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Investigating the Impact of Credit Risk and Liquidity Risk on Loan Growth in Banks Listed in Tehran Stock Exchange

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Abstract : *Paying facilities is one of main activities of banks that is not only the main source of income of any bank but also it can lead to economic growth by directing resources towards efficient investments. However, the amount of banks payment facilities and banks' behavior in granting facilities can be affected by several factors. Therefore, identifying the factors that affect banks 'payment volume is an important issue. Given that banks' payment facilities can be affected by uncertainty, the purpose of this study is to investigate the effect of credit risk and liquidity risk as two factors of intra-organizational uncertainty on the loan growth in banks listed in Tehran Stock Exchange. In this study, the ratio of non-performing loans to total facilities was used to measure credit risk, and the ratio of total facilities to total asset was used to measure liquidity risk. The present study was conducted using data collected from 12 banks admitted to Tehran Stock Exchange during 2010-2017 by using Generalized Method of Moments (GMM). The results of the data analysis show that increasing the liquidity risk leads to a decrease in the loan growth, while the credit risk does not have a significant effect on the loan growth. These results are consistent with the theory that banks' facilities payment behavior is influenced by their own. Given that this study is the first research that examine the impact of credit risk and liquidity risk on loan growth empirically, Its results can attract the attention of bank managers.*

Keywords: *Loan Growth, Credit Risk, Liquidity Risk*

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I. Introduction

Banks play a fundamental and influential role in today's world economy, as financial intermediaries and facilitators of the credit payment system as the beating heart of financial turnovers and transactions related to economic activity. It is obvious that banks are using the facilities to pay applicants to generate income, and their main income is derived from the gap between the interest rate on the deposit rate and the interest received on the granted facilities. Therefore, the income and profitability of each bank is directly related to the amount of facilities granted. Banks have the potential to mobilize funds and allocate them to efficient investments. Therefore, regardless of whether the sources of income or economic policy of the country are depleted, banks are keen to provide facilities with three guiding principles of performance, namely profitability, liquidity and ability to pay debt (Olokoyo, 2011). On the other hand, the volume of payment facilities of banks is a function of their internal characteristics such as size, deposit amount, liquidity, credit policy as well as some external conditions and factors that affect them. One of the major goals that banks pursue is to make resource allocation and facilities more efficient. But banks 'credit behavior and the volume of payments they make can be influenced by intra-organizational or extracurricular uncertainty, leading to a diversion in the portfolio of banks' facilities. One of the characteristics of banks is that they are exposed to various types of uncertainty, including risk, during their operations. Banking risk is one of the most important topics in the banking literature. Risk is an intrinsic part of banking and due to the limited financial resources, paying attention to a variety of risks by banks is one of the challenges facing banks. Banking risks include market risk, liquidity risk, credit risk, business risk, operational risk and bankruptcy risk. Credit risk and liquidity risk are the most important risks in the banking system due to the relationship with banks' operating activities. Therefore, this study aims to investigate the impact of credit risk and liquidity risk on loan growth. Although there have been many studies on credit risk and liquidity risk, so far no study has examined the impact of bank risk on bank facilities payment behavior in general and loan growth in particular; therefore, the present study can help to extend the existing literature in this field. According to the results of previous studies such as Bourke (1989), Duca & McLaughlin (1990), Miller & Noulas (1997), Staikouras & Wood (2004), Kosmidou (2008), Flamini et al (2009), credit risk is an important factor. It affects the profitability of banks, so credit risk is not expected to affect the loan growth, which is one of the ways to increase profitability. Increased credit risk means an increase in past due, deferred and suspicious receivables that reduces the bank's access to a large portion of its financial resources and creates uncertainty about access to sufficient resources in the bank, which can affect banks facilities payment behavior.

On the other hand, Bourke (1989) has shown that liquidity risk has a negative impact on banks' profitability, so it is expected that liquidity risk will also affect the loan growth. In fact, the liquidity risk following credit risk can pose a major challenge for the bank in providing liquidity which can also affect the behavior of banks to pay for the facilities. Banks provide facilities according to market conditions and organization conditions, and therefore, the banks facilities payment behavior is influenced by current and future conditions. Based on previous research (Stiglitz & Weiss, 1992; Chan & Kanatas, 1985; Inan, 2004) we can say interest rate, inflation rate, net profit margin, non-performing loans, the ratio of non-performing loans to granted facilities (credit risk) as well as the ratio of granted facilities to assets (liquidity risk) are one of the factors affecting the hedge fund market. So it can be expected that credit risk and liquidity risk influence banks' facilities payment behavior and loan growth, although this requires further investigation and empirical evidence. In fact, since the effects of credit risk and liquidity risk on banks' facilities payment behavior are unclear, the main issue of the present study is to investigate the impact of these two risks on the loan growth in the banks listed in the Tehran Stock Exchange.

