

THE INFLUENCE OF LIQUIDITY RISK ON EFFICIENCY IN RURAL BANKS: THE MODERATING ROLE OF INTERBANK BORROWING FUND

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ABSTRACT

High competition in Indonesian banking sectors has resulted in the non-survival of rural banks in Indonesia in the long run. The lack of third-party funding becomes one of the most important factors that cause many rural banks to face liquidity risk. Hence, many rural banks use interbank borrowing fund as an alternative source of funding in order to meet their liquidity requirement. Moreover, this risk also leads to many rural banks in Indonesia having to deal with low efficiency problem. This research examines not only the influence of liquidity risk on efficiency but also the role of interbank borrowing fund as a moderator variable. Random effect regression analysis reveals that liquidity risk has negative influence on efficiency. Furthermore, as moderator variable, interbank borrowing fund is shown to enhance the influence of liquidity risk on efficiency. This research becomes guidance for rural banks in managing their liquidity risk and efficiency. In addition, this research also can provide direction for authority in setting some regulation regarding to rural banks' activities in interbank market.

Keywords: liquidity risk, efficiency, asset utilisation, rural banks

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INTRODUCTION

The number of rural banks in Indonesia had decreased from 1,706 in 2010 to 1,629 in 2016. This is due to merger and acquisition or out of the business. This action had to be enforced as the rural banks are said to have a problem of liquidity and low efficiency. Unadequate capital, high non-performing loans and source of funding problem result in many rural banks in Indonesia have liquidity problem (Fitriana & Febrianto, 2018). This problem is worsened when rural banks are found to be failing to allocate their funds to the maximum and at the same time face high labor costs. Collectively, this will affect the efficiency of the bank (Alam, 2018). In fact, these problems continuously happen to the remaining rural banks that survive.

High loan to deposit ratio indicates that there is illiquidity and insolvency problem, and this situation occurs due unstable source of funding and thus loans become riskier asset than other financial assets because of lower market liquidity (Adam, 2014). According to Indonesian Financial Service Authority (2015), the liquidity ratio of rural banks that is measured by Loan to Deposit Ratio (LDR) should be no more than 78%. The loan to deposit ratio (LDR) of rural banks in Indonesia increased from 78.63% in 2012 to 84.34% in 2013. Meanwhile from 2014 to 2016, this ratio decreased from 79.79% in 2014 to 76.24% in 2016 (Indonesia Financial Service Authority, 2017). Hence average of rural banks loan to deposit ratios had were close to 80% which indicated that rural banks potentially deal with liquidity risk problem. These ratios indicated that 80% of rural banks' third-party fund in the form of short-term fund had been allocated as loans which have long-term tenure. As a result, rural banks face difficulties in funding their short-term obligation.

Common factors that likely to cause rural banks' liquidity risk are the difficulties in gathering third-party fund from depositors, unattractive services, limited facilities, high competition with commercial banks, and low quality of borrower in terms of ability to pay loan back (rural banks non-performing loan increased from 4.41% in 2013 to 5.83% in 2016, [Indonesia Financial Service Authority, 2017]).

Operating cost to operating revenue ratio becomes one of indicators of bank's efficiency in Indonesia. This ratio will measure bank's operational efficiency which should be no more than 80%. Rural banks' operating cost to operating revenue ratio increased from 79.47% in 2012 to 81.77% in 2016 (Indonesia Financial Service Authority, 2017). This increasing may caused by increase in rural banks' operational cost and poor management of rural bank business operation (Setiawan et al., 2019; Supeno, 2019). Moreover, increasing

trend in operating cost to operating revenue indicated that rural banks' efficiency was decreasing. This occurred because bank should spend high operational cost that will decrease their operational revenue. Operating cost to operating revenue that is higher than 80% indicates low efficiency. Besides operational efficiency, rural banks in Indonesia should also pay attention to their asset efficiency. In the last few years, rural banks total assets grew about 69.4% from 2012 to 2016 (Indonesia Financial Service Authority, 2017). Meanwhile, number of rural banks' asset which allocated in earning assets increased about 51.8% from 2012 to 2015 (Indonesia Financial Service Authority, 2017). Total revenue of these banks also increased about 18.3% from 2011 to 2015. Thus, increasing rural banks' earning assets may potentially increase both rural banks' revenue and their asset efficiency.

