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Explaining the role of banks' market power (competition) on liquidity creation in the condition of oil price shock

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Abstract

The current paper aims to explain the role of banks' market power in creating liquidity during an oil price shock. The sample population of this study includes Iran's commercial and specialized banks whose information is available from 2011 to 2021. To test the research hypotheses based on the multiple regression method, the data were analyzed using Eviews 10 software after checking the data's validity and the regression analysis assumptions. The Lerner index was used to measure the bank market power variable as the research's independent variable. The inverted index of stable funding net ratio based on Basel 3 liquidity requirements was used to measure the study's dependent variable, liquidity creation. Furthermore, the negative changes in oil prices were considered oil price shocks, which is the moderating variable of the present study. The results showed that bank market power has a positive and significant effect on the creation of bank liquidity at the confidence level of 90%, which means that with a high market power, banks tolerate more liquidity risk. Besides, the results indicate that the oil price shock has a negative and significant effect on bank liquidity creation at the level of 90%; Oil price shock does not influence the relationship between bank market power and liquidity creation. Therefore, banks with high market power tolerate more liquidity risk, and market power can significantly impact economic growth through its effect on creating liquidity.

Keywords: liquidity creation, banks' market power, oil price shock
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1 Introduction

The modern theory of financial intermediation states that banks have two crucial roles in the economic environment. Banks provide liquidity through liquid liabilities such as deposits to finance relatively illiquid assets such as investments and loans. Therefore, banks balance the liquidity needs of savers and the demand for companies' long-term financing commitments [15]. Banks help ensure the liquidity of economic activities by efficiently converting resources.

However, available liquidity ensures liquidity and debt to access financial resources. As there is a divergence between assets and liabilities, the capital structure of banks may become more fragile. Thus, banks cannot create high liquidity in their balance sheets in a certain period, resulting in adverse economic results and an increase in the fragility of the banking sector [1]. Regarding the current conditions, the issue of bank liquidity has been very attractive

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for managers and researchers. Reviewing the literature confirms that banks' liquidity ability is related to their market power from two different points of view.

On the one hand, bank liquidity creation is likely to increase through the "price channel" [31], suggesting that high competition may increase credit availability. On the other hand, increased competition can reduce bank profitability and, in effect, increase the bank's solvency risk. Therefore, under banking supervision standards, liquidity is threatened, and fragility is revealed. Petersen and Rajan [36] argued that increased competition reduces liquidity creation and reinforces the "fragility channel" view. The bank's fragility is characterized by its functions in providing protection and converting maturity into liquidity to meet the needs of creditors. In both of these mechanisms, the effects of market power in the competitive market are strongly related to the bank's ability to create liquidity [35].

The importance of the role that the financial system plays directly and indirectly in promoting economic growth is widely recognized in the financial and economic growth literature. A small part of this literature has concentrated on explaining such linkages through the role of the financial sector in the face of real or monetary shocks. This field revolves around the idea that the financial sector may play a role in containing and smoothing the consequences of real shocks reducing macroeconomic volatility. Therefore, the financial sector can indirectly stimulate economic growth by rubbing and reducing real shocks, which is discussed in studies such as [2, 13, 18, 25, 30, 33].

Since no study has investigated the problem of how to measure liquidity creation as a new liquidity condition in Basel 3, in the states of economic shocks, which is influenced by market power in the banking industry of Iran, the present research fills this gap and contributes to this relatively unexplored path by providing new insights into the relationship between liquidity creation and banks' market power. Thus, according to the abovementioned issues, the current research intends to answer the question, "To what extent does the market power in Iran's banking industry affect the creation of liquidity in the conditions of oil price shocks?"

2 Theoretical framework and Literature review

2.1 Liquidity creation

King [29] defines bank liquidity as the ability to finance the increase of assets and fulfill its obligations in the short term with acceptable low losses. Berger and Bouwman [6] state that banks create liquidity by converting their liquid assets into illiquid liabilities or financing their illiquid assets (i.e., investments and loans) with liquid liabilities (i.e., demand deposits). In their study, Kashyap et al. [28] stated that banks perform off-balance sheet activities such as loan commitments to create liquidity. Depositors are offered available withdrawals from their accounts, while borrowers are committed to long-term cash payments through loans. Therefore, banks balance the liquidity needs of savers and the demand for long-term financing obligations while contributing capital to the economy [14, 15]. Berger and Bouwman [6] classified all assets, liabilities, equities, and off-balance sheet activities as liquid, semi-liquid, or illiquid. The authors developed a set of indicators to measure liquidity creation by combining the previous classifications in different methods. Recently, Berger and Bouwman's [6] measure has been widely used in bank liquidity research [17, 37]. In this research stream, according to the theories of "relative market power" and "structure-behavior-performance," market power significantly influences the behavior of banks through the bank lending channel and bank risk appetite [34, 39].

