Determinants of Banks Liquidity
"An Empirical Study of Banks Working in Palestine"

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May/2018
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نتيجة الحكم على أطروحة ماجستير

بناءً على موافقة عمادة البحث العلمي والدراسات العليا بالجامعة الإسلامية بغزة على تشكيل لجنة الحكم على أطروحة الباحث/ محمود يوسف عبد الرؤوف سيد أحمد لنيل درجة الماجستير في كلية الاقتصاد والعلوم الإدارية/ برنامج إدارة الأعمال وموادها:

محددات السيولة المصرفية
"دراسة تطبيقية على المصارف العاملة في فلسطين"

Determinants of Banks Liquidity
"An Empirical Study of Banks Working in Palestine"

وبعد المناقشة التي تمت اليوم الأربعاء 15 رمضان 1439 ه الموافق 30/5/2018م الساعة 4 في قاعة
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واللجنة إذ تمنح هذه الدرجة فإنها توصية بقبول الله تعالى ولزوم طاعته وأن يسخر علماً في خدمة
ا. وطن، ودينه، وطوقنا،

و لله وللتوافق.

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وفتم الإطلاع عليها، ومتابعتها بالنسخة الورقية للرسالة نفسها، ضمن المحددات المبينة أدناه.

- تم إجراء جميع التعديلات التي طلبتها لجنة المناقشة.
- تم توقيع المشرفين والمشرفين على النسخة الورقية لاعتمادها كنسخة معدلة ونهائية.
- تم وضع ختم "عمادة الدراسات العليا" على النسخة الورقية لاعتماد توقيع المشرفين والمشرفين.
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- تطبيق التنسيق في جميع الصفحات (نوع وحجم الخط) بين النسخة الورقية والالكترونية.

ملحوظة: ستقوم إدارة المكتبات بنشر هذه الرسالة كاملة بصيغة (PDF) على موقع المكتبة الإلكترونية.

والله وسليه.

توقيع الطالب
A Holy Qur'an Verse

قال تعالى:

(1) {اقرأ بإسم رَبِّكَ الَّذِي خَلَق (2) خَلَق الإنسان مِن عَلَقٍ (3) وَرَبُّكَ الَّذِي خَلَق (4) عَلَمَ الإنسان ما لم يَعلَم (5) 

(العلق: 1-5)
Abstract

Liquidity management is considered as one of the top priorities in banks to ensure their ability to reach funds when needed in order to meet their customers' demands and meet their obligations at time. Therefore, this study aims to identify determinants of liquidity for working banks in Palestine. In order to achieve this aim, banks balanssheets and income statements analysed in order to compute study variables. Liquidity, which is the dependent variable of study, expressed by three liquidity ratios as: liquid assets to total assets (L1), liquid assets to short-term liabilities (L2), and loans to deposits (L3). The study used 13 factors that selected as potential determinants of banks liquidity depending on previous studies results connected to local environment; nine of them are internal banks variables, including, Bank Size, Profitability, Capital Adequacy, Loans, Asset Quality, Banks Lending, Management Efficiency, Deposits, and Funding Cost. While four of them are macroeconomic variables including Unemployment Rate, Lending Rate, interest Rate Spread, and Growth Rate of GDP. The study used panel data multiple regression method in order to analyis the data of 14 banks that are working in Palestine including foreign and local banks with focusing on period from 2007 to 2016. Results showed that bank Capital Adequacy, Loans, Banks Lending and Deposits had statistically significant effect on bank liquidity, while Bank Size, Profitability, Asset Quality, Management Efficiency, Funding Cost, Unemployment Rate, Lending Rate, Interest Rate Spread, and GDP had no statistically effect on bank liquidity. The study generally stresses the importance of internal management of liquidity risk of banks on a continuous basis, and specifically recommend balancing the bank's deposit taking and lending structure on the one hand and maintaining liquidity on the other. It also recommends to strengthening banks capital structure and control over operating expenses. Besides, it recommends developing monetary policy in order to empowerment PMA control over monetary supply and interest rates.

Keywords: Liquidity, Determinants, Banks.
تعتبر إدارة السيولة من القضايا التي تحتل أهمية عالية لدى البنوك، ويعود ذلك إلى أهمية وصول البنوك إلى مصادر التمويل حين الحاجة بهدف الاستجابة لطلبات زبائنتهما ومقابلة التزاماته في وقت استحقاقها. لذلك، هدفت هذه الدراسة إلى تحديد العوامل المؤثرة على سيولة البنوك العامة في فلسطين. من أجل تحقيق هذا الهدف، تم تحليل القوائم المالية الخاصة بالبنوك لموضوع الدراسة بهدف استخراج قيم متغيرات الدراسة. المثير التتابع في الدراسة والعامل بسيولة البنك تم قياسه باستخدام ثلاث مؤشرات مالية كالأتي:

(المؤشر الأول) الأصول السائلة إلى مجموع الأصول، (المؤشر الثاني) الأصول السائلة إلى المطلوبات قصيرة الأجل، (المؤشر الثالث) القروض إلى الودائع. كما تم استخدام 13 متغيرا كعوامل محتملة مؤثرة على سيولة المصارف، وقد تم تحديدها بالاعتماد على الدراسات التطبيقية السابقة في موضوع الدراسة.

9 من هذه العوامل تتعلق بالخصائص الداخلية للمصارف وهي كالأتي: حجم البنك، الربحية، كفاءة رأس المال، التسهيلات الإئتمانية، جودة الأصول، إقراض البنوك، كفاءة الإدارة، الودائع وتكلفة التمويل. بينما هناك 4 من هذه العوامل تتعلق بالاقتصاد الكلي وهي: معدل البطالة، معدل الفائدة على القروض، معدل انتشار سعر الفائدة ونمو الناتج المحلي الإجمالي. تم استخدام تحليل الانحدار الخطي المتعدد لتحليل عوامل المصارف المحلية والوافدة والتي عددها 14 مصرف خلال الفترة من عام 2007 وحتى عام 2016 حيث أظهرت النتائج أن العوامل (كفاءة رأس المال، التسهيلات الإئتمانية، إقراض البنوك والودائع) لها تأثير معنوي ذو دلالة إحصائية على سيولة المصارف، بينما (حجم البنك، الربحية، جودة الأصول، كفاءة الإدارة، تكلفة التمويل، معدل الائتمان، معدل الفائدة على القروض، معدل انتشار سعر الفائدة ونمو الناتج المحلي الإجمالي) لم يكن لها تأثير ذو دلالة إحصائية على سيولة المصارف. تؤكد الدراسة بشكل عام على أهمية الإدارة الداخلية للمخاطر المالية للمصارف على أساس مستمر، وتوصي بالتحديد لتحقيق المساهمة بين هيكلا الإيداع والإقراض لدى المصارف من جهة والاستبقاء بمجموعة من المخاطر من جهة أخرى. كما توصي بتخصيص هيكلا مال البنوك والسياطرة على نفقاتها التشغيلية إلى جانب ذلك، توصي بتطوير أدوات السياسة النقدية من أجل تمكين سلطة النقد من التحكم بفترة النقد وأسعار الفائدة.

كلمات مفتاحية: السيولة، محددات، المصارف.
Dedication

To the candles of my life, my dear parents.

To my beloved wife and my beloved son.

To my wonderful brothers.

To my colleagues at work.

To my dear homeland.

I give this humble effort
Acknowledgment

Through the completion of this study I have achieved a great goal in my life, so I am grateful to God Almighty and then to everyone who helped or guidance me.

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Researcher\

Mahmoud Yousef Sayedahmed
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List of Abbreviations

CAP  
Equity to Total Assets

DEP  
Deposits to Total Assets

EFF  
Non-interest Expenses to Total Revenue

FC  
Interest Expenses to Total Liabilities

GDP  
Annual Growth of GDP

BLN  
Interbank assets to Interbank Liabilities

IRS  
Difference Between Lending Rate and Deposits Rate

L1  
Liquid Assets to Total Assets

L2  
Liquid Assets to Short-term Liabilities

L3  
Loans to Deposits

LR  
Annual Interest Rate on Loans

LTA  
Loans to Total Assets

PMA  
Palestinian Monetary Authority

QUA  
Loan Loss Provision to Gross Loans

ROE  
Net Income to Equity

TOA  
Natural Logarithm of Total Assets

UNR  
Annual Rate of unemployment

VIF  
Variance Inflation Factor
Chapter 1
Study Background
1.1 Introduction

Financial institutions including banks playing a vital role in any financial system by expressing its intermediary role providing financing channels through turning financial resources from lenders to borrowers. Diamond & Dybvig (1983) were one of the firsts to provide the evidence on the importance of role of the bank in creating liquidity that known as "transformational role" by accepting and transfer deposits that considered liquid liabilities to illiquid long-term loans, which makes bank vulnerable to risks with the possibility of huge sudden withdrawals of deposits. That what in turn makes banks interested about their liquidity position especially with the chance of inability of banks to liquidiae their assets at time with desirable prices (Diamon, 2007). Basel Committee (2008) defines liquidity as “the ability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses”. Therefore, banks should concern about having adequate level of liquidity to ensure their ability to perform their role of liquidity creation besides their ability to meet its commitments as it comes due.

