

ASSESSING THE PROFITABILITY OF THE IRANIAN BANKING SYSTEM'S NON-LINEAR RELATIONSHIP WITH LIQUIDITY RISK

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Abstract

In this paper we are trying to prove the existence of a U shape relationship between some of bank specific variables that can affect on liquidity risk and profitability ratios (ROE, ROA). The point is running such an issue is to evaluate the effectiveness of these bank specific variables on banks profitability in both short and long run. In order to fulfill this mission, variable's data are gathered for the period of 2005 to 2011, and then using generalized method of moments (GMM), the relationship between bank profitability ratios and independent variables are estimated. Our results prove existence of a U shape relation between the above mentioned variables.

Keywords: Liquidation, Profitability, Profitability, GMM, Liquidity Risk, Bank Systems

Introduction

Country's economic development happens through the development of an efficient financial system. In definition of the financial network system of financial markets, institutions, businesses and manufacturing firms, households and the government are which have participated in partnership system and regulated the system. Today, economists believe that sustainable economic development is possible without the development of financial system. Banks are the main component of the financial system which is referred to as the heart of the economy in the economic literature. The particular function of the heart is blood transfusions into various economic sectors according to their needs. Continuously banks' operations require making decision on attraction and also allocation of necessary resources of the various uses field. Two important factors influence the decision process, one of which is interest rate risk and the other one, liquidity risk. It happens evaluating process of banks' performance with respect to these two factors and assessing their role and the factors affecting them, the profitability of banks. Apart from the main function of the banking system at the macro level, that is, the optimal mobilization and allocation of financial resources to economic activities, the most incentives of banks for granting the loans is profitability. As previously mentioned, this is a challenge for banks to earn more profit, while would encounter with various hazards. In the meantime, one of the most important challenges that banks are facing is a challenge of liquidity risk. According definition, liquidity risk includes the banks' inability to meet their obligations at maturity of them. This risk arises from the lack of necessary liquidity to cover short-term obligations and unexpected outputs of funds. Being exposure of the risk not just affects the

bank's performance but also has a devastating impact on the bank's fame. If banks don't provide liquidity for depositors at the right time, the banks will lose their trust and confidence. In addition, liquidity shortages and poor management of affairs may result in fines imposed by regulatory authorities and officials. On the other hand, the banks have to be ready to face drastic changes in monetary policies shaping the overall trends of liquidity of the banks. Here, this is where the concept of liquidity management would be showing off more than ever, because if amount of liquidity (balance of current accounts, current accounts with the Central Bank, among other banks' liquidity and statutory reserves) is more or less than optimum range, consequently, the bank is faced either with opportunity costs or losses caused by the lack of liquidity. In this paper, it has been not only investigated the factors affecting liquidity and liquidity ratios on banks' profitability, but other ratios not being measured in earlier research with liquidity ratio (on profitability) have been included in the calculations. The ratios including the ratios related to assets quality, economic indicators and other health-related ratios and the bank stability. In studies previously conducted by various researchers in the area of liquidity risk, it has been greater emphasis on raw data and computations, ever done, emphasized exclusively on risk-related items, and generally it has further emphasized on linear relationships between the independent variables and the dependent variable. While in this research, we, firstly, have used the ratios and indicators of health and financial stability rather than raw data and secondly, examined also nonlinear relationships among these variables and the dependent variables as well as the linear relationships between the number of variables to dealt with testing the relationship between variables in the long run. Another noteworthy point is that dependent variables of the research are divided into the two variables: return on equity and return on assets, different variables and elements impact on them that may, in terms of significance, have different and distinguish impact on the two dependent variables. Therefore, researchers have been trying to classify and separate, at least, independent variables (capital ratio and bank size), in terms of how to influence on dependent variables, and according each separated model, they include relevant variables of the model in it separately.

The Research literature

An effective and serious study has not been done with regard to examining non-linear relationship between factors affecting risk liquidity and profitability of the banks so far. Researchers have spent further time to examine linear relations between these variables and factors associated with liquidity in the banking system. But this means not to investigate nonlinear relationships between economic variables. Mehrara et al (2011) in a paper entitled "Investigation of the nonlinear relationship between real interest rates and private investment using a method of threshold value (in developing countries)" have studied nonlinear relation (U-shaped) among real interest rate and private investment in developing countries in the period 1970-2007, and threshold dynamism using a panel pattern. Their findings show that the real interest rate before a threshold (approximately 5-6%) will affect private investment positively, but crossing with an estimated threshold, further increase in the real interest rates has a negative effect on private investment. Ekhbari and Zeidizadeh (2011) in the paper "Estimating the optimal size of government in the economy of Iran, using the logo curve" have examined the existence of an inverse U-shaped curve to determine the optimal size of government in the country. They were looking for an answer to the question how much the optimal size of government in the economy of Iran is. Hence, they estimated logo curves to determine the optimal size of government. Their findings show that country's economic growth, achieved during the years 1977 to 2007, could be realized with capital expenditures less than what could have been done in practice. Rostamian and Haji Babai asserted (2009) in a paper entitled "measuring bank's liquidity

