Liquidity Creation Analysis On Indonesian Bank Using Panel Ardl Approach

Sri Lestari, Imam Ghozali, Najmudin, Masfufah

Abstract: This research is liquidity creation research and is entitled "Liquidity Creation Analysis of Indonesian Bank Using Panel ARDL Approach: A Case Study of Top Ten Banks in Indonesia in the Period 2009-2018". The sample of this research is taken from the top ten commercial banks in Indonesia. This research is aimed to know the impact of earning volatility, reserve requirement, and market share on liquidity creation. The population of this research is all of commercial banks in Indonesia which are registered in Otoritas Jasa Keuangan (OJK) with 1.122 observation. The samples of this research are taken from top ten banks in Indonesia in the period 2018. The sampling method which is used in this research is purposive sampling method. Based on the result of the research and data analysis using Panel ARDL (Autoregressive Distributed Lag) method, it shows that: (1) earning volatility has significant negative impact on long term and insignificant impact on short term liquidity creation, (2) reserve requirement (primary and combination) has significant negative impact on long term liquidity creation, reserve requirement combination has significant negative impact on short term liquidity creation, whereas reserve requirement (secondary, foreign exchnge, and LDR) cannot be examined because of a near singular matrix, (3) market share has significant negative impact on long term liquidity creation and insignificant impact on short term liquidity creation. The implication of above summary is bank party should consider the variables which are used in this research and their impacts on liquidity creation to improve bank performance. It is hoped that the next research can increase the number of samples and add variables that have not been used in liquidity research-creation in Indonesia.

Keywords: liquidity creation, banks in Indonesia, Panel ARDL

1 INTRODUCTION

1.1 Background

Nowadays globalization has extended impact and has changed social life, politics, economics and culture. In the economics sector, globalization facilitates society to fulfil their daily need. Globalization also gives big impact on Indonesian banking. It is signed by appearing banks either the government-owned bank or private bank, regional-owned bank or foreign bank and either conventional bank or sharia bank. Bank (money market) is one of two main pillars which sustain modern capitalism economics system. Most of sector finance activity always need bankingBank is a financial service company that accept fund from people who have extra fund and distribute it for those who require it and another finance service. In this case, bank run its intermediation function as a mediator between finance and factor of public trust which is the main factor to run the business of bank. Generally, there are three types of banking service such as collecting money from public (funding), distributing money to the public (lending) and other banking services (service). For the people who want to save their money in the bank, there are many kinds of services such as saving, demand deposit, deposit or other forms of saving. For those who need money, they can get loan from the bank in a credit form. The other bank services become support collecting and distributing activity to reinforce banking service which already exists (Kasmir, 2012:3). Modern intermediation finance theory said that a bank has two main roles: creating liquidity and transforming risk (Bhattacharya and Thakor, 1993).

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Along with liquidity creation, a bank runs risk transforming activity such as issuing non-risk liquid deposit to fund risk non-liquid loan. Third parties fund is the biggest fund in a bank, the percentage of public fund can reach 80%-90% from all of fund in the bank and credit distributing activity reach 70%-80% from all of business bank activities (Dendawijaya, 2003:56). Public or customer fund acceptance is kept in the form of demand deposits, time deposits or saving deposits. The fund is distributed to public/ people who need in credit form. This activity gives an impact on liquidity creation or the amount of circulated money. From this liquidity creation activity, a bank will get income.[1] Unstable income shows unstable bank performance in economics. A bank with unstable performance and in the bad economic atmosphere will hold liquidity creation and strengthen the capital structure by increasing existed capital (Berger and Bouwman, 2009). This is appropriate with risk absorption theory that state: a bank in difficult condition will more strengthen its capital and more careful in credit sharing (Berger and Bouwman, 2009). It can be concluded that income stabilisation affects negatively on liquidity creation. This thing is also applicable to the big and small bank, whereas it has no impact on the intermediate bank. Lei dan Song (2013); Hestiyani and Arfianto (2013); Mirajudin and Prasetiono (2014); Shu-Chun et al. (2018) also state that there is a negative impact of stable income on bank liquidity creation. The research of Horvath et al. (2016) find that there is a positive impact of stable income on liquidity creation. Horvath et al. (2015), Pratama and Wahyudi (2016) state that there is no impact on stable income on bank liquidity creation. Liquidity creation is also affected by Giro Wajib Minimum (GWM) or reserve requirement. Reserve requirement is bank minimum balance that should be kept by common banks everyday by Bank Indonesia (Kuncoro and Suhardjono, 2012). Giro Wajib Minimum or reserve requirement is forced by Bank Indonesia to fulfil bank liquidity obligation.

Meanwhile, the number of the effect of reserve requirement on liquidity creation is still too small. The research of Hestiyani and Arfianto (2013) shows that the impact of reserve requirement on liquidity creation is negative. Pratama and Wahyudi (2016) find that there is an impact of reserve requirement on liquidity. The research of this variable is not much because there is a rule of Giro Wajib Minimum (GWM) which does not exist in other countries. Local market competition, in this case, market share affect liquidity creation. Local market competition is important to control because various research has shown that market concentration affects credit availability (for example, Petersen and Rajan 1995 in Berger and Bouwman, 2009) and that loan portfolio of big bank and small bank is very different (for example, Berger and Bouwman, 2006). So, the competition tends to affect liquidity creation either through the number and the kind of loan given by bank and the funding way. If the local market competition among banks in a country is weakened or low, bank liquidity creation will increase. This is appropriate with the research of Lei and Song (2013) that said, there is negative impact of local market competition on liquidity creation. Berger and Bouwman (2009) conclude that local market competition of big bank on liquidity creation has insignificant negative impact, on intermediate bank has negative impact and on small bank has positive impact. On the research of Berger and Bouwman (2006), there is negative impact of local market competition on big bank liquidity creation and positive impact on small bank. The research of Horvath et al. (2015) states that there is no local market competition effect on liquidity creation. The inconsistency of research findings makes the researchers pick a topic about liquidity creation. This research is continuing of Indonesian Researchers (Hestiyani and Arfianto, 2013; Mirajudin and Prasetiono, 2014; Pratama and Wahyudi, 2016) by increasing market share variable of Berger and Bouwman's research (2009) and using different analysis tool from the previous research, Panel Autoregressive Distributed Lag (ARDL).

1.2 Research Objective

The objective of this research is to know and analyze the impact of earning volatility, reserve requirement, dan market share on liquidity creation, using sample of top ten common banks in Indonesia in the period 2009-2018.