Moreover, Liquidity Management is considered as one of the top priorities in banks and may on a daily basis especially with customers, where bank may lose some of those customers if they don't have the sufficient liquidity and can't provide services when they are needed or affect bank ability to meet its obligations. On the other hand, banks may have liquidity more than needed, resulting in using resources inefficiently. Therefore, liquidity is strongly linked to effective banking operations and may affect their solvency, which can lead to insolvency (in case of low liquidity) and low profitability (in the case of high liquidity) and finally destroy shareholders value (Melese, 2015).

The intensive attention on banks liquidity came with the recent global financial crisis that began in 2008, before the crisis; liquidity has not been one of priorities for bank management, where banking sector was sufficient and funding was readily available at low cost. Therefore, liquidity risks were not among their priorities, especially compared with other types of risks (BIS, 2008). As a result, the financial crisis forced
banks to adjusting their priorities and making them more interested in managing liquidity in a continuous manner.

In general, it can be noted that liquidity and liquidity risk management considered a very up-to-date and important topic, which drive to feel the importance of liquidity management and their impact on banks operations and their financial performance as well as their impact on the economy as a whole. which indicates a clear need to explore liquidity issue, especially focusing on studying determinants of liquidity for the Palestinian banking sector, which represents an important sector affects the financial system as a whole, especially PMA (2017) pointed that palestinian banking sector suffering from liquidity problem, which was a result to the decision of the Israeli occupation authorities to consider Gaza Strip as a hostile entity, which resulted in cutting off financial and banking relations with branches of banks that working in the Gaza Strip and that caused financial stress on Palestinian financial system. Therefore, the main aim of this study is to identify the potential determinants of liquidity for banks operates in Palestine and examine the relationship between the study variables, in order to have a more insight of liquidity problem nature and the variables that associated with it, focusing on the period from 2007 to 2016.

1.2 Problem of Study

Intermediary role of banks which expressed by liquidity creation through maturities transformation of short-term liquid deposits to illiquid long-term loans make banks vulnerable to liquidity risk because of the probability of inability to meet customers' demands for liquidity. Therefore, liquidity management consider as one of the top priorities in banks to ensure their ability to reach funds when needed to meet customers demand and meet their obligations at time, while mismanagement may lead to bank insolvency or low profitability. Especially, liquidity problems of some banks during the recent global financial crisis highlighting the importance of management and measurement of liquidity risk (Vodova, 2013).

Basel Committee (2008) explained that liquidity position of commercial bank affects their viability. Where banks suffered from lack of adequate liquidity during recent financial crisis, which result in many banks failing, and forced others to mergers.
Focusing on Palestine, the liquidity crisis is one of the types of financial crises experienced by banking systems. However, the nature of the crisis that experienced by Palestinian banking system comes as a result of Israeli policies of defiance and failure to comply with the monetary provisions of the Paris Economic Agreement. The liquidity crisis began since the decision to consider Gaza Strip as a hostile entity and the consequent cut-off of the full financial and banking relations with the branches of banks operating in the Gaza Strip, which caused a liquidity crisis developed with different forms over time (PMA, 2017). The main driver of this crisis is the measures related to the reduction of the ceiling of the PMA deposits in Israeli banks, which lead to the accumulation of liquidity in the shekel currency where it reached 16.5% as a share of banks total assets which exceeding the moderate liquidity ratio that around 10%, and in turn forces the banks operating in Palestine to stop receiving the shekel currency and this is one of the challenges to financial stability (PMA, 2016).

Moreover, there is a large theoretical literature focusing on bank liquidity creation, and most recent ones focused on measuring the amount of liquidity created in the banking sector, while few studies shed light on determinants of liquidity in banks (Melese, 2015)

That indicates the need to study banks liquidity and explores its determinants, in order to have a wider view on liquidity issue and to try avoid risks that related to it. Therefore, this research aims to explore the determinants of liquidity for banks working in Palestine focusing in the period from 2007 to 2016.

1.3 Scope and Objectives

- The main objective of this study is to identify the determinants of liquidity for working banks in Palestinian.
- Come up with recommendations that may help decision makers to enhance practices for managing liquidity.

1.4 Study variables

The variables were determined in this study according to the results reached by previous empirical studies that similar to the subject of this study and reviewing of related literature that mentioned in Chapter (2). Empirical studies were done in other
countries identified a number of variables as potential determinants of banks liquidity, and expressed liquidity of banks using financial ratios; Therefore, this study uses Liquidity as the dependent variable which is expressed by three ratios of liquidity as follows:

\[
L1 = \frac{\text{Liquid assets}}{\text{Total assets}}
\]

\[
L2 = \frac{\text{Liquid Assets}}{\text{Short-term Liabilities}}
\]

\[
L3 = \frac{\text{Loans}}{\text{Deposits}}
\]

1.4.1 Independent variables used as follows:

**Bank internal variables:**
1. Size.
2. Profitability.
4. Loans.
5. Assets Quality.
7. Management Efficiency.
8. Deposits.

**Macroeconomic variables:**
1. Unemployment Rate.
2. Interest rate spread.
3. Lending Interest Rate.
4. Growth rate of GDP.
1.5 Study Hypotheses:

The hypotheses proposed about the possible determinants of liquidity for working banks in Palestine are as follows:

H1: Bank size has a significant effect on bank liquidity.
H2: Profitability has a significant effect on bank liquidity.
H3: Capital adequacy has a significant effect on bank liquidity.
H4: Loans has a significant effect on bank liquidity.
H5: Asset quality has a significant effect on bank liquidity.
H6: Banks lending has a significant effect on bank liquidity.
H7: Management efficiency has a significant effect on bank liquidity.
H8: Deposits has a significant effect on bank liquidity.
H9: Funding cost has a significant effect on bank liquidity.
H10: Unemployment rate has a significant effect on bank liquidity.
H11: Lending interest rate has a significant effect on bank liquidity.
H12: Interest rate spread has a significant effect on bank liquidity.
H13: GDP has a significant effect on bank liquidity.
Figure (1.1): Hypothesis Framework.

Independent Internal Bank Variables

Bank Liquidty

Dependent Variable

Independent Macroeconomic Variables
Chapter 2
Literature Review
2.1 Introduction

In this chapter, we will be reviewing the related Empirical Studies done in the subject of this study, either Foreign studies or Arabic ones. In order to make general perception about study topic and trying to identify methods of measuring liquidity risk and potential variables that may affect banks liquidity position. As well as to identify the statistical methods used in those empirical studies. Therefore, to achieve the aim we reviewed (23) study similar to our study scope, which helped us to shape overall direction of this study and focusing on specified potential variables as determinants of banks liquidity.

2.2 Arabic Studies


This study aimed to investigate bank-specific factors and macroeconomic factors that determine the liquidity risk of Tunisian banks. The study examined both of internal and external factors. Results showed that banks’ lending activity, financial crisis, capital adequacy, economic growth are positively affecting banks liquidity risk, while size and inflation are negatively affected banks liquidity. The study also showed that Tunisian banks are concentrate in granting loans, which evolved faster than collected deposits. The study recommended Tunisian banks to reduce their major financial risk that has an impact on both their performance and sustainability. Tunisian banks must revise the primacy accorded to the lending activity, strengthen their own funds and recruit qualified staff.

2.2.2 (Zedan, 2017) Palestinian Banks Analysis Using CAMEL Model

The study aimed at using CAMEL method of classification in order to evaluate the performance of local Palestinian banks for the year 2015. The performance of the banks compared according to five criteria: capital adequacy, profit, liquidity, efficiency of management performance, and quality of assets. capital adequacy ratio used to analyze capital adequacy parameter, non-performing loans to total loans ratio used to analyze of assets quality parameter, non-interest expense to total revenue ratio used for analyze management quality parameter, return on assets and return on equity
used to analyze earnings ability, while total loans to total deposits ratio to analyze liquidity management. The results indicated that large banks had higher ratings compared to smaller banks rated.

2.2.3 (Moussa, 2015). The Determinants of Bank Liquidity: Case of Tunisia (2000-2010)

In this study, the aim was to identify the factors affecting the Tunisian banks' liquidity. The researcher used a sample of 18 banks operates in Tunisia for the period from 2000 to 2010. He used two liquidity measures to estimate banks liquidity as follows: liquid assets to total assets ratio and loans to deposits ratio. By using panel data regression method in order to analyze data, he found that the following factors had a significant impact on bank liquidity which were financial performance, capital to total assets, operating costs to total assets, inflation rate, growth rate of GDP, and delayed liquidity. While the following factors had not a significant impact on bank liquidity which are total deposits to total assets, size, financial costs to total credits, and Loans to total assets.


The aim of the study was to identify the factors affecting the companies' liquidity that are necessary for fulfilling its obligations and avoiding the risk of financial difficulties. The variables used were cash flows, fluctuations in cash flows, leverage, company size, availability of alternative liquid assets, cash distributions, and growth rate. The study was applied to a sample of Jordanian industrial companies on the ASE during the period from 2001-2010. Using the multiple regression method, the study found that the most important factors are the rate of growth, cash flows, availability of alternative liquid assets, and the degree of leverage. The safety and operations incentive were the most important incentives for Jordanian industrial companies to maintain liquid cash.

