine the factors that affect bank credits with a country's economic growth. The Indonesian banking sector plays a very important role in supporting the gross domestic product of the country and have been trying to enhance the banking system with new technology (Astariniet.al, 2016; Medyawati and Yunanto,2014). This study aims to examine the specified internal and external factors that affect the bank credits of the Indian and Indonesian banks and to compare the findings of both these countries.Previous studies reported some internal and external factors that affect bank credits, while this study elaborated on previous studies using the data before and after the global crisis (2008-09). We also analyse data in respect of ownership type, public and private banks both in India and Indonesia. Moreover, this empirical study comparesthe banking sectors oftwo different countriesin the aspect of several factors that influence bank credits behaviour, which could be of interest to academics, bankers, and policymakers.

2. Literature Review and a hypothesis statement

Bank credit is a contract between banks and borrowers where borrowers promise to repay funds with interest at a letter date and protect pledge collateral until the loan is fully paid (Driga, 2006). Over the past decade, several factors potentially contributed to bank credit, which may be categorized into external and internal factors. The external factors are not under the control of the bank, such as interest rate, inflation, gross domestic product (GDP), stock market performance, and government regulations (Al-kilani and Kaddumi, 2015; Moussa and Chedia, 2016). Internal factors of bank credit depend on the management decisions and the bank policy objectives, which included the bank deposit, capital adequacy ratio (CAR), asset quality, liquidity, non-performing assets (NPA), and loan deposit ratio, operational cost efficiency, and income diversification (Nugraheni and Meiranto, 2013; Moussa and Chedia, 2016). The banking system of every country has its own external and internal factors that affect financial performance differently.

2.1 Gross Domestic Product (GDP)

The Gross Domestic Product (GDP) is one of the primary indicators used to measure the health of a country's economy. It reflects the total value of all goods and services produced over a specific period. Sharma and Gounder(2012) reviewed the bank credit supplied to the private sector in seven countries in the South Pacific during the period 1982–2009. The results showed that strong economic growth had a positive impact on credit growth. In addition, Moreno et.al (2012) indicated that the total GDP and the level of investment to GDP were the key determinants of the credit portfolio in Colombia. In addition, Pham (2015) examined the determinants of bank credit using a large data set from 146 countries at different levels of economic development during the period 1990-2013. He pointed out that, a relationship exists between economic growth and bank credit in different country-specific manners. Al-kilani and Kaddumi (2015) established that lending behaviouris significantly influenced by internal and external factors such as net profit and GDP respectively in Jordanian banks. However, Moussa and Chedia (2016) showed that positive economic growth has a negative effect on bank credits in Tunisian banks.

***Hypothesis 1 (H1)*:** There exists a relationship between the gross domestic product (GDP) of a country to bank credits in India and Indonesian banks.

2.2 Interest rate (IR)

The interest rate on loans is considered the most important source of income for the bank, and the high-interest rate is usually accompanied by the increase in the money offered for lending.Karim, Harif, and Adziz (2006) reported that the interest rate affects bank lending negatively in the Malaysian context. Ayieyo (2016) conducted a study using the theory of money supply and identified the effect of interest rate on total loans from nine commercial banks in Kenya over the period from 2002 to 2011. The multiple regression analyses indicated that interest rates are negatively correlated and significantly affected the total loans. Furthermore, Ladimeet.al (2013) found that the behaviour of bank lending is directly and negatively affected by the bank lending rate in Ghana. Yasnur and Kurniasih (2017) examined the factors affecting bank-lending growth in Indonesia. The results suggested that bank interest rates have a positive but not significant effect on lending growth banks.

Hypothesis 2 (H2): There exists a relationship between the interest rate (IR) to bank credits in India and Indonesian banks.

2.3 Bank Deposit (DEP)

A deposit is a fund collected by the bank from society both individuals and entities through various products owned or offered by the bank (Sari and Murni, 2016). Deposit (saving) is collected by the bank through several products, such as saving a deposit, term deposit, demand deposit, and certificate of deposit (Riadi, 2018).The banks can utilize this saving to be placed in profitable pillars, one of which is in the form of credit or financing. Bank deposits are considered as one of the important factors that affect the volume of the granted credit because the increase of deposits in the bank offers more money that can be lent.

***Hypothesis 3 (H3)*:** There exists a relationship between deposit (DEP) to bank credits in India and Indonesian banks.

2.4 Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR is an indicator of the ability of banks to provide funds for expansion and accept risk loss caused by the operations of the bank. CAR is one of the

most significant current issues in banking which evaluates the amount of a bank's efficiency and stability. CAR is the ratio that determines the bank's capability to meet the liabilities and other risks such as credit risk and operational risk. Mukhtarovet.al (2018) analyse the influencing factors behind credits risks in Azerbaijani banks from 2010 to 2016. Theyanalysethe 10 biggest banks of Azerbaijani concerning asset size and found that decrease in the CAR, interest rate, and total assets led to increasing credit risk

Hypothesis 4 (H4): There exists a relationship between Capital Adequacy Ratio (CAR) to bank credits in India and Indonesian banks.

2.5 Loan deposit ratio (LDR)

To determine bank profitability, both loans and deposits are equally important. Among the various factors, the loan deposit ratio (LDR) is one of the prime factors for determining the bank's liquidity and profitability.Ladimeet.al (2013) conducted a study on the determinants of bank lending behaviour in Ghana. This study found that the behaviour of bank lending is directly and positively affected the size of the bank and the structure of bank capital.

Hypothesis 5 (H5):There exists a relationship between loan to deposit ratio (LDR) and bank credits in India and Indonesian banks.

2.6 The global financial crisis

The global financial crisis was a severe worldwide financial crisis thatstarted in the United States in the mid of 2007 thatshocked the world in the next 18 months(Malik et.al,2009). Aisen and Franken (2010)revealed that bank credit growth before the financial crisis was higher than that after the financial crisis using a large data set covering over 80 countries. Takáts (2010) found that bank lending had fallen harshly across the border during the financial crisis. The sources of funding become important during the crisis of credit growth; the countries that depend more on external financing suffer more than the internal (Kamil and Rai, 2010).

