



Push and Pull Factors of Japanese's Cross-Border Bank Lending in Indonesia

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Abstract

The empirical debate of cross-border bank lending from a developed to emerging market economies which focused on the benefit and cost has not stopped. The variables are generally divided into the push and pull factors of cross-border bank lending. This paper analyzes the determinants of cross-border bank lending from Japan to Indonesia. The empirical framework based on the OLS and GMM reveals a high impact of the business cycle in Indonesia and Japan as the most significant variables. According to the push and pull factors models, the pull factors model has higher determinants of the dynamic of cross-border bank lending from Japan to the Indonesian economy.

Keywords: cross-border bank lending; push factors; pull factors; Japan; Indonesia

JEL Classification: C36, E44, F34.

1. Introduction

Globalization in the financial aspects can be witnessed by the behavior of banks from developed countries in their participation in emerging market economies. One of the reasons is that the developed countries have led to more strict competition and growing credit to developing countries (Arestis, Demetriades, Fattouh, & Mouratidis, 2002; Claessens, 2001; Eichengreen, 2001). Besides, bank liberalization in developed countries is supported by the deregulation of the financial market in developing countries at the same time. Banks in emerging market economies started changing in their source of financing from the local to global funding (Müller & Uhde, 2012). Emerging market economies decrease their

control of cross-border bank capital flow by decreasing their financial entry barriers. Thus, banks from developed countries can acquire new investment freedom in order to expand their financial markets (Arestis et al., 2002; Claessens, 2001). A mutualism relationship in financial aspects between developed and emerging countries have been advancing through international bank lending. Home countries can expand their markets, and host countries will earn liquidity from developed countries.

The empirical studies investigate the determinants of international bank lending from developed to emerging economies, have developed in the various instruments. These provided literature that divided the determinants into external (push) and internal (pull) factors (Müller & Uhde, 2012; Pontines & Siregar, 2014). According to the bank lending flow factors, Jeanneau and Micu (2002) explained that shocks in an economy affected the lending flow, while a decrease in home countries' business cycle has an ambiguous effect. When the home countries suffered severe financial stress, they will encourage a bank to decrease their lending to emerging economies in order to recover their economy. In another perspective, a decrease in a home country's economy will also push banks out of border lending to averse the default risk of their portfolio diversification motives.

Since the end of 1983, the Japanese banks have flown their international credit to the Southeast Asian economies, especially Indonesia. The data from Consolidated Banking Statistics of Bank for International Settlement (BIS) the lending from the US banks have more increased in international credit and placed the Japanese banks as the biggest lenders in Southeast Asian economies.

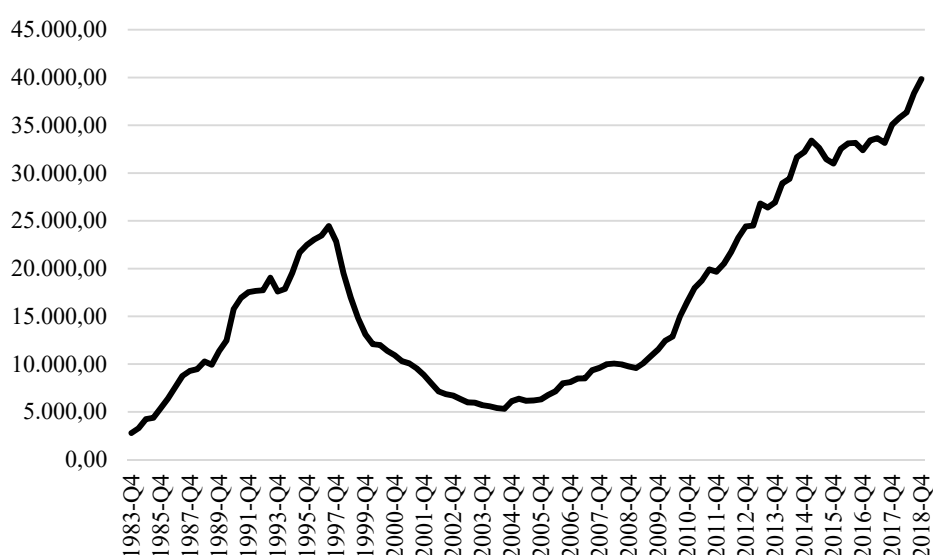


Figure 1. The Movement of Cross-Border Bank Lending from Japan to Indonesia (Source: Consolidated Banking Statistic of BIS, 2019).

