



## The Determinants of Private Banks' Liquidity in Syria During the Syrian Crisis

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### **Abstract**

Although the banking sector is at the core of any nation's economy, it is very vulnerable to crises and macro-economic shocks. While many banking indicators could be affected by crises, liquidity in particular requires special attention due to its sensitivity to the changes in macro-variables. This research aims to identify the liquidity determinants of the Syrian private banks during the country's crisis. The analysis is carried out on quarterly basis during the most severe period of the crisis between 2011 and 2018 using fixed effects estimator on panel data for all of the 14 Syrian private banks. The research considers bank-specific variables calculated from the interim and annual published financial reports of all Syrian private banks, as well as a variable for the Syrian crisis measured by the following macro-factors: the Syrian Pound exchange rates against U.S. Dollar during the studied period, the number of Syrians who fled the country as refugees or asylum seekers, and the number of crisis-related casualties. Using Loans to Assets (LTA) as the dependent variable, the research results found that bank capital, deposits, bank size, funding cost, and asset quality have a significant positive effect on liquidity at 1%, while profitability has a significant negative effect on liquidity at 1%. Furthermore, the macro-variable of the Syrian crisis has a significant positive effect on liquidity at 5%. The results of this paper shed a light on liquidity determinants during crisis times which is very important to the policymakers, supervisory authorities and bank managers to take proper and timely decisions regarding liquidity in crisis periods.

**Keywords:** *Banking; Liquidity; Loans to Assets; Syrian Crisis*

### **1. Introduction**

The Syrian crisis has been identified as the worst humanitarian catastrophe for the last three decades. During the years of the crisis, Syria suffered huge numbers of casualties and more than half of its population have either fled to other countries or live in Syria as internally displaced persons. In addition, the social fabric of the country was badly damaged which is less measurable but equally important. The GDP of Syria has decreased significantly since the beginning of the crisis, the infrastructure was severely damaged and trade with the neighboring countries have declined dramatically (Seeberg, 2017).

For more than eight years, whole generations have partly or entirely lacked access to good-quality education, and many of young well-educated Syrians have left the country (Dacrema and Talbot, 2019). The limited access to health care, food, housing, and education, have worsen the crisis effects and increased the rates of poverty and unemployment (Devadas et al., 2019).

The Syrian banking sector was not immune to the adverse impacts of the crisis. According to the finance literature, bank liquidity is very sensitive to crisis effects. Normally, banks transform short-term deposits into long-term loans. However, this process exposes banks to liquidity risk. Liquidity shortage in one bank may rapidly spread to other banks in the sector and results in a bank run (Vodová, 2014).

This research investigates the liquidity determinants of all Syrian private banks (14 banks; 11 conventional and 3 Islamic) during the period from 2011 to 2018 on quarterly basis. The studied period includes the most severe years of the Syrian crisis. Later on, Syria suffered mainly from the economic effects of the crisis. The research examines bank-specific variables in addition to a variable of the Syrian crisis which consists of three macro-factors.

## **2. Literature Review**

In order to find the determinants of commercial banks' liquidity in the Czech Republic, Vodová (2011) examined macroeconomic and bank-specific variables between 2001 and 2009. The results showed that the interest rates on loans, capital adequacy, interest rate on interbank transactions and the share of non-performing loans have a positive correlation with the bank's liquidity. While, the financial crisis, inflation rate and the business cycle have a negative relationship with liquidity. The effect of the banks size remained ambiguous.

Vodová (2011) also examined the liquidity determinants of commercial banks in Slovakia by analyzing bank-specific and macroeconomic variables between 2001 and 2010 using panel data regression analysis. The results showed that the financial crisis was the main reason for the drop in bank liquidity. Also, bank profitability, capital adequacy and size are negatively correlated with liquidity. GDP growth and bank profitability positively affect liquidity when measured by lending activity, while unemployment has a negative effect. Non-performing loans, rate of inflation, interest margin, and key interest rates have no statistically significant impact on the liquidity of commercial banks in Slovakia.