2.2 Market power

Competition between commercial banks and high competition (i.e., low market power) affects banks' pricing policies; the lending rate is reduced, and the deposit rate is increased [10]. For instance, Besanko and Thakor [8] used an equilibrium analysis to examine the long-run behavior of banks in the presence of banking deregulation. They showed that increased competition between banks led to a decrease in the equilibrium loan interest rate and an increase in the equilibrium deposit interest rate.

Berlin and Mester [7] found out that US banks operating in a competitive market offer more loan rate smoothing to borrowers. Guzman [23] analyzed the differences between economies in competitive and concentrated markets to show that banks tend to offer higher deposit rates and lower loan rates in the former environment than in the latter. Yang and Shao [40] used the inverse of Lerner's index to reflect the degree of bank competition, suggesting that more competition leads banks to extend more loans by setting lower loan rates to attract new borrowers.

They also argued that higher bank competition reduces charter value, encouraging aggressive lending behavior. Altunbas et al. [3] understood that Unusually low interest over a long period increases the bank's risk appetite. Similarly, Bikker and Vervliet [9] confirm that a low-interest rate environment disrupts bank performance and squeezes

net profit margins. The bank does not maintain sufficient capital for risky loans in this context. Therefore, liquidity creation may increase through the pricing channel. To put it simply, banks with sufficient capital tend to create more liquidity than banks with insufficient capital [35].

2.3 The relationship between bank market power and liquidity creation

Two opposing hypotheses can be proposed on the effect of bank market power on the creation of liquidity. First, increased competition (low market power) increases bank fragility by reducing bank profits, which usually act as a "buffer" against adverse shocks. Thus, banks are encouraged to minimize liquidity creation by limiting the volume of loans granted and the volume of deposits accepted to reduce the risk of bank runs. Therefore, according to this "channel of fragility" view, bank competition should decrease liquidity creation. The fragility channel view is reinforced by Petersen and Rajan [36], who argue that increased competition (low market power) reduces the supply of credit because banks are less likely to grant credit to customers who are not locked in. The idea is that reduced market power reduces banks' incentives to maintain long-term relationships with new borrowers or relationships that can generate future surpluses. Banks' willingness to lend and invest in information production may become more limited in competitive environments because competition reduces the likelihood that banks can recover the costs of building and nurturing long-term relationships with borrowers [4]. The second hypothesis shows that decreased market power influences bank pricing policies, meager loan rates, and high deposit rates. As a result, the demand for loans and deposits increases, which leads to increased loans and access to finance. Increasing competition or decreasing the bank's market power stimulates the demand for loans by reducing financial barriers. Beck, Demirgüc-Kunt, and Maksimovic [5] provide empirical support for their findings that indicate bank market power increases financing barriers in general. Hainz, Weill, and Godlewski [24] show that increased bank market power is associated with higher collateral requirements. Therefore, the "price channel" view indicates a negative relationship between bank market power and liquidity creation [35].

2.4 Oil price shock

Since Iran has always faced challenges in macroeconomics and due to the political and economic conditions governing the country in the context of numerous sanctions, the fluctuations in oil price and exchange rate, and the instability in the world market, the study of oil price shocks and the exchange rate has attracted the attention of macroeconomists [19]. Since the primary source of financial aid and subsidies is oil revenues, and since Iran's budget relies on oil revenues, oil prices significantly influence Iran's economy. Hence, the crude oil export revenue indirectly controls economic activities. In general, oil price shocks can affect the economic activities of a country in two ways. One is through the influence on the supply-side economy; these influences appear intermittently and manifest their role by affecting the country's production capacity. The other is the impact on aggregate demand, which can quickly affect the country's economic activities [27]. Also, economic shocks lead to a decrease in the market for deposits and granted facilities and, in effect, to a reduction in the liquidity creation of banks [21]. The sharp drop in oil prices represents an unspoken negative shock to the banks' credit supply. Oil revenues, heavy oil bonds with macroeconomics, and oil price fluctuations seriously impact budget spending, loan growth, and a reduction in overall economic activity. Macro policy measures are essential to prevent systemic risk and strengthen the stability of their financial systems [4].