Figure 1 shows that the Japanese banks, as the biggest lender countries in the total claims of the international banks in 2018 to Indonesian economies, are increasing. Accurately, Bank for International Settlement (BIS) reported that in the first period, total claims from the Japanese banks to Indonesia around USD 2,794 million. Therefore, the total claims from the US banks are increasing every year. At the end of 2018, the total claim of Japanese bank penetration to the Indonesian economies around USD 39,823.30 million. This financial mutualism relationship between Japan and Indonesia tends to a particular emphasis on the determinants of international bank lending form Japanese banks to Indonesian economies becomes fascinating to explore.

Furthermore, the empirical studies investigate the determinants of international bank lending from developed to emerging economies, have developed in the various instruments. These provided kinds of literature that divided the determinants into external (push) and internal (pull) factors (Müller & Uhde, 2012; Pontines & Siregar, 2014; Siregar & Choy, 2010). The study of [Frömmel and Midiliç \(2016\)](#) result that the fluctuation of the exchange rate is one of the significant channels that pull cross-border bank lending in emerging market economies. This study attempts to analyze the push and pull factors of cross-border bank lending from the Japanese banks to the Indonesian economies. The determinants are divided into push and pull factors, as following the previous literature. Thereby, this study complements and extends the previous empirical study of [Pontines and Siregar \(2014\)](#) by adding the exchange rate variable of the IDR vis-à-vis JPY.

The next part of this study is organized as follows. The second part previews the previous related study of the determinants of cross-border bank lending. The third part explains the research method, including data, measurements, econometric modeling, and strategy, to provide the most appropriate study. The result of this study will be discussed in the fourth part. Moreover, the last but not least is the conclusion that will be summarized in part five.

2. Literature Review

Some of the previous literature focused on the lender and recipient countries' macroeconomic and institution to explain the cross-border bank lending determinants, which divided variables into push and pull factors. Jeanneau and Micu (2002) used panel data and Generalized Least Square (GLS) to analyze the determinants of international bank lending in some largest countries in Asia and Latin America. They divided the independent variables to become a push and pull factor. To prove the future evolution of lending flows, they estimated each of push and pull factors, and international bank lending variable used Granger causality test. In Latin America, the push factor model seems to be the best predictor, and both factors are playing a more significant role in East Asian countries. They found that

GDP as a proxy of the economic cycle in both lender and recipient countries has a positive and significant effect on international bank lending. Furthermore, they provided a positive and significant effect of the short-term interest rate of lending countries to emerging economies. Particularly, fixed exchange rate regimes encourage more bank capital flow to the emerging market economies.

Papaioannou (2005) used panel data estimation to examine the cross-border bank flow from 19 developed countries, including the United States to 51 emerging market economies, including Indonesia, Malaysia, and the Philippines. The study divided the main result into pooled OLS and alternative estimators. Mainly reported, the gravity model shows the highest significant effect to the international bank lending. Specifically, the real per capita GDP, both home and host countries, has a positive and significant effect on cross-border bank lending activities. Inversely, the home countries exchange rate has a negative and significant effect. However, the inflation rate of host countries showed an insignificant variable.

Cetorelli and Goldberg (2011) adopted the model from Khwaja and Mian (2008), who used a different-indifferent approach. They estimated cross-border lending data from 17 developed lenders to 94 emerging market borrowers across Asia, Latin America, and Europe. They divided the pre-crisis period 2006:Q2 to 2007:Q2, 2007:Q3 to 2008:Q2 as the intermediate period, and the post-crisis period from 2008:Q3 to 2009:Q2. They found that shocks were transmitted through three balance bank channels. A withdrawing credit by foreign banks affected the local lending growth to emerging market borrowers. Foreign-owned and domestically-owned banks actively transmitted their shock by capital outflow.

Silalahi et al. (2012) decided to choose Arrelano-Bond GMM over two other estimation techniques are the pooled OLS and fixed the effect. They argued that the estimation of autoregressive of pooled OLS has an upward bias, and the fixed effect has a downward bias. They employed cross-border data claims from developed countries, namely Japan, the United States, the United Kingdom, and Germany, to Indonesia in all total sectors. The result showed that home countries' growth rate has a negative and significant effect, and host country growth rate showed inversely sign. However, interest rates, both in-home and host countries, showed insignificant in the affecting of international bank lending flow to Indonesia. Correctly, they also used the variable of interaction between home countries' growth rate and exposure to examine the global shock transmission. The variable shows a positive and significant effect on the volatility of their cross-border bank lending in Indonesia.