Hypothesis 6 (H6): There exists a relationship between the global financial crisis and bank credits in India and Indonesian banks.

2.7 Public versus private banks

There is a difference between public and private sector banks based on their ownership structure. Public sector banks are the banks owned by the government, while individuals and companies run private sector banks for profit and are not state-controlled.Sharma and Gounder (2012) revealed that the higher average interest rates on loans and the higher inflation rate might have negative effects on the credit growth, while the strong economic growth, size of the deposits and assets had a positive impact on the growth of credit in the private sector in six economies in the South Pacific during the period 1982-2009.Chowdhury and Ahmed (2009) established thatthe prospect of private commercial banks is very bright in respect of stable growth of deposits, loans, and advances, net income from 2002 to 2006 by considering 5 commercial banks operating in Bangladesh.

Hypothesis 7 (H7): There exists a relationship between the ownership of banks and bank credits in India and Indonesian banks.

Several studies focus on the factors of bank creditin the aspect of the banking system of different countries in the literature (Astariniet.al,2016; Moussa and Chedia, 2016; Rabab'ah,2015).In addition to this scenario, many different methodologies are reflected in these studies. Similar studies in this area comply with the determinants of credit risk in selected Indian banks were established by Jegadeeshwaran and Basuvaraj (2019) but based on the empirical review, there is a gap in scholarly research in the domain of factors influencing bank credit. Most of the studies underlined the determinants of profitability and financial performance of Indian commercial banks (Nachimuthu and Veni,2019; Chaudhary and Sharma, 2011).Das and Ghosh (2007) analysed the loan problems and factors of credit risk in Indian state-owned banks over the period from 1995 to2005.Therefore, a new study that covers Indian and Indonesian banks and results compared between the two countries will be very beneficial to the literature as both countries are bank-based systems. Concerning the reviewed literature with a hypothesis statement, a conceptual framework has been designed (Figure1).

3. Methodology

The study sample consists of 34 commercial banks with 442 observations in India and 12 Indonesian commercial banks with 156 observations including the ten largest banks comprises about 70% of total banking assets. The study includes annual data for 13 years covering the period from 2005-to 2017. In Model 1 there are 34 Indian banks including 18 nationalized banks operating in India and listed in the Bombay Stock Exchange. Indian banking data was collected from annual reports of Reserve Bank of India (RBI), RBIwebsites and money control newsdealing with the current banking scenario.In Model 2, there are 12 Indonesian banks including the top 4 Government-owned banks and listed on Indonesia Stock Exchange. Banks chosen are those Indonesian banks that published their financial reports and required data were available for the whole period. The secondary data was collected from the annual reports of the banks, SEKI (Economic and Financial Statistics Indonesia), financial reports and the statistical bulletin issued by the Bank of Indonesia.

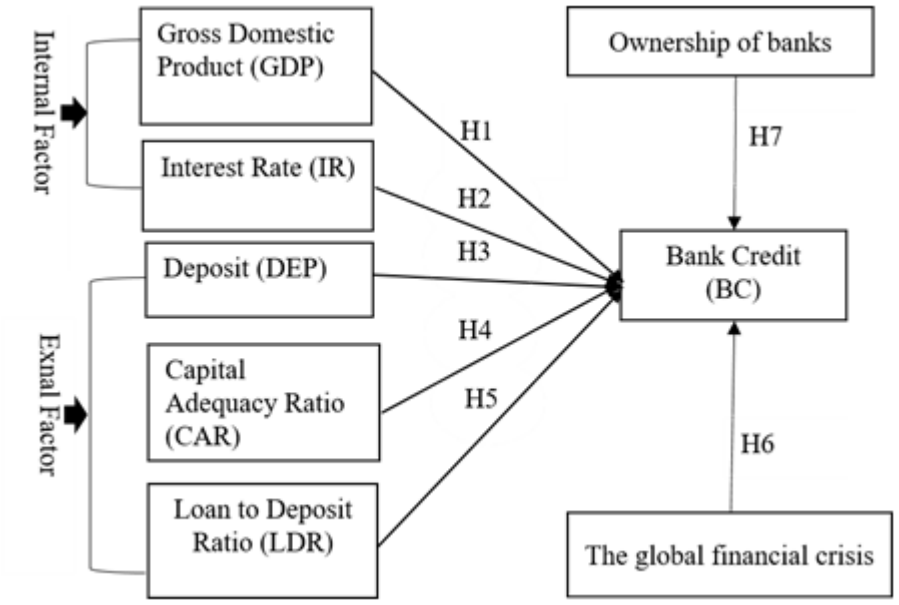

Figure 1: Conceptual framework showing the different factors influencing bank credit

The data analysis technique used in this research was multiple linear regression to obtain a comprehensive description concerning the relationship between one variable with other variables. Multiple linear regression analyses to test the relationship between the independent variables (GDP, IR, DEP, CAR, and LDR) and the dependent variable, bank credit (BC) in selected commercial banks of India and Indonesia. Statistical Package for Social Science (SPSS) windows version 20.0 was used to process research data. To discover whether there is a positive or negative relationship from independent variables toward bank credit, multiple linear regression models are used with the following formulation.

$$Y= a+ b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 +\varepsilon \quad (1)$$

Where 'Y'refers to the dependent variable (BC), 'a' represent Y-intercept or regression coefficient constant; "b_1, b_2, b_3, b_4, and b_5" are regression coefficients; "X_1, X_2, X_3, X_4,and X_5" are independent variables (GDP, IR, DEP, CAR, and LDR respectively); 'ε'error term or residual.

Therefore,

$$BC = a + b_1GDP + b_2IR + b_3DEP + b_4CAR + b_5LDR + \varepsilon \quad (2)$$

P-value <0.05 is considered statistical significant. With specific research objectives and based on past relevant literature, selected variables are described in Table 1.