2 LITERATURE REVIEW AND FOMULATING HYPOYHESIS

2.1 The impact of earnings volatility on liquidity creation

Earning volatility is one of risks that should be faced by bank. Unstable income shows unstable bank performance in economics. If a bank in unstable performance condition and unstable economics condition, a bank will hold its liquidity creation and also strengthen its capital structure by increasing previous capital (Berger and Bouwman, 2009). It because of bigger bank capital, stronger bank facing the risks. It is appropriate with risk absorption theory, in difficult condition a bank will more strengthen its capital and more careful on credit sharing (Berger and Bouwman, 2009). The research of Berger and Bouwman (2009); Lei and Song (2013); Hestiyani and Arfianto (2013); Mirajudin and Prasetiono (2014); Shu-Chun et al. (2018) have found out evidence that there is negative impact of earning volatility on liquidity creation. Based above explanation we can formulate the hypothesis:

H_1 = earning volatility (EV) give negative effect on liquidity creation (LC)

2.2 The effect of reserve requirement on liquidity creation

Giro Wajib Minimum (GWM) is minimum amount of funds that must be maintained by banks at the amount determined by Bank Indonesia at a certain percentage of Third Party Funds (Bank Indonesia, 2014). The research of Hestiyani and Arfianto (2013) shows that there is negative effect of reserve requirement on liquidity creation. The existence of Giro Wajib Minimum (GWM) rule from Bank Indonesia gives Indonesia banking bigger force because a bank has to maintain not only minimum demand deposit balance but also avoid getting penalty if the balance of demand deposit is lower or higher than certain amount determined by Bank Indonesia. It makes the liquidity creation that can be created by bank get more force. On Indonesian banking, there are 5 kinds of reserve requirement: primary reserve requirement, secondary reserve requirement, foreign currency reserve requirement, Loan to Deposit Ratio (LDR) reserve requirement, and combined reserve requirement. Therefore, the second hypothesis will be explained in detail as follow:

H_{2a} = primary reserve requirement (RR_PRI) influence negatively on liquidity creation (LC)

H_{2b} =secondary reserve requirement (RR_SEK) influence negatively on liquidity creation (LC)

H_{2c} = foreign currency reserve requirement (RR_VAL) influence negatively on liquidity creation (LC)

H_{2d} = LDR reserve requirement (RR_LDR) influence negatively on liquidity creation (LC)

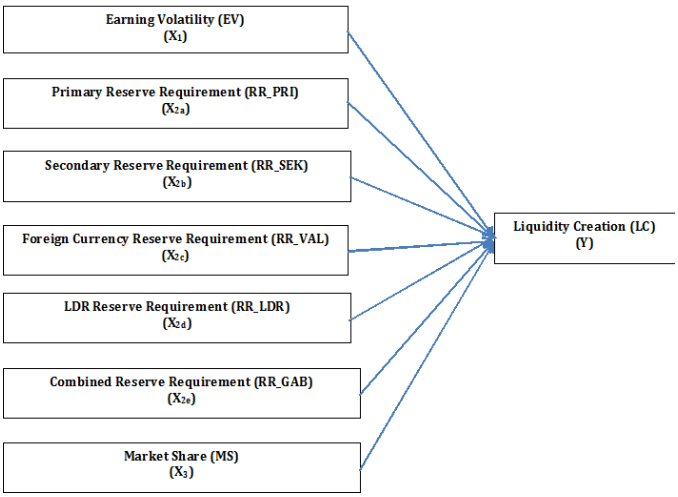
H_{2e} = combined reserve requirement (RR_GAB) influence negatively on liquidity creation (LC)

2.3 The impact of market share on liquidity creation

Market share is local market share from medium and big which is possible for a bank with different class can compete in different ways (Berger and Bouwman, 2009). The research of Berger and Bouwman (2006); Lei and Song (2013), said that there is negative impact of market share on liquidity creation. If the market share of banks in the country weakens or being low, banking liquidity creation will raise. Based on this explanation we can formulate hypothesis as follow:

H_3 = market share (MS) influence negatively on liquidity creation (LC)

From above hypothesis, it can be formulated the research model as shown in picture 1.



Picture 1. *Research Model*

3 RESEARCH METHOD

This research is a case study Ghozali (2016:90) stated that a case study can be used to examine is there any impact of one variable on other variable changed or not.

3.1 Population and Sample

Ghozali (2016) stated that population is all of people, event or thing that is concerned by the researcher to be investigated. The population in this research is all of common banks in Indonesia in the period 2009-2018 which are registered in Otoritas Jasa Keuangan (OJK). The amount of population in this research is 1.122 observation. From all of population, it will be taken research samples. The sampling method used in this research is non-probability purposive sampling. It is the way to take samples by determining certain criteria by researcher (Ghozali, 2016:140). Here are some criteria that used in this research: (1) common banks which are registered in Otoritas Jasa Keuangan (OJK) in the period 2009-2018, (2) top ten the biggest bank in Indonesia based on total asset from finance report on December 2018, (3) bank publishes annual finance report completely in the period 2009-2018, (4) bank-owned complete data which is necessary for research variable in the period 2009-2018.

3.2 Technique of Collecting Data

The researchers use literature review and documentation as collecting data technique in this research. Reviewing literature in this research include looking for relevant and valid reference by looking at book, journal, article and previous research which is related to research problem. Documentation is done by collecting secondary data, time series such as annual report of top ten the biggest bank in Indonesia in the period 2009-2018 to proceed.

3.3 Research Variable

There are four variables in this research. They are one dependent variable and three independent variables. The dependent variable in this research is liquidity creation. The independent variables in this research are earning volatility, reserve requirement and market share.

Liquidity creation is symbolized by LC, counted with cat nonfat formula (it is seen from balance sheet activity) as follow:

$$LC = \frac{0{,}5 * illiquid\ assets + 0 * semiliquid\ assets - 0{,}5 * liquid\ assets}{+0{,}5 * liquid\ liabilities + 0 * semiliquid\ liabilities - 0{,}5 * illiquid\ liabilities - 0{,}5 * equity}{GTA}$$

Source: Berger and Bouwman (2009); Lei and Song (2013)

Earning volatility is symbolized by EV. It is standard deviation from quartal ROA, where ROA equals with net profit divided by total asset. In this research ROA standard deviation which is used is monthly data. The formula is as follow:

$$EV = STD\ DEV\ ROA$$

Sources: Berger and Bouwman (2009); Lei and Song (2013)

Reserve requirement is symbolized by RR, counted based on Peraturan Bank Indonesia (PBI) Number: 12/19/PBI/2010.