Siregar and Choy (2010) used panel data OLS, especially the random effect model based on their estimated equation result. They employed seven OECD countries as the lender and nine East Asian countries, including Indonesia, Malaysia, Philippines, Singapore, and Thailand. The result of

estimation based on the three gravity models that they used to analyze the cross-border bank lending determinants. The coefficient of financial centers, such as the ASEAN integration area and dummy variables for colonial history, has a positive and significant effect. Mainly, the case for bilateral trade produces a positive and significant coefficient. Finally, they conclude that a financial risk in East Asian during the 1997 crisis associated with the higher bank lending attraction from OECD countries with a negative sign.

De Haas and Van Horen (2013) used the analysis of panel data OLS to estimate the international bank lending that focused on the crisis period. They used two pairs of bank-country and bank-firm levels of data. They also divided the pre-crisis around July 2006 until June 2007 and the post-Lehman period around October 2008 until September 2009. They generally estimated four models, such as sudden stop, volume, number, and exit. Notably, their result showed less relationship between the international bank lending and the changes in trade and changes in FDI banks as control variables. This insignificant result is showed for the models of a sudden stop, volume, and number.

Pontines and Siregar (2014) built a dynamic macro-panel model and employed bank lending data from Japan, the UK, and the US to Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand. They estimated the model with the system-GMM due to the endogeneity problem would intend to be controlled. Plugging of the autoregressive cross-border lending variable presented the system-GMM as the appropriate choice of estimation over OLS and fixed effect. The result shows that the home countries' growth rate and the indicator of global transmission shock have the most significant impact on the lending outflow from the six Asian countries back to the home countries.

3. Research Method

3.1. Data Source and Measurement

The data used for the following analysis is quarterly data from 1986:I to 2017:I. The original dataset primarily obtained from the official site of Bank for International Settlement (BIS), International Monetary Fund (IMF), the Organization for Economic Co-operation and Development (OECD), and the Fred Economic Data of Federal Reserve Bank of St. Louis. The dependent variable is the international bank lending from Japan to Indonesia. The data are obtained from the Consolidated Banking Statistics of the official site of Bank for International Settlement (BIS).

Table 1. Summary of Data Sources and Measurement

Variable	Data	Description	Source	Expectation
$LogCBL_{i,j,t}$	International Bank lending	Total Claim of lending from the Japanese Banks to Indonesia	Consolidated Banking Statistics - BIS	
Push Factors				
$logGR_{i,t}$	Real GDP	Macroeconomic indicator to capture the business cycle in Japan	World Bank	+/-
$IR_{i,t}$	US 3-months T-Bill rate	Indicator of the rate of return in Japan	International Financial Statistic of the International Monetary Fund (IMF)	-
$logGR_{i,t}.EX_{i,j,t}$	Interaction between the US GDP growth and banking exposure in ASEAN-5	Indicator of the transmission effect of the global shock through the cross-border bank lending from Japan to Indonesia	BIS and the World Bank	+/-
Pull Factors				
$logGR_{j,t}$	Real GDP	Macroeconomic indicator to capture the business cycle in Indonesia	World Bank	+
$IR_{j,t}$	The interest rate of the money market	Indicator of the rate of return in Indonesia	International Financial Statistic of the International Monetary Fund (IMF)	+
$logER_{i,j,t}$	the ASEAN-5 currencies <i>vis-à-vis</i> the US dollar	Indicator of the type of the Japanese banks' reaction to response the liability shock in the home country	International Financial Statistic of the International Monetary Fund (IMF)	-

The independent variables are used to estimate the cross-border bank lending movement. Thus study divides the independent variables into two groups: push and pull factors. The push factors are a business cycle in Japan, the interest rate in Japan, and the variable from the GDP growth of Japan and lending exposure of the Japanese banks to Indonesian economies (shock variable). The pull factor variables are a business cycle in Indonesia, the interest rate in Indonesia, and the exchange rate of UDR *vis-à-vis* JPY. The real gross domestic product (GDP) variables are measured in the current US dollar, which Japan as a home country and Indonesia as a host country which obtained from the official site of the World Bank. Since the data provided in yearly frequency, we employed the linear interpolation method. This data used to explain the business growth cycle in both Japan and Indonesia.