Table 1: Selected bank credit variables and their measurements

Variables	Symbols	Definition/Measurement	Previous study/ references
Bank Credit	BC	Determine as bank advance for Indian sample banks and bank Loan for Indonesian sample banks	Korkmaz (2015), Rabab'ah (2015)
Gross domestic product	GDP	Gross domestic product of the study years; GDP expressed in the country's currency or U.S. dollar ($) collected from the reliable sources for both countries	Sharma and Gounder (2012); Moreno et.al (2012); Pham HTH (2014)
Interest Rate	IR	Bank average interest rate set by the Reserve Bank of India for Indian data and the average interest rate set by the Central Bank of Indonesia for Indonesian data	Karim et.al. (2006);Ayieyo (2016);Ladimeet.al(2013);Yasnur and Kurniasih (2017)
Deposit	DEP	Total deposit amount in the bank; data collected from banks directly from the annual report of both countries.	Olokoyo (2011);Moussa and Chedia (2016)
Capital Adequacy Ratio	CAR	The measure of the ratio of a bank's capital to its risk ratio and expressed in percentage term; data collected from banks directly from their annual report for both countries.	Mukhtarovet.al(2018)
Loan to deposit ratio	LDR	The ratio of Bank Credit to Deposit; % LDR data collected directly from the annual report of Indonesian Banks; ratio calculated and data expressed in percentage for Indian Banks.	Rengasamy (2014); Ladimeet. al (2013)

4. Results and Discussion

Figure2 shows that average bank credits increased in both Indian and Indonesian banks from the period of 2005-2017 (Figure 2a); however, bank credit growth of Indonesian banks was better than Indian banks (Figure 2b) indicating better performance in respect of loans supplied in the market by Indonesian banks compared to Indian banks. Moreover, bank credit growth was reduced during the global crisis and 2014 to 2017 in both Indian and Indonesian banks.

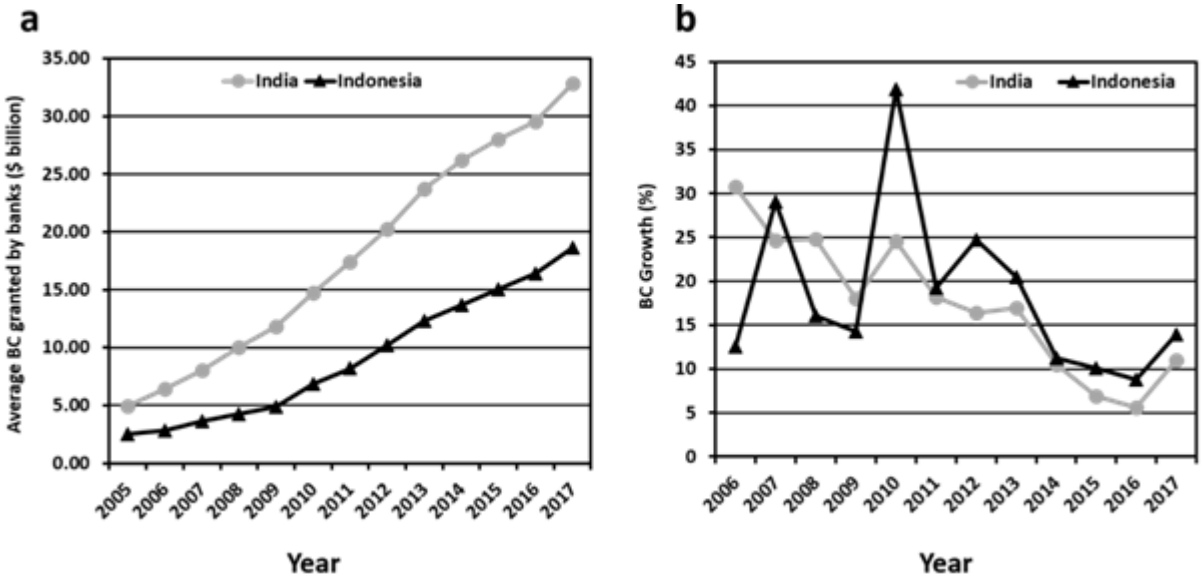

Figure 2: The development of bank credits (BC) granted by banks operating in India and Indonesia

4.1 Descriptive Statistics

Summary of the descriptive statistics for the dependent and independent variables for the sample banks of India and Indonesia are presented in Table 2. The sample size covers 442 and 156 observations for India and Indonesia respectively from 2005 to 2017.From Table 2, we observe that the mean of bank credits, deposits, and GDP of India is higher than Indonesia; however, the mean of capital adequacy ratio value of Indian commercial banks is lower thanIndonesian banks. Besides, other factors, namely the interest rate, and loan deposit ratioare comparable between the two countries. Low standard deviation in IR of Indian commercial banks indicates that the data points are inclined to be very close to the mean and there is a low variation of IR compared to Indonesian data during the study period.

Table 2: Descriptive Statistics for all variables of India (Model 1) and Indonesia (Model 2)

	Model	BC	GDP	IR	DEP	CAR	LDR
N	1	442	442	442	442	442	442
	2	156	156	156	156	156	156
Scale	1	Billion $	Billion $	%	Billion $	%	%
	2	Billion $	Billion $	%	Billion $	%	%
Minimum	1	0.20	808.90	4.88	0.33	8.00	32.61
	2	0.78	193.76	4.56	1.38	9.80	40.30
Maximum	1	270.88	2600.82	7.90	378.89	22.00	300.70
	2	52.49	964.80	11.61	59.76	29.47	108.86
Mean	1	17.98	1663.21	6.89	23.49	13.10	73.74
	2	9.90	542.37	7.56	12.30	17.16	79.90
Std. Deviation	1	28.01	520.49	0.90	35.62	2.22	53.32
	2	10.92	248.41	1.86	12.84	3.60	16.83

N (1) =34 × 13 = 442, 34-banks and 13 years (2005-2017), total observation for India
N (2) = 12 × 13 = 156, 12-banks and 13 years (2005-2017), total observation for Indonesia *Source*: Author's calculation

In the same period, the average gross domestic product is $1663.21 billion (average growth rate 7.52%) for India which is higher than $542.37 billion (average growth rate 5.55%) for Indonesia. The minimum GDP growth rate occurred in India in the year of the global crisis and after the year of the global crisis for Indonesia. The mean of the deposit is $23.49 and 12.30 billion for India and Indonesia respectively with a high standard deviation indicating there was a much variation of money deposits in different banks and different years for both countries. At the same time, the mean of bank credit ($17.98 billion) in India is higher than in Indonesia ($9.90 billion.