2.2.5 (El Mehdi & Abderrassou, 2013) Liquidity Determinants of Moroccan Banking Industry (2001-2012)

The researchers aimed to identify the determinants of Moroccan bank’s liquidity. They used six liquidity ratios to express Tunisian banks liquidity. As they identified determinants of Moroccan banks' liquidity by using panel data regression method to
analyze data from 2001 to 2012. The researchers found that there are a number of factors influencing the liquidity of Tunisian banks. The following factors positively affect the liquidity of banks, which were Bank size, external financing, profitability, capital adequacy, foreign direct investment, monetary policy, and the volume of foreign assets. While the following factors had a statistically negative significant impact on liquidity, which were inflation, annual GDP growth, recent financial crisis, and public deficit. While the results showed that following factors had no statistically significant effect on liquidity, which were unemployment rate and equity to total bank assets.

2.3 Foreign Studies

2.3.1 (Singh & Sharma, 2016) An empirical analysis of macroeconomic and bank-specific factors affecting liquidity of Indian banks (2000-2013)

The researchers aimed to identify the factors that affect Indian banks' liquidity. They used liquid assets to total assets ratio to express banks liquidity. Firstly, they analyzed banks liquidity holding by analyzing liquidity trends according to banks ownership, in addition, they analyze data of 59 banks for period from 2000 to 2013 using fixed effect and random effect estimates in order to explore the relationship between study variables. Results showed that following factors had statistically significant impact on bank liquidity, which were bank size, deposits, profitability and capital adequacy, growth rate of GDP, and inflation. While the following factors had no statistically affect banks liquidity, which were funding cost and unemployment rate.

2.3.2 (Melese, 2015), Determinants of Banks Liquidity: Empirical Evidence on Ethiopian Commercial Banks (2007-2013)

The researcher aimed to identify the factors that affect Ethiopian bank’s liquidity. They used liquid assets to total assets ratio to express banks liquidity. He analyzed data of 10 banks for period from 2007 to 2013 using fixed effect estimate in order to explore the relationship between study variables. Results showed that the following factors had statistically significant impact on bank liquidity, which were bank size, capital adequacy and profitability. While the following factors had no statistically impact on
banks' liquidity for study tested period, which were nonperforming loans and loan growth.

2.3.3 (Roman & Sargu, 2015), the impact of bank-specific factors on the commercial banks liquidity: empirical evidence from CEE countries (2004-2011)

The aim of this study was to evaluate the liquidity risk with a view to presenting proposals for the financial stability of the banking system for CEE Countries. Therefore, the researchers analyzed the financial statements of the following countries banks (Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania) for the period from 2004 to 2011 using OLS regression analysis. The results of their research highlighted the negative impact that the depreciation of the loans portfolio had on the overall liquidity of the analysed banks.

2.3.4 (Chagwiza, 2014), Zimbabwean Commercial Banks Liquidity and Its Determinants (2010-2011)

The aim of this study was to explore the determinants of liquidity for the Zimbabwe commercial banks'. They analyzed data of 10 banks for period from 2010 to 2011 using panel data regression method in order to explore the relationship between study variables. The results showed that the following factors had a significant positive impact on bank liquidity, which were total assets, bank rate, capital adequacy, and GDP. While the following factors had a significant negative relationship with banks' liquidity, which were business cycle, adoption of multi-currency and inflation.


The study examined the determinants of bank liquidity of 20 banks that have been go public in Indonesia during the period 2004 to 2011. Determinants of liquidity of banks are ten variables grouped into internal factors and external factors. Internal factors consist of one-year earlier liquidity, capital, asset quality, efficiency, profitability, and funding. External factors consist of interest rates, inflation, capital market development, and GDP Growth. The empirical findings indicated that the liquidity of the previous year, capital, asset quality, profitability, and funding affect liquidity of banks. Only variables with proxy tier-1 capital and funding showed a negative effect,
whereas other variables showed a positive effect. The results of this study also showed there are several external factors that affect the liquidity of banks', which were interest rate, inflation, and capital market development.

2.3.6 (Deléchat & others, 2014) The Determinants of Banks' Liquidity Buffers in Central America (2001-2011)

The study aimed to identify determinants of banks’ liquidity buffers in Central America, Panama, and the Dominican Republic (CAPDR) using a panel of about 100 commercial banks over 2006-2010. The researchers used two of liquidity ratios to assess liquidity position in banks, and tested the relationship between bank characteristic and macroeconomic variables on the one hand and liquidity on the other. The results showed that liquidity buffers holding by banks is above legal requirements. Besides showed that liquidity negatively related to capital adequacy, profitability, portfolio, size of banks, and foreign ownership.

2.3.7 (Malik & Rafique, 2013), Commercial Banks Liquidity in Pakistan: Firm Specific and Macroeconomic Factors (2011-2007)

The researchers aimed to identify bank specific factors and macroeconomic factors that affect Pakistani commercial banks' liquidity. They used two of liquidity ratios to express banks' liquidity, first one was liquid assets to total assets while the second was advances net of provisions to total assets. As they identified determinants of Pakistani banks' liquidity by using panel data regression method in order to analyze data of 26 banks for the period from 2007 to 2011. The results showed that the results was contrary with the different using of the two liquidity ratios. The researchers found that there are a number of factors influencing the liquidity of Pakistani banks, which were banks size, assets quality, and monetary policy interest rate.

2.3.8 (Lee & others, 2013) The Determinants Influencing Liquidity of Malaysia Commercial Bank and its Implications for Relevant Bodies (2003-2012)

The study aimed to identify the factors affecting Malaysian banks liquidity, which divided into two parts: bank specific factors and macroeconomic factors. Total loans to total deposits ratio used in order to express liquidity of study sample. The researchers analyzed the data of 15 Malaysian commercial banks for the period from
2003 to 2012. The results showed that all factors related to banks and macroeconomic factors had a significant effect on bank liquidity with except for interbank market interest rates. Factors that had a significant positive effect on bank liquidity were asset quality and growth of the local economy. While the following factors had a significant negative impact on bank liquidity which were size of the bank, the modern financial crisis, and capital adequacy.

2.3.9 (Vodova, 2013), Determinants of commercial bank liquidity in Hungary (2001 -2010)

The study aimed to identify the factors affecting Hungary banks liquidity, she used three of liquidity ratios to express banks' liquidity, first one was liquid assets to total assets, and the second one was liquid assets to deposits and short-term borrowing, while the third was liquid assets to total deposits. The researcher used panel data regression method in order to analyze data of Hungary banks for the period from 2001 to 2010. The results showed that the following factors had a significant positive impact on bank liquidity, which were capital adequacy, lending rate, and bank profitability. While the following factors had a significant negative relationship with banks' liquidity, which were bank size, interest rate on interbank transaction, monetary policy interest rate, and interest margin.

2.3.10 (Cucinelli, 2013) The Determinants of Bank Liquidity Risk within the Context of Euro Area (2004 -2011)

The main objective of this study was to analyze the type of relationship that exists between liquidity risk that measured using liquidity coverage ratio and the net stable funding ratio, and some specific bank structure variables, which were size, capitalization, assets quality and specialization. The sample is composed of 1080 listed and non-listed Eurozone banks and the methodology applied in the analysis was OLS regression based on panel data. The results highlighted that bigger banks had a higher liquidity risk exposure, while banks with higher capitalization present a better liquidity on long horizon. The assets quality affects only on the measure of the short-term liquidity risk. With regard to the specialization, banks more specialized on the lending activity show a more vulnerable funding structure. Finally, during the crisis, the liquidity risk management changes only on the short-term horizon.
2.3.11 (Vodová, 2012) Determinants of commercial banks’ liquidity in Poland (2001-2010)

The study aimed to identify the factors affecting Polish commercial banks liquidity, she used four of liquidity ratios to express banks' liquidity, first one was liquid assets to total assets, the second one was liquid assets to deposits and short-term borrowing ratio, third one was liquid assets to total deposits ratio, while the fourth was loans to deposits ratio. The researcher used panel data regression method to analyze data of Polish banks for the period from 2001 to 2010. The results showed that the following factors had a significant positive impact on bank liquidity, which were capital adequacy, share of nonperforming loans, inflation, interest rates on loans, and interbank transaction. While the following factors had a significant negative impact on bank liquidity, which were interest rate margin, profitability, and bank size.


The study aimed to identify the determinants affecting the liquidity of Ethiopian banks. In addition to examining the effect of these determinants on the ability of banks to generate profits as part of the performance evaluation of banks, the researcher analyzed the data of eight Ethiopian banks using of fixed effect panel regression method for the period from 2000 to 2011. The results showed that the following factors had a significant positive effect on the liquidity of banks, which were bank size, capital adequacy, assets quality, inflation rate, short-term interest rate, and interest rate margin. While the following factors had a significant positive effect on banks' performance which were, assets quality and short-term interest rate, while the following factors had a significant negative effect on banks performance which were inflation and interest rate margin.