2.5 Foreign studies

Viverita et al. [38] conducted a study entitled "Liquidity creation by Islamic and conventional banks during the Covid-19 pandemic". By examining the monthly data of 85 commercial and Islamic banks in Indonesia, they found that they had more liquidity than commercial banks during the Covid-19 crisis. Altunbas et al. [3] conducted research entitled "Market power and bank systemic risk: Role of securitization and bank capital." Investigating data from 15 countries from 2007-2009, they found that greater market power before the crisis was associated with greater levels of realized systemic risk during the crisis. Dang and Huynh [12] conducted a study titled "Bank funding, market power, and the bank liquidity creation channel of monetary policy." Examining Vietnamese bank data from 2007 to 2019, they understood that greater market power weakens monetary policy transmission through the bank liquidity creation channel. On the other hand, they found that banks relying less on customer deposits may be less sensitive to monetary policy shocks when creating liquidity.

Nguyen et al. [35] conducted a research entitled "The influence of market power on liquidity creation of commercial banks in Vietnam." Examining the data of commercial banks in Vietnam, they found that liquidity creation increases when a bank has high market power. Besides, highly profitable banks have a relatively positive effect on banks' market power concerning liquidity creation. Chatterjee [11], in another study entitled "Bank liquidity creation and

recessions," investigated the US banking sector data from 1984 to 2010 and found that liquidity creation in larger banks contains more information about future recessions than in smaller banks.

2.6 Internal studies

Farhang et al. [21] conducted research entitled "The effects of economic, financial and banking shocks on liquidity creation in Iranian banks," which examined the information of Iranian banks during the years 2009-2020 and unraveled that gross domestic product (GDP), GDP shocks, and bank deposit interest rates have a positive effect on liquidity creation and credit risk shocks of facility interest rate and effective exchange rate have a negative impact on liquidity creation. Falahpor, Tehrani, and Gorgani [20] conducted research entitled "Investigating the effect of oil price shocks and western sanctions on banks' liquidity creation." They examined the information of 11 banks admitted to the Tehran Stock Exchange during the years 2008-2018 and found that the effect of adverse oil price shocks on banks' liquidity is greater than the effect of positive oil price shocks and economic sanctions due to their impact on large banks. Izadkhah, Izadkhah, and Raei [26], in research entitled "Investigating the impact of liquidity creation on profitability and financial stability of banks," investigated the information of 15 companies admitted to the Tehran Stock Exchange from 2018 to 2019. They found that creating liquidity increases banks' profitability and financial stability. Mahmoudinia, Mohammadi, and Memarzadeh [32] conducted research entitled "Liquidity creation index calculation in the framework of Berger and Baumann's pattern and its impact on banking crises: An application of the logit and probit model." Using the information from 17 banks from 2005-2017, they tested their research hypotheses based on the logit model. The results showed that the effect of liquidity on the banking crisis is significantly positive. Assets, credit risk, inflation, and overdue claims have a positive impact, and free trade and capital adequacy rates have a negative effect on the banking crisis.

3 Research hypotheses

1. The bank's market power significantly affects the creation of liquidity.
2. The negative shock of oil prices significantly affects the creation of liquidity.
3. Oil price shocks significantly impact the relationship between bank market power and liquidity creation.

4 Research methodology

4.1 Data collection method

The current research is applied in terms of purpose and descriptive survey regarding implementation and data collection method. The recent research aims to explain the role of bank market power in creating liquidity in the conditions of oil price shocks. Furthermore, the practical purpose of the study is to use the results to provide new insights into bank liquidity. In general, this research aims to achieve realistic goals and provide proposals based on research results to the government, policymakers, monetary authorities, and banking system managers for better and more effective monitoring. Also, investigating the effect of other variables in the form of control variables is one of the other goals of the research. This research uses linear regression methods to examine the impact of bank market power on liquidity creation in adverse oil price shocks. The source of data for economic variables is the Central Bank Economic Indicators. For bank variables, it is the statistics and banking data of the Central Bank and financial statements published on the Codal website.