Market share is symbolized by MS. The formula of market share is as follow:

$$MS = \frac{share\ of\ banks'\ deposit}{total\ deposits}$$

Source: Berger and Bouwman (2009); Lei and Song (2013); Horváth et al. (2015)

4 TECHNIQUE OF DATA ANALYSIS

4.1 Statistics Descriptive Analysis

Statistics descriptive analysis is the simplest statistics analysis. The analysis used in this research is mean, median, maximum, minimum, and standard deviation (Winarno, 2015:1.28).

Panel Autoregressive Distributed Lag (ARDL) Analysis:

Autoregressive Distributed Lag (ARDL) Model is used to estimate and separate longterm relation from short term dynamics (Kripfganz and Schneider, 2018).

Model

$$LC_{it} = \sum_{j=0}^{q} \gamma_{ij} EV_{i,t-j} + \sum_{j=0}^{r} \delta_{ij} RR_{i,t-j} + \sum_{j=0}^{s} \theta_{ij} MS_{i,t-j}$$

Information :

LC = liquidity creation
EV = earning volatility
RR = reserve requirement
MS = market share
γ = earning volatility regression coefficient (gamma)
δ = reserve requirement regression coefficient (delta)
θ = market share regression coefficient (theta)
q, r, s = lag optimal lag order
i = 1, 2, …., i
t = time range (year)

Good ARDL panel model can be accepted if the model own cointegrated lag, its significant value less than 0,05 (Novalina and Rusiadi, 2018).

Stationarity Test

To examine stationarity, Unit Root Test can be used with Augmented Dickey Fuller (ADF). This test will determine does the data have fluctuation or constant (Ghozali, 2017:355). If the value of Probability < 5% (0,05) or statistics value > critical value, the data is steady or there is no unit root and vice versa (Ghozali, 2017:355).

Lag Length

To determine the Length of lag, Akaike Information Criteria (AIC) can be used. Optimal model is the smallest score model (the most negative value) from AIC (Kripfganz and Schneider, 2018). The most optimum lag score can be found on a model with the smallest AIC score.

Model Estimation

If big panel data is used in research, the equation will be estimated using Pooled Mean Group (PMG) or Mean Group (MG). this estimator is suitable for big panel because it offers suitable estimator for longterm and short term dynamics.

5 RESULT AND DISCUSSION

From the criteria, it can be obtained 10 bank samples for the research. The samples are Bank Rakyat Indonesia (BRI), Bank Mandiri, Bank Central Asia (BCA), Bank Negara Indonesia (BNI), Bank Tabungan Negara (BTN), Commerce International Merchant Bankers Niaga Bank (CIMB Niaga Bank), Pan Indonesia Bank (Panin Bank), Bank Danamon, Malayan Banking Berhad (Maybank), and Bank Oversea-Chinese Banking Corporation Nilai Inti Sari Penyimpan (Bank OCBC NISP).

The Result of Statistics Descriptive Analysis

Table 1. *Statistics Descriptive*

Banks and Year						
Var	Mean	Med	Max	Min	Std. Dev.	Obs
LC	0,543850	0,544500	0,722600	0,309800	0,086643	100
EV	0,002120	0,001450	0,014600	0,000100	0,002107	100
RR_PRI	0,144353	0,080000	0,106400	0,050000	0,010938	100
RR_SEK	0,070459	0,116100	0,471800	0,025000	0,087010	100
RR_VAL	0,000212	0,080300	0,296100	0,010000	0,036113	100
RR_LDR	0,075025	0,000000	0,0064000,1	0,000000	0,001030	100
RR_GAB	0,072512	0,065938	39700	0,031075	0,020945	100
MS	0,099997	0,052300	0,249200	0,022600	0,075100	100

Source: Output of Eviews 10 data analysis

Statistics Descriptive analysis is the simplest analysis in statistics. The used analysis are mean, median, maximum, minimum, and standard deviation. Table 1 is the statistics summary from the variables that will be tested using Panel ARDL.

5.1 Analysis of Panel Autoregressive Distributed Lag Panel (ARDL) :

Model

$$LC_{it} = \sum_{j=0}^{q} \gamma_{ij} EV_{i,t-j} + \sum_{j=0}^{r} \delta_{ij} RR_{i,t-j} + \sum_{j=0}^{s} \theta_{ij} MS_{i,t-j}$$

Stationarity Test Result

Table 2*. The Result of Unit Root Test on Level Stage*

Variable	ADF		
	p-value	Critical Value α = 0,05	Definition
LC	0,0039	0,05	Stationary
EV	0,0001	0,05	Stationary
RR_PRI	0,0000	0,05	Stationary
RR_SEK	0,0181	0,05	Stationary
RR_VAL	0,0000	0,05	Stationary
RR_LDR	0,0175	0,05	Stationary
RR_GAB	0,1864	0,05	Non Stationary
MS	0,2230	0,05	Non Stationary

Source: Processed Data

Table 2 shows ADF value on the level from the variable which is used in this research with significance level α = 0,05. The stationary variables are liquidity creation, earning volatility, primary reserve requirement, secondary reserve requirement, foreign currency reserve requirement, and LDR reserve requirement. Whereas combined reserve requirement variable and market share are non-stationary, it is needed Unit Root Test on difference 1 level.

Table 3*. The Result of Unit Root Test on the First Level*

Variable	ADF		
	p-value	Critical Value α = 0,05	Definition
LC	0,0129	0,05	Stationary
EV	0,0010	0,05	Stationary
RR_PRI	0,0000	0,05	Stationary

RR_SEK	0,0186	0,05	Stationary
RR_VAL	0,0000	0,05	Stationary
RR_LDR	0,0000	0,05	Stationary
RR_GAB	0,0005	0,05	Stationary
MS	0,0426	0,05	Stationary

Source: Processed Data

Based te output on Table 3, it can be seen that ADF value all of the variables which are used in the stationary research on difference 1, and there is no stationary variable on difference 2, so analysis using ARDL Panel can be conducted

Lag Length

To determined lag length, Akaike Information Criteria (AIC) can be used. Table 12 shows AIC output.

***Table 4**. Optimal Lag Length*

Variable	Lag	Variable	Lag
LC	1	RR_VAL	-
EV	1	RR_LDR	-
RR_PRI	1	RR_GAB	1
RR_SEK	-	MS	1

Source: Processed Data

The result of determining lag length on Table 4 using AIC method, it can be known that the variables of liquidity creation, earning volatility, primary reserve requirement, combined reserve requirement, and market share have 1 optimal lag length, whereas the variables of the secondary reserve requirement, foreign currency reserve requirement, and LDR reserve requirement can not be estimated so further analysis can not be conducted. It is detected by appearing of near singular matrix when processing data by inserting the three variables, it can be caused the data contain multicollinearity element or because of lack of data.