The researchers conducted empirical research for commercial banks from Central and Eastern Europe in the 2001 to 2011 period. The researchers aimed to identify the determinants of liquidity for a sample of European banking system. They analyzed banks data included of 30 banks from Bulgaria, Czech Republic, Lithuania, Romania,
Slovakia, Slovenia and Hungary. As they used four ratios to express liquidity position of study sample, and determines three bank specific factors and ten macroeconomic factors. The results indicates that there is a significant effect for the following factors on banks liquidity which were equity and total assets, lending interest rate, interest rate spread, the credit flow to the private sector, private debt, and the current account balance.


The study aimed to identify the factors affecting Romanian commercial banks liquidity; he used two of liquidity ratios to express banks' liquidity, which were loans to total assets ratio and liquid assets to deposits and short-term funding ratio. The researcher used panel data regression method to analyze data of Romanian banks for the period from 2002 to 2010. The pre-crisis years observed separately from the crisis period (2008-2010). An important indicator for bank stability, Z-score, has a significant influence over bank liquidity in the crisis years. Moreover, results indicated that liquidity is significant negatively affected with capital adequacy, asset quality and interbank funding, whereas, it is positively related to cost to income ratio, funding cost, credit risk rate and inflation.


The study aimed to identify the factors affecting Slovak commercial banks liquidity, she used four of liquidity ratios to express banks' liquidity, first one was liquid assets to total assets ratio, second one was liquid assets to deposits and short-term borrowing ratio, third one was loans to total assets ratio, while the fourth one was loans to deposits and short-term funding ratio. The researcher used panel data regression analysis to analyze data of Slovak banks for the period from 2001 to 2010. The results showed that the following factors had a significant positive impact on bank liquidity, which were growth rate of GDP, profitability. While the following factors had a significant negative impact on bank liquidity, which were bank capital adequacy, profitability, and bank size.
2.3.16 (Subedi, 2011), Determinants of banks liquidity and their impact on financial performance in Nepalese Commercial Banks (2002-2011)

The aim of this study was to identify the relationship between selected factors which were eight bank specific factors and macroeconomic factors on the one hand and liquidity on the other and then to see to what extent these determinants exert impact on financial performance of Nepalese banking industry through the significant variables explaining liquidity. Capital adequacy, size of banks, loan growth, non-performing loans, GDP growth, interest spread, inflation and short-term interest rate are several determinants on which this empirical study was based on. The results showed that the following factors had a significant negative impact on liquidity, which were capital adequacy, assets quality, loan growth, growth rate of GDP, and short-term interest rate. While the following factors had a significant positive effect on banks liquidity which were bank size, and inflation.


The study aimed to identify the factors affecting Czech commercial banks liquidity, she used four of liquidity ratios to express banks' liquidity, first one was liquid assets to total assets ratio, second one was liquid assets to deposits and short-term borrowing ratio, and third one was loans to total assets, while the fourth one was loans to deposits and short-term funding. The researcher used panel data regression method to analyze data of Czech banks for the period from 2001 to 2009. The results showed that the following factors had a significant positive impact on bank liquidity, which were capital adequacy, assets quality, Lending rate, and interest rate on interbank transaction. While the following factors had a significant negative impact on banks liquidity which were inflation rate, business cycle, and financial crisis.

Note: Next table (2.1) shows literature reviews summary
Table (2.1): Summary of Empirical Studies reviews.