4.2 Statistical population, statistical sample, and time frame of the research

The statistical population of the present research is all the banks under the supervision of the Central Bank of the Islamic Republic of Iran in the period of 2011-2021. The sampling method was systematic elimination. The selection criteria is the availability of the required banking information and statistics of the banks in the period under review. Twenty three banks have had the sampling criteria.

5 Research models and variables

According to the research results of Bawazir [4], Fu et al. [22], and Distinguin et al. [16], the intended model is defined as Model (5.1) to test the research hypotheses:

$$\Delta y_{it} = C_0 + d_1 Lerner_{it} + d_2 X_{i,t-1} + d_3 Es_t + d_4 (Lerner_{it} * ES_t) + \varepsilon_{it} \tag{5.1}$$

$X_{i,t-1}$ are considered as research control variables with one lag. How to calculate the dependent, independent, and control variables is shown in Table 1.

Table 1: Measurement method of variables in model 1

Variable	Symbol	Variable type	Measurement method
Liquidity Creation	I.NSFR	Dependent	(required liquidity with stability)/(liquidity with stability available)
Market power	Lerner	Independent	Lerner = (final cost - price)/(price) Price = (Total Income)/(Total Assets)
Economic shock (oil price)	ES	Moderating	Virtual variable: Years when there was a negative oil price shock = 1; and otherwise = 0
Bank size	Size	Control	Natural logarithm of bank assets
Bank capital (to control the bank's capital structure)	Capital	Control	(equity)/(total assets)
Return on equity (to control the profitability of the bank)	ROE (Return on equity)	Control	(net profit)/(equity)
Loan loss provision (to control credit risk)	LLP (Loan loss provision)	Control	(deferred facilities)/(total facilities)

5.1 Dependent variable

Liquidity creation: The variable of changes in liquidity creation is the dependent variable of this research; based on the liquidity requirements of the Basel 3 Committee, we use the inverse of the net stable funding ratio as an index of liquidity creation, in the form of relation (5.2): This ratio is obtained by dividing the sustainable allocation of resources (in the section of balanced assets and items by coefficients in the area of assets, including facilities and other items) by the sustainable supply of resources (in the section of balanced debts and items by coefficients in the area of debt including deposits and other items).

(required liquidity with stability)/(liquidity with stability available) = The inverse of the net funding ratio (5.2)

in relation (5.2), the coefficients for balancing the required financial resources (assets or numerator) are as follows:

- 1% to 5% cash and government bond
- 21% corporate and government bonds,
- 51% cooperative loans,
- 65% mortgage loans
- 85% micro and quick-return loan
- 111% for other assets with a maturity date of more than one year and off-balance sheet items

Coefficients for balancing available sustainable financial resources (debt or denominator) are as follows:

- 50% deposits of private companies and non-financial institutions, public sector financing, etc.
- 95% micro-deposits of commercial customers
- 90% of retail customer deposits
- 100% of the first and second-class capital, shares, and debts that mature after one year.
- 0% for any debt and capital not in the above classification

5.2 Independent variable

Bank market power: To calculate the bank market power variable, it is first necessary to calculate the final bank costs. In the present research, relation (5.3) is used to calculate the final cost, based on the two products of loan (L) and deposit (D):

$$LnC_{it} = \alpha_0 + \gamma_1 LnW_{lit} + \gamma_k LnW_{kit} + \gamma_L LnL_{it} + \gamma_D LnD_{it} + \frac{1}{2}\gamma_{ll}(LnW_{lit})^2 + \gamma_{lk} LnW_{lit} LnW_{kit} + \frac{1}{2}\gamma_{kk}(LnW_{kit})^2 + \frac{1}{2}\gamma_{LL}(LnL_{it})^2 + \gamma_{LD} LnL_{it} LnD_{it} + \frac{1}{2}\gamma_{DD}(LnD_{it})^2 + \gamma_{Ll} Ln(L) LnW_{lit} + \gamma_{Lk} Ln(L) LnW_{kit} + \gamma_{Dl} LnD_{it} LnW_{lit} + \gamma_{Dk} LnD_{it} LnW_{kit} + \mu_1 Trend + \frac{1}{2}\mu_2 Trend^2 + \mu_L TrandLn(L) + \mu_D TrandLn(D) + \mu_l TrandLn(W_l) + \mu_k TrandLn(W_k) + v_{it} + U_{it} \quad (5.3)$$

in the above function, there are explanatory variables as follows: C: operating cost in bank, L: loan and granted facilities, W_k: cost of capital, W_1: cost of labor, D: bank deposits, $Trend$: time trend variable that includes technological changes, v: Random error component with $N(0, \sigma^2)$ distribution, u: Inefficiency error component, a non-negative random variable that indicates inefficiency, Ln: natural logarithm operator, i: bank indicator, and t: year. Usually, technological changes in the banking system happen very quickly with the use of electronic tools such as ATMs and internet services, so we include the "Trend" variable in the cost function.

