

Analysis of the Effect of Non-Performing Loan, Return on Assets, Return on Equity and Size on Banking Liquidity Risk

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Abstract

Banks play a major role in the country's economy. Banks play an important role in both public and private lending. The role of the bank as an intermediary. Useful for the bank as an intermediary between the parties to satisfy the parties in need. This study focuses on areas that affect a bank's liquidity risk. The purpose of this study is to analyze non-performing loans, ROA, ROE, and size securities for liquidity risk of banks listed on the IDX between 2016 and 2020. The sample used in the survey of all banks, both state-owned and national private banks, will be recognized by BI from 2016 to 2020. The targeted sampling method is used from criteria obtained from 40 banks. The analytical method used in this study is linear regression which was tested with classical assumptions including normality, multicollinearity, autocorrelation, and heteroscedasticity. The results showed that the ROA and ROE variables had a positive and significant effect on liquidity risk. The NPL and medium size variables have a negative effect on liquidity risk.

Analisis Pengaruh Non-Performing Loan, Return on Aset, Return on Equity dan Size terhadap Risiko Likuiditas Perbankan

Abstrak

Dalam perekonomian suatu negara, perbankan punya andil yang besar. Perbankan memainkan peran penting. Fungsi perbankan sebagai intermediary, dimana bank berfungsi sebagai perantara antara pihak berkecukupan dengan membutuhkan. Penelitian ini difokuskan pada area yang berpengaruh terhadap risiko likuiditas pada bank. Tujuan dari penelitian ini tidak lain untuk menganalisis efek NPL, ROA, ROE dan Size terhadap risiko likuiditas pada bank-bank yang listing di BEI periode 2016-2020. Sampel yang digunakan dalam penelitian adalah seluruh bank, baik Bank BUMN maupun Swasta Nasional di Indonesia yang diakui di BI dari tahun 2016 hingga 2020. Dari kriteria yang diperoleh 40 bank, metode yang digunakan adalah purposive sampling. Metode analisis yang digunakan dalam penelitian ini adalah regresi linier yang diuji melalui asumsi klasik dengan normalitas, multikolinearitas, autokorelasi dan heteroskedastisitas. Hasil penelitian menunjukkan bahwa variabel roa dan ROE berpengaruh baik dan signifikan terhadap risiko likuiditas. Variabel sedang NPL dan Size berpengaruh negatif dan tidak signifikan terhadap risiko likuiditas.

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INTRODUCTION

Banks have an important role and position in the country's economy. Roman & Sargu (2014), stated that the banking zone occupies an important position in funding public or private zones. Bank as financial intermediaries have generally aimed to raise funds from citizens and return them to citizens for a variety of purposes. They say banks can specifically act as trustees, development, and service agents.

Universal Liquidity is a bank's expertise in funding legacy surges and handling debt when it expires, without incurring unexpected losses from the bank. Banking is the collection, withdrawal, and other banking of funds that are highly susceptible to various risks. Effendi & Disman (2017) said liquidity risk is one of the most important risks facing banks. This is because if a bank gets caught in a liquidity bottleneck, it cannot do business, and if this is always guaranteed, it threatens bankruptcy.

Previous studies on variables affecting liquidity risk have been attempted by some researchers, but there is still a comparison of the findings. According to the research result from Effendi & Disman (2017) show that non-performing loans have a significant positive impact on liquidity risk. However, in contrast with the survey by Azhary & Muharam (2017), the NPL results are detrimental. The study by Sukmana & Suryaningtyas (2016) created a positive and significant link between Return on Asset (ROA) and liquidity risk. However, unlike what Bani & Yaya (2016) found, a significant negative link is created between ROA and liquidity risk. A previous study of the impact of Return on Equity (ROE) on liquidity risk was conducted by Iqbal (2012) and showed a positive link between ROE and liquidity risk. However, according to a survey which conducted by Muharram & Kurnia (2012), ROE is negatively impacting traditional bank liquidity levels. In his study, Iqbal (2012) created a significant and positive link between size and liquidity risk. In contrast, the study from Bani & Yaya (2016), found that there was no relationship between liquidity risk and size. Profita-

bility has conditions that are not much different, some research results such as from Nishanthini & Meerajancy (2015) and Nugrahaeni (2014) show that a company's liquidity risk will always be related to profitability.