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<tr>
<th>No.</th>
<th>year</th>
<th>Place</th>
<th>Study Title</th>
<th>Author Name</th>
<th>Objectives</th>
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<th>Macroeconomic variables&amp;results</th>
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<tr>
<td>1.</td>
<td>2017</td>
<td>Tunisia</td>
<td>The Determinants of Liquidity Risk: Evidence from Tunisian Banks</td>
<td>Zaghdou &amp; Hakimi</td>
<td>To Investigate Determinants of banks liquidity risk</td>
<td>Panel Data Multiple Regression</td>
<td>10 banks</td>
<td>Loans/Deposits</td>
<td>1. (+) Loans (Loans/Total Assets) 2. (-) Bank size (Logarithm of total assets) (+) capital adequacy (equity/total assets)</td>
<td>1. (+) Dummy variable for realization of financial crisis (0 before 2008 and 1 after 2008) 2. (+) market share (Total Assets of banks) 3. (+) GDP No statistically significant: (+) Inflation rate</td>
</tr>
<tr>
<td>3.</td>
<td>2015</td>
<td>Tunisia</td>
<td>The Determinants of Bank Liquidity: Case of Tunisia</td>
<td>Mohamed Ben Moussa</td>
<td>To identify Tunisian Banks liquidity Determinants. Data covered period from 2000-2010</td>
<td>Panel Data Multiple Regression</td>
<td>18 banks</td>
<td>L1: liquid assets/total assets L2: Loans/Deposits</td>
<td>Statistically significant: 1. profitability (-) ROE and (+) ROA 2. (-) Capital adequacy (equity/total assets) 3. (-) bank efficiency (Interest receivable-interest incurred/total assets)</td>
<td>1. (-) growth rate of GDP 2. (+) inflation rate No statistically significant: 3. financial expenses/total credits</td>
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<tr>
<td>No.</td>
<td>year</td>
<td>Place</td>
<td>Study Title</td>
<td>Author Name</td>
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</table>
| 4.  | 2014 | Moroccan | Liquidity Determinants of Moroccan Banking Industry | El Mehdi & Abderrassoul | to identify the determinants of Moroccan bank's liquidity | Panel Data Multiple Regression | 8 banks | L1: liquid assets \ Total Assets  
L2: liquid assets \ short-term liabilities  
L3: liquid assets \ Deposits  
L4: Loans \ Total Assets  
L5: Loans \ Deposits & short-term Liabilities  
L6: {loans-Deposits} \ Total Assets | 4. (Operating expense/total assets)  
**No statistically significant:**  
5. size of bank (total assets)  
6. Deposits (total deposits/total assets)  
7. Loans (Total Loans/ Total Assets) | 1. (++)Monetary Aggregate e M3  
2. (-)Growth of GDP  
3. (-)Public Deficit  
4. (-)Inflation Rate  
5. (-)Realization of Financial Crisis  
6. (++)Foreign Direct Investment  
7. (++)Foreign assets  
**No statistically significant:**  
8. Unemployment Rate |
| 5.  | 2014 | Jordan | Liquidity Determinants: An Empirical Study on Jordanian Industrial Companies | Asmaa Alamarrna | This study aimed to explore the factors affecting the liquidity of industrial companies | Panel Data Multiple Regression | 47 Company | Cash and cash equivalents \ total assets | 1. (++)cash flows  
2. (-)fluctuations in cash flows  
3. (-)net working capital  
4. (-)leverage  
5. (-)size  
6. (++)cash distributions  
7. (++)growth rate | - |
<table>
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<th>Internal bank variables &amp; results</th>
<th>Macroeconomic variables &amp; results</th>
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<tbody>
<tr>
<td>1.</td>
<td>2016</td>
<td>India</td>
<td>An empirical analysis of macroeconomic and bank specific factors affecting liquidity of Indian banks</td>
<td>Singh &amp; Sharma</td>
<td>To explore the association between bank-specific and macroeconomic factors that determine the liquidity of Indian banks</td>
<td>Panel Data Multiple Regression</td>
<td>59 banks</td>
<td>Liquid assets / total assets</td>
<td>1. (+) Profitability (ROA) 2. (-) size (Total Assets) 3. (+) Deposits (Deposits / total assets) 4. (+) Capital adequacy (Capital adequacy ratio Tier I) 5. (+) Ownership</td>
<td>No statistically significant: 6. Funding cost (Cost of Funds) 1. (-) Dummy variable for realization of financial crisis (1 in 2009 and 2010; 0 in rest of the period) 2. (+) Inflation rate 3. (-) GDP</td>
</tr>
<tr>
<td>2.</td>
<td>2015</td>
<td>Ethiopia</td>
<td>Determinants of Banks Liquidity: Empirical Evidence on Ethiopian Commercial Banks</td>
<td>Nigist Melese</td>
<td>To assess bank specific factors that affect liquidity of Ethiopian commercial banks. The data covered the period from 2007-2013</td>
<td>panel fixed effect regression</td>
<td>10 banks</td>
<td>liquid assets / Total Assets</td>
<td>1. (-) capital adequacy (equity / total assets) 2. (+) Bank size 3. (total assets) 4. (-) Profitability (ROA).</td>
<td>No statistically significant: 5. Loan Growth 6. Nonperforming loans / total loans</td>
</tr>
<tr>
<td>3.</td>
<td>2015</td>
<td>CEE countries</td>
<td>The impact of bank-specific factors on the commercial banks liquidity: empirical evidence from CEE countries</td>
<td>Roman &amp; Sargu</td>
<td>To analysis the determinants of the liquidity risk of a sample of banks operating in a series of CEE countries over period 2004-2011</td>
<td>OLS regression analysis</td>
<td>85 banks</td>
<td>Loans / total assets</td>
<td>1. capital adequacy 2. assets quality (impaired loans / total loans) 3. Mang. Efficiency (interest expenses to total deposits) 4. Profitability (ROA, ROE) 5. Size (Total assets)</td>
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<td>No.</td>
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<td>4</td>
<td>2014</td>
<td>Indonesia</td>
<td>Determinants of Bank Liquidity in Indonesia: Dynamic Panel Data Analysis</td>
<td>Made Sudirma</td>
<td>To test myriad variables which can determine the bank liquidity in Indonesia during the global monetary crisis period. The data covered period from 2004-2011</td>
<td>dynamic panel data analysis</td>
<td>20 banks</td>
<td>Liquid Assets\ (deposits+ short-term financing)</td>
<td>1. (-) Liquidity of previous year 2. (+/-) Capital (Tier1/Total Assets), (Total Capital/Total Assets) 3. (-) Asset quality (Impaired loans/ Total loans) 4. (-) Profitability (Net Interest Margin) 5. (-) Funding (Net Loans/Deposits and short-term Funding)</td>
<td>No statistically significant: 6. Efficiency (Non-Interest Expenses/Avg Assets).</td>
</tr>
<tr>
<td>5</td>
<td>2014</td>
<td>Central American countries</td>
<td>The Determinants of Banks’ Liquidity Buffers in Central America</td>
<td>Deléchat &amp; others</td>
<td>To introduce and identify bank, country and time effects on bank level liquidity. over the period of 2006-2010</td>
<td>Generalized Methods of Moments (GMM)</td>
<td>96 banks</td>
<td>L1: Liquid assets\ Deposits&amp;short-term Funding L2: Liquid assets\ total assets</td>
<td>1. Liquidity buffers(L1) 2. (-) Capital adequacy (equity\total Assets) 3. (-) Profitability (Interest income\interest paid)/ interest earning assets). 4. (-) asset quality (loan-loss reserves\gross loans). 5. (-) Size (total assets) 6. (-) Foreign ownership</td>
<td>1. (+) interest rate 2. (+) inflation 3. (+) capital market development (Market Capitalization/GDP) 4. (+) GDP growth.</td>
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<td>Macroeconomic variables&amp;results</td>
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<td>6.</td>
<td>2014</td>
<td>Zimbabwe</td>
<td>Zimbabwean Commercial Banks Liquidity and Its Determinants</td>
<td>Wilbert Chagwiza</td>
<td>To identify determinants of liquidity of Zimbabwe commercial banks. Data covered period from 2010-2011</td>
<td>Panel Data Multiple Regression</td>
<td>-</td>
<td>L1: Loans\Deposits</td>
<td></td>
<td>1. (+) capital adequacy(Total Capital)</td>
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<td>L2: Loans\Liabilities</td>
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<td>2. (+) Size (Total Assets)</td>
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<td>L3: Loans\Total assets</td>
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<td>3. (-) Interest rate</td>
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<td>L4: liquid assets\Total Assets</td>
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<td>4. (+) Lending rate</td>
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<td>L5: liquid assets\Deposits</td>
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<td>5. (-) Bank rate</td>
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<td>7.</td>
<td>2013</td>
<td>Pakistan</td>
<td>Commercial Banks Liquidity in Pakistan: Firm Specific and Macroeconomic Factors</td>
<td>Malik &amp; Rafique</td>
<td>To identify bank specific and macroeconomic determinants of commercial bank’s liquidity in Pakistan. Data covered period from 2011-2017</td>
<td>Fixed Effects Regression</td>
<td>26</td>
<td>L1: liquid assets\total assets</td>
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<td>1. (-) Dummy variable for realization of financial crisis (1 in 2009 k 0 in rest of the period)</td>
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<td>L2: Advances net of provisions (loans)\total assets</td>
<td>2. (+) Size (Total Assets)</td>
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<td>3. capital adequacy (The share of own capital\total assets)</td>
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<td>4. profitability (ROE)</td>
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<td>8.</td>
<td>2013</td>
<td>Hungary</td>
<td>Determinants of Commercial Banks liquidity in Hungary</td>
<td>Pavla Vodová</td>
<td>To identify determinants of liquidity of Hungarian commercial banks. The data cover the period from 2001 - 2010.</td>
<td>Panel Data Regression</td>
<td>29</td>
<td>L1: liquid assets\Total Assets</td>
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<td>1. (+) Capital Adequacy (equity \total assets)</td>
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<td>L2: Liquid assets(deposits+ short-term borrowing)\</td>
<td>2. (+) Profitability (ROE)</td>
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<td>L3: liquid assets\deposits</td>
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<td>3. (-) Bank Size (Total Assets)</td>
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<td>No statistically significant:</td>
<td>4. Asset Quality (non-performing loans \volume of loans)</td>
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<td>5. (-) Monterey policy interest rate</td>
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<td>No statistically significant:</td>
<td>6. Unemployment rate</td>
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<td>7. Dummy variable for realization of financial crisis (1 in 2009)</td>
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<tr>
<td>9</td>
<td>2013</td>
<td>Malaysia</td>
<td>Determinants Influencing Liquidity of Malaysia Commercial Bank and its Implications on for Relevant Bodies</td>
<td>Lee &amp; others</td>
<td>To identify the factors significant to explain Malaysia commercial Banks liquidity. Data covered period from 2003-2012</td>
<td>panel fixed effect regression</td>
<td>15 banks</td>
<td>Loans\deposits</td>
<td>1. (-) Capital Adequacy (Total Capital / Total Risk Weighted Asset) 2. (-) Bank Size (Total assets) 3. (-) Profitability (ROE) 4. (+) Asset Quality (non-performing loans / volume of loans)</td>
<td>1. (+) GDP 2. (-) A dummy variable in this model where one will be allocated in financial crisis period and zero for the other time period <strong>No statistically significant:</strong> 3. Interbank Rate</td>
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</tbody>
</table>
| 10  | 2013 | Eurozone| The Determinants of Bank Liquidity Risk within the Context of Euro Area      | Doriana Cucinelli | to analyze relationship between liquidity, and some specific bank structure covered the period from 2006-2010                                | OLS regression based on panel data | 1080 bank | L1: Coverage Ratio: High quality liquid assets / Net cash out flow (t+30)  
L2: Net stable funding ratio (available amount of stable funding / required amount of stable funding)  
L3: Loans / Total assets  
L4: Loans / deposits | 1. (-) Capital Adequacy (equity / total assets) 2. (+) Size (Total Assets) 3. (-) Loans (Net loans / total assets) 5. (+) Asset Quality (loan loss reserve / gross loans) | 1. (+) Growth Rate of GDP 2. Inflation rate 3. (-) Monterey policy interest rate 4. (-) Unemployment rate |
| 11  | 2012 | Poland  | Determinants of commercial banks' liquidity in Poland                         | Pavla Vodová      | to identify determinants of liquidity of Polish Commercial banks. Data covered period from 2001 to 2010                                     | Panel Data Regression            | 36 banks | L1: Liquid assets / Total Assets  
L2: Liquid assets / deposits  
L3: Loans / Total assets  
L4: Loans / deposits | 1. (+) Capital Adequacy (equity / total assets) 2. (+) Asset Quality (non-performing loans / volume of loans) 3. (-) Profitability (ROE) 4. (-) Size (Total Assets) | 1. (-) Dummy variable for realization of financial crisis (1 in 2009k) 2. (-) Growth of GDP 3. (+) Inflation rate 4. (+) Interest rate on interbank transactions 5. (+) Interest rate of loans 6. (-) Difference between interest rate on loans and on deposits 7. (-) Monterey policy interest rate 8. (-) Unemployment rate |
<table>
<thead>
<tr>
<th>No.</th>
<th>year</th>
<th>Place</th>
<th>Study Title</th>
<th>Author Name</th>
<th>Objectives</th>
<th>Methodology</th>
<th>Sample</th>
<th>Liquidity Indicators</th>
<th>Internal bank variables&amp;results</th>
<th>Macroeconomic variables&amp;results</th>
</tr>
</thead>
</table>
| 12  | 2012 | Europe     | Evaluating the Liquidity Determinants in the Central and Eastern European Banking System | Ioan TRENCA & others | to determine the factors that influence the liquidity level in the Central and Eastern European banking system | Panel Data Multiple Regression | 30 banks | L1: liquid asset \total assets L2:Loans\Total assets L3:Loans\Total Deposits | 1. (-) Capital Adequacy (Equity/total assets)  
2. (+) the difference between the loans interest rate and the deposits interest rate  
No statistically significant:  
2. Size (Total Assets)  
3. Profitability (ROE) | 1. (-) loans interest rate  
2. (+) the difference between the loans interest rate and the deposits interest rate  
No statistically significant:  
3. Growth Rate of GDP  
4. Inflation rate  
5. Unemployment rate  
6. Interbank interest rate |
| 13  | 2012 | Romania    | Bank liquidity and its determinants in Romania               | Ionica Munteanu   | Aim of identifying the factors that influence Romanian banks liquidity. Data covered the period from 2002-2010 | Panel Data Multiple Regression | 27 banks | L1: liquid assets \deposits and short term funding L2:Loans\Total assets | 1. (-) Capital Adequacy (Tier1)  
2. (-) Asset Quality (Impaired loans\loans)  
3. (-) Banks Lending (Interbank assets\Interbank Liabilities)  
4. (+) Funding Cost (Total Interest expenses\Total liabilities)  
5. (+) management Efficiency Cost to income ratio (Total expenses/Total generated revenues). | 1. (-) Interest rate ROBOR  
2. (+) Credit risk rate  
3. (+) Inflation rate  
4. (+) Unemployment Rate  
No statistically significant:  
4. GDP rate |
| 14  | 2012 | Ethiopia   | Determinants of Banks Liquidity and their Impact on Financial Performance: | Tesfaye Tseganesh | to identify determinants of commercial banks liquidity in Ethiopia and | Fixed Effect Panel Data Regression | 8 banks | L1: Loans\(deposits+ short-term financing) L2: liquid assets \total assets | 1. (+) capital adequacy (Equity to total assets)  
2. (+) share of non-performing loans in | 1. (+) Inflation rate  
2. (+) short term interest rate  
3. (+) Interest rate margin  
No statistically significant:  
4. GDP growth rate |
<table>
<thead>
<tr>
<th>No.</th>
<th>year</th>
<th>Place</th>
<th>Study Title</th>
<th>Author Name</th>
<th>Objectives</th>
<th>Methodology</th>
<th>Sample</th>
<th>Liquidity Indicators</th>
<th>Internal bank variables&amp;results</th>
<th>Macroeconomic variables&amp;results</th>
</tr>
</thead>
</table>
| 15. | 2011 | Nepal | Determinants of banks liquidity and their impact on financial performance in Nepalese Commercial Banks | Sushil Subedi | see the impact of liquidity on financial performance over the period of 2000-2011 | Fixed Effect Panel Data Regression | 32 banks | L1: Liquid Assets \ Total Assets  
L2: Loan \ Deposit & Short-term financing | the total volume of loans  
3. (+)bank size  
**No statistically significant:**  
4. loan growth | 1. (-)growth rate of GDP  
2. (+)Inflation Rate  
3. (-)interest spread  
4. (-)short-term interest rate. |
| 16. | 2011 | Czech | Liquidity of Czech Commercial Banks and its Determinants | Pavla Vodová | examine the impact of bank specific and macroeconomic impact on liquidity of Nepalese banks covered period from 2002-2011 | Panel Data Multiple Regression | 18 banks | L1: liquid assets \ Total Assets  
L2: Liquid assets \ (deposits+ short-term borrowing)  
L3: Loans \ Total assets  
L4: Loans \ (deposits+ short-term financing) | 1. (+)Capital Adequacy  
(The share of own capital \ total assets)  
2. (+)The share of non-performing loans \ total volume of loans  
3. (+/-)Size (Total Assets) **No statistically significant:**  
4. profitability (ROE) | 1. (-)Dummy variable for realization of financial crisis (1 in 2009k 0 in rest of the period)  
2. (-) growth of GDP  
3. (-) inflation rate  
4. (+) interest rate on interbank transactions  
5. (+) interest rate of loans **No statistically significant:**  
6. Monterey policy interest rate  
7. Unemployment rate  
8. difference between interest rate on loans and interest rate on deposits |
<table>
<thead>
<tr>
<th>No.</th>
<th>year</th>
<th>Place</th>
<th>Study Title</th>
<th>Author Name</th>
<th>Objectives</th>
<th>Methodology</th>
<th>Sample</th>
<th>Liquidity Indicators</th>
<th>Internal bank variables&amp;results</th>
<th>Macroeconomic variables&amp;results</th>
</tr>
</thead>
</table>
| 17. | 2011 | Slovakia | Determinants of Commercial Bank’s Liquidity in Slovakia | Pavla Vodová   | To identify determinants of liquidity of Slovak commercial banks. he consider bank specific and macroeconomic data over the period from 2001 to 2010 | Panel Data Multiple Regression | 11 banks | L1:liquid assets\ Total Assets  
L2:liquid assets\ (deposits+ short-term borrowing)  
L3:Loans\Total assets  
L4:Loans\(deposits+ short-term financing) | 1. (-) capital adequacy  
(The share of own capital\total assets of the bank  
2. (-) profitability (ROE)  
3. (-) size (Total Assets)  
No statistically significant:  
4. (The share of non-performing loans \volume of loans) | 1. (-) Dummy variable for realization of financial crisis (1 in 2009 and 2010; 0 in rest of the period)  
2. (+) growth of GDP  
3. (+) Unemployment rate  
4. (-) Monterey policy interest rate  
No statistically significant:  
5. inflation rate  
6. interest rate on interbank transactions  
7. interest rate of loans  
8. difference between interest rate on loans and interest rate on deposits |
### 2.4 Choosing of Study Variables