After the global financial crisis and the increasing interest in liquidity risk, Roman and Sargu (2015) analyzed the liquidity risk determinants of a variety of banks operating in CEE countries (Romania, Poland, Lithuania, Latvia, Hungary, Czech Republic, and Bulgaria). Using an ordinary least squares regression analysis, the researchers studied bank-specific factors for the period between 2004 and 2011. The empirical results revealed that the most influential internal factors on liquidity are: the return on average equity, the ratio of non-performing loans to total loans, and the ratio of total capital. However, these factors showed contradicting correlations with liquidity (positive and negative) based on the local macroeconomic indicators. Taking into consideration the relationship between liquidity and the total capital ratio (TCR), the measures implemented by the supervisory and regulatory authorities to prevent the negative effects of the global financial crisis had a positive effect on the banks' liquidity. The results also showed that non-performing loans has a negative effect on banks' liquidity.

Mohamad (2016) examined the liquidity determinants of Turkish conventional banks. The researcher considered 21 Turkish banks and covered the period between 2006 and 2013 using two liquidity ratios; the first ratio is liquid assets / total deposits, and the second ratio is liquid assets / customer deposits and short-term borrowing. Macroeconomic and bank-specific factors, as well as the financial crisis of 2008 were analyzed using panel random effect regression. The researcher concluded that bank capitalization has a significant positive effect on first and second liquidity ratios. The first

liquidity ratio is significantly and negatively affected by bank profitability, while the second ratio is positively affected by the ratio of loan loss reserve and negatively affected by the bank size, both results are statistically significant. The macroeconomic factors and the crisis variable do not have a significant effect on the first and second liquidity ratio.

By selecting a sample of 12 largest US banks in the period between 1999 and 2017, Bayz (2018) examined the liquidity determinants of US banks. The research considered bank-specific (internal) and macroeconomic (external) variables. The effect of the financial crisis of 2008 on liquidity is also examined in the research. The findings of panel data analysis revealed that liquidity is negatively affected by bank capitalization and positively by bank size, while the impact of the remaining bank-specific variables is not significant. Furthermore, economic growth positively and significantly affects liquidity, while the global financial crisis had a significant negative impact on banks' liquidity.

### **3. Theoretical Framework**

This section includes an overview of the Syrian banking sector as well as a brief description of the general liquidity structure of the Syrian private banks before and during the crisis.

#### **3.1. Overview of the Banking Sector in Syria**

For more than 40 years, the Syrian banking sector had comprised of 5 to 6 government-owned banks as well as the Central Bank of Syria which had a narrow impact on the monetary policy and somehow monitored the banks liquidity and lending activities (Galdo, 2004).

In 1966, the Syrian banking sector was re-organized on the basis of banking specialization according to different economic sectors and activities, where the Syrian banking sector was divided into state-owned banks specialized by sector and activity (Commercial Bank of Syria, Industrial Bank, Real Estate Bank, Agricultural Bank, Popular Credit Bank, and Saving Bank).

That policy in the banking sector was based on an idea that such a specialization will shift the institutions of this sector from competitors trying to attract customers and borrowers to collaborating institutions working in line with the government's strategy, but what actually happened is that each bank was working isolated from others. In other words, it was like one large banking institution with several specialized branches that lack effective communication (The Syrian Economic Center, 2007).

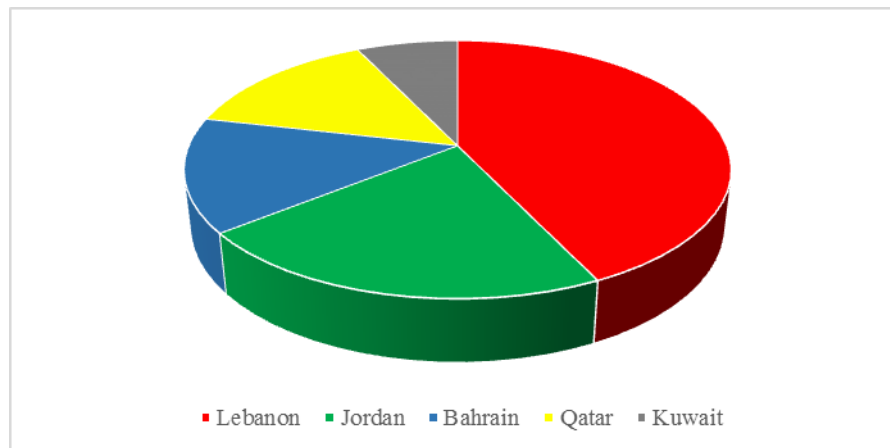
At first, the specialization policy helped each bank to get practical and theoretical experience in its economic activity which led to a substantial increase in products and services during the 1970s. However, and due to multi exchange rates during the 1980s, the Commercial Bank of Syria witnessed rapid development and dominated 80% of the banking market leaving 20% for the remaining banks. This revealed the flaws of this banking policy that led to a growth and development of one bank at the expense of other banks which became exposed to bankruptcy risk and relied on the state to finance their own expenses (The Syrian Economic Center, 2007).