The operating cost of each bank (C) is extracted from the personnel, depreciation, administrative, and other expenses in the profit and loss statement of banks. Loan (L), considering the diversity of the headings of granted facilities in the financial statements of different banks, these facilities are extracted from the assets section in the balance sheets and financial reports in two ways: 1- The facilities granted to the non-governmental sector in addition to the facilities granted to the government sector; 2- Demands from the government in addition to the granted facilities. Deposits (D): The amount of deposits in each bank is obtained from the sum of long-term, short-term deposits, savings interst-free (Qardh-Al Hasanah) deposits, current interst-free deposit (Qardh-Al Hasanah), and other deposits. Cost of labor (W_1): The labor value is calculated from the personnel expenses in each bank's profit and loss statement, extracted each year, and from the ratio of personnel expenses to the number of personnel of each bank.Cost of capital (W_k): Capital value is calculated from the sum of non-personnel costs (depreciation, administrative, and other expenses) compared to fixed assets. Since the homogeneous cost function is of degree one, applying symmetry assumption, the function related to relation (5.4) is obtained as:

$$n\left(\frac{C_{it}}{W_{lit}}\right) = \gamma_I \ln\left(\frac{W_{lit}}{W_{kit}}\right) + \gamma_L \ln L_{it} + \gamma_D \ln D_{it} + \frac{1}{2}\gamma_{II}\left(\ln\left(\frac{W_{lit}}{W_{kit}}\right)\right)^2 + \gamma_{LD} \ln L_{it} \ln D_{it} + \frac{1}{2}\gamma_{LL}(\ln L_{it})^2 + \frac{1}{2}\gamma_{DD}(\ln D_{it})^2 + \gamma_{LI} \ln(L_{it}) \ln\left(\frac{W_{lit}}{W_{kit}}\right) + \gamma_{DI} \ln(D_{it}) \ln\left(\frac{W_{lit}}{W_{kit}}\right) + \mu_1 Trend_{it} + \frac{1}{2}\mu_2 Trend_{it}^2 + \mu_L Trend_{it} \ln(L_{it}) + \mu_D Trend_{it} \ln(D_{it}) + \mu_I Trend_{it} \ln(w_{lit}) + \mu_k Trend_{it} \ln(w_{kit}) + \epsilon_{it} \quad (5.4)$$

To estimate the market power through the Lerner index in the loan and deposit markets, deriving the cost function relative to the loan (L) and deposit (D), the final cost (MC) related to loans and deposits is obtained from relation (5.5):

$$mc_{it} = [\gamma_D + \gamma_{LD} lnL_{it} + \gamma_{DD} lnD_{it} + \gamma_{DI} ln\left(\frac{W_{lit}}{W_{kit}}\right) + \mu_D Trend_{it}] \times \left(\frac{C_{it}}{D_{it}}\right) + [\gamma_L + \gamma_{LD} lnD_{it} + \gamma_{LL} lnL_{it} + \gamma_{LI} ln\left(\frac{W_{lit}}{W_{kit}}\right) + \mu_L Trend_{it}] \times \left(\frac{C_{it}}{L_{it}}\right) \quad (5.5)$$

After calculating the final cost index, the value of Lerner's index is obtained from relation (5.6).

$$Lerner_{it} = \frac{p_{it} - mc_{it}}{p_{it}} \quad (5.6)$$

P is the monopoly price obtained from the ratio of total revenue divided by total assets, MC is marginal cost and Lerner represents market power.

6 Results

6.1 Checking the validity of the variables

In the present research, to check the regression model assumptions, the validity of the research variables was measured based on the Levin-Lin-Chu statistic, whose results are demonstrated in Table 2. As the significance of

all variables is less than 0.05, the null hypothesis (Invalidity: existence of unit root) is rejected. Thus, all research variables are valid and reliable.