risk using value-at-risk model (case study Saman Bank)", liquidity management means the bank's ability to perform its financial obligations over time. Liquidity management takes place at different levels. Liquidity management requires identifying its risk exposure and changes arisen by it in environmental variables. Managers can have liquidity risk as an indicator to manage and control liquidity. In this research, a case study on Saman bank's liquidity risk measurement is being analyzed and organized. This practical research investigates Saman Bank's liquidity risk using the exposure risk method during the years 2002 to 2007. This study examines the bank's financial statements and measured value of the liquidity risk of bank during the above-mentioned years, using the method of value at risk. The main hypothesis of the researcher has been based on reducing trend of the liquidity risk over the years. To test the hypothesis, it has used Cox - Stewart statistical method. The survey results indicate a downward trend for liquidity risk over years which are assessed. Izadinia and Alinaqyan (2012) in his paper entitled "liquidity risk management at the crisis conditions in the banks" tried to check the crisis status of the liquidity in banks, and brought some ways to pass the crisis as well as an overview of the conditions and factors that produce this situation in the banks. The ways include: such as creating pools of liquidity, maintaining sufficient cash assets and cash reserves, observing the principles and requirements of capital adequacy, bank deposits guaranteed by the Central Bank, increased focus on liquidity management, the Banks models' emphasis on testing pressure, creating more transparency in bank, the banks' use of the instruments and off-balance sheet activities and supervision within the Banks according to the government regulations. They concluded, finally, that diagnosis of situations liquidity is causing instability can helped to position of the bank in critical condition. High liquidity is required for customers' loans and financing for this function reduces stability. When being crisis conditions in the financial markets, the bank must endure some problems in financing loans; this along with other conditions leads a lack of liquidity in bank. The banks should apply some strategies to overcome such a situation, besides trying for preventing the situations to take place. The central bank should enhance its oversight of the banking system and create stronger regulations. Akbarian and Dianati (2006) in a paper "Risk Management in Banking without Usury" express that there are risks in all economic activities; hence, the measures need to be taken to control the risks arising from economic activities. Therefore, risk management in order to find ways to contain and mitigate risk is very important. The banks, as economic institutions have in place of intermediary between depositors and applicants of deposits, seek to reduce and not to transfer risk to depositors for creating more incentives to maintain and increase the deposits. In interest banking, the banks would encounter lower risk, given that interest rates of deposits are fixed and the banks are transferred risk to the borrower; but in interest-free banking, banks receive and allocate resources according to the specific context of the Sharia has determined them to act. As a result, the constant rate could not be considered before and its rate will be determined after assessing performance as Islamic contracts. So it appears the risk management of interest-free banking is a double important thing.

Arief Vanis (2012), in a paper entitled "liquidity risk and banking system performance" have reviewed and evaluated liquidity risk on the profitability of banks in Pakistan. The results show that there is a significant relationship between amount of deposits, cash reserves, cash gap, save of pending loans and banks' profitability. In this paper, the multiple regression method was used to estimate the results. The results of the first hypothesis of this study confirm a positive relationship between the amount of money deposited in banks and the level of bank earn. The second hypothesis of this paper is based on a positive relationship between cash reserves of banks and the banks' revenue that is totally rejected. The third hypothesis suggesting a negative relationship between liquidity gap and the Bank's income has been confirmed low significantly, due to relative low beta

coefficient of liquidity gap. The fourth hypothesis of this paper has been accepted too, which confirmed being a negative correlation between increase in the volume of bad debt reserve of banks and their level of income. The research has been conducted to measure the probability of occurrence of liquidity crisis and determine banks' optimal saving rate. Another investigation, Hu, ABrahaysoun Eabout (1998) is to calculate the value at risk of the bank balance sheet. The Group, in a paper entitled "The value at risk of a bank's balance sheet," has analyzed of a bank's balance sheet items in a sample bank and determined which items are involved in value at risk of the bank, and described how the management use the information from value-at-risk calculation in decision-making. The balance sheet items will be classified to calculate the value at risk based on a variety of rates available from banking industry. (Berkowitz, 2000), Riengboum, Shay and Astembak (1988), in their paper entitled "optimal management of liquidity and policy based on ensuring in the banking industry" analyzes the state of the bank when increasing the liquidity needs of depositors and thus increasing bank's liquidity risk. In their proposed model, they calculate probability of occurring crisis on the basis of relevant information to maintaining saving cost and penalty rate being paid due to compensating deficits liquidity of the interbank market.