In the year 2000, a new decision was issued that allowed private banks to carry out their business activities from the free zones in Syria; this decision was followed by law No. 28 of 2001 which ended the public-sector monopoly of the Syrian banking sector. A new money and credit law and a banking secrecy law were also passed. According to the new banking law, Syrian institutions and individuals were allowed to establish and fully own private banks. Arab and foreign institutions and individuals were also allowed to establish banks with a maximum of 49% ownership. The capital required to establish a private bank was set at \$30 million as a minimum, with a 5% maximum ownership of total shares per single individual. The law also set a 25% flat tax rate on bank profits (Galdo, 2004).

Later on, the law No. 23 of 2002 (The Basic Monetary Law) re-activated the role of the Monetary and Credit Council (MCC). In May 2003, the MCC decided to lower the interest rate after 22 years of fixed interest rates, and later that year in July and September, Presidential Decrees No. 33 and 59 were issued respectively, concerning anti-money laundering and the liberalization of foreign exchange transactions. In June 2003 banking licenses were issued to three private banks allowing them to operate in Syria. In 2005, the Legislative Degree No. 35 was issued to allow the establishment of Islamic banks in accordance with the law No. 28 of 2001 (The Syrian Economic Center, 2007).

Today, fourteen private banks are working in Syria and their stocks are listed in Damascus Securities Exchange (DSE). Every Syrian private bank has a foreign parent bank or group. As a founding company, the parent bank is considered as a strategic partner of the Syrian private bank and usually holds the largest share of that local bank's stocks. The geographical distribution of these parent banks is shown in Figure.1.

Figure.1: Geographical Distribution of the Syrian Private Banks' Parent Institutions



Source: Prepared by the Author from the Official Websites of the Syrian Private Banks

### 3.2. The General Liquidity Structure of the Syrian Private Banks before and During the Crisis

A brief analysis of the Syrian private bank balance sheets is conducted to identify the liquid and illiquid assets as well as the short-term and long-term liabilities. This analysis is important to understand the liquidity structure of this sector. The most prominent balance sheet items related to liquidity are:

- Cash and Due from Depository Institutions:

This includes cash held in the banking institution, deposits with other correspondent institutions, cash in collection process (checks under collection), and the bank's reserves held with the Central Bank of Syria. These assets are considered the "first line of defense" against demand for cash.

Syrian private banks hold two types of deposits with other banks and financial institutions, current accounts which are the liquid deposits used to facilitate the banking transactions and worldwide operations, and time deposits which are held with other banks and financial institutions to generate interest income for the bank (Murabaha or Wakala investment deposits that generate profits for Islamic banks). Deposits with other banks have increased substantially during the Syrian crisis to become the largest asset item in so many banks, as they preferred to keep their funds with the parent institution outside the country to avoid the high risk associated with the Syrian market.

- Investment Securities: the Liquid Portion

These securities are reported in the financial statements as “financial assets at fair value through other comprehensive income” and typically include government’s short term securities and privately issued securities (complied with Sharia for Islamic banks).

In terms of liquidity, these securities are the “second line of defense” against cash demand. They fall between cash and loans, held mainly because they can easily be liquidated into cash while also generate some income. This type of securities form a very small portion of the banks' assets before and during the crisis.

- **Investment Securities: The Income-Generating Portion**

Notes, Bonds, Sukuk, and other types of securities held mainly for the returns they generate or yield are known as investment securities. These securities are reported as “financial assets at amortized cost” in the financial statements and also form a small portion of the Syrian banks' assets.