At present, most Iranian banks are facing deprivation of resources as deferred claims, which, with the increasing trend of deferral of facilities, diminishes the banks' creditworthiness and ultimately monetization. However, the ratio of deferred claims to facilities in some banks has increased by several times the acceptable quota (2%) (Office of Banking Studies and Regulations, 2010). However, there is no empirical evidence to examine the impact of credit risk and liquidity risk following the increase in deferred claims on loan growth, and a lack of study is remarkable. In Iran, the governmental structure of banks has prevented serious attention to banking risk and its tools for controlling and managing risk. Given the process of privatization of state-owned banks and the entry of private banks into the industry, it seems that the issue of risk control and precautionary regulation deserves more attention. Therefore, it is important to consider the issue of banking risks and their impact on bank indicators that play an important role in their profitability. Another important aspect of this research is that the sustainable development of any country requires the proper allocation of surplus resources of savers to productive investments through the provision of facilities. If the surplus resources of savers are channeled through efficient monetary markets to investors and those who can make the most of them to achieve macroeconomic goals, one can hope that the goals set for the country's economy can be fulfilled, and since most of the country's economic transactions are fulfilled through the banking system, and the proper functioning of the country's banking system will play a decisive role in improving economic activity.

Therefore, it is important to consider the factors that may influence the volume of facilities payment of banks as one of the important activities that enable the achievement of macroeconomic objectives, as it attracts the attention of managers towards removing barriers. The remainder of this study first reviews the theoretical foundations of credit risk and liquidity risk and loan growth, then the hypotheses are developed and then the hypotheses are tested in the next section using the presented model and finally the results of the study are interpreted.

II. Theoretical Fundamentals

Due to the combination of banks' assets and financial institutions, the major share of which is in the form of short-term and long-term lending facilities, the most important risk that such institutions face is credit risk. Credit risk is defined as the probability that a portion of a bank's assets, especially its facilities, will be impaired and likely to be worthless. Credit risk management is very important and is central to the health of a bank and indeed the entire financial system. As banks provide facilities, they need to have precautionary reserves for the loss of their downstream facilities. An increase in the value of reserves for loss of facilities compared to total facilities indicates that the bank's assets are becoming more difficult to obtain (Tsorhe et al., 2010). Credit risk is one of the most important risk factors for banks and financial institutions. Credit risk can also be defined as unexpected events that usually occur as a result of changes in the value of assets or liabilities. This risk arises from the fact that the recipients of the facilities do not have the ability to repay their debt to the bank (referred to as delinquency), which is synonymous with credit risk. In general, the following three traditional indicators are widely used to determine the degree of credit risk for banks:

Relative Facilities Losses, Facilities Profit Earnings, and Equity Total Assets. Credit risk is one of the most important risks observed in the banking system of countries and in most cases it has higher losses than other risks. The importance of credit risk is that the bank's resources for providing loans are in fact monetary debt to shareholders, depositors, and other banks, which undermines both the creditworthiness and the monetary debt repayment power in the event of freezing or lack of liquidity. . According to the KPMG International Institute, deferred claims are an integral part of monetary and credit institutions' credit operations, but ignorance and underestimation of the credit risk category in such institutions may lead to the emergence and concealment of credit termites, even in the case of their credit portfolio, as a result, the emergence of deferred claims, on the one hand will reduce the operating income of financial institutions and on the other hand will lead to a decrease

in the volume of assets and thus a decrease in profitability. Deferred claims and credit risk is one of the most important issues in the banking industry (Alalade et al., 2014).