Research hypotheses

The hypotheses in this study are as follows:

1. There is a significant relationship between the capital ratio and ratio of return on equity in the banks.
2. There is a significant relationship between return on asset and size of the bank.
3. There is a significant relationship between liquidity and profitability ratios of banks.
4. There is a significant relationship between liquidity gap and profitability ratios of banks.

The research methodology

This research is practical in terms of objective and the data obtained using the post-event approach (via past information), descriptive-analysis, correlation research in terms of data collection method and its main purpose is to determine existence, amount and type of relationship between the variables being tested.

Kind of the study and the method to test hypotheses

What has been cited in the study is that the economic performance is a set of consequences that would result from economic activity. There are various dimensions of economic performance, but most economists to assess the performance of firms pay more attention to aspects of profitability. Studies related to the performance of the banking industry in terms of profitability have used two ratios: return on equity and return on assets which are applied in most cases to demonstrate the ability of banks to create money. General formula Profit is as follows:

$$(1) \text{ Profit} = \text{Revenue} - \text{Costs}$$

The factors in this study are presented as independent factors affecting profit are classified by the same two factors i.e. the costs and revenues. In general, factors such as liquidity ratios (the ratio of deposits to total assets, the ratio of investment deposits to volatile deposits) capital ratio, size of bank and GDP growth rate affect directly ability of banks' making income. And factors such as liquidity gap ratio, the ratio of cash assets to total assets have the effect on amount of these banks' cost due to creating the opportunity cost, which is evidence that there is a kind of existence of causality logic. So how impacting these elements on the economic performance of banks, profitability is considered in this paper, is explained by the following equation:

(2) BANK PROFITABILITY=F (LIQUIDITY RATIOS, LIQUIDITY GAP RATIO, CAPITAL RATIO, BANK SIZE, GDP GROWTH RATE, INFLATION RATE)

Estimating way of data for this study is based on a dynamic panel data approach. Dependent variable have been the ratios of return on equity and return on assets and appeared when interrupt occurs on the right side of equation and have been considered along with other banking variables related to health and stability of banks with indicators related liquidity risk as independent variables.

In this study, the factors affecting the profitability of banks are divided into two categories:

- The first set of variables is that we examined, in this study, the nonlinear relationship between them and the dependent variables. These variables are the main variables of this study are presented in the research models and include the size of the bank, capital ratio, ratio of liquidity gap to total assets, ratio of cash assets to total assets. To investigate the nonlinear relationships among these variables and the dependent variables, we can add quadratic of the variables to their own equations and the research patterns.
- The second set is bank-specific variables and macroeconomic variables are added as control variables in the models. They include inflation rate, GDP growth rate, the ratio of core deposits to total assets and ratio of investment deposits to volatile deposits (visually). According to the above classification, we to review and judge the nonlinear relationships between independent and dependent variables achieved in the following general relationship.

$$(3) \Pi = \alpha_1(\Pi_{1t}) + \alpha_2(BS) + \alpha_3(BS)^2 + \alpha_4(LIQGAP) + \alpha_5(LIQGAP)^2 + \alpha_6(CTA) + \alpha_7(CTA)^2 + \alpha_8(CR) + \alpha_9(CR)^2 + \varepsilon$$

Π represents two variables in the model, return on equity (ROE) and return on assets (ROA), (CTA) ratio of cash assets to total assets, (DTA) ratio of total deposits to total assets, (IDTSD) ratio of investment deposits to volatile deposits (visual), (LIQGAP) liquidity gap ratio to total assets, (CR) capital ratio, (BS) bank size, (GDP) growth rate of GDP and (IR) inflation.

The research statistical population

The statistical population of the research consisted of all banks in the banking network which is active in Iran during the years 2005 to 2011. Only banks that have been studied in this paper have all the following features:

- Their end of financial year is March 20th.
- The sample companies are not a part of investment companies, financial intermediation, holding companies
- Banks have been active before 2005 and done during 2005 to 2011 actively.
- Banks must not be pended under investigation more than 5 months.
- Banks' information is available.