- **Trading Securities**

Securities held to gain short-term returns from short-term price changes are called trading securities. They are reported in the financial statements as “financial assets at fair value through profit or loss”. In general, investment in securities of all kinds makes up a small portion of Syrian private banks assets, one reason for this could be that Damascus Securities Exchange is relatively new with a limited number of tradable securities.

- **Loans and Financing Assets (the Illiquid Assets)**

The largest asset item before the crisis was loans and advances (financing assets for Islamic banks). Bank loans are mainly classified into different groups of similar nature. For example, (commercial, retail, individuals, SMEs ... etc). This item generated the biggest portion of banks' profits and accounted for 44% of all banks' assets before the crisis. During the crisis, loans, advances and financing assets dropped sharply to reach 13% of all banks' assets at the end of 2018, the higher rates of default and the risky Syrian market have driven banks to be so conservative with regard to providing new loans during the crisis.

- **Deposits**

The core liability of Syrian private banks is deposits which are financial claims held by households, businesses, and government bodies against the banks. The main types of deposits are: On-demand (current) deposits, saving deposits, and term deposits.

#### **4. Methodology**

This section explains the methodology used in this research to examine the liquidity determinants of the Syrian private banks during the crisis by showing the data collection method, the research variables, and the model used to analyze the data.

##### **4.1. Data Collection Method**

The data in this research for all bank-specific variables was extracted from the published interim and annual reports of banks; balance sheets and income statements. To measure the Syrian crisis; the number of crisis-related casualties was extracted from statistics of the Syrian Observatory for Human Rights as it is the only entity that calculated all deaths, the number of Syrians who fled the country due to the crisis to settle in other countries as refugees or asylum seekers was extracted from UNHCR and applications of EU asylum seekers. Syrian Pound exchange rates against U.S. Dollar during the studied period was extracted from “Syrian Pound Today” and “Syria Stocks” (Hassani, 2015).

## 4.2. Research Variables

Based on the literature review discussion, the variables included in the model are:

### 4.2.1 Dependent variable: Loans to Assets (LTA)

This ratio measures the percentage of bank assets held as illiquid loans, so the closer this ratio moves to 1 the less liquid the bank is (Vodová, 2011).

### 4.2.2. Independent variables:

**Capital Adequacy Ratio (CAR):** Bank capital plays a vital role in protecting customer deposits since it absorbs any unexpected losses. Vodova (2011) found that liquid asset holdings in Czech Republic banks increase when the capital is higher. However, the results of Horvath et al., (2012) indicated that an increase in bank capital would lead to a decrease in its liquidity holdings therefore a negative relationship exists between capital and liquidity. When Vodova (2011) conducted the study in Slovakia, different results were acquired to those in the Czech Republic. The study in Slovakia showed a negative relationship between capital and liquidity. Vodova (2011) justification was that the lower-capital banks are more concerned about liquidity management, therefore more liquid assets are held. Capital adequacy ratio (CAR) is calculated as the bank's regulatory capital divided by its risk weighted assets (credit, operational and market risk). In Syria, the minimum CAR requirement is 8% in line with Basel 2 Accord.

**Deposits (DEP):** Banks collect deposits as they provide them with the cheapest funding source in comparison with borrowings, reserves, or cost of capital (Sayedahmad, 2018). Since banks are required to meet the cash demand of depositors, they need to maintain a sufficient amount of liquid assets in line with the growth of their customer deposits (Sharma and Singh, 2016).

**Profitability (ROAE):** In theory, liquidity and profitability are two contradicting banking objectives because investors and shareholders strive to maximize their profit gains. This goal is realized through transforming customer deposits into financial assets such as loans that generate income to the bank investors/shareholders. However, excessive lending may increase banks solvency risks especially that banks depend on short term liabilities such as deposits in their business activities (Sayedahmad, 2018).

**Bank Size (BS):** As shown in the literature review, bank size is a commonly used determinant of liquidity. Bank size is mostly represented by the value of the bank's total assets. Although larger banks are expected to maintain higher liquidity, a study of 1080 banks in the Eurozone conducted by Cucinelli (2013) found that larger banks are more exposed to liquidity risks than smaller ones, and a negative relationship exists between bank size and liquidity of banks. The researcher attributed this to the concept of "too big to fall" which means that governments will intervene to rescue large banks in case of sudden liquidity shocks.