5.2 Model Estimated Result

This research use ARDL Panel as analysis tool. The first advantage of ARDL Panel can estimate and separate longterm relation from short term dynamics, so it can be seen the impact of independent variables on overall long term or short term dependent variable. Table 5 shows the estimated ARDL Panel result for overall bank and the research year.

***Table 5**. Overall ARDL Panel Output*

Variable	Coefficient	Prob.*
Long Run Equation		
EV	-20,29863	0,0000
RR_PRI	-11,53441	0,0000
RR_GAB	-0,727077	0,0000
MS	-4,232432	0,0000
Short Run Equation		
D(EV)	3,730564	0,2602
D(RR_PRI)	6,149498	0,1276
D(RR_GAB)	-1,069987	0,0040
D(MS)	-6,313828	0,6231

Source: Output of Eviews 10 data analysis

Based on table 5, it can be seen that variable of earning volatility, primary reserve requirement, combined reserve requirement, and market share influence negatively and significantly on long term liquidity creation. In short term combination reserve requirement variable influence negatively and significantly on liquidity creation variable, but earning volatility, primary reserve requirement and market share have no impact. After conducting ARDL regression, the result is inserted into the created ARDL Panel. The overall output model of ARDL from all fo banks and all of the periods are as follow:

1. Long term

a. With primary reserve requirement

LC_{it} = – ***20,2986 EV_{it-1} – ***11,5344 RR_{it-1} – ***4,2324 MS_{it-1}

b. With combined reserve requirement

LC_{it} = – ***20,2986 EV_{it-1} – ***0,7271 RR_{it-1} – ***4,2324 MS_{it-1}

2. Short term

a. With primary reserve requirement

LC_{it} = 3,7306 EV_{it-1} + 6,1495 RR_{it-1} – 6,3138 MS_{it-1}

b. With combined reserve requirement

LC_{it} = 3,7306 EV_{it-1} – **1,0700 RR_{it-1} – 6,3138 MS_{it-1}

The second advantages of ARDL Panel is the impact of independent variables on short term dependent variable of each reasearch can bee seen. The estimation result of each bank model can be seen on table 6 until table 15.

Table 6. *Output of BRI ARDL Panel*

Variable	Coefficient	Prob. *
D(EV)	9,188536	0,8764
D(RR_PRI)	1,571321	0,9038
D(RR_GAB)	-0,074214	0,9317
D(MS)	8,171112	0,4034

Source: Output of Eviews 10 analysis data

Table 6 shows BRI ARDL Panel output. Based on Table 6, it can be obtained information that earning volatility variable, primary reserve requirement, combined reserve requirement, and market share do not influence on liquidity creation.

Table 7*. Bank Mandiri ARDL Panel Output*

Variable	Coefficient	Prob. *
D(EV)	2,542483	0,0240
D(RR_PRI)	-3,414922	0,2968
D(RR_GAB)	-2,781975	0,0000
D(MS)	12,71524	0,0035

Source: Output of Eviews 10 analysis data

Table 7 shows Bank Mandiri ARDL Panel output. Based on Table 7, it can be obtained the information that bel earning volatility variable and market share influence positively and significantly on liquidity creation. Combined reserve requirement variable gives a significant negative impact on liquidity creation, but primary reserve requirement variable doesn't give any impact on liquidity creation.

Table 8*. BCA ARDL Panel Output*

Variable	Coefficient	Prob. *
D(EV)	-2,756768	0,9866
D(RR_PRI)	24,01180	0,3156
D(RR_GAB)	0,009495	0,9569
D(MS)	-8,896238	0,9569

Source: Output of Eviews 10 analysis data

Table 8 shows BCA ARDL Panel output. Based on Table 8 it can be seen that primary reserve requirement and combined reserve requirement give no impact on liquidity creation. Earning volatility variable and market share give no impact on liquidity creation.

Table 9*. BNI ARDL Panel output*

Variable	Coefficient	Prob. *
D(EV)	7,527659	0,2542
D(RR_PRI)	15,94891	0,2204
D(RR_GAB)	0,043410	0,8829
D(MS)	4,754691	0,5668

Source: Output of Eviews 10 analysis data

Table 9 shows BNI ARDL Panel output. Based on Berdasarkan Table 9, it can be obtained information such as earning volatility variable, primary reserve requirement, combined reserve requirement, and market share give no impact on liquidity creation.

Table 10. *BTN ARDL Panel output*

Variable	Coefficient	Prob. *
D(EV)	12,27388	0,9178
D(RR_PRI)	7,650110	0,9229
D(RR_GAB)	-1,374083	0,1743
D(MS)	35,13209	0,9877

Source: Output of Eviews 10 analysis data

Table 10 shows BTN ARDL Panel output. Based on Table 10 it can be seen that these variables (earning volatility, primary reserve requirement, market share, and combined reserve requirement) have no impact on liquidity creation.

Table 11*. CIMB Niaga Bank ARDL Panel output*

Variable	Coefficient	Prob. *
D(EV)	4,909473	0,5085
D(RR_PRI)	-16,07388	0,9673
D(RR_GAB)	-1,736743	0,2663
D(MS)	51,54618	0,9874

Source: Output of Eviews 10 analysis data

Table 11 shows CIMB Niaga Bank ARDL Panel output. Based on Table 11, it can be seen that earning volatility, primary reserve requirement primer, combined reserve requirement, and market share variable have no impact on liquidity creation.

Table 12. *Panin Bank ARDL Panel output*

Variable	Coefficient	Prob. *
D(EV)	16,88588	0,0295
D(RR_PRI)	23,79228	0,0400
D(RR_GAB)	-0,037332	0,0274
D(MS)	-25,29406	0,8274

Source: Output of Eviews 10 analysis data

Table 12 shows Panin Bank ARDL Panel output. On Table 12, it can be seen that earning volatility and primary reserve requirement influence positively and significantly on liquidity creation. Combined reserve requirement variable influence negatively and significantly on liquidity creation. Market share variable does not affect liquidity creation.

Table 13. *Output ARDL Panel Bank Danamon*

Variable	Coefficient	Prob. *
D(EV)	3,975816	0,0006
D(RR_PRI)	6,915027	0,0599
D(RR_GAB)	-2,785602	0,0000
D(MS)	-94,96239	0,3918

Source: Output of Eviews 10 analysis data

Table 13 shows Bank Danamon ARDL Panel output. On Table 13, it can be seen that earning volatility variable influence positively and significantly on liquidity creation. Combined reserve requirement variable influence negatively and significantly on liquidity creation. Primary reserve requirement and market share variable do not affect liquidity creation.