Liquidity Risk

The liquidity risk is the bank's inability to provide funds for its facilities or timely payment of its debt, such as deposits (Tripe, 1999). This risk is mainly due to the structure of banks' assets and liabilities and its main origin is the time mismatch between the inflows and outflows to the bank; therefore, the liquidity risk can be divided into two categories of assets liquidity risk and resources (Crouhy and Mark, 2000) Liquidity is the availability of cash or cash equivalents. So it can be said that the risk of liquidity is the risk of the bank not being ready to provide lending facilities or timely payment of bank debt (Banks, 2005). A bank has sufficient liquidity when it can obtain sufficient funds quickly and at an acceptable cost, both by increasing its debt and by converting its cash assets into cash (Falconer, 2001). According to Drehmann & Nikolau's theory (2009), liquidity risk is divided into two types: liquidity risk and market liquidity risk. Liquidity risk is the risk that the bank is unable to meet the expected or unforeseen flow of funds required. Market liquidity risk involves the risk that the bank faces depreciation due to price changes that lead to market risk, and the real value of deposits declines. These real depreciation of deposits resulting from price changes, which are themselves instances of market risk, are called market liquidity risk or market risk liquidity risk. There is a strong interaction between the liquidity risk of the funds and the market risk, especially when the bank is facing a liquidity crisis. The important point is that the liquidity shock of the funds causes the sale of assets and decreases its price. Some theorists believe that the reason for the liquidity risk is the banks' efforts to increase profitability. According to this theory, banks hold less cash assets in order to increase profitability and try to keep most of the low liquidity assets such as concessional facilities in the portfolio. This can increase the liquidity risk of funds. Accordingly, Brunnermeier (2009) states that in this type of liquidity risk, two cycles occur simultaneously: the margin spiral and the loss spiral. Loss cycles can result from occurrence of the liquidity shock in a bank for any reason. Therefore, banks facing liquidity shortages are trying to sell their assets even if they have to sell it at a price lower than its value. Selling assets will reduce asset prices. The profit cycle exacerbates the loss cycle. As profits increase, the investor has to sell more assets in order to reduce the leverage ratio (debt ratio to asset). Therefore, the mechanism of liquidity risk in the event of liquidity shortage forces the investor to adjust its portfolio, thereby simultaneously increasing profits and losses and drastically reducing liquidity and liquidity risk will occur. Rochet (2008) considers three factors to be effective in creating liquidity risk; on the debt side, there is uncertainty about the value of deposit withdrawals or revisions to over-valuation of interbank facilities, especially when the bank is in bankruptcy or facing liquidity shortages. On the asset side, there is uncertainty about the value of new assets for the facilities that the bank will receive in the future. Off-balance sheet performance such as credit lines and other derivatives and derivatives also exposes the bank to liquidity risk. Valla and Saes-Escoriac (2006) attribute the liquidity risk in the banking network to the law of one bank's liquidity crisis. The first sign of a liquidity crisis is that a bank faces a shortage of cash in its balance sheet. In that case, it will try to cover the lack of liquidity by going to the interbank market and borrowing from it. As such, the risk of adverse selection in the interbank market is created and other banks are also subject to bankruptcy.

Loan Growth

Bank facilities payments are based on the notion that banks play a particular role in the financial system, as banks are able to address the problems of asymmetric information in financial markets. There are two requirements for a bank to pay for its facilities: first, some companies must depend on bank facilities, and second, the central bank must be able to transfer the banking facility's timetable. In effect, it means that the central bank should be able to change the supply of banks' facilities. If the first condition is met, it is obvious that small companies are affiliated with the bank. Because banks have lower costs in accessing and monitoring their customers' information than other investors, they have a comparative advantage. Small companies are also generally unable to access the securities market. This effect is especially important for countries with less developed capital markets. Considering the second condition of a contractionary monetary policy reduces the level of total deposits. Deposits are one of the least depleted sources of financing for banks, (for some banks) costly and (for some other banks it may even be impossible to offset the lack of deposits with other sources of funding, so some banks are not able to earn funds required for lend facilities to maintain the Facilities Payments Letter 1398132000634010 dated 14/09/2019 implementation of Karaj Civil Orders 1 and hence reduce their supply of facilities. Then financial variables that measure banks' financial health can play an important role, meaning that banks with weak balance sheets are more affected by information asymmetry than banks with strong balance sheets (Gomez & Groze, 2007). In fact, if part of the ones who receive facilities is affiliated with the bank, it means that those who receive facilities cannot access alternative forms of external financing (other than bank resources) and banks also designate bank facilities as a substitute for other assets in their balance