4.2 Pearson's Correlation Analysis

Pearson's correlation matrix for the study variables of Model 1 and Model 2 has shown in Table 3a and 3b respectively. It was revealed that there is a significant positive correlation of bank credit with GDP (r=0.318; P<0.001), deposit (r=0.993; P<0.001), and LDR (r=0.15; P<0.005) variables for Indian banks

Table 3 (a): Pearson's Correlation Matrix of India (Model 1)

Model 1		BC	GDP	IR	DEP	CAR	LDR
BC	Pearson Correlation	1	.318**	.003	.993**	.005	.150**
	Sig. (2-tailed)		.000	.949	0.000	.911	.002
GDP	Pearson Correlation		1	-.013	.324**	-.056	.080
	Sig. (2-tailed)			.791	.000	.241	.094
IR	Pearson Correlation			1	-.009	-.075	.055

	Sig. (2-tailed)	.851	.115	.247
DEP	Pearson Correlation	1	-.040	.095*
	Sig. (2-tailed)		.397	.045
CAR	Pearson Correlation		1	.368**
	Sig. (2-tailed)			.000
LDR	Pearson Correlation			1

** Correlation is significant at the 0.01 level (2-tailed),* Correlation is significant at the 0.05 level (2- tailed).*Source*: Author's calculation

Table 3 (b): Pearson's Correlation Matrix of Indonesian banks (Model 2)

Model 2		BC	GDP	IR	DEP	CAR	LDR
BC	Pearson Correlation	1	.512**	-.364**	.981**	.174*	.131
	Sig. (2-tailed)		.000	.000	.000	.030	.102
GDP	Pearson Correlation		1	-.758**	.437**	.141	.430**
	Sig. (2-tailed)			.000	.000	.080	.000
IR	Pearson Correlation			1	-.319**	.090	-.366**
	Sig. (2-tailed)				.000	.262	.000
DEP	Pearson Correlation				1	.161*	-.004
	Sig. (2-tailed)					.045	.960
CAR	Pearson Correlation					1	-.053
	Sig. (2-tailed)						.510
LDR	Pearson Correlation						1

** Correlation is significant at the 0.01 level (2-tailed), * Correlation is significant at the 0.05 level (2-tailed).*Source*: Author's calculation

(Model 1) (Table 3a). In addition, there is a strong positive correlation of GDP with DEP (r=0.324; $P<0.001$) in Indian banks suggesting high economic growth of the country encouraged people to deposit money in the bank. Furthermore, there is a strong positive correlation of CAR with LDR (r=0.368; $P<0.001$) in Indian banks. Similarly, it was found that there is a significant positive correlation of bank credit with GDP (r=0.512; $P<0.001$), DEP (r=0.981; $P<0.001$), and CAR (r=0.174; $P<0.05$) variables; however, a significant negative correlation with IR in Indonesian banks (Model 2) (table 3b). Furthermore, there is a significantly strong negative correlation of GDP with IR (r=-0.758; $P<0.001$) and a positive correlation with DEP (r=0.437; $P<0.001$) and LDR (r=0.43; $P<0.001$) variables in Indonesian banks. In addition, there is a strong negative correlation of IR with DEP (r=-0.319; $P<0.001$) and LDR (r=-0.366; $P<0.000$), and a positive correlation between DEP with CAR (r=0.161; $P<0.05$).

4.3 Multiple Regression Analysis

The results of the regression analysis for this study shows in table 4 for both India (Model 1) and Indonesia (Model 2), which relates the credit facilities granted by the banks of India and Indonesia with selected independent variables. Based on the hypothesis test, the multiple linear regression coefficients are found to be statistically fit for both Model 1 (R^2 = 0.988; $P<0.001$) and Model 2 (R^2= 0.982; $P<0.001$). R^2 values for both models indicate that >98% of bank credit variation may be explained by the variation of the independent variables IR, GDP, LDR, CAR, and deposits.

4.3.1 Impact of GDP on bank credit in India and Indonesia (H1)

The economic growth rate or GDP coefficient is negative and statistically not significant for India, and it is positive and statistically significant for Indonesian banks (β=0.065;$P<0.005$) (Table 4). The results from the samples of Indonesian banks were comparable with previous studies of Guo and Stepanyan (2011), Imran and Nishat (2013), and Rabab'ah (2015), who showed a positive impact on GDP on the volume of the bank credits. Similarly, Guerra (2017) found that GDP growth has a positive effect on the growth of banking credit in the Mexican context. However, Moussa and Chedia (2016) found conflicting results that could be comparable with the results obtained from Indian banks. An increase in GDP annually has a positive impact on credit distribution allowed by commercial banks in Indonesia however; it is less impact in the case of Indian commercial banks (Figure3). The percentage of GDP growth in India is more fluctuated than in Indonesia and bank credit growth in Indonesian banks is more stable than commercial banks in India except for the year 2010, after the global financial crisis year (2008-09) (Figure3). The negative impact of GDP on bank credits but not statistically significant in India might explain that the economic growth is not stable in India and commercial banks have been suffering from the large non-performing loans in their portfolios which suppressed their lending growth.