Table 14. *Output ARDL Panel Maybank*

Variable	Coefficient	Prob. *
D(EV)	3,968377	0,8542
D(RR_PRI)	-0,046139	0,9997
D(RR_GAB)	-0,939690	0,1056
D(MS)	-18,38019	0,9891

Source: Output of Eviews 10 analysis data

Table 14 shows Maybank ARDL Panel output. Based on Table 14, it can be gained information that is earning volatility variable, primary reserve requirement, combined reserve requirement, and market share give no influence on liquidity creation.

Table 15. *OCBC NISP Bank ARDL Panel output*

Variable	Coefficient	Prob. *
D(EV)	-21,20970	0,8808
D(RR_PRI)	1,140473	0,9578
D(RR_GAB)	-1,023140	0,0123
D(MS)	-27,92471	0,9979

Source: Output of Eviews 10 analysis data

Table 15 shows OCBC NISP Bank ARDL Panel output. Based on Table 15, it can be seen that earning volatility variable, primary reserve requirement and market share do not affect liquidity creation. Whereas combined reserve requirement variable give significant negative impact on liquidity creation. After conducting regression of Panel ARDL for each bank, the result is inserted into Panel ARDL which is already created. Panel ARDL output, model for each bank can be arranged as follow:

1. BRI
   a. With primary reserve requirement
      LC_{it} = 9,1885 EV_{it-1} + 1,5713 RR_{it-1} + 8,1711 MS_{it-1}
   b. With combined reserve requirement
      LC_{it} = 9,1885 EV_{it-1} – 0,0742 RR_{it-1} + 8,1711 MS_{it-1}
2. Bank Mandiri
   a. With primary reserve requirement
      LC_{it}= **2,5425 EV_{it-1} – 3,4149 RR_{it-1} + **12,7152 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= **2,5425 EV_{it-1} – ***2,7820 RR_{it-1} + **12,7152 MS_{it-1}
3. BCA
   a. With primary reserve requirement
      LC_{it}= – 2,7568 EV_{it-1} + 24,0118 RR_{it-1} – 8,8962 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= – 2,7568 EV_{it-1} + 0,0095 RR_{it-1} – 8,8962 MS_{it-1}
4. BNI
   a. With primary reserve requirement
      LC_{it}= 7,5277 EV_{it-1} + 15,9489 RR_{it-1} + 4,7547 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= 7,5277 EV_{it-1} + 0,0434 RR_{it-1} + 4,7547 MS_{it-1}
5. BTN
   a. With primary reserve requirement
      LC_{it}= 12,2739 EV_{it-1} + 7,6501 RR_{it-1} + 35,1321 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= 12,2739 EV_{it-1} – 1,3741 RR_{it-1} + 35,1321 MS_{it-1}
6. Bank CIMB Niaga
   a. With primary reserve requirement
      LC_{it}= 4,9095 EV_{it-1} – 16,0739 RR_{it-1} + 51,5462 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= 4,9095 EV_{it-1} – 1,7367 RR_{it-1} + 51,5462 MS_{it-1}
7. Panin Bank
   a. With primary reserve requirement
      LC_{it}= **16,8859 EV_{it-1} + **23,7923 RR_{it-1} – 25,2941 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= **16,8859 EV_{it-1} – **0,0373 RR_{it-1} – 25,2941 MS_{it-1}
8. Bank Danamon
   a. With primary reserve requirement
      LC_{it}= ***3,9758 EV_{it-1} + 6,9150 RR_{it-1} – 94,9624 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= ***3,9758 EV_{it-1} – ***2,7856 RR_{it-1} – 94,9624 MS_{it-1}

9. Maybank
   a. With primary reserve requirement
      LC_{it}= 3,9684 EV_{it-1} – 0,0461 RR_{it-1} – 18,3802 MS_{it-1}
   b. With combined reserve requirement
      LC_{it} = 3,9684 EV_{it-1} – 0,9397 RR_{it-1} – 18,3802 MS_{it-1}
10. Bank OCBC NISP
   a. With primary reserve requirement
      LC_{it}= – 21,2097 EV_{it-1} + 1,1405 RR_{it-2} – 27,9247 MS_{it-1}
   b. With combined reserve requirement
      LC_{it}= – 21,2097 EV_{it-1} – **1,0231 RR_{it-2} – 27,9247 MS_{it-1}

5.4 Discussion

This research aim is to know the impact of earning volatility, reserve requirement, and market share variable on liquidity creation using Panel ARDL. This research is focused on the impact of long term independent variables, so a bank can make long term plan well. Long term planning will become bank guideline to gain success in the future. Long term planning needs more care and detail consideration, so there is no mistake in taking decision. After conducting a test, this research answer te impact of long term earning volatility, reserve requirement, and market share on liquidity creation hypothesis. The result of hypothesis testing can be seen in Table 16.

Table 16. *The Result of Hypothesis Testing for Long Term*

Hypothesis	Hypothesis Statement	Test Result	Additional Information
H_1	EV influence negatively on LC	Significant	Hypothesis accepted
H_{2a}	Primary RR influence negatively on LC	Significant	Hypothesis accepted
H_{2e}	Combined RR influence negatively on LC	Significant	Hypothesis accepted
H_3	MS influence negatively on LC	Significant	Hypothesis accepted

Source: Processed data

Secondary reserve requirement hypothesis (H_{2b}), foreign currency reserve requirement (H_{2c}), and LDR reserve requirement (H_{2d}) can not be proved because when all of them are inserted in the model, near singular matrix appear so those three reserve requirement variable can not be inserted in the model. Thereby, the second hypothesis is represented by primary reserve requirement and combined reserve requirement. Based on the test result, it is known that both of variable influence negatively and significantly on liquidity creation. Therefore, it can be concluded that the second hypothesis is accepted. Here are further discussion:

First hypothesis discussion, earning volatility influence negatively on liquidity creation

The whole test result is shown in Table 5. It shows that earning volatility variable influence negatively and significantly on long term liquidity creation by probability value 0,0000 smaller than its significance value (0.05). The coefficient shows that bigger earning volatility score, smaller liquidity creation score and vice versa. The result of the estimation model of each bank about the impact of earning volatility on liquidity creation can be seen in Table 6 until Table 15. The estimation result of each bank is short term estimation result. The result is summarized in Table 17.