Similarly, the ability of a bank in managing loans provided has a strong correlation to its liquidity performance in accordance with the findings of Roman & Sargu (2014), Iqbal (2016) and Rahman (2016). The research revealed that non-performing loans (NPL) have a significant impact on a bank's liquidity performance. Liquidity management capabilities of a bank also has a correlation with the size of the bank itself, as the results of research from Sukmana & Suryaningtyas (2016) has confirmed the fact.

The purpose of this study is to identify the impact of NPL, ROA, ROE, and size on the liquidity risk of traditional banks listed on the Indonesia Impact Exchange between 2016 and 2019.

Hypothesis Development

According to Law Number 10 of 1998 concerning Banking, a bank is an "organization that collects funds from citizens in the form of savings and distributes funds to residents in the form of loans and in other forms to improve their standard of living". As we know, the function of the bank is to "collect public funds and lend them to citizens for various purposes or as intermediaries in the financial sector."

Universal liquidity is a knowledge filled bank. Short-term requirements, banks must be able to complete withdrawals of savings, checking accounts, time deposits, bank obligations and loan maturities without delay. Activities in the banking world are trial-and-error commercial transactions that are exposed to various risks. From Bank Indonesia Regulation No. 5/8/PB/2003, risk is the ability to execute a desired company that causes losses on the bank. Pandia (2012) states that liquidity risk is the fulfillment of requests for withdrawal of savers or distribution of debt to prospective debtors, and the fulfillment is not fast due to the failure of banks to fulfill their obligations.

The risk caused by liquidity risk can be measured using the ratio of funds liquidity to total assets. Sukmana & Suryaningtyas (2016) stated that LTA is the ratio used to calculate the number of liquid relics from the number of relics owned by banks that can convert the relics. Bank Indonesia Regulation No. 13/24/DPNP/2011 concerning Universal Bank Integrity Assessment is a guideline in determining LTA. Two aspects of the Universal Bank's regulatory assessment of health are based on primary and secondary liquid inheritance. Major liquidity legacy. Usually used to meet bank liquidity needs in the form of third-party funds and has a time limit for paying debts to banks. Sukmana and Suryanintias said that in 2016 the high LTA ratio showed that the assets converted into cash were also large and the bank was also liquid.

Effect of NPL on Liquidity Risk

NPL are allocations calculated using a method that offsets all non-performing loans and all bank loans. Based on Bank Indonesia Circular No. 13/30 / DPNP dated 16 December 2011.

Based on the expected return theory, banks lend to sectors where banks profit at longer maturity interest rates. Long-term credit risk arises if the borrower does not pay the installments in time, the loan is not repaid, or the creditworthiness is low. If the loan default is large up to the installment payment of the loan received from the bank, the agenda is placed on the deferred agenda. Ordered loan installments are expected to be a source of bank liquidity, but we want to increase the liquidity risk of banks due to the problem of borrowers not paying installments on time. A previous study attempted by Azhary & Muharam (2017) found that NPL had a negative impact on both study models. In addition, study by Ghenimi & Omri (2015) created a negative and significant impact on non-performing loans on liquidity risk. Iqbal (2012) said bad debts were having a negative impact and were concerned about liquidity risk. Therefore, for them, low non-performing loans are still what banks continue to pose great liquidity risk to banks.

H1: NPL negatively affect liquidity risk.

Effect of Return on Asset (ROA) on Liquidity Risk

ROA is a marker that illustrates the power of banks to earn a return on some of the assets owned by banks. Bank Indonesia Circular Letter Number 6/23/DPNP 31 May 2004.

Arthesa (2006) that when a bank reached a "theoretical trade-off between liquidity and profitability" to strengthen its liquidity position, it would impose some of its assets on idle time. He said he would strengthen cash reserves and thereby reduce them. Bank profitability. Conversely, if a bank wants to increase its profitability until the bank endangers liquidity because the cash reserve from the consumption of bank assets is used for liquidity, the bank in turn increases the profitability of the bank. Must be used for other profits that can be used to get an increase or decrease in the liquidity of a bank and cause a case of liquidity effect. Previous studies were by Ali & Sadaqat (2011); Anam et al. (2012); Roman & Sargu (2014); Iqbal & Akhtar (2016); Muharam & Kurnia (2016); Rahman & Banna (2016); Azhary & Muharam (2017); Effendi & Disman (2017) achieved results when ROA had a positive and significant impact on the liquidity effect.