The interest rate of Japan is obtained from the official site of the International Monetary Fund (IMF). This data is used to interpret the home country's interest rate. Additionally, the interest rate in Indonesia, which represented by the interest rate of the money market in percent per annum, is also obtained from the official site of the International Financial Statistic of the International Monetary Fund (IMF). The exchange rate of the IDR vis-à-vis JPY is also obtained from the official site of the International Monetary Fund (IMF). Additionally, in order to analyze the transmission effect of the shock in the economy of Japan through the cross-border bank lending from Japan to Indonesia, we extracted the variable from the GDP growth of Japan and lending exposure of the Japanese banks to Indonesian economies.

3.2. Empirical Model

The main purpose of this study is to analyze the primary determinants of cross-border bank lending. Accordingly, this study adopted the previous model from the study of [Pontines and Siregar \(2014\)](#). We modified the model by including exchange rate volatility from the study of [Frömmel and Midilić \(2016\)](#). The original model of this study is transformed into econometrics model as outlined by equation (1):

$$\begin{aligned} \log CBL_{i,j,t} = & \alpha_0 + \alpha_1 \log CBL_{i,j,t-1} + \beta_1 \log GR_{i,t} + \beta_2 \log GR_{j,t} + \beta_3 IR_{i,t} + \beta_4 IR_{j,t} + \\ & \beta_5 ER_{i,j,t} + \beta_6 \log GR_{i,t} \cdot EX_{i,j,t} + \varepsilon_t \end{aligned} \quad (1)$$

Where i denotes the home country or lender of international bank lending, which is Japan, while j denotes the host country or recipient of international bank lending from Japan, namely Indonesia. The $\log CBL_{i,j,t}$ represents the cross-border bank lending from Japan to Indonesia in logarithmic term; $\log CBL_{i,j,t-1}$ represents the lending in the previous period; $\log GR_{i,t}$ represents the business cycle in Japan; $\log GR_{j,t}$ represents the business cycle in Indonesia; $IR_{i,t}$ is nominal the interest rate Japan; $IR_{j,t}$ is nominal the interest rate in Indonesia; $ER_{i,j,t}$ represents the exchange rate of the IDR vis-à-vis JPY; $GR_{i,t} EX_{i,j,t}$ represents the indicator of the Japanese bank response to the shock; and ε_t is the disturbance term.

Consider to right-hand side variables in eq. (1), the main determinants of cross-border bank lending are divided by home or push and host or pull factors, as figured out by some previous literature of [Jeanneau and Micu \(2002\)](#) and [Müller and Uhde \(2012\)](#). We expect the positive coefficient of the real GDP of host countries as the higher returns will be earned from the higher economic cycle should attract more cross-border lending domestically. Whereas, there are two expected coefficients of the real GDP

of Japan since the lower economic condition in the home country will encourage the bank lender to seek another market, or the bank lender may catch a worsen signal of the capital position of foreign banks the should discourage their lending overseas.

To capture the rate of return in both home and host countries, we expect the negative coefficient of interest rate variable in the home country and a positive coefficient of interest rate in host countries. These expectations reflect that higher interest rates in the home country; banks will decrease their cross-border lending. Inversely, banks will increase more their cross-border lending when they are catching an increase in the host countries' interest rate. Besides, the exchange rate volatility of currency pairs is expected to be negative since the empirical evidence provided by Jeanneau and Micu (2002). Finally, the indicator of the home country's bank response to the global shock is expected to be negative, as the unstable economy, banks will more carefully lend their cross-border lending.

3.3. Analysis Method

We mainly employed Ordinary Least Square (OLS) to estimate the determinants of the Japanese bank's cross-border bank lending, as presented in equation (1). In order to decrease the endogeneity effect of the model, this study also employed the generalized method of moments (GMM) and instrumented all potentially endogenous variables with their own suitably lags. There are two types of GMM estimation, difference-GMM, and system-GMM. The difference GMM as the previous literature has suggested an indication of a transformation effect from the specification Arellano and Bond (1991). This estimator is widely used for modeling using a country-pairs variable. The estimator is based on the first difference variables, in order to eliminate the country-pair specific effect. However, the difference-GMM produced a poorly estimator in the case of small samples. Moreover, under such conditions, lag levels seem to have weak instruments for the different variables and prone to go through from finite sample bias.