In improving this situation, rural banks utilise interbank borrowing fund as an alternative funding which helps rural banks to fulfill their funding requirement. Interbank cash market provides financial institutions short term unsecured funding to meet their day-to-day obligations (Gallitschke et al., 2017). Rural banks' interbank borrowing fund increased about 73% from 2012 to 2016 (Indonesian Financial Service Authority, 2017). This increasing trend shows that most of the rural banks in Indonesia rely heavily on interbank borrowing fund. Interbank borrowing fund assists rural banks to pay off their short-term obligations. Moreover, this fund may also enhance rural banks' capability in distributing loan and investing in other earning assets. At the same time, the availability of this fund has caused rural banks to be confident in providing financing for riskier investment in order to generate higher income. However, these riskier investments have possibility higher chances of defaulting and thus rural banks may not be able to recoup the loan. Thus, this will decrease rural banks' liquidity because they cannot withdraw their fund from the risky investments. Again this conflict will lead to higher liquidity risk and efficiency problem among rural banks.

Based on this background, the objectives of this study are twofold, to identify the relationship between liquidity risk and efficiency of rural banks in Indonesia and to examine the moderator role of interbank borrowing fund towards the relationship between liquidity risk and efficiency. The contribution of this research is employing interbank borrowing fund as a moderator in examining the influence of liquidity risk on efficiency. Based on previous studies, interbank borrowing fund as one of bank's source of fund has important roles. According to Furfine (2002) interbank markets provide guidance for interest rate policy. Moreover, interbank markets channel liquidity from institutions with a surplus fund to those in need, allowing for more efficient financial intermediation. Dinger and Hagen (2009) found that interbank borrowing result in lower risk of

the borrowing banks. Furthermore, Allen et al. (2014) showed that subsidiaries that were dependent on the interbank market would try to increase their access to deposit funding during crisis, and the decreasing of interbank borrowing fund reduces the credit supply. There are many studies on the relationship between interbank borrowing fund and liquidity, which interbank borrowing fund roles as independent or dependent variable (Freixas et al., 2011; Iyer & Schoar, 2013; Allen et al., 2014; Geng et al., 2016; Soldatos, 2017). However, most of these studies did not examine further about the role of interbank borrowing fund in influencing the relationship between liquidity risk and efficiency. It is conjectured that, the presence of interbank borrowing fund may potentially increase liquidity risk and decrease efficiency of rural banks.

The findings in this research can become a hint for rural banks in managing their funding activities, so that they can reduce their liquidity risk. This research also can give some directions for rural banks in utilising their assets and maintaining their efficiency ratio. Moreover, this research also becomes useful input for authority to increase their monitoring to rural bank's interbank activity. In addition, this research can be one of consideration for authority in setting the level of rural bank's lending and deposit rate.

LITERATURE REVIEW

The relationship between risk and efficiency can be explained by bad management theory (Berger & DeYoung, 1997). Banks that are poorly managed, do not control their operating cost or do not monitor their borrowers effectively, have higher risk and lower efficiency levels (Nguyen & Nghiem, 2015). The relationship between liquidity risk and efficiency has been widely investigated by past studies. The influence of liquidity risk on cost and profit efficiency of Chinese banks, had been examined by Ariff and Can (2008), and they found that there is positive relationship between liquidity risk and efficiency. This positive relationship suggests that Banks with high lending activity can increase their efficiency by utilising purchase fund. Jiang et al. (2009), investigated the relationship between liquidity risk and efficiency of Chinese banking and discovered a negative relationship between liquidity risk and efficiency. They conclude that banks with higher dependency on borrowing funds than on deposit funds have tendency to generate higher liquidity risk and lower efficiency. Repkova (2015) investigated the influence of liquidity risk on efficiency of Czech banking sector from 2001 to 2012, and also showed a positive relationship between liquidity risk and efficiency. Dell'Atti et al., (2015) discussed about relationship between liquidity and efficiency of French, Spanish, U.K. and Italian

banking groups from 2006 to 2010. They revealed positive relationship between liquidity (both short-term and long-term liquidity) and efficiency. The illiquid banks should borrow some funds in interbank market or offer higher deposit rate in order to decrease liquidity risk, as a result, these policies will increase banks' cost of fund and decrease efficiency. In addition, Tan and Floros (2017) examined also the relationships among competition, risk, and efficiency in Chinese banking industry from 2003 to 2013. They found negative relationship between liquidity risk and efficiency. The higher the banks' liquidity, the higher the capability of banks to meet their obligation to their depositors. This circumstance generates lower risk and higher efficiency.