sheets (That is, banks also depend on facilities and are not completely free of facilities), monetary policy may be effective through the banking facilities payment. Due to the role of banks, some of the ones who receive facilities will not have access to credit markets unless they borrow from banks. If there is no perfect substitute between bank micro deposits and other sources of funding, the bank's facilities for monetary transfers works as follows: an expansionary monetary policy that enhances bank reserves and bank deposits, increases the quality of existing bank facilities. Assumed role for banks as ones who give facilities by classes of bank facilities recipients will increase facilities that will increase investment (and possibly consumer) spending. In short, the effect of this policy can be explained by the fact that money supply leads to increased bank deposits followed by increased deposits, increased banking facilities, and ultimately increased investment and production. Despite the importance of lending facilities for economic growth in recent years, concerns about the growth of commercial lending by banks have increased due to the ease of lending. Some researchers believe that banks have achieved new business by lowering their rates and by not tightening their lending standards, and competition for their customers has increased. Others suggest that while economic development is ongoing and past loan losses have not been forgotten, banks are more willing to take risks. Each of these explanations are correct; the acceleration in loan growth can eventually lead to severe fluctuations in facility losses and a decline in bank revenue. It can also be a spark for a new round of bankruptcies (Keeton, 1999).

- **Prior studies**

The following table summarizes previous studies on credit and liquidity risks and their effects on banks 'financial indicators as well as factors affecting banks' facilities payment behavior.

Table 1- Summary of Past Studies

Row	Writer & Year	Purpose of the study	Result
1	Tan	Investigating the Effect of Risk and Competition on Bank Profitability	Risk had no significant effect on profitability.
2	Olawale	The effect of credit risk on commercial banks	Credit risk has a negative impact on banks' profitability.
3	Aiyar	Investigating the relationship between facility payment and capital adequacy	Banks' lending facility is completely affected by the amount of capital needed and also by its changes.
4	Talavera	The relationship between bank facility payment behavior and country-level instability	Banks have been dramatically reducing their debt-to-equity ratio.
5	Al-Khouri	Investigation of risk assessment and its performance in banking sector	Credit risk and liquidity risk are major contributors to bank performance.
6	Mbutor	Investigating the effects of currency exchange rate fluctuations and asset price fluctuations on bank payment facility behavior	Exchange rate fluctuations and stock price changes have affected banks' payment facility behavior, but the effect is not significant.
7	Foos	Investigating the Growth of Facility and Risk of Commercial Banks	Facility growth leads to increased facility losses after three years through reduced interest income and reduced bank capital. Facility growth is a key variable of banking risk.
8	Hess	Factors Determining Credit Risk	The growth of facilities has led to credit losses for banks in the next two to four years.
9	Sufian	Investigating the Determinants of Profitability in Commercial Banks	Commercial banks with higher levels of credit risk are more profitable.
10	Stikoras and Wood	Investing in the profitability of European banks	The findings show the negative impact of risk on the profitability of the European banking system.
11	Bork	Investigating the Determinants of Bank Profitability	Liquidity risk and credit risk have negative effects on banks' profitability.

Hypothesis development

Banks' decision regarding paying for facilities under uncertain conditions

Here we look at how uncertainty affects banks' behavior. In this regard, we discuss how banks choose between risk-free facilities and assets, as banking risk and intra-organizational uncertainty increase. We therefore base the portfolio model presented by Baum et al. (2005) on the work. In this model, there is a clear relationship between the distribution of portfolio holdings and economic uncertainty. In this study, we mean uncertainty, credit risk, and liquidity risk, which is some kind of intra-organizational uncertainty. We therefore

develop the model of Baum et al. (2005) with regard to intra-organizational uncertainty. In this scheme, bank managers work in a risk environment (they manage banks in a risky environment) and can invest deposits in two different asset classes at a time, namely facilities and securities (bonds).