**Funding Cost (FC):** Several studies have explored how bank liquidity is influenced by the sources and cost of funds. Banks lean more towards investing in liquid assets if they experience an increase in their cost of funding. Thus, if the cost of liability increased, banks invest in liquid assets to support their liquidity positions (Sharma and Singh, 2016). Since it is an important source of funding in Syrian private banks, cash collateral is included in deposits especially that it is treated as a blocked deposit by banks and even earns interest in some cases.

**Asset Quality (NPL):** Asset quality is calculated by the share of non-performing loans in term of total loans. Vodova (2011) found that NPL ratio and bank liquid asset holdings are positively correlated

in the Czech Republic's commercial banks, while Iqbal (2012) found that the NPL ratio has a negative relationship with bank's liquid asset holdings.

The Syrian Crisis (CRI): This variable is the macro-factor that is used to measure the severity of the Syrian crisis. It is calculated quarterly as an average of the following security, social, and economic factors:

- Security factor: The number of battle-related deaths as a factor directly related to the armed conflict;
- Social factor: the number of Syrian refugees and asylum seekers;
- Economic factor: the exchange rate of Syrian Pound against U.S. Dollar as an indicator of inflation.

According to previous studies, financial crisis has a negative impact on bank liquidity, but the Syrian crisis is more complicated than a mere financial crisis, that is why predicting its effect on bank liquidity is very difficult.

### 4.3. Research Model

Various bank-specific variables in addition to a lagged variable of the Syrian crisis are used in the following liquidity regression model:

$$LTA_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 DEP_{it} + \beta_3 ROAE_{it} + \beta_4 BS_{it} + \beta_5 FC_{it} + \beta_6 NPL_{it} + \beta_7 CRI(-1)_t + \epsilon_i$$

Where:

$\alpha$  represents the intercept.

$\beta$  represents the coefficient value.

LTA the dependent variable represents liquidity of bank  $i$  in period  $t$ , measured by total loans to total assets.

CAR represents the capital of bank  $i$  in period  $t$ , measured by capital adequacy ratio.

DEP represents deposits of bank  $i$  in period  $t$ , measured by total deposits to total assets.

ROAE represents profitability of bank  $i$  in period  $t$ , measured by net income to average total equity.

BS represents bank size of bank  $i$  in period  $t$ , measured by the natural logarithm of total asset.

FC represents funding cost of bank  $i$  in period  $t$ , measured by interest expense to average total deposits.

NPL represents asset quality of bank  $i$  in period  $t$ , measured by non-performing loans to total loans.

CRI(-1) represents one period lagged variable of the Syrian crisis, measured by the average of security, social, and economic factors

The regression is estimated through a time-series-cross-section analysis using Generalized Least Square (GLS) estimator.

## 5. Results and Discussion

This section contains the analysis and discussion of results of the Syrian private banks' liquidity determinants during the crisis.

### 5.1. Descriptive Statistics

The descriptive statistics as indicated in Table (1) provides a summary of the research variables; it shows the minimum, maximum, mean and standard deviation of each variable.

Table 1: Descriptive Statistics of All Variables

Variable	Obs	Min	Max	Mean	Std. Dev.
LTA	448	0.0181	0.7010	0.2426	0.1435
CAR	448	0.0243	3.1392	0.4551	0.6512
DEP	448	0.1508	0.9432	0.7258	0.1618
ROAE	448	-0.7635	0.6461	-0.0255	0.1122
BS	448	22.548	26.706	24.885	0.7834
FC	448	0.0004	0.0151	0.0065	0.0037
NPL	448	0.0000	0.7391	0.2728	0.1833
CRI	448	0.0033	0.8133	0.5094	0.2285

Source: Prepared by the Author Using Eviews 10

Most variables show significant inequality and high variability; such variations arise from the differences exist among the banks incorporated in the study.

### 5.2. Correlation Analysis

The correlation analysis, as shown in Table (2) was conducted to examine the strength and direction of the relationship between the independent variables of the model. Negative correlation between variables is indicated by a minus sign, while positive correlation is indicated by a plus sign. When the coefficient of the correlation moves closer to 1 (maximum value), the strength of the relationship increases and vice versa (Yeboah, 2020).