Other factors such as interest rate risk and credit risk also can influence efficiency. Interest rate risk can generate both positive and negative influence on inefficiency (Kwan & Eisenbeis, 1997). Increasing of interest rate will increase bank's cost and decrease efficiency (Sun & Chang, 2011). Moreover, some past studies found that credit risk has negative relationship with efficiency (Chen et al., 2015; Nguyen & Nghiem, 2015; Barra et al., 2016; Mosko & Bozdo, 2016). Meanwhile, positive relationship between credit risk and efficiency also had been revealed by Tan and Floros (2017) and Saeed and Izzeldin (2016).

The role of interbank borrowing fund as moderator will be explained by asymmetric information theory. Asymmetric information problem arises when one party to a transaction or relationship has information that the other does not, and it is too costly to write, monitor, and enforce a contract that would compensate adequately for the imbalance in information (Berger et al., 2010). Ritz and Walther (2015) applied asymmetric information to investigate a bank's response to the increase in funding uncertainty, and they found that potential lenders in money markets have concerns on default risk and there exists asymmetric information between interbank lenders and borrowers. Interbank lenders do not have sufficient information about their borrowers involved in transaction, thus these lenders cannot distinguish between high risk or low risk borrowers (Ritz & Walther, 2015; Heider et al., 2015).

As far as it is known, there is no further research in the role of interbank borrowing fund as moderator of the relationship between liquidity risk and efficiency. However, the relationship between liquidity risk and interbank borrowing fund had been investigated by some previous studies. Freixas et al. (2011) showed that the central bank should lower the interbank rate when confronted with a crisis that causes a disparity in the liquidity held among banks. Moreover, Allen et al. (2014) examined the influence of financial crisis on foreign banks in host countries, and they discovered that liquidity shocks will

lead to lower credit growth and subsidiary's reduction in lending is strongly related to its parent bank's lending via the interbank market. Interbank borrowing fund as one of the financial sources will influence the ability of parent banks to support their subsidiaries. Furthermore, interconnectedness of banks and liquidity in European Central Banks had been investigated by Craig et al. (2015). They revealed that banks with a more diversified borrowing structure in the interbank market bid significantly less aggressive and pay a lower price for liquidity in the European Central Banks. In addition, Eross et al. (2016) discovered that when the short term interbank market is affected by liquidity shocks spread, the LIBOR-OIS is a leader in moving back to equilibrium, while the euro-dollar currency swap rate and the US-German bond spreads are followers.

METHODOLOGY

The population of this research was rural banks in Indonesia. The sample of this research was 52 rural banks which have total assets ranging from Rp100 billion to Rp1 trillion. The data of these rural banks came from Indonesia Financial Service Authority. This institution had replaced central banks of Indonesia in supervisory and control banks' activities in Indonesia. The data derived from rural banks' balance sheet and income statement which had been published in Indonesia Financial Service Authority's website. This research used annual data from 2012 to 2016. These periods were transition periods when the authority of banking supervisory in Indonesia changed from central bank of Indonesia to Indonesia Financial Service Authority, and this new authority started to control rural banks more intensively by releasing some important regulation.

Static panel data analysis was employed in this research because this research comprised both time series and cross section data. Random effect model was more appropriate to be applied in this research because the number of cross-section data was larger compare to the time series units (Gujarati & Porter, 2009). Furthermore, Hausman test is formulated to assist in making a choice between the fixed effect and random effect model (Asteriou & Hall, 2007). Before doing Hausman test, this research did also Lagrange Multiplier test to check better regression model between random effect model and ordinary least square. In addition, the Hausman test indicated that random effect model or error correction model was better to be employed in this research.