Investment in securities is assumed to be risk-free by default and this risk-free investment has a return rate of r_f. For bank i at time t, investing in risk facilities has a random return rate r_i equal to r_f plus risk reward (r_{pi}). It is assumed that r_{pi} is the same for all facilities.

$$(1) \quad r_i = r_f + r_{pi}$$

Here:

$$varr_{pi} = \sigma_\varepsilon^2, E(r_{pi}) = P$$

Therefore:

$$(2) \quad r_i = r_f + P + \varepsilon_i$$

Here ε_i is a random component with a distribution of N (0, $\sigma\varepsilon^2$).
It is also assumed that each bank has its own portfolio with different risk structure.
Therefore:

$$E(\varepsilon_i, \varepsilon_j) = 0$$

In this context, bank managers face with the problem of portfolio optimization. Based on their utility functions, they invest the share of the deposits in the facilities and (1-αi) the deposits in the bonds. However, before making a decision, they do not see the risk reward and the random component of ε_i and what they see is noisy signals.

$$S_i = \varepsilon_i + V \qquad (3)$$

Here V is a random and independent variable of ε_i and has a distribution N ($0,\sigma_v^2$)
It is assumed that component (V) is the signal that is the same for all recipient banks, whereas the signal whose effect on the different banks remains at the end is different due to the existence of ε_i.
If there was a desire to share information and V was seen, then there would be no uncertainty, however, even if we assume that V was visible, sharing information would seem unlikely to remain in the credit markets.

According to the (r_i) relationship, bank managers have to predict the value of ε_i. In any case, banks can see the signals and can extract additional information from it. In this model, the assumed E (ε_i | S_i) (expectation value ε_i provided Si observation) is a constant ratio of the signal. (λ is a constant ratio) and in fact λ is the linear regression coefficient ε_i on Si.

$$E(\varepsilon_i|S_i) = \lambda S_i = \lambda(\varepsilon_i + V) \qquad (4)$$

The expected return on the portfolio can now be:

$$E(R_i|S_i) = \alpha_i\left(r_f + P + E(\varepsilon_i|S_i)\right) + (1-\alpha_i)r_f$$
$$= \alpha_i\left(r_f + P + \lambda(\varepsilon_i + V)\right) + (1-\alpha_i)r_f \quad (5)$$

And its variance is as follows:

$$var(R_i|S_i) = (\sigma_\varepsilon^2 + \sigma_v^2)\alpha_i^2\lambda^2 \qquad (6)$$

Here we assume that risk-averse banks have the following utility function:

$$E(u_i|S_i) = E(R_i|S_i) - \frac{\omega}{2}var(R_i|S_i) \qquad (7)$$

Where ω is the risk aversion factor.
Using the equations of averages and portfolio variance, one can obtain the optimal ratio of facilities to assets (i) shown by iα:

$$\alpha_i = \frac{P + \lambda(S_i)}{\lambda^2\omega(\sigma_\varepsilon^2 + \sigma_v^2)} \qquad (8)$$

Relationship (8) shows the reverse relationship between the uncertainty and the ratio of facilities to bank assets. In fact, with increasing uncertainty, the optimal ratio of facilities to assets decreases.

And the variance of iα:

$$var(\alpha_i) = \frac{1}{\lambda^2 \omega^2 (\sigma_\varepsilon^2 + \sigma_v^2)} \qquad (9)$$

Which is negatively correlated with the degree of uncertainty (σv2) and when we derive from the αi variance relation the σv2 to derivative ratio:

$$\frac{\partial var(\alpha_i)}{\partial \sigma_v^2} = -\frac{1}{\lambda^2 \omega^2 (\sigma_\varepsilon^2 + \sigma_v^2)^2} < 0 \qquad (10)$$

The obtained relationship states that the variance in the ratio of facilities to assets decreases with increasing uncertainty. Therefore, using this model and developing uncertainty about both credit risk and liquidity risk, this study examines whether banks are affected by both credit risk and liquidity risk and the effect that changes in these two risks have on the prediction of return on credit. Do banks pay for facilities, change their behavior of allocating bank resources to facilities payments, and does the growth in lending affect these two uncertainties? Therefore, the following two hypotheses are tested in this study:

H1: Credit risk has a significant impact on the growth of banks' facilities.

H2: Liquidity risk has a significant impact on the growth of banks' facilities.