The next table (2.2) summarize banks internal factors that are potential determinants of liquidity in order to be applied in this study, which were used by other researchers in their similar studies.

<table>
<thead>
<tr>
<th>No.</th>
<th>Variable</th>
<th>Concept</th>
<th>Measure</th>
<th>No. of Studies used ratio</th>
<th>Justification of Excluding Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Size</td>
<td>liquidity creation to differ among banks according to their sizes (Lee&amp;others, 2013)</td>
<td>Logarithim of Total Assets</td>
<td>18</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Profitability</td>
<td>Used to examine tradeoff relationship between banks liquidity and their profitability. (Deléchat&amp;others, 2014).</td>
<td>Net Income to Equity</td>
<td>14</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Capital Adequacy</td>
<td>Better-capitalized banks should have easier access to markets and thus hold less liquidity (Deléchat&amp;others, 2014).</td>
<td>Equity to Total Assets</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Loans</td>
<td>Extent of banks specialization on the lending activity, which higher ratio lower liquidity ratio (Cucinelli, 2013).</td>
<td>Loans to Total Assets</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Assets Quality</td>
<td>Determines the quality of bank loans. The higher the ratio, the more bank liquidity is (Cucinelli, 2013).</td>
<td>Nonperforming loans to total assets</td>
<td>9</td>
<td>Inability to obtain the value of this ratio for foreign banks, because lack of publishing the disclosures accompanying the annual financial statements.</td>
</tr>
<tr>
<td>6.</td>
<td>Loan Growth</td>
<td>Where higher loan growth signals increase in illiquid assets (Melese, 2015).</td>
<td>Growth Rate of Loans from previous year</td>
<td>3</td>
<td>Using of substitute variable (bank Loans)</td>
</tr>
<tr>
<td>7.</td>
<td>Banks Lending</td>
<td>The more liquid the bank is, the more it lends in the interbank market (Munteanu, 2012).</td>
<td>Interbank Assets to Interbank Liabilities</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Efficiency</td>
<td>The more bank management efficiency is, the more its ability to absorb liquidity risk, and the more its</td>
<td>Cost to Income Ratio (Non-interest Expenses (Operating cost)/Total Revenue)</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>
The following table (2.3) shows macroeconomic variables used in study:

<table>
<thead>
<tr>
<th>No.</th>
<th>Variable</th>
<th>Concept</th>
<th>No. of Studies used ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Unemployment Rate</td>
<td>Unemployment rate affect banks volume of loans, which in turn affect its liquidity position (Vodova, 2013)</td>
<td>8</td>
</tr>
<tr>
<td>2.</td>
<td>Interest rate spread</td>
<td>Measure of the opportunity cost of holding liquid assets (Deléchat&amp;others, 2014).</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Lending rate</td>
<td>The more the interest rate on loans is, the lower bank volume of loans, which in turn affect its liquidity position (Vodova, 2012)</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>Growth Rate of GDP</td>
<td>when the economy grows, it' supposed banks have a lesser liquidity ratio (Vodova, 2013)</td>
<td>16</td>
</tr>
</tbody>
</table>

Table (2.3): Study Macroeconomic Variables.
Next table summarize basic dimensions of current study:

**Table (2-4): Summary of current study:**

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Place</th>
<th>year</th>
<th>Objectives</th>
<th>Methodology</th>
<th>Sample</th>
<th>Liquidity ratios</th>
<th>Internal bank variables</th>
<th>Macroeconomic variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2: liquid assets\Short-term Liabilites</td>
<td></td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L3: Loans\Deposits</td>
<td></td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.5 The key advantages of study:

- The scarcity of previous studies if found that connected with banking liquidity in Palestine.
- The study is the first that tries to identify determinants of liquidity for working banks in Palestine.
- The study sample included foreign banks operating in Palestine, which were usually excluded in local studies samples due to the difficulty of obtaining their data.
- The study examining effect of most of banks characteristics that explored by similar previous Empirical studies in other countries; Table No. (2.2) Presents the variables collected from previous studies and the reasons for excluding some of them. Thus, we will examine (9) internal variables of banks, and (4) Macroeconomic variables.
- The study Investigated effect of some macroeconomic variables on liquidity of working banks in Palestine.
Chapter 3
Theoretical Framework
3.1 Introduction

This chapter introduce the Palestinian banking system and its components, the Palestinian Monetary Authority and its areas of operation, the concept of bank liquidity and its sources as well as the historical development of liquidity management theories. He will also identify the banks role in creating liquidity and the associated risks that may threaten banks and the banking system as a whole, in addition to exploring ways a bank can follow to mitigate these risks. Moreover, the researcher will review liquidity risk measurement methods and review the potential determinants of banks liquidity and their expected impact.