Table 1 shows the description of variables which are used in this research. Efficiency becomes a dependent variable in this research which was estimated by asset utilisation ratio following Zarrouk et al. (2016). This ratio was estimated by dividing total revenue to total assets. Asset utilisation ratio is important for

banks because it measures the extent to which a banks can utilize its assets to produce income (Elsiefy, 2013). The higher of this ratio showed that the higher of banks' efficiency in utilizing their assets. Moreover, the independent variable is liquidity risk which is proxied by liquidity ratio. Liquidity ratio is measured by loan to deposit ratio, following Ariff and Can (2008) and Jiang et al. (2009). Loan to deposit ratio is one of liquidity ratio that measures the extent of the bank's ability in distributing their loan and gathering deposit funds (Akhter & Kumar, 2017). Liquidity risk depends on the liquidity ratio in which the higher the liquidity ratio, the higher the liquidity risk. Furthermore, interbank borrowing fund as moderator variable will be estimated by interbank borrowing ratio following Iyer and Schoar (2013) and Allen et al. (2014). This ratio was calculated by dividing interbank borrowing fund to total assets. Interbank ratio illustrates how much the level of dependence of banks on interbank borrowing funds (Craig et al., 2015). In addition, this research applied also size, capital, and profitability as control variables. Size can describe the economies of scale of the bank which is one of the factors that can affect the relationship between risk and efficiency (Alam, 2013). This research will employ total assets as size measurement following Ianotta et al. (2007), Latif et al. (2014), Gulati (2015), Chen et al. (2015); Dell'Atti et al. (2015), and Philippos et al. (2015). Capitalisation becomes one of variable that affects efficiency (Ismail et al., 2013; Tan & Floros, 2013; Louati et al., 2016). Capitalisation was estimated by equity to total asset following Berger and DeYoung (1997), Altunbas (2007), Varotto (2011), Tan and Floros (2013), Manta and Badircea (2015), and Mosko and Bozdo (2016). This ratio measures the level of of bank capital strength (Liadaki & Gaganis, 2010). In the same way with Doyran (2013), Iyer and Schoar (2013), Maghyereh and Awartani (2014), and Louati et al. (2016), profitability was determined by return on assets (ROA). This ratio illustrates the effectiveness of bank management in generating profits by utilizing its assets (Doyran, 2013). Bank which generate lower cost may generate higher profitability, and this circumstance will influence efficiency (Olson & Zoubi, 2011; Tan et al., 2017).

Table 1
Variable description

Variable	Description	Previous studies
Dependent variables		
Efficiency	Asset utilisation ratio or Total Revenue divided to Total Assets	Zarrouk et al. (2016)
Independent variable		
Liquidity	Ratio of Loan to Total Deposit -The higher of this ratio implies the higher of risk	Ariff and Chan (2008); Jiang et al. (2009)
Moderating variable		
Interbank borrowing	Ratio of Interbank Borrowing Fund to Total Asset	Iyer and Schoar (2013); Allen et al. (2014)
Control variables		
Size	Total Asset	Ionotta et al. (2007); Latif et al. (2014); Gulati (2015); Chen et al. (2015); Dell’Atti et al. (2015); Philippas et al. (2015)
Capitalisation	Equity to Total Asset	Berger and DeYoung (1997); Altunbas (2007); Varotto (2011); Tan and Floros (2013); Manta and Badircea (2015); Mosko and Bozdo (2016)
Profitability	ROA Ratio or Net Income divided to Total Asset	Aysen and Doyran (2013); Iyer and Schoar (2013); Maghyereh and Awartani (2014); Louati et al. (2016).

The influence of liquidity risk on efficiency and the role of interbank borrowing fund both as independent variable and moderator will be explained by the following regression model.

$$\begin{aligned}
 Efficiency_{it} = & \beta_0 + \beta_1 Liqrisk_{it} + \beta_2 Interbank_{it} + \beta_3 Liqrisk. \\
 & interbank_{it} + \beta_4 SIZE_{it} + \beta_5 CAPITALISATION_{it} \\
 & + \beta_6 PROFITABILITY_{it} + \varepsilon_{it}
 \end{aligned}$$

Past studies obtain inconsistency result about the relationship between liquidity risk and efficiency. However, bad management theory proposes negative relationship between risk and efficiency. The increasing of risk leads to increasing in bank’s cost which eventually decrease their efficiency. Hence,

this research will hypothesize negative relationship between liquidity risk and efficiency.

H1: There is a negative influence of liquidity risk on efficiency.