For the GMM analysis, we employed the system-GMM, a related dynamic panel estimator developed in 1998 by Blundell and Bond (1998), according to the assumption that change in the using instrumental variables is uncorrelated with the fixed effect. However, the system-GMM is used to earn potentially considerable improvements over the difference-GMM in the case of small samples. System-GMM is composed by the first difference instrument on lag levels, and of levels instrumented on lag first differences. Specifically, the long-run deviation is not systematically related to the fixed effect. The reason for employing the system-GMM is more robust to measure the error cross-section estimation and remains consistent if the endogeneity problem detected.

4. Result and Discussion

4.1. Statistic Descriptive Analysis

The analysis begins from the correlation matrix analysis of each variable based on the data estimated. The result of the correlation matrix among variables is presented in table 2. The result explains that interest rate in Japan, Indonesia, and the exchange rate of IDR vis-à-vis JPY have negative correlation on the cross-border bank lending from Japan to Indonesia. However, the business cycle in Japan, Indonesia, and the shock in Japan have a positive correlation.

Table 2. Correlation Matrix

	$LogCBL_{i,j,t}$	$logGR_{i,t}$	$logGR_{j,t}$	$IR_{i,t}$	$IR_{j,t}$	$ER_{i,j,t}$	$logGR_{i,t} \cdot EX_{i,j,t}$
$LogCBL_{i,j,t}$	1	0.349046	0.3486176	-0.071206	-0.006890	-0.119136	0.241227
$logGR_{i,t}$	0.349046	1	0.750550	-0.719377	-0.553277	-0.835913	-0.319235
$logGR_{j,t}$	0.348617	0.750550	1	-0.738034	-0.832027	-0.721739	-0.711414
$IR_{i,t}$	-0.071206	-0.719377	-0.738034	1	0.593354	0.887006	0.734773
$IR_{j,t}$	-0.006890	-0.553277	-0.832027	0.593354	1	0.514914	0.725571
$ER_{i,j,t}$	-0.119136	-0.835913	-0.721739	0.887006	0.514914	1	0.625946
$logGR_{i,t} \cdot EX_{i,j,t}$	0.241227	-0.319235	-0.71141	0.734773	0.725571	0.625946	1

(Source: Author's Computation Using E-views 10).

The business cycle in Japan has a negative correlation with all of the other independent variables except the variable of the business cycle in Indonesia. According to column 3 of Table 2, the interest rate in Japan, Indonesia, the exchange rate of the IDR vis-à-vis JPY, and the shock variable hurt the business cycle in Indonesia. However, the interest rate in Japan has a positive correlation with interest rate in Indonesia, the exchange rate, and the shock variable as well as the variable of interest rate in Indonesia, which has a positive correlation with the exchange rate and the shock variable. Finally, the shock variable has a positive impact on the exchange rate of the IDR vis-à-vis JPY.

The summary statistic of data used to estimate equation (1) is presented in Table 3. Generally, we employed the same number of observations for every seven variables. However, other two variables, such as the lag of cross-border bank lending in the previous period is generated from the dependent variable, and the indicator of the Japanese banks' response to the home country's shock is generated by timing between the business cycle in Japan and the exposure of lending from Japan to Indonesia.

Table 3. Summary Statistic of Variable

	$LogCBL_{i,j,t}$	$logGR_{i,t}$	$logGR_{j,t}$	$IR_{i,t}$	$IR_{j,t}$	$ER_{i,j,t}$	$logGR_{i,t}.EX_{i,j,t}$
Mean	9.532919	29.09882	26.29643	2.948560	17.97141	0.032429	24.40957
Median	9.570119	29.15231	26.13342	1.940333	17.97667	0.013187	23.90356
Maximum	10.41653	29.48056	27.61332	7.690000	35.19667	0.159644	26.36061
Minimum	8.578665	28.25121	25.04436	0.994000	11.26333	0.007777	22.85691
Std. Dev.	0.525957	0.242694	0.833517	1.896293	5.273539	0.031347	1.194419
Skewness	-0.040242	-1.268185	0.276151	1.043979	0.979079	1.413857	0.343807
Kurtosis	1.872762	4.648729	1.751220	2.721774	4.032713	4.844436	1.551604
Jarque-Bera	6.651781	47.66397	9.555506	23.10928	25.11701	59.36411	13.38887
Probability	0.035941	0.000000	0.008415	0.000010	0.000004	0.000000	0.001238
Sum	1191.615	3637.353	3234.461	368.5700	2210.483	4.053623	3051.197
Sum Sq. Dev.	34.30226	7.303664	84.75955	445.8947	3392.846	0.121846	176.9031
Observations	125	125	123	125	123	125	125