H2: ROA positively affects liquidity risk.

Effect of ROE on Liquidity Risk

ROE is a marker of banking expertise in managing existing capital to obtain a net profit. Sourced in Bank Indonesia Circular Message No. 6/ 23/ DPNP on May 31, 2004.

Based on the liquidity and profitability trading theory, Arthesa (2006) states that banks need to protect their liquidity levels while pursuing profitability and profitability as well as maintaining their business. I did. Profitability with banks also means for investors the dividends associated with their investment. Banks charge capital to protect their liquidity reserves, to ensure liquidity and to reduce the occurrence of liquidity effects. An early study of the effects of ROE on liquidity effects was attempted by Iqbal (2012) and showed a positive relationship between ROE and liquidity

effects. This study was supported by studies attempted by Akhtaret et al. (2011); Roman & Sargu (2014); Bani & Yaya (2016).

H3: ROE positively affects liquidity risk

Effect of Size on Liquidity Risk

Banking size is a scale that can be categorized as small, yes banking in terms of total assets, log size, and market value. In the case of Bani & Yaya (2016) the bank calculated the size of the bank's total assets. This is because the assets of each bank are so different that there is an extreme difference in value.

It is based on the theory of economies of scale. This is a relative increase in output because of accumulating all inputs accordingly. What does a bank achieve economies of scale when it can produce more production at a relatively small rate of wage increase Kusuma (2005) found that

banks with large assets tend to be more profitable than industries with small assets, so banks waste illiquid assets to satisfy their liquidity and make great profits. The impact of liquidity on banks remains significant as it tends to rise. Previous studies by Azhary & Muharam (2017); Effendi & Disman (2017); Bani & Yaya (2016); Rahman & Banna (2016); Abdullah & Khan (2018) and Anam et al. (2012). There was a negative correlation between size and liquidity effect. Because banks are large and will continue to grow until they have more assets, banks do not have to worry about the burden of maturing soon.

H4: Size negatively affects liquidity risk

Based on NPL, ROA, ROE, and the relationship between size and theory and variables, the theoretical framework can be drawn as follows:

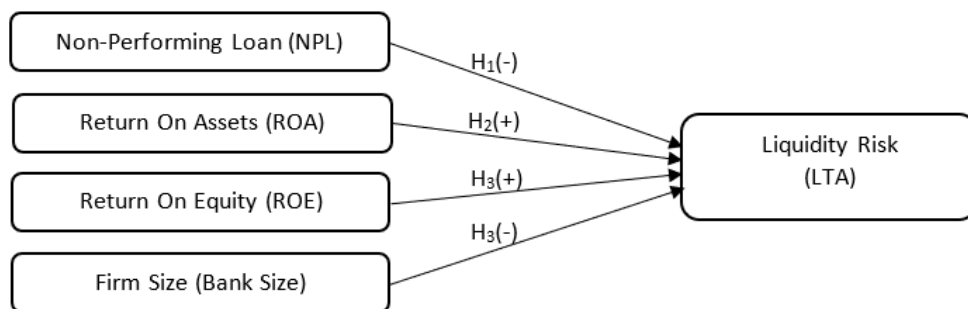


Figure 1. Theoretical Framework

Source: Abdullah & Khan (2012), Akhtar & Sadaqat (2011), Anam et al. (2012), Muharam & Kurnia (2013), Roman & Sargu (2014), Ghenimi & Omri (2015), Rahman & Banna (2015), Bani & Yaya (2016), Iqbal (2016), Sukmana & Suryaningtyas (2016), Azhary & Muharam (2017), Effendi & Disman (2017).