Above conditions establish statistical population consisting of 18 banks, Melli, Karafarin, Sepah, Saderat, Tejarat, Mellat, Refah, Post Banks, Keshavarzi, Maskan, Saderat Touseh, Sanaat & Madan, Saman, Parsian, Eghtesad Nouvin, Pasargad, Sarmayeh and Sina.

The research paradigm

In the present study with the use of dynamic panel data, the generalized moment technique was used for estimating the models and two models of linear and nonlinear relationships between independent and dependent variables were examined. Method of generalized moments has not been used in previous studies evaluating these relationships and the nearest mode (examining the factors affecting banks' accrued dues of Iran), only five commercial banks in a 10-year period were examined that

researchers would suffice to estimate only linear relationships between independent and dependent variables. Given that the research dependent variables are, in this study, return on equity and return on assets, therefore, the two models are ahead:

$$ROE = \alpha_1(ROE_{t-1}) + \alpha_2(CR) + \alpha_3(CR)^2 + \alpha_4(LIQGAP) + \alpha_5(LIQGAP)^2 + \alpha_6(CTA) + \alpha_7(CTA)^2 + \alpha_8(IDTSD) + \alpha_9(DTA) + \alpha_{10}(GDP) + \varepsilon \quad (5)$$

$$ROA = \alpha_1(ROA_{t-1}) + \alpha_2(BS) + \alpha_3(BS)^2 + \alpha_4(LIQGAP) + \alpha_5(LIQGAP)^2 + \alpha_6(CTA) + \alpha_7(CTA)^2 + \alpha_8(IDTSD) + \alpha_9(DTA) + \alpha_{10}(GDP) + \varepsilon \quad (6)$$

Estimating the model

Analysis of relevant data from various commercial and specialized banks often requires the use of panel regression models that the behavior of the banking system is checked at a time and dynamically. Many variables affect the behavior of the banking system these variables can be generally divided into two categories, bank-specific and macroeconomic variables. In applicable research, the conventional panel models are not usually considered dynamically (Gujarati, 1995), one of their disadvantages is they neglect the dependence between the state of previous years. This dependence is also considered in this study, for this reason, interrupted-response variable is considered in models, in order to analyze new data. In general, we in this section to find causality between the independent variables (the factors affecting liquidity risk) and dependent variables (profitability indices) have applied a four-step econometric process. In the first step, firstly, using panel unit root tests, reviewing the research data to be stationary was done and secondly data has been corrected using differential method, data which is high concentrations. Thirdly, by using the method of generalized moments, it estimates the size and explains the type of relationship between the independent and dependent variables. Finally, we assess validity of matrix for measurement instruments to variously check the research models, using Sargan test.

Realization tests on the data (stationary test):

Before the estimation of economic relationships using time series data, the properties of time series data are examined using unit root tests. The modeling and estimation of these relationships with time series data regardless of unit root tests is not valid. Because a large number are non-stationary economic time series and regressions between them are often forged or dummy (Granger and Newbled, 1974). Dummy regression is a situation that despite the high coefficient of determination, there is no significant relationship between the variables. The most important methods of the unit root test arisen from generalizing unit roots tests to panel data include:

- Levin Lin Chu test (LLC)
- Bertoung test
- Im, Pesaran and Shein test
- Fisher tests (ADF, PP)
- Houderi test

The tests check the co- accumulation status of variable. In other words, if the variables are co-accumulation, this will mean that they move together over time, so that short-term disturbances will be corrected to long-term. Granger (1981) admits that if the time series data is accumulation type one, it can be converted with stationary data, once differential making. In this study, using the Levin Lin Chu, Im, sons and Sheime and Fisher tests (ADF, PP) it has been investigated unit root variables.

Table 1- Unit root test results for all the variables under study

Variables	PP-Fisher Chi-square		ADF-Fisher Chi-square		Im, Pesaran and Shein W-test		Levine, Lin & Chu t*	
	Probability	Calculated	Probability	Calculated	Probability	Calculated	Probability	Calculated