III. Research Model

The following model was used to test the hypotheses in this study:

$$LG_{it} = c + \alpha_1 CR_{it-1} + \alpha_2 LR_{it-1} + \alpha_3 Z_{it} + \varepsilon_{it}$$

Table 2- Variables and how they are measured

Type of Variable	Variable Name	Variable Sign	Measurement	Source
Dependent	Bank lending growth	LG	Difference between total loans at time t and total loans at time t-1 divided by total loans at time t-1	Kashif et al (2016)
Independent	Credit risk	CR	Ratio of non-commercial facilities to total facilities. Non-commercial facilities include past due, deferred and suspicious facilities. Being higher means more credit risk.	Tan (2015)
Independent	Liquidity risk	LR	The higher the ratio of total lending facilities to total assets, the greater the ratio of lower liquidity and higher liquidity risk.	Tan (2015)
Control	Bank Size	SIZE	Natural logarithm of total bank assets	Tan (2015)
Control	Rate of return on assets	ROA	Ratio of net profit to total assets	Tan (2015)
Control	The inflation rate	INF	Based on the consumer price index	Stiglitz & Weiss (1992)
Control	exchange rate	EX	Rials equity against US dollar in government market	Stiglitz & Weiss (1992)

Statistical Sample and Data

The present statistical sample of includes 12 banks admitted in Tehran Stock Exchange during 2010 to 2017. The information required to submit reports to the General Assembly and financial services representatives evaluated by the authorities and the services and balances and balances available on the websites is hosted by the organizational and advertising websites of Tehran (Kedal site). You can keep your information for establishing clan facts from the list of the Central Bank of the Islamic Republic of Iran.

Research Methodology

The statistical model used in this study is Generalized Method of Moments (GMM) according to the explained equations. The basic method of estimation is one of the parameter estimation methods of mathematical modeling of dynamic data. This method incorporates a related ERT. The armband associated with the values will be converted to noise and noise, and will be maintained in a separate way. The IT method can eliminate the tool variables of these people by using them. This method has two important tests: Arellano Bond and Sargan.

The Generalized Method of Moments (GMM) is a robust model in which unlike the maximum likelihood (ML) method, no information is needed on the exact distribution of error sentences. In fact, this model is a dynamic one that in addition to the main variables, lagged variables are also included in the model to

estimate a better and more realistic model, and it can be said that many ordinary econometric estimators can be used as special cases of GMM. In the dynamic GMM method, the dependent variable interrupt is used as a dynamic tool with specified interrupts. Also, in order to eliminate the correlation of the dependent variable with the error term and sentence, the explanatory variable interruption is also used as a tool (Arellano & Bond, 1991). So for Arellano & Bond, who introduced this estimation method, it would be a good tool for the GMM method to have no correlation with the error statements. If this condition is met, then GMM estimates will be consistent. Therefore, the variables used in the tool are tested by the Sargan test introduced by Arellano & Bond. The theoretical relation that the parameters in this model are estimated on is usually the orthogonal state between the (possibly nonlinear) function of the parameters, f (θ) and a set of tool variables (Z_t), which is, in fact, the parameter θ that must be estimated.

$$E[f(\theta)'Z] = 0$$

In fact, if the data is imported into GMM as follows:

$$\text{Equation Specification } c(1) * \log(y) + X^{c2}$$

$$\text{Characteristics of instrumental variables } cZ\ Z(-1)$$

This orthogonal state is calculated by the following equations:

$$\sum (c(1)\log y_t + X_t^{c2}) = 0$$

$$\sum (c(1)\log y_t + X_t^{c2})Z_t = 0$$

$$\sum (c(1)\log y_t + X_t^{c2})Z_{t-1} = 0$$

The null hypothesis for this test is that the instruments are valid enough that they are not correlated with the errors in the first-order differential equation, and the confirmation of the null hypothesis can provide evidence that the tools are appropriate. The GMM system model is compatible if there is no serial second-order correlation in the residual values. If the GMM estimator is consistent and its tools are valid, the dynamic panel data model will also be valid.

IV. Result

Table 3 presents the descriptive indices of variables including their dispersion and centrality indices in order to gain a more accurate understanding of the status of the statistical sample.

Table 3. Descriptive variables of variables

Variables	N	Average	Mean	Background	Minimum	Standard deviation
LG	96	0,229878	0,187398	0,859386	-0,115573	0,198307
CR	96	0,311700	0,285517	0,742839	0,033390	0,179833
LR	96	0,614578	0,604487	0,887569	0,383436	0,126319
SIZE	96	19,45405	19,60528	21,52018	16,60290	1,152188
ROA	96	0,013691	0,010908	0,045837	0,000195	0,011581
INF	96	18,31250	15,45	39,3	8,6	9,979909
EX	96	22709,13	23881	37690	10339	10003,37

Source: Research findings

Considering this table, it can be seen that on average, the selected banks had a growth rate of 22% during the period 2011-2011, but the highest growth rate was 85% and the lowest growth rate was negative. In addition, the average credit risk was 31%, with 74% and 3.3%, respectively. The average liquidity risk was 61% in the years under review, the highest being 88% and the lowest being 38%.