Table 4: Regression Analysis of Indian Bank (Model 1) and Indonesian Banks (Model 2)

	Model 1				Model 2			
	B	β-Coefficient	t	Sig. (*P*)	B	β-Coefficient	t	Sig. (*P*)
(Constant)	-12.797		-8.545	.000	-10.954		-8.533	.000
GDP	.000	-.006	-1.071	.285	.003	.065	3.384	.001
IR	.360	.012	2.328	.020	.212	.036	2.081	.039
DEP	.781	.991	188.666	0.000	.818	.963	77.806	.000
CAR	.373	.030	5.482	.000	.040	.013	1.143	.255
LDR	.074	.045	8.273	.000	.087	.121	9.818	.000
R	0.994				0.991			
R Square0.988					0.982			
Adjusted R Square	0.989				0.98			
sig.Prob (Fstatistic)	0.000				0.000			

Source: Author's calculation

4.3.2 Impact of interest rate on bank credit in India and Indonesia (H2)

Table 4 shows that the regression coefficient value of interest rate is positive and statistically significant for both India (β=0.012;*P*<0.01) and Indonesia (β=0.036;*P*<0.05). In contrast, Karim et.al (2006) and Ayieyo (2016) found that interest rates negatively influenced bank lending activity. However, the results of our study are comparable with the study of Rabab'ah (2015) who found that the effect of the interest rate might be positively or negatively affect the volume of bank lending.The increase in the interest rate may encourage people to deposit money in the banks for a good return. As a result, fund growth increased in banks, and banks utilized to deposit money to provide more loans. However, at the same time increased interest rates could lead to reduced demand for loan borrowers because of their high-interest rates (Rabab'ah, 2015). Previous, Nugraheni and Meiranto (2013); Sari and Nurni (2016) found that interest rate positively affects the volume of bank lending in Indonesia. Similarly, Guo and Stepanyan (2011) found that the high-interest rates on deposits significantly affect the rate of growth in credits. The relationship between the interest rate and bank credits has shown in Figure4. Thus, hypothesis H2 is strongly accepted as the interest rate has a significant impact on bank credit in India and Indonesia.

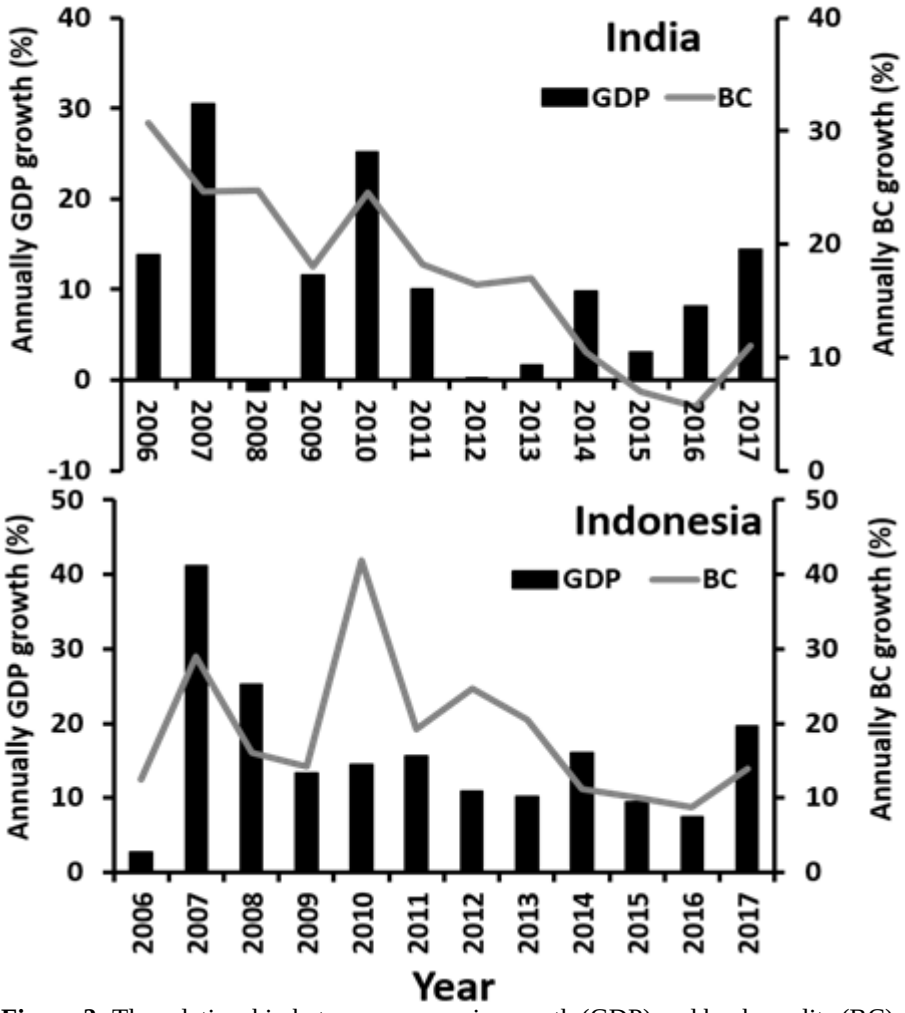

Figure 3: The relationship between economic growth (GDP) and bank credits (BC)

4.3.3 Impact of deposit on bank credit in India and Indonesia (H3)

The results show that the regression coefficient of deposits is positive and statistically significant (β=0.991;*P*<0.001 andβ=0.963;*P*<*0*.001) for both countries (Table 4). The relationship between deposits and bank credits is depicted in Figure5. This result proves that money deposits or savings have a strong impact on lending activity because it is the biggest asset of banking so it may affect lending. Sharma and Gounder (2012) and Olokoyo (2011) reported that deposits have a significant impact on the volume of bank credit. Thus, hypothesis H3 is strongly accepted as the deposit has a significant effect on bank credit in both India Indonesia. One possible explanation of this result is that banks are functioning as financial intermediaries that connect money investors and borrowers. When excess money is deposited in banks by investors; the banking system creates money through the process of creating loans. As a result bank credit volume increase with money deposit in banks.

4.3.4 Impact of capital adequacy ratio (CAR) on bank credit in India and Indonesia (H4)

The regression coefficient value of CAR found in this study is positive and statistically significant (β=0.03;*P*<0.001) for Indian banks, however, it is positive and statistically not significant for Indonesian banks (Table 4). It indicates a positive direction between the CAR variable and bank credit

for both countries when other variables are constant. The results of this study demonstrate the credit facilities granted by banks depend on their capital. In previous, Berrospide and Edge (2010) established that the effect of capital was significant on bank lending. Thus, hypothesis H4 stating there exist a relationship between capital adequacy ratios to bank credits in Indian banks is accepted; however, rejected for Indonesian banks. The same factor that is significant on bank credit in India and not significant in Indonesia indicates that the management of two banking sectors operating in two different countries is dissimilar.