	level	statistic	level	statistic	level	statistic	level	statistic
Roa First difference	0.0000	-24.4287	0.0000	-14.358	0.0000	83.1192	0.0000	136.7990
Roe Level	0.0000	-9.27526	0.0709	-0.39439	0.0768	48.7065	0.0000	80.4111
CR Level	0.0000	-9.73257	0.0774	-1.42246	0.0106	58.3721	0.0000	93.4578
Cr2 Level	0.0000	-20.1344	0.0000	-5.25498	0.0001	77.5336	0.0000	120.9200
Cta Level	0.0000	-154.384	0.0000	-15.2153	0.0208	55.314	0.0000	80.4709
Cta 2 First difference	0.0000	-1331.93	0.0000	-181.379	0.1235	45.9655	0.0000	90.1451
Bank size First difference	0.0000	-16.9264	0.0000	-13.0966	0.0000	113.677	0.0000	85.5880
Bank size 2 First difference	0.0000	-15.6128	0.0000	-12.1953	0.0000	113.539	0.0000	80.0959
DTA Level	0.0000	-128.133	0.0000	-59.1729	0.0000	89.313	0.0000	140.0600
LIQ GAP First difference	0.0739	-0.06355	0.0000	-6.90707	0.0000	93.7105	0.0000	93.3760
Liq gap 2 First different	0.0000	-41.2816	0.0000	-44.6523	0.0001	75.1873	0.0000	93.7550
Id ts d First different	0.0000	-50.9479	0.0000	-18.6625	0.0000	127.281	0.0007	69.1190
Ir Level	0.0000	-25.967	0.0000	-6.97457	0.0000	125.256	0.0007	69.1190
Gdp First different	0.0000	-22.9963	0.0000	-5.80868	0.0000	83.2274	0.0000	80.8294

Source: the research findings

The results of this test for the Iranian banking system can be seen throughout the years 2005 to 2011. Since the significance levels for all variables in all unit root tests is smaller than 0.1, so all variables in the estimated model can be considered stationary.

The results of estimating pattern

Since this study have two models to estimate the relationship between independent variables and dependent variables. Our results and findings in the following two tables and six specifications are visible. The first two tables are the results of the survey for estimating the effects of independent variables on equity returns and Table 2 is the results of estimating the effects of independent variables on asset returns. To check the validity of the instruments matrix, Sargan test has been used in this study too. It is worth noting that Sargan statistics uses predetermined limits to determine any correlation between instruments and errors. To be valid, there must not be any correlations between the instruments and the error terms. In this research, the main hypothesis (null hypothesis) is that the

instruments are valid as long as they are not correlated with the errors in the first-order difference equation. Rejection of the hypothesis indicates the validation of controls instruments to be appropriate. Better expression, the applied instrumental variables are not correlated with residuals. And we can conclude that the instruments used to estimate have necessary validity (Tayebi, Karami and Sariry, 2011). The results of our estimation and survey in two tables, each of which has three specifications are presented as follows:

Table 2- presents the results of estimating nonlinear impact of independent variables on the dependent variable: return on equity.

specification	First specification			Im, Pesaran and Shein W-test			Levine, Lin & Chu t*		
	Coefficient	t-statistic	Prob.	Coefficient	t-statistic	Prob.	Probability level	Calculated statistic	Prob.
ROE (-1)	0.048708	1.89180	0.062	0.076687	5.66555	0.0000	0.143846	7.56195	0.000
CR	-1.861704	-21.2869	0.000	-	-	-	-	-	-
CR2	1.991042	15.4802	0.000	-	-	-	-	-	-
Liquidity Ratio	-	-	-	-0.028996	-2.05313	0.0432	-	-	-
Liquidity Ratio2	-	-	-	0.01456	5.33973	0.0000	-	-	-
LIQ GAP RATIO	-	-	-	-	-	-	0.639034	6.80731	-
LIQ GAP RATIO2	0.005285	1.780781	0.0786	0.000806	2.138799	0.0354	0.003073	1.821448	0.072
ID TSD RATIO	0.002077	2.16757	0.033	0.001429	1.95630	0.053	0.001396	1.777732	0.07
GDP	0.275365	4.54532	0.000	0.109302	1.72609	0.088	0.410672	4.534796	0.00
DEPOSIT RATIO	0.0739	-0.06355	0.000	-6.90707	0.0000	93.71	0.0000	93.3760	
J-statistic	15.14525			14.8623			14.24618		
Instrument rank	18			18			18		
Scalar pval	0.23358			0.23358			0.23358		

Source of research findings

Table 3- estimation results of the nonlinear effect of the independent variables on the dependent variable ROA.