Table 2: The results of the validity test of the research variables

Variable	Levin-Lin-Chu statistic	Sig.
Bank liquidity creation (-1)	-5.09	0.000
Bank market power	-3.68	0.000
Oil price changes	-11.81	0.000
Bank capital (-1)	-7.61	0.000
The ratio of nonperforming loan to bank facilities (-1)	-6.57	0.000
Size (-1)	-4.58	0.000
Return on equity (-1)	-7.79	0.000

6.2 Checking the collinearity of the variables

Variance Inflation Factor (VIF) provides a measure of the degree of coherence, such that a variance inflation factor of 1 or 2 indicates essentially no coherence, and a measurement of 20 or higher indicates a strong correlation. Multicollinearity appears when more than two predictor variables are related to each other so that a decrease in statistical significance is observed when all are included in the model. Multicollinearity can be evaluated using variance inflation factors, as values greater than 10 indicate a high degree of multicollinearity. The results of collinearity are shown in Table 3.

Table 3: The results of the non-collinearity test

Variable symbol	Collinearity test		Result
	Tolerance	Variance inflation	
Oil price changes	0.663	1.507	Absence of collinearity
Size	0.842	1.188	Absence of collinearity
Bank capital	0.732	1.366	Absence of collinearity
The ratio of nonperforming loan to bank facilities	0.924	1.082	Absence of collinearity
Return on equity	0.884	1.131	Absence of collinearity
Bank market power	0.783	1.278	Absence of collinearity

According to the results obtained from Table 3, the value of the tolerance index for the variables in the model is close to zero, and the value of the VIF index is not more than 10. Thus, there is no evidence of collinearity among the variables.

6.3 Checking the existence of autocorrelation and heterogeneity of the variance of variables

The Waldridge Test is used to check the dependence and relationship between sections. In panel data, the generalized White Test is used to check the heterogeneity of variance, the results of which are presented in Table 4.

Table 4: The results of the Waldridge and White Tests

Pattern	statistic	Sig.	Result
$\Delta y = C_0 + d_1 Lerner_{i,t} + d_2 X_{i,t-1} + d_3 ES_{i,t}^{OIL} + \epsilon_{it}$	49.79	0.000	Existence of autocorrelation
	0.91	0.588	Homogeneity of variance

Since the value of Waldridge's statistic is less than 0.05 in Table 4, the null hypothesis of the autocorrelation test that there is no autocorrelation between the residuals of the regression model is rejected. Furthermore, to assess the homogeneity of variance, since the significance value is 0.588, which is more than 0.05, the null assumption of the homogeneity of variance test is accepted based on the homogeneity of variance of the model's residuals. Therefore, the GLS model is fitted to the observations to remove the autocorrelation.

Table 5: The results of the Wald Test

Model	statistic	Sig.	Result
$\Delta y = C_0 + d_1 Lerner_{i,t} + d_2 X_{i,t-1} + d_3 ES_{i,t}^{OIL} + \epsilon_{it}$	8646.24	0.000	Troubleshooting by adding the first interval of the dependent variable

The results obtained from the Wald chi-square test in Table 5 show that by adding the dependent variable interval to the model, the significance value of the chi-square test is smaller than 0.05, which indicates the absence of autocorrelation and heterogeneity of variance after adding the dependent variable interval to the model. Therefore, according to

the conducted tests and the need to remove the autocorrelation and homogeneity of variance, the dependent variable interval is added to the model.

6.4 Data type detection test

Limer test was used to understand which panel or integrated method is suitable for fitting the model to the observations. If the significance value of the F statistic is less than 0.05, the null hypothesis, which states the integrated model is appropriate, is rejected, and the panel method is used. The test results are shown in Table 6.

Table 6: The results of the F-Limer test

Model	statistic	df	Sig.	Result
$\Delta y = C_0 + d_1 Lerner_{i,t} + d_2 X_{i,t-1} + d_3 ES_t^{OIL} + d_4 Lerner_{i,t} \times ES_{i,t}^{OIL} + \epsilon_{it}$	0.563052	(22,199)	0.9434	Cross-sectional model

According to the results of Table 6, as the significance level of the Limer test is greater than 0.05 for the model, the assumption that the use of the integrated model is appropriate is accepted, and a cross-sectional model is used for fitting.