Table 17*. The result of Earning Volatility test of Top Ten Bank in Indonesia in the period 2009-2018*

Period/ Bank	Test Result	Additional Information
BRI	Insignificant	No effect
Bank Mandiri	Significant	Influential
BCA	Insignificant	No effect
BNI	Insignificant	No effect
BTN	Insignificant	No effect
Bank CIMB Niaga	Insignificant	No effect
Panin Bank	Significant	Influential
Bank Danamon	Significant	No effect
Maybank	Insignificant	No effect
Bank OCBC NISP	Insignificant	No effect

Source: Processed data

Table 17 shows that among 10 banks only two of them which proved that earning volatility influence negatively and significantly on liquidity creation. Generally, it can be said that earning volatility does not affect short term liquidity creation. This result is appropriate with the result shown in Table 5 that short term earning volatility does not affect liquidity creation. Therefore, it can be concluded that in the case of top 10 the biggest banks in Indonesia, earning volatility influence negatively and significantly on long term liquidity creation, but it is proved the opposite condition in short term. The result of this test shows the advantage of Panel ARDL model, detecting the impact in the short and long term. Berger and Bouwman (2009); Lei and Song (2013); Hestiyani and Arfianto (2013); Mirajudin and Prasetiono (2014); Shu-Chun et al. (2018) examined the impact earning volatility on liquidity creation and found out that earning volatility give significant negative impact on

liquidity creation. The researcher told that in a difficult economics condition and unstable performance, a bank will hold its liquidity and strengthen its capital structure by increasing the capital. It because of bigger capital of a bank, stronger a bank in facing the risk. This is appropriate with risk absorption theory that is a bank in difficult condition will strengthen its capital and more careful in credit sharing. Berger and Bouwman (2009) use fixed effects analysis tool; Lei and Song (2013) use the pooled, fixed-effects, and random-effects regressions; Hestiyani and Arfianto (2013) use multiple linear regression; Mirajudin and Prasetiono (2014) use multiple linear regression; Shu-Chun et al. (2018) use Ordinary Least Square (OLS) regression and Two-Stage Least Squares (2SLS) regression. All of them use analysis tool which only can predict the impact of earning volatility on short term liquidity creation. Earning volatility is unstable income because of unstable bank work performance in economics. The result of this research found out that the whole short term earning volatility has no impact on liquidity creation. It because in the short term, unstable income in banking still can be faced and be solved by the bank itself, so there is no impact on liquidity creation. Long term unstable income has an impact. It because identifying unstable source income is forward-looking. This research has found out that the whole long term earning volatility influence significantly and negatively on liquidity creation. Facing this thing, the banks must be able to carry out an identification which will be analyzed to know how much risk is potentially dangerous, widespread and systemic, so it can paralyze banking and economics activities. The economic crisis which is occurred in 1997 until 1998 is caused by Indonesia's short term large external debt. It has been getting worse because the government doesn't make mechanism law to control it. When the crisis occurred, it is just realized that crisis brings serious impact. From 1992 until 1997, 85% of Indonesia's external debt is private loan. The number of the loan is big enough because foreign creditors lend Indonesia which has low inflation, budget surplus, many human resources, and open trading system in that time their capital. Besides the government poor monitoring mechanism, it also caused by poor banking systems in Indonesia (Kompasiana, 2014). This caused high instability income of banking and make long term liquidity creation low. Because the result of this research shows that there is significant negative impact of earning volatility on long term liquidity creation, it can be concluded that the first hypothesis is accepted. The acceptance of the first hypothesis dhows that higher-earning volatility, lower liquidity creation, and vice versa. If a bank in unstable work performance and difficult economics, a bank will hold its liquidity and strengthen its capital structure by increasing capital, so it will be more careful about sharing its credit.

Discussion of the second hypothesis, reserve requirement influence negatively on liquidity creation

The testing result of reserve requirement effect on overall liquidity creation is shown in Table 5. Based on Table 5, it is known that the primary reserve requirement variable influence significantly and negatively on long term liquidity creation. It is proved by probability value (0,0000) smaller than its significant value (0,05). The coefficient refers to negative value, that is -11, 53441. Table 5 also shows the combined reserve requirement variable influence negatively and significantly on long term liquidity creation. It is proved by probability value (0,0000) that smaller than its significant value (0,05). The coefficient refers to the negative number, that is -0,727077. This result shows that bigger reserve requirement variable, smaller liquidity creation score and vice versa. The result of the short term test on primary reserve requirement shows that primary reserve requirement does not affect liquidity creation. It is proved by probability value, 0, 1276. It is bigger than its significant value (0,05). The result of the short term test on combined reserve requirement influence negatively and significantly on liquidity creation. This is proved by its probability value (0,0040) which is smaller than its significant value (0,05i). The coefficient shows negative value, that is -1,069987. The estimation result model of each bank about the impact of reserve requirement on liquidity creation is one Table 6 until 15. Table 18 shows the summary of reserve requirement (primary and combined) impact on liquidity creation of 10 banks which are used as research samples. The test of each bank is a short term test.

Table 18. *The result of Reserve Requirement Test of Top Ten Bank in Indonesia in the period 2009-2018*

Reserve Requirement	Period/ Bank	Test Result	Additional Information
Primary	BRI	Insignificant	No effect
	Bank Mandiri	Insignificant	No effect
	BCA	Insignificant	No effect
	BNI	Insignificant	No effect
	BTN	Insignificant	No effect
	CIMB Niaga	Insignificant	No effect
	Panin Bank	Significant	No effect
	Bank Danamon	Insignificant	No effect
	Maybank	Insignificant	No effect
	OCBC NISP	Insignificant	No effect
Combined	BRI	Insignificant	No effect
	Bank Mandiri	Significant	Influential
	BCA	Insignificant	No effect
	BNI	Insignificant	No effect
	BTN	Insignificant	No effect
	CIMB Niaga	Insignificant	No effect
	Panin Bank	Significant	Influential
	Bank Danamon	Significant	Influential
	Maybank	Insignificant	No effect