- Inferential statistics

Enduring Test

Levin, Lane, and Jo (LLC) (2002), showed that in the combined data, the use of the unit root test for this data has more test power than the use of the unit root test for each section separately; this test was used to check the maneuverability of the variables, the results of which are reported in Table 4.

Table 4- Summary of LLC test for research variables

Variable name	Statistics value	Probability level of statistical error	Test Mode	Test result
LG	-5,21199	0,0000	Width of origin and time trend	Enduring Test
CR	-4,83610	0,0000	Width of origin and time trend	Enduring Test
LR	-7,92239	0,0000	Width of origin and time trend	Enduring Test
SIZE	-6,51385	0,0000	Width of origin a	Enduring Test
ROA	-7,49684	0,0000	Width of origin and time trend	Enduring Test
INF	-4,22309	0,0000	Width of origin and time trend	Enduring Test
EX	-7,44829	0,0000	Width of origin and time trend	Enduring Test

Source: Research findings

As the test results show, because the probability level of the statistics for all variables is lower than 0.05, all variables are at enduring level.

Variance Inflation Factor

The variance inflation factor test is performed to discover the linearity between the independent variables. Multiple line intensities can be analyzed by examining the magnitude of the VIF. If the VIF test statistic was close to one, it indicates that there is no line. As an experimental rule, if the VIF is greater than 5, multiple linearity increases. Only independent variables are used to calculate this coefficient. How to calculate this coefficient is in accordance with the following formula:

$$VIF = \frac{1}{(1 - R^2)}$$

R^2 is equal to the coefficient of determination of the fitted independent variable on the other independent variables. Table 5 shows the results of this test for all independent variables.

Table 5. VIF test results

Variable	VIF
CR	1,56406
LR	1,21690
SIZE	1,72816
ROA	1,36780
INF	1,22967
EX	1,67754

Source: Research findings

The results of the table show that there is no multiple overlap between the independent variables because the variance inflation factor is close to one for all the variables, so the results of the model can be confident.

Model Estimation Results

The static panel method has some problems with some explanatory variables in terms of serial correlation, variance heterogeneity, and endogeneity. The GMM estimator makes it possible for researchers to solve problems related to serial correlation, variance heterogeneity, and endogeneity for some variables. Therefore the GMM method was proposed by Arellano & Bond to solve this problem. Because in the dynamic panel patterns, the dependent variable interruption is correlated with the disruption sentence, the second dependent variable interrupt and the other variable interrupts (in a recursive form) are used as tools for the dependent variable interrupt based on the GMM method. In this method, in order to estimate the model, it is necessary to first identify the instrumental variables used in the model. The instrumental variables of these models are the values of the dependent variable and the explanatory variables. The results of estimating each research equation by GMM method are reported in the following tables. The compatibility of GMM estimators depends on the validity of the instrumental variables used and the assumption of serial discrepancy of the error sentences. This validation can be tested by two tests specified by Arellano & Bond that are reported at the end of each table. To check the validity of the tool matrix from the statistics proposed by Arellano & Bond (1991), Blundell & Bond (1998) and Arellano & Bover (1995) are used. This test is known as the sargan test, which measures the validity of all the tools used. The sargan test statistics have the chi-square distribution with degrees

of freedom equal to the number of over-identifying restrictions, and the null hypothesis indicates that the tools are not correlated with the disruption components. Sargan test is predetermined by limitations and is used to determine any correlation between tools and errors. For tools to be valid, there should be no correlation between tools and error sentences. The null hypothesis for this test is that the instruments are valid enough that they are not correlated with the errors in the first-order differential equation. Failure to reject the null hypothesis can provide evidence that tools are appropriate.

The second test is the M2 statistic, which tests the existence of a second-order serial correlation in the first-order differential error sentences. Non-rejection of the null hypothesis in this test is evidence of the assumption of a serial non-correlation. In other words, the GMM estimator is consistent if there is no second-order serial correlation in the error terms from the first-order differential equation.