(Source: Author's Computation Using E-views 10)

According to table 3 above, the data spread among variables are quite high. Since the minimum value of the interest rate in Japan is 0.007777, the minimum value of the business cycle in Indonesia is very far from the value of interest rate in Japan. The mean of each variable is quite nearby from each other, except the value of the exchange rate. Table 1 above also reports the standard deviation for each variable that has high spread, especially between the exchange rate and interest rate of Indonesia. Thus, we decided to apply the logarithmic terms for the high spread variables such as cross-border bank lending, business cycle in Japan and Indonesia, and exchange rate, to decrease the enormous difference spread among variables estimated.

4.2. Empirical Analysis and Discussion

Determinants of the cross-border bank lending from Japan as a home country to Indonesia as a host country are mainly estimated through ordinary least square (OLS) and Generalized Method of Moment (GMM) to make the analysis more robust. We compared the result of these two models. The result of the estimation of equation (1) is presented in table 4.

4.2.1. The Push and Pull Factors of Japan-Indonesia Cross-Border Bank Lending

Table 4 presents the estimation result of OLS, which divided into three columns, push factors, pull factors, and the simultaneous estimation of all variables. Push factors are the variables that come from the home county of cross-border bank lending. The home country has variables that push the banks to expand their lending to the cross-border. Pull factors are factors that come from the borrower's country (Indonesia) that pull the lending from Japanese banks to Indonesia.

Table 4. The Estimation Result of OLS

Variable	Push Factors Model	Pull Factors Model	Push and Pull Factors
C	-20.89578*** (7.625827)	-18.03456*** (2.678220)	30.77117*** (8.758625)
$\log GR_{i,t}$	0.896310*** (0.276685)		-2.490058*** (0.374456)
$\log GR_{j,t}$		0.967787*** (0.094124)	1.259241*** (0.073483)
$IR_{i,t}$	-0.028840 (0.049783)		-0.111959*** (0.029789)
$IR_{j,t}$		0.103115*** (0.012012)	0.028012*** (0.009962)
$ER_{i,j,t}$		7.645147*** (1.614163)	-8.096434*** (2.664936)
$\log GR_{i,t} \cdot EX_{i,j,t}$	0.181575*** (0.057971)		0.744198*** (0.065867)
F-statistic	12.70636***	36.63074***	74.80766***
Adjusted-R ²	0.220709	0.466998	0.784012

Figures reported in the parenthesis () are the standard error. An asterisk ***, **, and * indicate rejection of the null hypothesis at 1, 5, and 10 percent of significance level, respectively (Source: Author's Computation Using E-views 10).

The result of the OLS estimation shows that the coefficient of real GDP in Japan ($\log GR_{i,t}$) has a significant effect on the dynamic of cross-border bank lending for the push factors model and the simultaneous model. Specifically, the coefficient of $\log GR_{i,t}$ is 0.896310, which indicates an increase in the business cycle in Japan as much as USD 1 Million affected 89 percent increase in the Japanese banks flows to Indonesia. The positive coefficient of the $\log GR_{i,t}$ implies that the Japanese banks tend to focus their lending activities at their home when the decline in the Japan economic cycle happened. This result confirms the study of Müller and Uhde (2012) and Papaioannou (2005) that a decline in the home country's business cycle is responded by a decline in the international bank lending to host countries.

The interest rate in Japan does not statistically significant push cross-border bank lending from Japan to Indonesia. However, from the perspective of the push factors, the shock in the home country's economy is transmitted through the lending from cross-border banks (Aiyar, 2011; De Haas & Van Horen, 2013; Pontines & Siregar, 2014). In order to test the impact of a shock in the Japanese economy on the ebb and flow to Indonesia, this study measures an interaction term between the Japanese business cycle and the exposure of the Japanese bank lending to Indonesia ($\log GR_{i,t} \cdot EX_{i,j,t}$). The indicator of the Japanese bank response to the shock has a significant and positive effect at 1 percent. This variable captures the reaction of Japanese banks to shock or crisis that happened in their home country. The result implies that the Japanese banks reduced their international lending through

increased exposure of the banking system in Indonesia as a reaction to the Japanese's economic decline. It presents a shock transmission effect of cross-border bank lending from Japan to Indonesia.