3.2 Overview of Palestinian banking system:

3.2.1 Palestinian Monetary Authority (PMA)

Under the terms of the economic agreement signed between the Palestine Liberation Organization and "Israel Occupation" in Chapter IV of the Convention under the title of financial and monetary issues; the establishment of the Palestinian Monetary Authority, the Palestinian Authority has issued the decision to start work on the project of the Palestinian Monetary Authority, which will assume the functions of the Central Bank except for the Palestinian currency (Alshurafa, 2007).

PMA (Palestinian Monetary Authority) is an independent public institution responsible for the formulation and implementation of monetary and banking policies to ensure the soundness of the banking sector and the balanced growth of the local economy. Its main objective is to maintain monetary and financial stability and promote economic growth. Its major responsibilities are distributed as follows:

- Supervising banks, specialized lending institutions, and cashiers working in Palestine.
- Supervising the implementation and operation of modern payment systems.
- Drawing and implementing monetary policy in order to achieve monetary stability.

PMA vision to be a modern central bank with full powers for the State of Palestine (PMA, 2017).
There are many obstacles facing PMA in the process of transition to central bank, these obstacles divided into external and internal constraints. The external constraints summarized in the fragmentation of the Palestinian economic by the geographical fragmentation of the West Bank and the Gaza Strip, and the absence of a national currency, which weakens the role of the Monetary Authority in its ability to control monetary policies. Addition to the inflationary pressures and price correlation with "Israel". While the internal obstacles are the need to train national cadres to fulfil the tasks and issue laws and regulations related to the work of the Palestinian banking system (Aljadba, 2016).

3.2.2 Monetary and supervisory policy procedures used by PMA

The absence of the national currency prevented the PMA from controlling the supply of money as a main tool for achieving the objectives of the Palestinian society on the one hand and to fix its economic problems on the other hand, such as combating inflation, reducing unemployment rate and encouraging investment opportunities. PMA has also lost influence on the volume of monetary trading, influencing the interest rate, which is the most important pillar of monetary policy, and thus reducing it with part of the tasks of the Monetary Authority, and restricting it to a major task of supervising banks in the absence of effective monetary policy. In order to protect and develop the Palestinian banking system, and to activate its contribution to the required economic and financial development in Palestine, the supervision and control function has become a real challenge to the Monetary Authority, since proper regulation and supervision are the two main elements of stability and confidence in the banking system. Many of the legislation enacted by the Monetary Authority has been enacted to ensure compliance and continuous supervision of correct banking practices (Alshurafa, 2007).

3.2.3 Components of Palestinian Banking System

Palestinian banking system is the banks or banking institutions that are the constituents of the financial system, which act as containers in which funds and savings are collected to re-lend them to those who can and wish to invest and operates under the supervision of Palestinian Monetary Authority (Alshurafa, 2007). PMA defines the
bank as a public joint stock company licensed to practice banking business in Palestine (PMA, 2011).

The Palestinian banking system includes: Palestinian Monetary Authority (PMA) which supervises banking sector contains (7) local banks, which are headquartered in Palestine, including commercial banks and two Islamic banks addition to includes (8) foreign banks, which are the banks whose their headquarters are outside of Palestine. It also includes exchange Institutions contain (276) companies and individuals, and (6) specialized lending institutions (PMA, 2016).

![Diagram of Palestinian banking system]

**Figure (3.1):** Components of Palestinian banking system.

### 3.3 The Concept of Bank Liquidity

Liquidity of banks can be defined as “the ability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses” (BIS, 2008).

In addition, it can be “a measure of bank ability to readily find the funds it may need to meet demands upon it” (Elliot, 2014). Moreover, can be “a measure of the ability of bank and ease with which assets can be converted to cash so banks can meet its obligations at time without unacceptable losses” (Fekadu, 2016).

According to the definitions mentioned above, it is clear that liquidity is considered vital for banks. Therefore, banks should concern about their liquidity position while operating. Thus, banks can have adequate liquidity through holding buffers of liquid assets such as cash or reserves on its balance sheet which are easy to convert into cash.
when needed or by researching funds from marketplace to ensure their ability to meet customers’ demands and meet their obligation.

In particular, the fundamental traditional role of banks through converting deposits which are liquid liabilities to illiquid assets (Loans), which caused maturity gap due to different maturity periods and affected bank liquidity situation, therefore banks tends to lessen of this gap by holding liquid assets (Diamond & Dybvig, 1983).

In a major view, banks tend to hold liquid funds for four basic reasons: the first one is to meet whatever legal reserve requirements may be imposed by central banks or authorities. The second reason is to provide payment for services provided by banks. The third reason is to meet anticipated demands of depositing customers withdrawing cash. The fourth reason is to meet anticipated increases in loan demand (Fleming, 1974).

Moore (2010) explained that banks needs to hold liquid assets to meet their customers' need of cash. If a bank does not have the liquidity needed to satisfy its customers demand, then it either has to borrow on the interbank market or the central bank, which incur an "interest penalty". Therefore, bank liquidity situation affected by its holding of liquid assets such as cash, reserves, marketable securities that can be easy to convert when needed to ensure bank ability to deal with liquidity needs or "shocks". In addition, bankers should assess their liquidity position considering bank’s access to funds as well as its cost of funding. Therefore, banks should concern about their liquidity position in a daily basis; and monitor both expected and unexpected cash flow, to be insure of their capacity to meet the need of cash readily and timely at reasonable price (OCC, 2012).

It is noted that what determines the liquidity of an asset is still a disputed issue among theorists, the conventional wisdom gained from banks management literature, an asset can be liquid if it has low risk (e.g. government securities) with a short maturity (less sensitive to interest rate movements) (Alger's, 1999). Assets classified regarding to its liquidity to liquid, semi-liquid or illiquid based on the ease, cost, and time for banks to obtain liquid funds to meet customers’ demands (Berger& Bouwman, 2009). To sum
the above, it can be said that an asset is liquid if it can be converted quickly to cash when needed without unacceptable losses.

In general, Banks can use multiple strategies to insure having adequate levels of liquidity. The first strategy is to hold short asset maturities that mature during the period of a cash crunch and it is generally liquid. The second strategy is to lengthen liability maturities, which the longer-term liability, the less likely that it will mature while a bank is still in a cash crunch. The third strategy is to issue more equity in which common stock is roughly equivalent to a bond with a perpetual maturity, with added advantage that no interest or similar periodic payments have to be made (Dividends are normally paid only out of profits and are discretionary). The fourth strategy is to cut back the volume of lines of credit and other contingent commitments to pay out cash in the future, reduce the potential outflows, thereby improving the balance of sources and uses of cash. The fifth strategy is to obtain liquidity protection. A bank could pay for a line of credit from another bank, to guarantee the availability of cash in the future, if needed. Alternatively, in some cases depending on a central bank. In some countries, banks have assets pre-positioned with their central bank that can be used as collateral to borrow cash in a crisis (Elliot, 2014).

Summing up the above, the bank should concern about its liquidity management and tries to have adequate level of liquidity by diversifying its funding sources, not just focusing on deposits as the only source for creating liquidity. Banks can look at loans portfolio as a source of liquidity, where bank can sell or liquidate some of them in the secondary market. And they should also care about market base activities that could be used to as alternative source of funding needed by bank, such as issue of commercial paper or covered bonds (Angora& Roulet, 2011). For more views, we will try in the next section to highlight theories of bank liquidity management, to understand and learn about techniques of liquidity assessment and their management.

3.4 Theories of Liquidity Management

Maintaining an adequate level of liquidity depends on the institution’s management to efficiently meet both expected and unexpected cash flows and collateral needs without adversely affecting either daily operations or the financial condition of the institution (OCC, 2012). There are a number of theories about managing banks liquidity. These
theories evolved from being dependent on short-term loans and liquidating assets to obtain the required liquidity to rely on the liabilities side such as issuing bonds or raising the capital of the bank. These practices followed by modern approach adopted by banks to have funds needed with financial instruments available in the capital market. Next paragraph will describe the historical sequence and traditional theories of bank liquidity management and highlight the banks' tactics to provide the required liquidity.

3.3.1 Commercial Loan Theory:

Commercial loan theory or named as "the real-bills doctrine", is basically a theory of asset management that emphasizes liquidity, the doctrine holds that banks should restrict their earning assets to “real” bills of exchange (discounted paper financing the movement of goods) and short-term, self-liquidating advances for commercial purposes, therefore, banks will have the required liquidity to meet depositors withdrawals (Summers, 1975).

According to this theory, banks grant loans for short periods and finance the working capital, wherein borrowers refund the borrowed funds after completing of their trade cycles successfully. Besides, the banks do not lend money for the purposes of purchasing real estate or consumer goods or for investing in stocks and bonds, due to the length of the expected payback period of these investments. This theory is proper for traders who need to finance their specific trading transactions and for short periods (Moussawi, 2015). It should be noted that there is a number of disadvantages in this theory:

1. This theory does not take into consideration the relative stability for the various types of deposits. Current deposits are not withdrawn at the same time. As for saving deposits, the number of these accounts and their nature in terms of normal growth, makes them relatively stable. Fixed deposits with maturity dates are known to the bank, and the owner has no right to withdraw them except on due dates.
2. Preventing the providing of the necessary loans to expand industrial projects, increase the production lines, and re-equip them with modern machines, for the length of these loans.
3. It failed to meet the needs of economic and social development, especially in developing countries. Full compliance with this theory prevents banks from contributing to infrastructure projects, which work to make fundamental changes in the national economy.