Table 1. Variable Measurement

No	Variable Name	Formula	Research
1.	NPL	$\frac{\text{Non Performing Loan}}{\text{Total Credit}} \times 100\%$	(Azhary & Muharam, 2017)
2.	ROA	$\text{Roa} = \frac{\text{Profit Before Tax}}{\text{Total Asset}} \times 100\%$	(Rahman& Banna, 2016)
3.	ROE	$\frac{\text{Ea}_t}{\text{Oe}_{t-1} + \text{Oe}_t}$	(Roman & Sargu, 2014)
4.	SIZE	$\text{Ln Of Total Assets}$	(Bani & Yaya, 2016)
5.	Liquidity Risk	$\frac{\text{Current Assets}}{\text{Total Assets}}$ $\frac{\text{Current Assets}}{\text{Total Deposit}}$	(Sukmana & Suryaningtyas, 2016)

METHOD

Data and Samples

In this study, we used two types of variables, the dependent variable, and the independent variable. The liquidity effect measured against the LTA rate is used as the dependent variable. In contrast, the independent variables used in this study consisted of non-performing loans, ROA, ROE, and company size.

The population of this survey includes all banking sectors, both state banks and state-owned private banks, registered with Bank Indonesia from 2016 to 2020.

The samples used in this study were selected using a targeted sampling method. Illustration retrieval method with purposive sampling procedure is an illustration retrieval method that is tried because it is sourced on the criteria that have been determined by researchers. After trying to select illustrations sourced on the criteria, 40 conventional banks that were listed on IDX from 2016 to 2020 passed the criteria.

Research Model

The data in this study comes from secondary data sourced from Bloomberg as well as the annual report of each banking illustration in question obtained from the IDX website.

The analysis method used in this study is multiple linear regression, which is tested to pass classical assumptions with tests of normality, multicollinearity, autocorrelation and heteroskedasticity. In this study, multiple regression equations are used as follows:

$$\text{Liquidity Risk} = \alpha + \beta_1 \text{NPL} + \beta_2 \text{ROA} + \beta_3 \text{ROE} + \beta_4 \text{Firm Size} + e$$

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

Descriptive statistical analysis can be used as the basis for describing the data from diagrams based on means, standard deviations, variants, maximums, and minimums. Obtained from the IDX website from 2016 to 2019, based on Bloomberg data and an annual

Table 2. Descriptive Statistical Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
LTA (%)	160	6.35	37.50	15.45	5.76
NPL (%)	160	.03	14.76	3.68	3.54
ROA (%)	160	-9.72	16.10	1.24	2.49
ROE (%)	160	-75.66	22.45	4.65	15.42
SIZE (Rupiah)	160	2,365,227,887	2.235.335,548,189	247,665,468,329	245,482,675,675

Source: Secondary data processed by SPSS 24

Table 3. Determination Coefficient Test Results Model Summary

	N	Minimum	Maximum	Mean	Std. Deviation
LTA (%)	160	6.35	37.50	15.45	5.76
NPL (%)	160	.03	14.76	3.68	3.54
ROA (%)	160	-9.72	16.10	1.24	2.49
ROE (%)	160	-75.66	22.45	4.65	15.42
SIZE (Rupiah)	160	2,365,227,887	2.235.335,548,189	247,665,468,329	245,482,675,675
Valid N (listwise)	160				

Source: Secondary data processed by SPSS 24

report of images of each bank in question. The analysis results for each of the variable's LTA, NPL, ROA, ROE and size of traditional banks registered with IDX from 2016 to 2020 are as follows:

Based on the results of the determination coefficient test (R^2) in table 2 indicates if the value of the adjusted coefficient of determination (Adjusted R Square) is 0.23. The subject indicates that the ability of LTA dependent va-

Table 4. Determination Coefficient Test Results Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.346 ^a	.187	.236	.24335

a. Predictors: (Constant), SIZE, ROE, NPL, ROA

b. Dependent Variable: LTA

Table 1 shows the number of observations on conventional banks registered with IDX in this study as many as 160 data illustrations. The dependent variable in this research is LTA has an average value of 15.45% with a standard deviation value of 5.76. LTA has a minimum value of 6.35% from the Central Java Regional Development Bank in 2017. On the contrary, the maximum value is 37.50% at Bank Central Asia Tbk in 2016. The table 1 also shows the number of observations on conventional banks registered with IDX in this study as many as 160 data illustrations. Not only that, but the table also showed variables analyzed in the study consisting of LTA, NPL, ROA, ROE, and size. In table 1 dependent variable in this

variables can be presented by independent variables NPL, ROA, ROE, and SIZE of 23.6% and the remaining 76.4% influenced by other aspects.