specification	First specification			Im, Pesaran and Shein W-test			Levine, Lin & Chu t*		
	Coefficient	t-statistic	Prob.	Coefficient	t-statistic	Prob.	Probability level	Calculated statistic	Prob.
ROE (-1)	-0.420737	-39.0326	0.000	-0.35315	-15.893	0.000	-0.445338	-48.9436	0.000
BANK SIZE	-0.10352	-5.3202	0.000	-	-	-	-	-	-
BANK SIZE ²	0.003749	3.87575	0.0002	-	-	-	-	-	-
Liquidity Ratio	-	-	-	-0.15136	-7.7501	0.000	-	-	-
Liquidity Ratio2	-	-	-	0.001968	11.6634	0.000	-	-	-
LIQ GAP RATIO	-	-	-	-	-	-	0.131217	4.65405	0.000
LIQ GAP RATIO2	-	-	-	-	-	-	-0.480023	-3.86182	0.0003
INFLATION RATE	-0.00006	-1.6541	0.050	-0.00011	-1.6629	0.051	-	-2.8738	0.005
ID TSD	0.00033	2.8873	0.0052	0.000064	6.98205	0.000	0.000046	1.66592	0.099

RATIO									
DEPOSIT RATIO	0.009091	1.7676	0.081	0.008035	4.4641	0.00	0.02724	7.135594	0.000
J-statistic	13.75484			14.04359			14.55875		
Instrument rank	17			18			18		
Scalar pval	0.246857			0.29793			0.26645		

Source of research findings

Conclusions

The overall aim of this estimate is existence of a U-shaped relationship between independent variables and to Judge about the short-term and long-term relationship type between these two variables. As seen, in all specifications the Sargan-test statistic is P-VALUE <0.5. That suggests the conclusion that there is no correlation between the matrix of instruments and components of disorder. So we can conclude that the validity of the instruments used in all specifications to estimate well is enough. The first variable in this section shall be construed variable is capital variable. The results of the first specifications in Table 2 show that there is a kind of U-shaped relationship between this variable and asset returns. The relationship demonstrated it due to being negative the coefficient of linear variable and positive the coefficient of quadratic variable. In other words, an increase in short-term capital in the banking system causes reduction of return on equity is. But the long-term increase in this ratio leads to an increase in return on equity. The variable of bank size impacts almost the same on the ratio of return on asset. Except that its effect is far less than the ratio of capital impact on return on equity. Being negative coefficient on bank size variable in first-degree term and positive coefficient on the quadratic term of this variable also showed a U-shaped relationship between this variable and the dependent variable of return on assets. Than the relationship between liquidity and profitability ratios is also U-shaped relationship. As seen, in second specification of both Tables 2 and 3, sign of first-degree term is positive and sign of the quadratic term, negative. Maintaining cash assets, under inflation conditions, in the short term is considered a conservative policy, typically, which reduces the ability of banks to invest and create opportunities to profit. But when crisis and its effects on the long term is showing off, that can be inferred that raising the cash assets relatively through attracting confidence of investors towards the safety of their investments will increase banks' ability to absorb further credit. The last variable is cash gap variable which is related an inverted U-shaped to both dependent variables in our nonlinear models. Third specification in Table 2 and 3 shows positive sign for first-degree term and negative for the quadratic term, justifying where there is a relation. This result reflects the fact that increase in physical capital and increase in equity under critical conditions in the short term can lead to increased return ratios due to rising inflation rate and declining GDP growth rate. But the long-term increase in the relative gap can reduce banks' return on assets and equity.

Suggestions

In this study, the variables were unreliable by first-order differential solutions became reliable variables. This solution may eliminate long-term valuable relations of those variables that relationship between them is based on the level not difference. The reason for this phenomenon is that most economic theories as a long-term relationship are expressed in variables' levels rather than difference. Therefore, it is recommended that in future studies of other patterns, it can be used to correct errors and eliminate the co-accumulation. For example, the pattern of represents level communication among variables better, such as a pattern vector error correction. In this research, the

traditional measures of liquidity were used, having emphasis on the subject that whatever current assets are more than current liabilities, the liquidity situation is more desire. These indices didn't speak about combination of cash assets and time and the amount of liquidation of them. It is suggested that in future studies to measure the liquidity position of the banks, the modern liquidity ratios, indices are used cited subjects to be included in the calculation. In addition, it is recommended research applicable findings ahead are used to compare with a study in which modern indices of liquidity used. This leads that each indicator's ability to predict the strength of banks' liquidity and profitability position is evaluated. Reducing the liquidity gap, as posed previously, increase profitability in the banking system. Recommended for future studies that the gap shall be calculated in a more dynamic way, further indicating which temporal structure is the balance sheet items and the time intervals between assets and liabilities should be reflect more accurately.

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