OCBC NISP	Significant	Influential

Source: Processed Data

The result of the research about the impact of primary reserve requirement on liquidity creation shows that from 10 banks, none of them proves that primary reserve requirement influence negatively and significantly on liquidity creation. Therefore, it can be concluded that generally, primary reserve requirement does not affect short term liquidity creation. This result is appropriate with the result in Table 11, short term of primary reserve requirement does not affect liquidity creation. The result of the research about the impact of combined reserve requirement on liquidity creation shows that among 10 banks, only 4 of them prove that combined reserve requirement influence negatively and significantly on liquidity creation. This supports the finding, generally combined reserve requirement influence negatively and significantly on short term liquidity creation. This result is appropriate with the result in Table 5, in short term combined reserve requirement influence negatively and significantly on liquidity creation. Hestiyani and Arfianto (2013) have researched the impact of reserve requirement on liquidity creation and found out evidence that reserve requirement influence negatively on liquidity creation. The proxy of reserve requirement of the research is combined reserve requirement (uniting all of the kinds of reserve requirement into one) and the used analysis tool is multiple linear regression. The existence of Reserve Requirement or Giro Wajib Minimum (GWM) rule of Bank Indonesia gives more pressure to the banks. It because a bank not only keeps the minimum balance of demand deposit but also get penalty if the demand deposit balance is lower or higher than what is determined by Bank Indonesia. This makes liquidity creation that can be created by a bank get more pressure. Minimum reserve requirement and Giro Wajib Minimum (GMW) are the rules of minimum reserve requirement created by Bank Indonesia. Primary minimum statutory reserve is minimum saving which has to be owned by bank in the form of checking account balance (certain external party accounts at Bank Indonesia which are a means for administering transactions from deposits that can be withdrawn anytime) which is already determined its amount by BI, 8% of Dana Pihak Ketiga (DPK) in rupiahs. Whereas, reserve requirement combination is the combination of all minimum reserve requirement which is produced by Bank Indonesia (primary, secondary, foreign exchange, and LDR). From this research, it can be said that short term primary reserve requirement has no impact on liquidity creation. It because of the banks still capable to fulfil its obligation to keep minimum demand deposit balance. When the balance of a bank is higher or lower than what is determined, the bank will get penalty, but the bank still can manage this well. Long term primary reserve requirement influence negatively and significantly on liquidity creation. This occurred if the policy is applied in long term without renewal. This condition will make the bank get more pressure because a bank not only has to keep minimum demand deposit balance (8% from third party fund in rupiahs) but also get penalty if the balance is lower or higher than what is determined by Bank Indonesia. Long term and short term combined reserve requirement influence negatively and significantly on liquidity creation because a bank has to keep minimum demand deposit balance from four kinds of policies (primary, secondary, foreign exchange, and LDR) produced by Bank Indonesia in the same time. Beside running banking activities, bank gets more difficulties in fulfilling its obligation. Lower the rule of the minimum statutory reserve, higher liquidity that can be created, but the bank will still difficult to fulfil its obligation beside running banking activity. This can be seen in Table 1. In 2008 fund sharing is higher than fund-collecting because the policy was launched by Bank Indonesia in 2008. From 2000 until 2007 it occurred liquidity excess, bank fund sharing is lower than the fund collected and the amount of owned asset so that society fund buildup occurred. It occurred because banks in Indonesia are reluctant to share the fund. This condition was getting worsed by the monetary crisis in 2007 until 2008. Because of this case Bank Indonesia launched Giro Wajib Minimum (GMW) policy in 2008.

Table 19. *Fund and the amount of asset development of general bank in Indonesia in the period 2000-2008 (Billion Rupiahs)*

Year	General Bank		
	Fund sharing	Fund Collecting	Number of Assets
2000	559.779	898.723	1.039.855
2001	656.780	975.415	1.099.699
2002	698.885	967.444	1.112.204
2003	796.731	1.006.624	1.213.518
2004	932.971	1.105.769	1.272.081
2005	1.140.278	1.283.480	1.469.827
2006	1.380.373	1.468.369	1.693.850
2007	1.702.520	1.718.965	1.986.501
2008	2.015.221	1.990.345	2.310.557

Source: Indonesian Banking Statistics (SPI) 2005, 2012

The result of this research shows that there is significant impact among primary and combined reserve requirement on long term liquidity creation and also short term combined reserve requirement. Therefore, it can conclude that the second hypothesis is accepted. It means higher reserve requirement, smaller liquidity creation and vice versa. By Giro Wajib Minimum (GWM), it will give bank more pressure not only to keep minimum deposit demand balance but also to get penalty if the demand deposit balance is higher or lower, this condition also can make liquidity creation which is created by bank get more pressure.

Discussion of the third hypothesis, market share influence negatively on liquidity creation

The overall long term test result of the impact of market share variable on liquidity creation is in Table 5. The result shows that in longterm market share variable influence significantly negatively on liquidity creation. It is proved by the probability value (0,0000) that is smaller than its significant value (0,05). The coefficient shows to negative side that is -4,232432. It means that if market share of the banks is falling or become low, the liquidity creation of a bank will raise. The overall test result of the impact of market share on liquidity creation in short term is also in Table 5. The result shows that in short term on overall bank market share has no impact on liquidity creation. It proved that the probability value (0,6231) is smaller than its significant value (0.05). The model estimation result of each bank about the impact of market share on liquidity creation is in Table 6 until Table 15. Table 20 shows the summary of the impact of market share on liquidity creation on 10 banks which are used as the research samples.

Table 20*. The result of Market Share Test on Top Ten Banks in Indonesia in the Periode 2009-2018*

Period/ Bank	Test Result	Additional information
Long Term	Insignificant	No Effect
BRI	Insignificant	No Effect
Bank Mandiri	Insignificant	No Effect
BCA	Insignificant	No Effect
BNI	Insignificant	No Effect
BTN	Insignificant	No Effect
Bank CIMB Niaga	Insignificant	No Effect
Panin Bank	Insignificant	No Effect
Bank Danamon	Insignificant	No Effect
Maybank	Insignificant	No Effect
Bank OCBC NISP	Insignificant	No Effect

Source: Processed Data

Table 20 shows summary about the short term impact of market share on liquidity creation on 10 banks used as samples of the research. Test of each bank is short term test. The result of the research shows that none of 10 banks proves that in short term market share influence on liquidity creation. This finding proves that in shirt term market share does not affect liquidity creation. This result is appropriate with the result in Table 5 which prove that short term market share does not affect liquidity creation. Berger and Bouwman (2006) also Lei and Song (2013) study about the impact of market share on liquidity creation and found evidence that market share influence negatively and significantly on liquidity creation. Berger and Bouwman (2006) use fixed effects analysis tools, whereas Lei and Song (2013) use pooled, fixed-effects, and random-effects regressions. Different from Panel ARDL, both of these analysis tools only can estimate short term impact and can not predict long term impact. The research of Indonesian banking shows that long term market share influence significantly and negatively but in the short term it does not influence. In this research market share is calculated by comparing total the Dana Pihak Ketiga (DPK) of each bank with the Dana Pihak Ketiga (DPK) of all banks. Therefore, market share shows local market competition. If the local market competition of banks is weakened or low, the liquidity that created by bank will increase. The weakening of local competition can be seen from the decreasing number of bank. It also shows that the market share of each bank is increased. Table 21 proves that. The research finding shows that there is significant negative impact of market share on long term liquidity creation. Therefore, it can be concluded that the third hypothesis is accepted. It means that higher market share, smaller liquidity creation and vice versa. Local market competition is important to be controlled because market concentration influence credit availability and loan portfolio of big bank and small bank is very different