Furthermore, all of the pull factors have a statistically significant effect on the dynamic of the cross-border bank lending from Japan to Indonesia at a 1 percent significant level. It has a consistent result in the simultaneous estimation of F-statistic. Accordingly, the result of partial estimation has positive coefficients for all pull factors except the exchange rate on the simultaneous model. It means that an increase in the business cycle and interest rate in Indonesia pull the bank lending from Japan to Indonesia.

4.2.2. Robustness Check

Generally, the result of pooled OLS shows a vast lack of significance variable estimates due to the endogeneity problem of these estimates. Thus, we suitably propose a generalized method of moments (GMM) to presents a robustness check. The result of the system-GMM shows a more improved significance of the coefficient estimates since the problem of endogeneity is solved. The result of the system-GMM estimator is presented in table 5. The result is also based on the estimation of equation (1).

Table 5. The Estimation Result of GMM

Variable	Push Factors Model	Pull Factors Model	Push and Pull Factors
C	-22.28429*** (5.846088)	-25.46271*** (4.817949)	47.86641*** (15.66071)
$\log GR_{i,t}$	0.918965*** (0.224535)		-3.435269*** (0.691374)
$\log GR_{j,t}$		1.231135*** (0.170078)	1.544828*** (0.167585)
$IR_{i,t}$	-0.021453 (0.046903)		-0.103544*** (0.033134)
$IR_{j,t}$		0.123697*** (0.018245)	0.031841* (0.016800)
$ER_{i,j,t}$		11.45196*** (3.454259)	-12.09691** (5.895678)
$\log GR_{i,t} \cdot EX_{i,j,t}$	0.210615*** (0.069064)		0.863185*** (0.117452)
Adjusted-R ²	0.212557	0.461919	0.746659
J-Statistic	10.28142***	15.64514***	9.663200***

Figures reported in the parenthesis () are the standard error. An asterisk ***, **, and * indicate rejection of the null hypothesis at 1, 5, and 10 percent of significance level, respectively (Source: Author's Computation Using E-views 10).

Table 5 presents the estimation result based on equation (1), which tests the effect of business cycle in Japan, the interest rate in Japan, and the Japanese shock to represent the effect of push factor of cross border bank lending from Japan. Otherwise, it also presents the effect of the business cycle in Indonesia, the interest rate in Indonesia, and the exchange rate of IDR vis-à-vis JPY in order to show the effect of pull factors of cross-border bank lending from Japan to Indonesia. The business cycle in Japan has a positive and significant effect on the volatility of cross-border bank lending. The robustness check uses GMM estimation has consistent results according to the OLS estimation, both push factors, pull factors, and combination of push and pull factors.

The variable of the exchange rate of IDR vis-à-vis JPY of the pull factors model confirms the result of [Correa et al. \(2018\)](#) and [Frömmel and Midiliç \(2016\)](#), who disclosed a positively significant effect to the cross border bank lending in emerging market countries. However, it diverges to the result of [Jeanneau and Micu \(2002\)](#), who discovered a negative and significant for all models estimated. The bilateral exchange rate is an indicator of financial stability and exchange rate risk. Since we employed the value of the spot rate of the currency pairs, the higher the value of the exchange rate means, the more depreciate of the host country's currency. It becomes a risk factor that the global bank decrease their lending to emerging market economies.

5. Conclusion and Recommendation

This study analyzes the determinants of cross-border bank lending from Japanese banks to Indonesian economies. According to the estimation result, the conclusions as follows: first, the business cycle in Indonesia pulled the cross-border bank lending from Japan. Second, the interest rate in Japan has low push factors affect on the cross-border bank lending to Indonesia. Third, the currency depreciation positively affects the flow of global lending based on the pull factor, and the transmission shock signal as the interaction of home country's growth rate and its exposure in the individual host countries as a push factor of international bank lending was indicated in transmitting the global shock to the host countries. According to the conclusion of the estimation result, it can suggest for strengthening the international bank regulation for the global bank intermediation in Indonesia. Moreover, the bank regulation in Indonesia should support the subsidiary of foreign banks to reinforce the financial system with not eliminate the possibility of domestic banks contributing to global financial intermediation. Indonesia should also actively participate in international bank supervision.

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