Based on the results of Statistical Test F (Test of overall significance of illustration regression) in table 3 obtained a calculated value of F of 6.25 with a significance value of 0.003. The significance value smaller than 0.05 indicates if the model used in this study is feasible for use, and that LTA dependent variables can be displayed by independent variables NPL, ROA, ROE, and SIZE. Based on the comparison of the calculated F and F values of the table, the table F value is 3.76. The calculated F is greater than the table F, so it can be inferred if simultaneously all independent variables affect dependent variables

Table 5. F Statistical Test Results

		ANOVA ^a				
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.376	4	.087	6.254	.003 ^b
	Residual	2.645	169	.018		
	Total	3.113	174			

a. Dependent Variable: LTA

b. Predictors: (Constant), SIZE, ROE, NPL, ROA

Source: Secondary data processed by SPSS 24

research is LTA has an average value of 15.45% with a standard deviation value of 5.76. LTA has a minimum value of 6.35% from the Central Java Regional Development Bank in 2017. On the contrary, the maximum value is 37.50% at Bank Central Asia Tbk in 2016.

Based on the test results of statistical test results t (individual parameter significance test) in table 4 until you can get multiple linear regression equations as follows:

$$LTA (t-1) = 1.22 - 0.08 NPL + 0.04 ROA + 0.006 ROE - 3.12 SIZE$$

Table 6. Statistical Test Result t (Individual parameter significance test)

Model	Coefficients ^a				t	Sig.
	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta			
(Constant)	1.222	.206			5.547	.000
1 NPL	-.085	.061	-.180		-1.265	.337
ROA	.047	.016	.369		3.482	.022
ROE	.006	.001	.360		5.536	.001
SIZE	-3.122	4.659	-.067		-.657	.366

a. Dependent Variable: LTA

Source: Secondary data processed by SPSS 24

Discussion of Research Results

The results of the study on early hypothesis testing obtained results if NPL negatively influenced not significant to the effect of liquidity projected with the ratio of LTA. The result is based on the coefficient direction of the negative value NPL with values t -1.265 and significance values of 0.33. Because the value of significance is greater than 0.05 until the early hypothesis (H1) which tells if NPL negatively affects the effect of liquidity is rejected. In 2016, the NPL were negatively linked to liquidity. The large NPL ratio shows the magnitude of bad loans and eventually causes losses on the part of banks. Iqbal also said that the large NPL ratio of conventional banks was due to careless lending applications and that it was a factor in liquidity cases. Bank Indonesia has set the maximum NPL ratio through Bank Indonesia Regulation (PBI) of 5%. The average value of NPL in the illustration of the bank used is 2.78%. The results showed banks could reduce the NPL ratio below 5% to cause substantial profitability, as banks look to save money to form non-performing loans and PPAP.

The results of the study on the second hypothesis, obtained results if ROA positively influenced and significant to the effect of liquidity projected with the ratio of LTA. The result is based on the direction of positive regression coefficient with values t 3.48 and significance values of 0.022. Because the significance value is smaller than 0.05 until the second hypothesis

(H2) which tells if ROA positively affects the effect of liquidity is accepted. Sourced on the theory trade of between liquidity and profitability, if a bank wants to Strengthen its liquidity position is tried by means of increasing reserves in cash by imposing assets owned by your bank to raise some of the idle funds, thus lowering the profitability of the bank. Conversely, if the bank wants to strengthen its profitability until the bank has to risk liquidity, because cash reserves derived from the consumption of bank assets are used for liquidity needs to be used by banks for other interests that can increase profitability in the bank to increase liquidity in the bank to decrease and cause cases of liquidity effects. The results of the study were unchanged, compared with studies tried by Anam et al. (2016), Iqbal (2016), Muharam & Kurnia (2016), Rahman & Banna (2016), Azhary & Muharam (2017), Effendi & Disman (2017).