According to the asymmetric information theory, insufficient information between lenders and borrowers in interbank market creates a state of uncertainty among market participants. Borrowers in interbank market facing liquidity risk would be unable to repay their borrowing to the lenders. This occurred possibly because either borrower fails in investing their interbank borrowing fund into earning asset or the lenders charge high interest rate on the borrowed fund. Thus, referring to Freixas et al. (2011), Allen et al. (2014), Craig et al. (2015) and Eross et al. (2016), we conjecture that liquidity risk and interbank borrowing fund can potentially have a negative influence on efficiency. Guided by the above discussion, interbank borrowing fund is shown to enhance rural banks' liquidity position and their capability in distributing loan. This in turn may also have impact on the relationship between rural banks liquidity risk and efficiency. In other words, interbank borrowing fund could potentially serve as a moderator that enhances the influence of liquidity risk on efficiency.

H2: Interbank borrowing fund enhances the influence of liquidity risk on efficiency.

RESULTS

Descriptive Statistics

According to Table 2, the mean of rural banks efficiency is 0.123, this value is lower than 1 and it shows that rural banks have low efficiency, or they could not utilise their asset to attain maximum efficiency. The minimum value of efficiency was 0.0294, while the maximum value of efficiency was 1.060. The mean of rural banks loan to deposit ratio (LDR) was 1.37, and it showed that average rural banks face high liquidity risk because this ratio was higher than 80% or their total of loan exceed their total deposit fund. Thus, rural banks had difficulties to fulfill their short-term obligations because most of their short-term funds had been allocated to the loans which had long-term nature. The maximum value of rural bank's loan to deposit ratio could reach to 3.08, and this value indicated that there was rural bank distributed their loan three times higher than its third-party fund. This bank may deal with liquidity risk because they did not have excess third-party fund to finance their short-term obligation and establish reserve fund to overcome non-performing loan problem. Moreover, the mean of interbank

ratio was 0.17, this ratio showed that the composition of interbank borrowing was about 17% of the total assets. This ratio indicates that the use of interbank fund is still low. The minimum interbank ratio was 0.041, while the maximum value is 1.07 or there was rural bank that used interbank borrowing fund more than the value of its asset. Furthermore, size as one of control variable which was measured by total asset has mean about Rp4.93 trillion. The minimum total asset was Rp6.81 trillion and the maximum value was Rp7.03 trillion. The mean of capital ratio is 0.093, or average of rural bank capital was 9.3% of its total assets only. Some of rural banks had capital ratio exceed 1.0. Hence, the maximum value of capital ratio could attain to 1.6, while minimum value is 0.00322. In addition, profitability as the last control variable was measured by ROA, and it had mean about 0.0579 or 5.79%. This value indicates that rural banks had low return compare to their assets. The minimum value of ROA is 0.0029 and the maximum value could achieve to 1.59.

Table 2
Descriptive statistics

Variables	Mean	Minimum	Maximum
Efficiency	0.123	0.0294	1.060
Loan to Deposit Ratio	1.370	0.5400	3.080
Interbank Ratio	0.170	0.00014	1.070
Size (Total Asset)	4.93e+08	681,164	7.03e+09
Capital (Capital Ratio)	0.0930	0.00322	1.600
Profitability (ROA)	0.0579	0.00290	1.590

Note: Observation = 242

Regression Analysis

The influence of liquidity risk on efficiency

The value of Lagrange Multiplier test was 0.000 or lower than 0.5, this value shows that fixed effect model was better to be applied than ordinary least square (OLS). However, the value of Hausman test for this regression model was 0.71 or higher than 0.05, as a result random effect model was better to be applied than fixed effect model. Thus, based on result of Hausman test, this result applies random effect model. Moreover, according to Table 3 the values of Variance of Inflation Factor for all variables were lower than 10. This result indicates that regression model was free from multicollinearity problem. According to column 2 in Table 4 the Adjusted R² was 0.3158. The coefficient value of loan to deposit ratio were -0.297 or there was negative correlation

between loan to deposit ratio and efficiency. These results showed that the higher of liquidity ratio indicates the higher of rural banks' risk which leads to lower efficiency. Moreover, interbank borrowing fund generated also negative and significant relationship on efficiency (-0.104). This result showed that increasing of interbank borrowing fund will decrease rural banks' asset efficiency. Meanwhile, the decreasing of interbank borrowing fund will increase this asset efficiency's ratio. The column 3 in Table 4 also showed the significant interaction of interbank borrowing fund. Hence, this result showed that interbank borrowing fund could moderate the relationship between liquidity risk and efficiency.