Table 21. *The increasing of fund sharing and decreasing the number of public bank in Indonesia in the period 2009-2018*

Year	Fund Sharing (billion Rp)	Increasing	Number of Bank	Decreasing
2009	2,282,179		121	
2010	2,765,912	0.21	122	0.01
2011	3,412,463	0.23	120	-0.02
2012	4,172,672	0.22	120	0.00
2013	4,823,303	0.16	120	0.00
2014	5,468,910	0.13	107	-0.11
2015	5,952,279	0.09	106	-0.01
2016	6,570,903	0.1	103	-0.03
2017	7,177,549	0.09	102	-0.01

2018	7,809,987	0.09	101	-0.01
	Increasing average	0.15	Decreasing average	-0.02

Source: Statistik Perbankan Indonesia (SPI) 2014, 2018

6 CONCLUSION

From the analyzed data and hypothesis test it can be concluded that : (1) earning volatility influence negatively and significantly on long term liquidity creation, whereas in short term there is no suck kind of impact; (2) reserve requirement (primary and combined) influence on long term liquidity creation. Combined reserve requirement influence significantly and negatively on short term liquidity creation. Secondary reserve requirement, foreign currency reserve requirement, and LDR reserve requirement can not be used to arrange the model because near singular matrix appear when data is processed by inserting those three variables; (3) market share influence negatively and significantly on long term liquidity creation while in the short term show no significant effect. The banks should consider the variables which are used in this research and influence on liquidity creation to improve bank performance. To the scholars, it is hoped that this research can be used to be learning media about factors that influence liquidity creation and also hoped that the next research can increase the number of samples. Moreover, it is hoped that the variables which have not been used in liquidity creation research in Indonesia are added in the next research.

7. REFERENCES

[1]. Bank Indonesia. Kodifikasi Peraturan Bank Indonesia : Likuiditas Rupiah dan Valuta Asing (Giro Wajib Minimum). 2014. Jakarta

[2]. Berger, Allen N. dan Christa H. S. Bouwman. (2006). The Measurement of Bank Liquidity Creation and the Effect of Capital. 1-42. Diakses dari https://pdfs.semanticscholar.org

[3]. Berder et al, Bank Liquidity Creation. The Review of Financial Studies. 22. 9 . pp3779-3837. 2009

[4]. Bhattacharya, Sudipto dan Anjan V. Thakor. Contemporary Banking Theory. Journal of Financial Intermediation. 3 .pp. 2-50.1993

[5]. Dendawijaya, Lukman. Manajemen Perbankan. 2003 Bogor : Ghalia Indonesia.

[6]. Ghozali, Imam. Desain Penelitian Kuantitatif & Kualitatif Untuk Akuntansi, Bisnis dan Ilmu Sosial Lainnya. 2016.Yoga Pratama. Semarang.

[7]. Ghozali, Imam. Analisis Multivariat Dan Ekonometrika Teori, Konsep dan Aplikasi dengan Eviews 10. 2017 Badan Penerbit Universitas Diponegoro. Semarang.

[8]. Hestiyani, Medikatama and Erman Denny Arfianto. (2013). Analisis Faktor-Faktor yang Mempengaruhi Liquidity Creation Perbankan Indonesia : Studi Kasus pada 10 Bank Terbesar di Indonesia pada Periode 2007 sampai dengan 2012. Diponegoro Journal of Management. 2. 2 :pp. 1-12. 2013

[9]. Horváth, Roman, Jakub Seidler, Laurent Weill. Bank Capital and Liquidity Creation : Granger-Causality Evidence. The Journal of Financial Services Research. 45 pp. 341-361. 2015

[10]. Horvart et alHow Bank Competition Influences Liquidity Creation. Economic Modelling. 52 pp. 155-161. 2016

[11]. Kasmir . Manajemen Perbankan Edisi Revisi. 2012 Jakarta : PT RajaGrafindo Persada.

[12]. Kripfganz, Sebastian dan Daniel C. Schneider. . ARDL: Estimating Autoregressive Distributed Lag and Equilibrium Correction Models. London Stata Conference. 2018

[13]. Kuncoro, Mudrajad dan Suhardjono Manajemen Perbankan Teori dan Aplikasi. 2012 Yogyakarta : BPFE.

[14]. Lei, Adrian C. H. dan Zhuoyun Song. Liquidity Creation and Bank Capital Structure in China. Global Finance Journal. 24 pp. 188-202. 2013

[15]. Mirajudin, Muhammad dan Prasetiono. Analisis Liquidity Creation pada Perbankan di Indonesia Tahun 2007-2013 : Studi Kasus pada 10 Bank Besar di Indonesia Tahun 2013. Jurnal Studi Manajemen & Organisasi. 12 pp. 76 – 89. 2015

[16]. Novalina, Ade dan Rusiadi. Leading Indicator Stabilitas Ekonomi di Negara CIVI (China, India, Vietnam, dan Indonesia) Pendekatan ARDL Panel. Jurnal Kajian Ekonomi dan Kebijakan Publik. 4. 1 pp. 2527-2772. 2018

[17]. Otorritas Jasa Keuangan. . Statistik Perbankan Indonesia.2005. Jakarta

[18]. Pratama, Raditya Utari Putra dan Sugeng Wahyudi. Analisis Pengaruh GWM, Equity Ratio, Earning Volatility, Credit Risk, dan Size terhadap Liquidity Creation pada Bank Umum di Indonesia dengan Size sebagai Variabel Kontrol : Studi Kasus pada Bank Umum di Indonesia Periode 2010 – 2014. Diponegoro Journal of Management. 5. 1 pp. 1-12. 2016

[19]. Shu-Chun, Huang, Chen Wei-Da, Chen Yehning. Bank Liquidity Creation and CEO Optimism. Journal of Financial Intermediation. 36 pp. 101-117. 2018

[20]. Tulak, Dewi Yuliastuti; Junaidi; dan Lut Tri Utami. Penerapan Autoregressive Distributed Lag (ARDL) dalam Memodelkan Pengaruh Indeks Harga Konsumen (IHK) Kelompok Bahan Makanan dan Kelompok Makanan Jadi terhadap Inflasi di Kota Palu. Journal of Science and Technology. 6 (3) pp.313-320. 2017