The results of the study on the third hypothesis, obtained results if ROE influenced positive and significant to the effect of liquidity projected with the ratio of LTA. The results are based on the results of multiple regression analysis showing if the coefficient of positive regression with values t 5, 536 and significance values of 0.01. Because the value of significance is smaller than 0.05 to the third hypothesis (H3) which tells if ROE positively affects the effect of liquidity is accepted. Referring to theory trade of between liquidity and profitability, Arthesa (2006) said that on the one hand the bank must protect its liquidity level,

but on the other hand banks must also seek profit and profitability not only to keep the business at the bank profitability also means for investors in obtaining dividends related to their investments. To protect its liquidity the bank charges its capital to protect liquidity reserves to reduce the occurrence of liquidity effects. The results of the study were unchanged, compared with studies tried by Roman & Sargu (2014), Ghenimi & Omri (2015), Rahman & Banna (2016), and Iqbal (2016). Iqbal (2016) who has a strong ROE ratio, said the large ROE ratio shows that the return on investment from shareholders is more lightning. when banks have a larger ROE, they have a large income that can be used to support short-term liabilities and banks want to have fewer cases or risky conditions.

The results of the research on the fifth hypothesis, obtained results if the size of the bank affects negatively and does not significant against the effect of liquidity projected with the ratio of LTA. The results are based on the direction of the firm size, which is negative with a value of t -0.65 and a significance value of 0.36. Because the value of significance is greater than 0.05 to the 5th hypothesis, which reports that the size of the bank affects negatively against liquidity risk is rejected. The size does not affect liquidity risk due to conventional banks, competition in the banking market continues to be strong, because the rise of sharia banking is therefore a race to acquire customers. Bani & Yaya (2016) said the issue led to conventional banks increasing their assets and improving their business so that customers were comfortable with the services provided. And the small amount of total assets owned by a bank so as not to cause liquidity effects on the bank. The study was in line with studies attempted by Ghenimi & Omri (2015), Rahman & Banna, (2015), Bani & Yaya (2016), Akhtar & Sadaqat (2016), Azhary & Muharam (2017), Effendi & Disman, (2017) who said the size of the bank had no effect on liquidity effects. The results showed that the minimum value of size measured by total assets was 2,365,227,887 and the maximum value is 2,235,335,548,189. The comparison between

the minimum value and the maximum is quite large showing that the small number of total relics owned by a bank does not want to cause the formation of liquidity risk in the bank.

CONCLUSSION AND RECOMMENDATION

The results of this research show that there are some aspects that influence liquidity as measured by using LTA variables. Of the 5 aspects studied consisting of NPL, ROA, ROE, and Firm Size. From the results of the study, it was proven that ROA and ROE variables have a positive and significant influence on the effect of liquidity. In contrast, other variables consisting of NPL, and Firm Size do not affect the liquidity effect. On the contrary, other variables consisting of NPL and Firm Size do not affect liquidity risk.

This research has limitations that the beginning is the results of the determination coefficient test shows the value of Adjusted R Square only 0.23. This means that if only 23.6% of dependent variables can be displayed by independent variables. The opposite of the remaining 76.4% was exposed by other variables beyond the variables used in this study. Not only that this study also has limitations The study is only focused on conventional banks, so it has not been able to compare the liquidity effect with variables used in sharia banks and banks that conduct mergers.

Based on the results of this research, there are some initial recommendations for banks that banks must be more selective in sharing credit periods and keeping a close eye on the condition of prospective credit recipients. Not only that, but it is also expected that the bank is able to manage productive assets that can increase the source of liquidity in the bank. And banks are also obliged to manage their income such as accumulated capital from investors so that more liquid relics are available, to minimize liquidity risk. Not only recommendations for banks, but there are also some recommendations that can be considered for future research.

For the next research can classify the illustration of the banking to be used, a kind of

sourced at the small dimension of the bank, so that better results can be obtained. Not only that, the next research can equate 2 types of banks more specifically to recognize how liquidity risk comparison in banks, for example the comparison between conventional bank liquidity risk with sharia banks such as research tried by Muharam & Kurnia (2013), Sukmana & Suryaningtyas (2016), Efendi & Disman (2017), And the next research could raise independent variables that support liquidity effects, such as NIM, NWC, GDP growth, and inflation levels as tried by Anam et al, (2012), Ghenimi & Omri (2015), Rahman & Banna (2016),

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