Table 6. Model Estimation Results

Variable	Coefficient	standard error	T statistics	Probability level of statistical error
LG(-1)	0,186289	1,146631	1,270460	0,2084
CR(-1)	-0,092114	0,357202	-0,257876	0,7973
LR(-1)	-2,817283	0,782437	-3,600653	*0,0006
SIZE	0,070662	0,155108	0,455564	0,6502
ROA	-4,695178	2,563036	-1,831882	**0,0716
INF	0,003879	0,002012	1,928363	0,0582**
LEX	-0,288369	0,194816	-1,480217	0,1436
J statistics	31,96042	Statistical Error Level J		0,078073
Average dependent variable	-,.027030	Dependent variable standard deviation		0,197259
Standard regression error	0,190934	The sum of the squares of the waste		2,369615
AR(1)	-2,518919	Probability of statistical error m		0,0118
AR(2)	-0,177978	Probability of statistical error m		0,8587
Probability of statistic of sargans				0,1009693379331972

Source: Research findings * Significant at 5% error level ** Significant at 10% error level

In this table, since the probability of error of the sargan test statistic is greater than 0.05, the null hypothesis that the tools are valid in both models is accepted. Also, the Arellano Bond test results confirm the null hypothesis that the second order serial disconnection is zero because the probability level of AR (2) statistic error is greater than 0.05, so it can be reliably relied on the model results.

V. Conclusion

In this study, two hypotheses have been tested to investigate the dynamic and long-term effects of two intra-organizational uncertainties, namely, credit risk and liquidity risk on banks' facilities payment behavior, with respect to loan growth per year compared to last year. The reason for choosing these two risks is that they are the most important banking risks and are the best characteristic of intra-organizational uncertainty in determining the facilities payment of banks.

The results of the hypothesis testing revealed that in the long run, credit risk had negative but non-significant effects on the growth of selected banks' facilities, so the first hypothesis was not confirmed. But the second hypothesis was confirmed because the t-statistic and its probability level indicate a significant coefficient, so the liquidity risk has a significant negative impact on the growth of the loan in the coming year. That is, as the liquidity risk increases this year, banks' facilities payment behavior changes and the facilities payment rate decreases in the next year, leading to a slowdown in loan growth. These results indicate that banks are exposed to intrinsic uncertainty, only to liquidity risk. They respond and reduce their facilities payment following increased liquidity risk, but credit risk cannot determine the banks' facilities payment behavior. In fact, since liquidity risk is the risk of the bank not being ready to provide lending facilities or timely payment of bank debt, a bank facing high liquidity risk not only fails to provide the resources to lend, but also to fail. The ability to pay its own debt cannot borrow from other sources and borrow from the central bank or receive deposits from the public, thus altering banks' payment behavior and slowing the growth of bank facilities. But as we have seen, credit risk cannot be a prelude to changing banks ' facilities payment behavior and slowing loan growth, and cannot be considered as a predictor of banks' facilities payment behavior because, as credit risk increases , banks are likely to use other ways to provide financial resources of facilities. There is a great deal of importance in lending resources to drive efficient and productive investments, so banks' ability to lend is also important. However, as lending facilities are the main way of earning banks money, banks may behave in an inefficient and unreasonable way of paying for higher profitability, which can put the bank at risk for a variety of facilities. As a result of the uncertainty within the organization, banks 'behavior in lending changes as well, with the results of this study showing that liquidity risk is an important factor in changing banks' payment

behavior and reducing loan growth. As a result, paying attention to the factors that lead to liquidity risk and its proper management can be very important in order not to interfere with the volume of payment of banks' facilities. Therefore, bank managers are recommended to take the necessary measures to manage liquidity risk by setting up a Risk Management Committee.

VI. Limitation and future research

One of the major limitations of the present study was the lack of direct reporting of past due facilities, deferred claims and suspicious claims on bank financial statements and accompanying notes that the researcher used to charge the suspected claims for non-performing facilities. Comparison of results with previous studies made it difficult. However, this study contributes greatly to the development of existing literature and the use of future researchers because it is the first study to examine the effects of credit risk and liquidity risk on facilities growth. Future researchers are advised to further study the impact of other banking related risks on facilities growth to complement the results. Also, since the model results may be sensitive to the type of econometric model used, it is suggested to use other methods of analysis in future studies. On the other hand, considering the quality of concessional facilities may also be influenced by intra-organizational uncertainty, it may be interesting to examine the impact of credit risk and liquidity risk on facilities quality, which is recommended by future researchers.

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