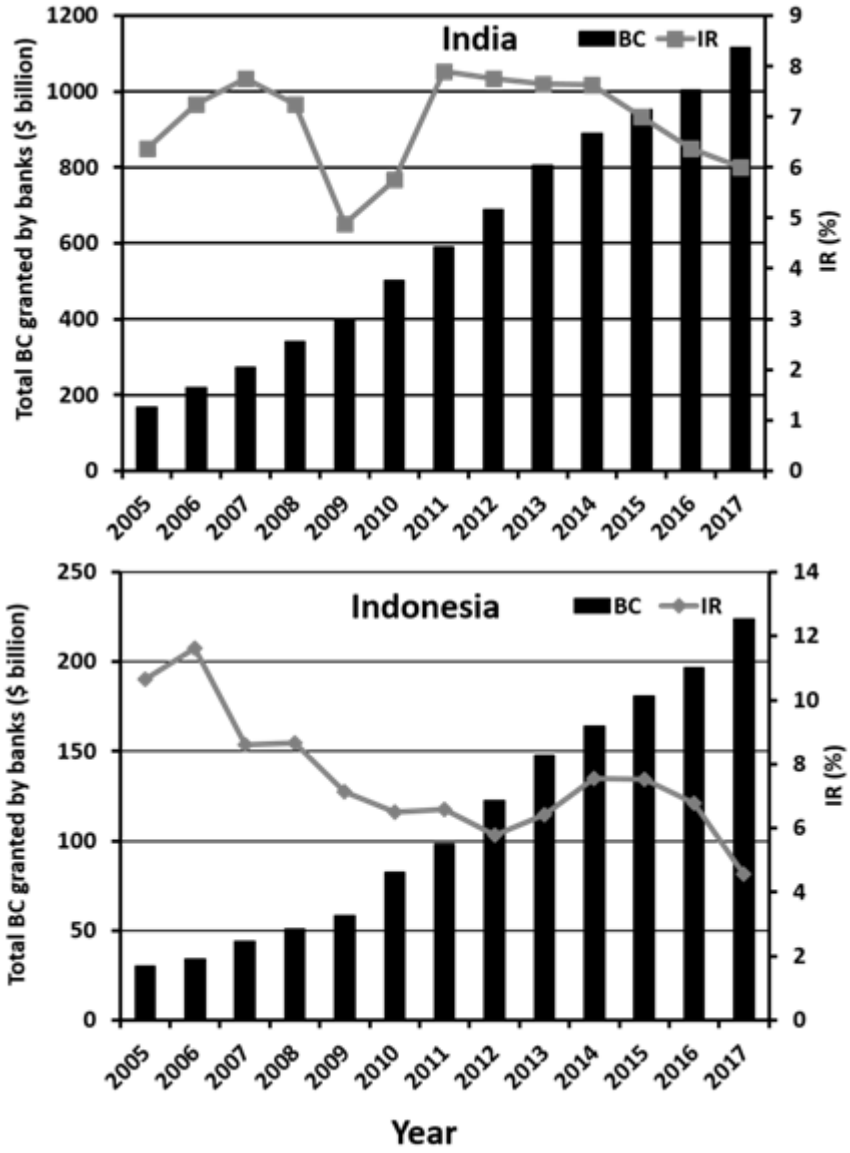

Figure 4: The relationship between the bank interest rate (IR) and bank credit (BC)

4.3.5 Impact of loan deposit ratio (LDR) on bank credit in India and Indonesia (H5)

Table 4 shows that the regression coefficient value of LDR is positive and statistically significant (β=0.045;*P*<0.001 andβ=0.121;*P*<0.001) for both countries. The results agree with the study of Abreu and Mendes (2001) which showed the LDR had a positive impact on the size of credits. The higher the loan deposit ratio showed greater use of bank deposits for lending, which means the bank has been capable to run intermediary functions properly. Olokoyo (2011) reported that the LDR significantly affected the ratio of credit facilities granted by the commercial banks in Nigeria. Thus, hypothesis H5 stating there exist a relationship between loan to deposit ratio and bank credits in Indian and Indonesian banks is accepted. A high loan deposit ratio indicates the bank's ability to distribute credit is better. The higher the loan deposit ratio means the higher the bank's contribution to the economy of a country.

As indicated from Table 4, the adjusted explanatory power of the two models, R-square, is at the level of 0.988 and 0.982 respectively for India and Indonesia, which is considered high reflecting that the independent variables explain about >98% of the change in the independent variables. The described R-squared is comparable between the two countries. F-statistic shows that the study model is significant (*P*<0.001 for both countries) and appropriate. We also analysethe multicollinearity of our regression model using variance inflation factors (VIF). We observed that VIF values of all factors between 1.1 and 3.2 indicatethe model is acceptable. Thus, the independent variables in the model jointly influence bank credits in Indian and Indonesian

commercial banks. Therefore, considering the model was robust or fitted well to the actual data of the variables. As it is significant, the regression model might use to predict the bank credit distribution. This also demonstrates that the independent variables used in this research were clear explanatory on dependent variables and demonstrates the use of this model.

4.3.6 The effect of the global financial crisis on bank credit in India and Indonesia (H6)

Table 5 shows the data before and after the global financial crisis.It was revealed that bank credit growth was more declined in Indian banks compared to Indonesian banks after the financial crisis apart from 2010 (Figure 2b). Bank credit growth had fallen after the financial crisis in both countries which iscomparablewith the previous studies (Hogan, 2019; Takáts, 2010). There were similar impacts of IR, DEP, CAR, and LDR on BC after and before the financial crisis in Indian banks. However, a negativesignificant change was found in the impact of GDPonbank credit after the financial crisis in India (β=-0.013; P<0.05). In the case of Indonesian banks, there was an insignificant effect of IR and CARon BC whereas, DEP and LDR have a similarlysignificant effect on BC before and after the financial crisis. Moreover, a positive significant effect was observed in the impact of GDP on BC after the financial crisis in Indonesia (β=0.033;P<0.05) indicating national GDP value positively influenced the bank credit after the crisis in Indonesia. In the respect of GDP; the opposite effect was found in India and Indonesia after the financial crisis which indicates that different bank structures and national policies affected different ways in the volume of bank credit.