Table 3
Variance inflation factor

Variable	Variance Inflation Factor (VIF)
Liquidity (Loan to deposit Ratio)	1.38
Interbank Borrowing Fund	2.08
Liq*Interbank Borrowing Fund	1.72
Log of Total Assets	1.37
Capital	1.38
Profitability	1.03

Table 4
Regression result (Dependent variable efficiency)

Variable	Coefficient Estimates	t-statistics
C	0.3280	3.66***
Liquidity (Loan to deposit Ratio)	-0.2970	-2.53***
Interbank Borrowing Fund	-0.1040	-3.66***
Liquidity*Interbank Borrowing Fund	0.0880	14.11***
Log of Total Assets	-0.0087	-1.89*
Capital	-1.14e-10	-1.45
Profitability	0.0016	0.05
Adjusted R ²	0.3158	
Wald χ^2	248.6800	
Probability > χ^2	0.0000	
Hausman test (<i>p</i> -value)	0.7100	

Note: (*) indicates significance at 10% level, (**) indicates significance at 5% level, and (***) indicates significance at 1% level. Values in parentheses are t-statistics. Source : Author's Calculation

DISCUSSION

The regression results showed that there was negative relationship between loan to deposit ratio and efficiency, or this result means also that liquidity risk has negative relationship with efficiency. The higher of loan to deposit ratio indicated that the lower of liquidity, because the number of loans as long-term bank investment are higher than total deposits as short-term fund. Increasing of loan to deposit ratio will generate also increasing in non-performing loan which will increase rural banks' monitoring cost to their borrowers. As a result, this increasing cost will decrease rural banks' revenue and its asset utilisation ratio. In other words, increasing of liquidity risk will decrease asset efficiency, or liquidity risk has negative relationship with the efficiency. This result is consistent with Jiang et al. (2009), and Tan and Floros (2017).

Rural banks have heavy reliance on loan as their major source of revenue and generating high revenue leads to many rural banks release loan for some riskier investment in order to increase their revenue and increase their asset efficiency. However, most of these riskier investments are default and causes these investments fund cannot be paid back. As a result, the failure of these investment payback leads to shortage on rural banks liquidity causes increasing in liquidity risks. Furthermore, increasing of liquidity risk will increase rural banks operating cost and decrease both of its operating revenue and asset efficiency. Indeed, the negative relationship between liquidity risk and efficiency also consistent with bad management theory which explains that banks which cannot control their operating cost and manage their loan will increase their risk and decrease their efficiency.

The regression result revealed also that interbank borrowing fund could enhance the influence of liquidity risk on efficiency. Interbank borrowing fund become one of solutions for rural banks' liquidity shortage problem. This fund may also increase rural banks' capacity in distributing their loan and investing in some riskier assets in order to get higher return. In fact, the increasing of investment in riskier asset will increase also the possibility of payback failure. As a consequence, this failure will generate liquidity problem which will increase liquidity risk. Furthermore, using interbank borrowing fund will increase rural bank's cost of fund because interbank borrowing fund has higher cost of fund than third-party fund. Increasing of rural banks cost of fund will decrease rural banks' revenue or incomes which eventually decrease their asset efficiency.

Interbank borrowing funds can be employed by rural banks as one of source of fund alternative. However, rural banks should use these funds appropriately in order to avoid failure in payback these funds. If these funds allocate in some asset allocation such as loans, rural banks should monitor these loans to minimise their borrowers' default.

CONCLUSION

Liquidity risk of rural banks in Indonesia has contribution to influence efficiency in utilising their assets. Efficiency on utilising assets is important to be examined because most of rural banks in Indonesia did not allocate their fund in performing assets. Therefore, this study analysed the relationship between liquidity risk and efficiency of rural banks in Indonesia. Furthermore, the role of interbank borrowing fund was also investigated because it was predicted to increase the relationships among liquidity risk and efficiency.

The random effect regression results showed that rural banks' liquidity risk had negative influence on efficiency. Moreover, interbank borrowing funds would increase the rural banks' liquidity and change the relationship between liquidity risk and efficiency to be positive. Furthermore, interbank borrowing fund generated negative relationship with efficiency. In addition, as moderator variable, interbank borrowing fund could enhance the relationship between liquidity risk and efficiency.

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