Table 2: Correlation Matrix of the Model's Independent Variables

Variable	CAR	DEP	ROAE	BS	FC	NPL	CRI
<b>CAR</b>	1.000						
<b>DEP</b>	-0.171	1.000					
<b>ROAE</b>	0.095	-0.028	1.000				
<b>BS</b>	0.022	-0.033	-0.159	1.000			
<b>FC</b>	0.061	-0.027	-0.190	-0.125	1.000		
<b>NPL</b>	0.011	0.113	-0.279	-0.081	0.135	1.000	
<b>CRI</b>	0.043	0.024	-0.321	0.427	0.120	0.213	1.000

Source: Prepared by the Author Using Eviews 10

The extent of association between the independent variables is relatively low which indicates that there is no multicollinearity in the model.

### 5.3. Hausman Test

The fixed effects model is more suitable when the entire population is effectively represented by entities of the sample (Calson-Öhman, 2018). Thus, it is recommended to conduct the analysis using fixed effects model since the whole population (all the Syrian private banks) is studied in this research. Also, it is better to use fixed effects model when each analyzed entity has unique individual characteristics that may have some influence on the variables (Antonopoulos et al., 2017). Consequently, a model of fixed effects estimator is adopted in this thesis.

Hausman test was conducted to verify and confirm the choice of fixed effects model. This test is designed to determine which estimation model (random or fixed effects) should be conducted in panel data analysis.

The null hypothesis of Hausman test indicates that the preferred model is random effects; the alternative hypothesis indicates that the preferred model is fixed effects. Thus, a low p-value indicates that the null hypothesis should be rejected in favor of the assumption of fixed effects (Khalil, 2019). The test results suggest using fixed effects model as shown in Table (3).

Table 3: Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
<b>Cross-section random</b>	15.209272	7	0.0334

Source: Prepared by the Author Using Eviews 10

### 5.4. Stationarity Test

Unit root test is applied to check the stationarity of all variables. In order to avoid spurious relationships between the variables when developing econometric models, stationarity of all variables is one of the prerequisites. A variable is said to be stationary if its mean and variance do not vary over time (Mohamad, 2016).

Unit root test was conducted using the “Augmented Dickey Fuller” test. The test was performed using two methods: the first method considers the individual intercept only, while the second method considers the individual intercept and the trend. All variables are stationary at level or at first difference as shown in Table (4). Thus, first difference transformation of non-stationary series is applied to remove unit root from these series.

Table 4: Unit Root Test (Augmented Dickey Fuller)

Variables	Level		1st Difference	
	Individual intercept (p-value)	Individual intercept and trend (p-value)	Individual intercept (p-value)	Individual intercept and trend (p-value)
<b>LTA</b>	0.0000	0.4686	0.0000	0.0000
<b>CAR</b>	0.5756	0.1996	0.0000	0.0000
<b>DEP</b>	0.1827	0.5041	0.0000	0.0000
<b>ROAE</b>	0.0000	0.0000	0.0000	0.0000
<b>BS</b>	0.9704	0.1231	0.0000	0.0000
<b>FC</b>	0.0009	0.0683	0.0000	0.0000
<b>NPL</b>	0.3938	0.9999	0.0000	0.0000
<b>CRI</b>	0.0029	1.0000	0.0000	0.0000

Source: Prepared by the Author Using Eviews 10

### 5.5. Empirical Results

As previously discussed in the research methodology, the regression is conducted using fixed effects models. The results are shown in Table (5).

Table 5: Results of Liquidity Regression

	Fixed Effects Model		
	Coefficient	Std. Error	p-value
<b>Constant</b>	0.014661	0.002953	0.0000
<b>CAR</b>	-0.045900	0.011735	0.0001
<b>DEP</b>	-0.070018	0.023250	0.0028
<b>ROAE</b>	0.036010	0.006669	0.0000
<b>BS</b>	-0.153610	0.006697	0.0000
<b>FC</b>	-2.185363	0.441653	0.0000

<b>NPL</b>	-0.189700	0.013557	0.0000
<b>CRI(-1)</b>	-0.028012	0.011280	0.0134
<b>Prob (F-statistic)</b>	0.0000		
<b>R-squared</b>	0.79		
<b>Adjusted R-squared</b>	0.78		
<b>Durbin-Watson</b>	2.01		

Source: Prepared by the Author Using Eviews 10

To remove cross-section dependence, GLS weights: cross-section SUR was applied. Statistics have remarkably improved after applying the weighted GLS.