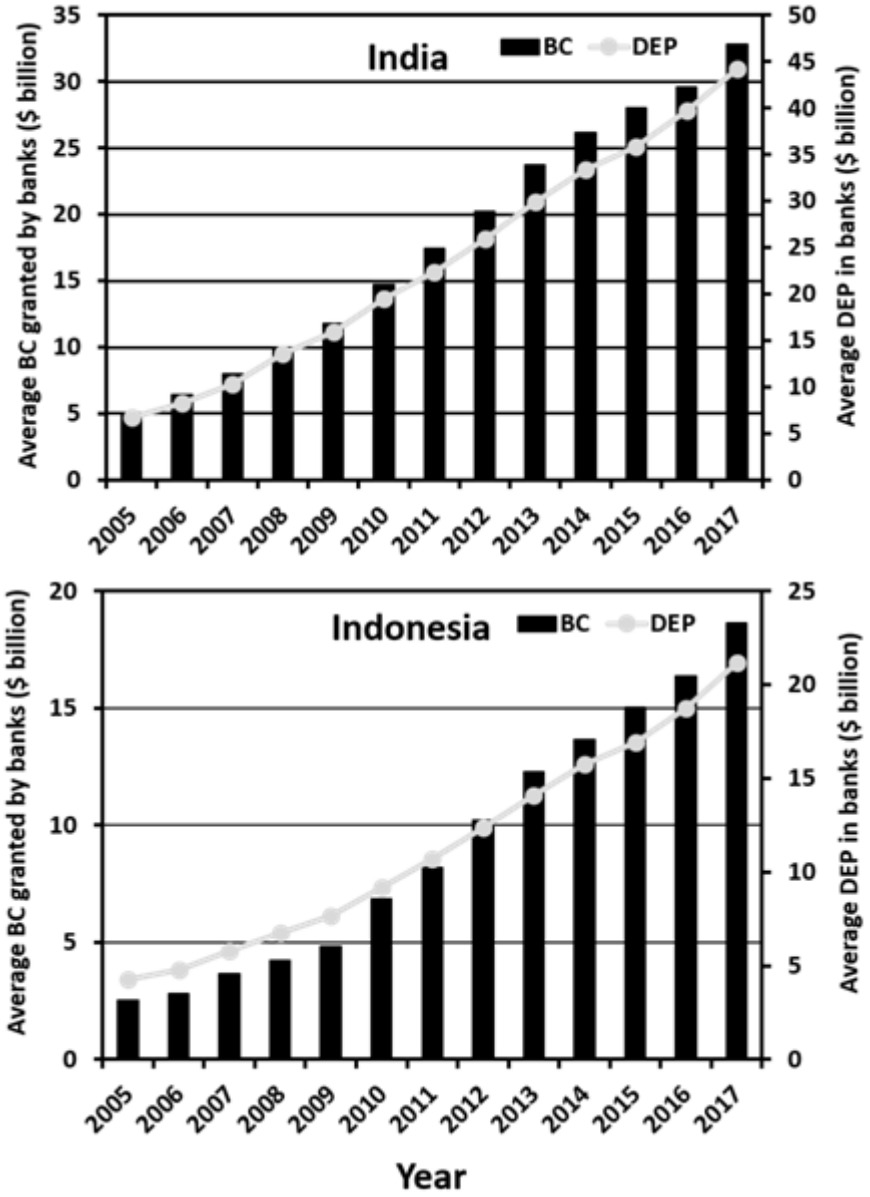

Figure 5: The relation between deposits (DEP) and bank credits (BC)

Table 5: Regression Analysis of before and after recession period for Indian Banks (Model 1) and Indonesian banks (Model2)

	India (Model1)				Indonesia (Model2)			
	Before crisis (2005-08)		After crisis (2009-17)		Before crisis (2005-08)		After the crisis (2009-17)	
	β-Coefficient	Sig.value (P)	β-Coefficient	Sig.value (P)	β-Coefficient	Sig.value (P)	β-Coefficient	Sig.value (P)
GDP	-.001	.974	-.013	.022	-.077	.542	.033	.026

IR	.011	.490	.005	.398	-.043	.713	-.002	.887
DEP	.987	.000	.983	.000	1.042	.000	.980	.000
CAR	.003	.754	.004	.550	-.029	.632	.026	.058
LDR	.089	.000	.082	.000	.258	.001	.105	.000
R-sq	0.99		0.99		0.87		0.99	

Source: Author's calculation

4.3.7 The effect of ownership (Public versus private banks) on bank credit in India and Indonesia (H7)

In this study, we analyse data from 18 National and 16 private banks from India, 4 Government-owned, and 8 private banks from Indonesia. It was revealed that the growth of average bank credit in public banks was greater than in private banks during the study period both in India and Indonesia (Figures 6a and b). Interestingly, it was found that the percentage growth of bank credit and deposit both were higher in private banks than public banks after and before the recession period except 2009-2010, which were lower during the recession period in India. Opposite results were found in Indonesian banks compared to Indian