6.5 Model fitting

In this part, to test the research hypothesis, the research model has been fitted to the observations according to the selected approach in the previous phases, and the results are presented in Table 7.

Examining the effect of economic shocks on the relationship between bank market power and liquidity creation

Table 7: The results of model fitting - the moderating effect of oil price shock (Significance at the 99% level (***), significance at the 95% level (**), significance at the 90% level (*))

$\Delta y = C_0 + d_1 Lerner_{i,t} + d_2 X_{i,t-1} + d_3 ES_{i,t}^{OIL} + d_4 Lerner_{i,t} \times ES_{i,t}^{OIL} + \epsilon_{it}$

Variable	Regression coefficient	SD	t	Sig.
LERNER	0.028	0.015	1.913	0.057*
CAPITAL	0.614	0.205	2.991	0.003**
LLP	0.500	0.812	0.616	0.538
ROE	0.219	0.094	2.320	0.021**
SIZE	0.004	0.005	0.801	0.424
DELOIL	-0.071	0.027	-2.613	0.009**
DELOIL * BANKLERNER	0.035	0.023	1.522	0.129
Y (-1)	0.700	0.047	14.787	0***
C	-0.010	0.070	-0.147	0.883
Coefficient of determination	0.686		Fisher statistic	14.552
Adjusted coefficient of determination	0.639		Sig.	0.000***

Table 7 demonstrates that since the significance level of Fisher's test is less than 0.05, the assumption of the linear relationship between variables is confirmed, and the model is significant. The coefficient of determination is used to check the model's explanatory power. As the model's coefficient of determination is 0.69, it shows an average fit for the dependent variable by the independent variables. It indicates that about 69% of the changes in the dependent variable are explained by the independent variables.

The first hypothesis: Table 7 shows that the bank market power has a positive and significant effect on the bank liquidity creation with a significance of 0.057 at the confidence level of 90%, so the first research hypothesis is confirmed.

The second hypothesis: Table 7 shows that the negative oil price shock significantly negatively affects liquidity creation with a significance of 0.009 at 90%, 95%, and 99% confidence levels. Therefore, the second hypothesis of the research is also confirmed.

The third hypothesis: Upon the results of Table 7, examining the moderating effect of the oil price shock on the relationship between bank market power and liquidity creation in banks, the test is insignificant at any of the confidence levels (significance level equal to 0.129). Therefore, the third hypothesis of the research is rejected in the sense that the oil price shock does not significantly affect the relationship between bank market power and liquidity creation.

7 Conclusions and suggestions

The present study aims to explain the role of bank market power on liquidity creation in the condition of oil price shocks. According to the results of hypotheses testing, bank market power has a positive and significant effect on liquidity creation with a significance of 0.057, and oil price shock has a negative and significant impact on liquidity creation with a significance of 0.009. The results obtained coordinate the results of Nguyen et al. [35] and Falahpor, Tehrani, and Gorgani [20] studies. In addition, after testing the hypothesis of the moderating effect of oil price shock on the relationship between bank market power and bank liquidity creation, this hypothesis was not significant, which implies that the increase in oil price shock cannot influence the impact of bank market power on bank liquidity creation. Therefore, the hypothesis that oil price shock affects the relationship between bank market power and bank liquidity generation is rejected. The findings of this study have several policy implications. First, bank market power is essential for macroprudential policies. The results of this study show that banks tolerate more liquidity risk by achieving higher market power. Market power can significantly impact economic growth through its effect on liquidity creation. However, due to the new liquidity rules, banks are required to hold more liquid assets. Therefore, policymakers need more clarity on sustainable economic growth through liquidity creation and Basel 3 policy effectiveness. One of the policy measures to deal with the adverse effects of oil price shocks on the banking system can be the creation of a stabilization fund that acts as a bank reserve fund in times of negative shocks. Another measure in this field can be making it possible for banks to borrow from the capital market (by issuing appropriate Islamic securities) to control the wave of fluctuations caused by adverse shocks [20].

Macroeconomic policy makers, National Competition Council and banking system managers, senior managers of industries, manufacturers, etc., can use the results of this research. According to the study conducted and the results obtained, it is suggested for the researchers to investigate the following issues in the future:

1. Examining the effect of economic shocks (exchange rate, economic prosperity, and recession) on creating liquidity,
2. Examining the market power of specialized banks in creating liquidity,
3. Examining the effect of bank capital on creating liquidity.

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