The overall regression has strong significance with Prob (F-statistic)=0.000; the table shows that R square of this model is about 79%, that is, about 79 percent of the variation in the dependent variable, LTA, is explained by the independent variables.

Adjusted R-square registered 78% indicating the percentage of variation that is clarified by the independent variables that significantly affect the dependent variable.

The Durbin Watson statistics values is 2.01 indicating that there is no statistical evidence that the error terms are auto correlated.

All the independent variables have significant effects on the dependent variable at 1% except the crisis has a significant effect on the dependent variable at 5%. The liquidity regression shows the following results:

Bank capital (capital adequacy ratio) has a negative and significant effect on loans to assets (LTA) at 1% level (positive effect on liquidity). This means that well-capitalized banks report better liquidity ratios than banks with low capital adequacy ratios.

Bank deposits (total deposits to total assets) has a negative and significant effect on loans to assets (LTA) at 1% level (positive effect on liquidity). This indicates that banks which hold more deposits need to maintain more liquid assets to meet the depositors demand.

Bank profitability (return on average equity) has a positive and significant effect on loans to assets (LTA) at 1% level (negative effect on liquidity). This result was expected as a trade-off exists between liquidity and profitability.

Bank size (natural logarithm of total assets) has a negative and significant effect on loans to assets (LTA) at 1% level (positive effect on liquidity). Bigger banks tend to hold more liquid assets especially in crisis times.

Funding cost (interest expense to total deposits) has a negative and significant effect on loans to assets (LTA) at 1% level. Banks seem to hold more liquid assets to avoid depending on deposits when cost of funding increases.

Asset quality (NPL to gross loans) has a negative and significant effect on loans to assets (LTA) at 1% level (positive effect on liquidity). This result was expected as defaulted loans have increased during the crisis years and banks were not encouraged to provide new loans. Instead, they maintained high amounts of safe liquid assets.

The lagged variable of the Syrian crisis has a negative and significant effect on loans to assets (LTA) at 5% level (positive effect on liquidity). In contrary to the other financial crises that hit the world, and due to its complications, the Syrian crisis has positively affected the liquidity of the Syrian private banks which were over-liquid during the crisis years. The reason behind this is the banks' reluctance to provide new loans and advances during most of the crisis years due to high default ratios. Most banks maintained substantial amounts of liquid assets in forms of cash or current accounts and short term deposits held with their parent bank.

## Conclusions

This research studied the liquidity determinants of the Syrian private banks during the country's crisis over the period between 2011 and 2018 which is the most severe period of the Syrian crisis. Using fixed effects estimator on panel data for all of the fourteen Syrian private banks, the results show that bank capital, deposits, bank size, funding cost, and asset quality have a significantly positive effect on liquidity at 1%, while profitability has a significantly negative effect on liquidity at 1%. Furthermore, and unlike the ordinary financial crises, the Syrian crisis has a positive effect on liquidity at 5%. It is very important to note that unlike many other research papers that use a dummy variable to measure a crisis, this research employed a proxy variable that takes into account social, economic and political factors to give an accurate measure of the severity of the Syrian crisis during the studied period.

The major limitation of this research is the absence of official data for many indicators and macro-factors in Syria. Also, bank ratios were extracted and calculated from each interim and annual report which is a time and effort consuming process.

In line with the findings, and to enhance the banks' liquidity during crisis times, the research comes with the recommendations of strengthening banks' capital and attracting more deposits, as well as increasing the banks size with a special attention to the cost of funding. Profitability also should be well-balanced with liquidity of the banks.

Thus, this research gives a boarder view of the relationship between liquidity of the Syrian private banks and various bank-specific variables in addition to the variable of Syrian crisis. The results are important to the policymakers, supervisory authorities and banks management to take proper and timely decisions regarding liquidity in crisis times.

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