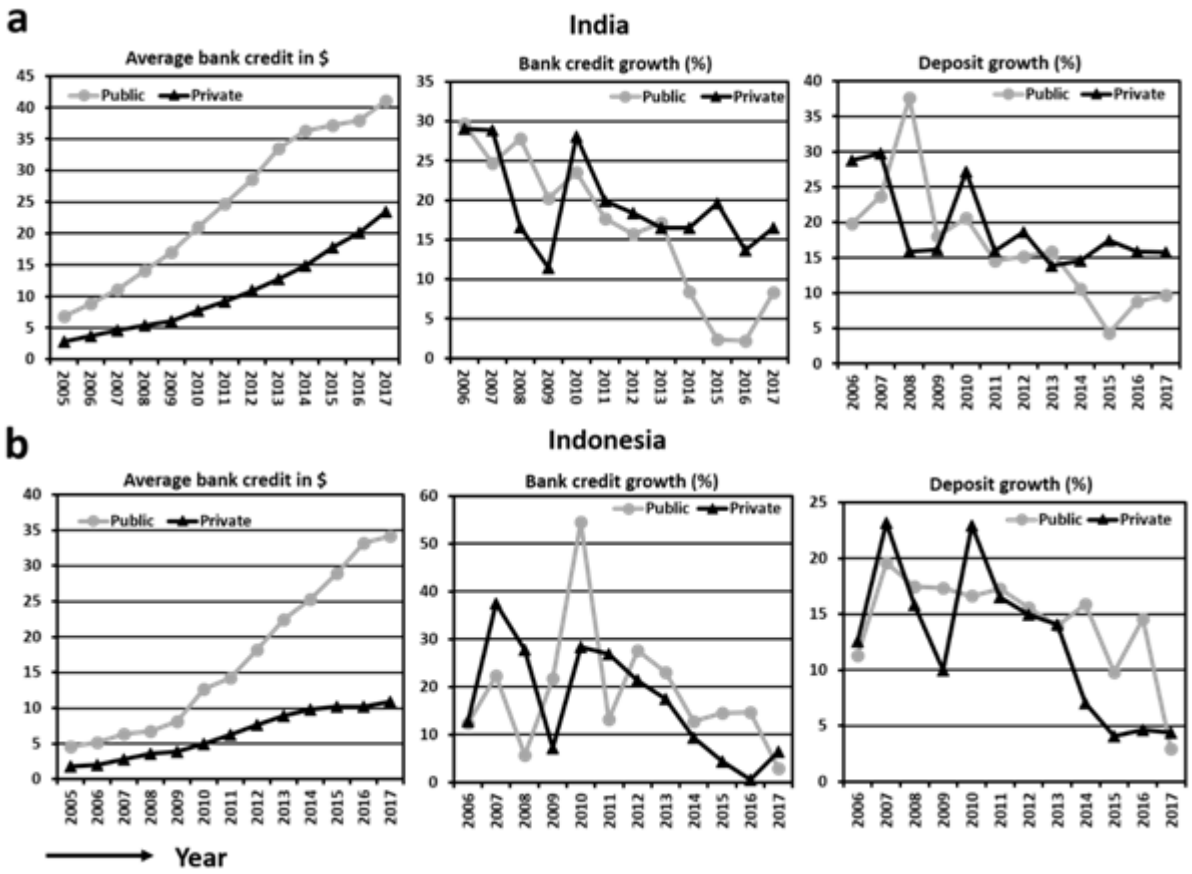

Figure 6: Average bank credit, credit, and deposit growth in private and public banks in India (a) and Indonesia (b)

banks (Figure 6b). The result of this study using an Indian bank is comparable with the study of Divya and Ranjithkumar (2017) who established that the percentage growth of advances in private sector banks increased more gradually than public sector banks in India from 2012 to 2016.Table 6 represents the results obtained by dividing the sample between public and private banks. It was revealed that money deposits and loan to deposit ratio both are a positively significant impact on bank credit in public and private banks operating in India and Indonesia. The coefficient of GDP is negative and statistically not significant for private banks, however, significant for public banks in India (β=-0.031; P<0.001) indicating negative economic growth influenced on bank credit in public banks which was not true for private banks. In the case of Indonesian banks, GDP has a positive and significant effect on public banks (β=0.095; P<0.001) however, a not significant effect on private banks in Indonesia.Other factors, IR and CAR have no significant effect on BC in both public and private banks in India and Indonesia.

Table 6: Regression Analysis of Public and Private Banks for Indian banks (Model 1) and Indonesian banks (Model2)

	India				Indonesia			
	Public banks		Private banks		Public banks		Private banks	
	β-Coefficient	Sig.value (*P*)	β-Coefficient	Sig.value (*P*)	β-Coefficient	Sig.value (*P*)	β-Coefficient	Sig.value (*P*)
GDP	-.031	.000	-.004	.603	.095	.000	.015	.716
IR	.010	.099	.003	.721	.037	.113	.043	.110
DEP	.990	.000	.979	.000	.935	.000	.996	.000

CAR	-.002	.700	.014	.083	.009	.574	.029	.112
LDR	.052	.000	.055	.000	.193	.000	.143	.000
R-sq	0.99		0.99		0.98		0.99	

Source: Author's calculation

5. Conclusion

This study examined the key internal and external factors affecting the bank credit provided by the Indian and Indonesian commercial banks for13 years from 2005to 2017. The study found that the deposits of money, loan deposit ratio,and interest rate have a positive significant impact on bank credit for both Indian and Indonesian commercial banks; however, capital adequacy ratio has a positive significant effect in Indian commercial banks only. It was found thatGDP has a significant effect on bank creditin Indonesia, but a not significant effect in India. This study also indicated that bank credit growth was declined afterthe financial crisis in both countries, though national economic growth hasthe opposite effect on bank credit in India and Indonesian banks. This study also found that GDP hasan insignificant effect on bank credit in private banks both in India and Indonesia however, negative and positively significant effects in public banks in India and Indonesia respectively. Furthermore, the study revealed that credit services granted by the banks both in India and Indonesia increased around sevenfold from 2005 to 2017 with an annual growth rate of 15.92% and 16.68% for India and Indonesia respectively.

6. Limitations of the study and future research directions

The study is accomplished for the period from 2005to 2017 and restricted to the functioning of the 12 largest banks in Indonesia by assets and randomly selected 34 Indian Commercial Banks including 18 nationalized banks, which does not include all banks in India and Indonesia. Therefore, it may not have generalized a full interpretation of the entire banks in India and Indonesia. The present findings need to be confirmed by more evidence using more banking data including nationalized and foreign banks from two countries and the rest of the world. We studied selected internal and external factors influencing bank credit facilities in India and Indonesia however; other factors like profits of the bank, non-performing assets, and bank size are also important. Further research can also be carried out with a large number of banks, more internal and external factors, and extending the time of the study for both India and Indonesia. However, the present findings of this study reflect the actual status of sample banks, more investigation is necessary which could be of interest to researchers, academics, and bankers, for both countries.

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