4. It assumes that the business cycle can be completed successfully, which is not always achieved, especially in times of recession and financial crisis (Alsaegh & Abohamad, 2006).

### 3.3.2 Shiftability Theory

M.G. Mouton developed this theory in 1918. The shiftability theory offered advantages over the commercial loan theory (Summers, 1975). According to this theory, banks tend to hold liquid assets as secondary reserves, which are considered of high quality, marketable securities with short-term maturities. Therefore, banks can sell these liquid assets to open markets in secondary market, which can be converted to cash as soon as possible with the least possible loss. That gives solutions for banks to have adequate liquidity, and these investment assets make the banker earn some extra income, even if minimal. However, the new concept frees the banker from his reliance upon the loan portfolio as a source of supplemental liquidity (Fleming, 1974). In addition, it should be recognized that shiftability or transferability of a bank’s assets is a basis for ensuring liquidity (Ibe, 2013).

This theory introduced new concepts and theoretical framework of business borrowing by commercial banks, and opened the way for new and innovative ways to obtain required liquidity through secondary markets, unlike the traditional commercial loan theory that restricted the bank by relying heavily on expected cash flows from loans (Summers, 1975).

Besides, it should be noted that shiftability theory was not a substitute for commercial loan theory or prove it is worthless for banks assets management. In fact, it contributed to the expansion of the view of asset management and enhanced banks practices by investing in short-term assets in the investment markets rather than relying entirely on investment in loans as the only source of liquidity (Taiwo, 2017).
3.3.3 Anticipated Income Theory:

H.V. Prochanow developed this theory in 1949. This theory differs from previous theories, where the liquidation of the loan was not by sale of assets of the borrower as in the traditional commercial loan theory of liquidity, nor by the transferring of the asset to some other owner as in the shiftability theory. But It happens by the anticipated income of the borrower (Fleming, 1974). According to this theory, the management of a bank can rely on the borrower's expected income in its liquidity planning. This enables the bank to grant medium and long-term loans as well as short-term loans as long as the repayment of these loans comes from the expected income of the borrowers in regular structured instalments, which makes the bank highly liquid due to the relative regularity of the cash flows and their predictability (Moussawi, 2015). In addition, bankers again began to look at their loan portfolio as a source of liquidity. Moreover, even though the loans are long term, in a liquidity crisis the bank can sell the loans to obtain needed cash in secondary markets (Alshatti, 2014).

3.3.4 Liability Management Theory

This theory emerged in the 1960s. The concept of this theory is that banks should not focus solely on the assets liquidation and income generated by loans granted to customers as the only sources to meet banks liquidity needs, as they can achieve the desired liquidity level through the liabilities side by borrowing or purchasing from the money market or attracting new deposits. This approach is flexible for the bank through the diversity in quantity and types of liabilities that the bank can own (Fleming, 1974). Any bank can protect its liquidity levels from massive deposits withdraws by using credit instruments, which existed in secondary markets banks (summers, 1975).

Despite the advantages of this theory, the disadvantage is that it may be appropriate for larger banks in size rather than small ones, as large banks have the ability to attract new depositors with greater capacity due to their past reputation and profits, as well as their ability to access financial markets more efficiently and obtain needed funds at reasonable price (Fleming, 1974).
In general, this theory has radically changed the direction of the banks and the authors to investment rather than liquidation of assets. It is now considered as an important alternative of liquidity.

The historical development of liquidity management concepts in banks shows that banks have tend to use both of assets and liabilities sides in order to have the liquidity they need, either by keeping liquid assets that can be quickly converted to cash when needed or by using capital market instruments. Therefore, there is no optimal way that banks can follow to have the funds they needed. They should concern with managing liquidity in a systematic way and trying to diversification of their funding sources, taking into account the risks that bank can absorb. The next section will discuss how banks create liquidity and the risk related to this role.
3.5 Liquidity creation and related risk

According to financial intermediation theory, Banks play an important role in creating liquidity in any financial system, through the transfer of liquid liabilities (deposits) to illiquid assets (long-term loans) which are favourable to individual and institutions. That what provided the rational of banks existence (Diamond & Dybvig, 1983). In addition, this existence is due to the two central roles done by banks in the economy, the first they create liquidity and second transform risk (Berger&Bouwman, 2009). Liquidity creation role expressed by banks by contributing to the financing of various agents in the economy as a financial intermediary, and contributing to facilitating transactions between these agents (Horvát, Seidler, & Weill, 2014). The role of financial intermediation by the bank is desirable from both sides of the relationship, whether depositors or investors, since depositors have the possibility to access their funds better than if they invested directly with the same expected return, and may have return more than the market value. Investors also see banks as more reliable than borrowing directly from individuals, and will be free from agency costs that required from additional layers (brokers) to have the desirable liquidity (Diamond & Rajan, 2001).

This financial intermediation role of banks shows there is a risk related to this role, when banks can face "transformation risk" beyond this cycle and be vulnerable to runs if depositors have less confidence on banks and withdraw the deposits in a high volume which force the bank to liquidate illiquid assets early with a lower return than planned, which affects it's financial position (Diamond & Dybvig, 1983). e.g. when the depositors have unexpected need to cash, maybe for investment opportunity in which that need cannot be delayed, that liquidation of loans which banks forced to. That makes bank exposes to liquidity risk when financial asset can be sold only discounted at market rates on interest (Diamond & Rajan, 2001).

What leading banks to expose to these risks is related to their fundamental role which makes illiquid loans that cannot be liquidate quickly at desirable price, and issue demand deposits where depositors can withdraw at any time. Making bank’s liabilities more liquid than its assets which lead to mismatch of liquidity (Diamond, 2007). Therefore, the higher is the bank liquidity creation to the external public, the higher is
the risk for banks to face losses from having to dispose of illiquid assets to meet the liquidity demands of customers (Tseganesh, 2012).

In general, the traditional structure of the banking system and the high reliance on deposits to create liquidity may lead to the fragility in this system, when banks cannot meet the need for cash withdrawal, which in turn affects the Bank's basic function to meet the needs of customers to liquidity, and that lead the bank to face liquidity risk. Therefore, banks tend to hold buffers of liquidity on their balance sheet to face customers demand and ensure their ability to meet their obligations, and that leads to overhead costs. The reason for this action is that they have a limited ability to actively, attract new customer deposits in the short run because of "sluggish depositors" (Drehmann & Nikolaou, 2013). That may happen because of the failure of coordination between depositors and banks and may be occurred due to asymmetric information (Nikolaou, 2009). This state of failure can be avoided through the continuous relationship banks keep with their clients and borrowers (Crockett, 2008).

Liquidity creation theories show that banks liquidity can be created "on and off" balance sheet, liquidity creation on balance sheet expressed by traditional view where banks playing the traditional intermediation role, and financing illiquid assets with liquid liabilities, that discussed by authors like (Bryant, 1980) (Diamond & Dybvig, 1983). While other theories like (Holmstrom & Tirole, 1998) and (Kashyap, Rajan, & Stein, 2002) suggest that banks also can create liquidity off balance sheet through loan commitments and similar claims to liquid funds.

Kashyap et al. (2002) clear up that banks differ in their creation of liquidity from other financial institutions, where banks can create liquidity on and off their balance sheet. On Balance sheet activities, contain traditional granting of loans for customers depending on the volume of deposits, While off Balance sheet activities contain of granting credit facilities such as loans commitments. Hence, both of these activities puts pressure on the bank's liquidity. They argued that banks usually tend to hold buffers of liquid assets in order to face liquidity shocks, and that results in highly overhead costs. What drives bank to doing this is that the capital markets are not perfect because the bank cannot deal with liquidity shocks simply by raising capital relying on new external finance at a moment's notice, or demanding deposits in the
due time. Therefore, banks should attempt to achieve a synergy between these two activities in which each puts pressure randomly on liquidity demand, which leads to the reduction of the volume of liquid assets held by the bank by sharing costs. In addition, they should reduce the overall cost and enhance banks efficiency, especially if these two activities are not highly correlated. Gatev and Strahan (2006) presented an empirical evidence of negative covariance between deposits withdraws and issuing new loan commitments. The study concluded that at the periods when borrowing is expensive at the markets, banks experience a raising in their funds by deposits inflow. In these periods, borrowers tend to take down funds from pre-existing lines of credit in the market and demand new loan commitments from banks. The advantage for banks that funds are large enough to enable them to make new loan commitments at lower than-average prices without need of raising their holding of liquid assets.

Liquidity risks can be defined as “the risk that an institution’s financial condition or overall safety and soundness is adversely affected by an inability (or perceived inability) to meet its obligations” (OCC, 2012).

According to Basel Committee (2008), there are two types of liquidity risks. The first one is funding liquidity risk and the second is market liquidity risk, “Funding liquidity risk is the risk that the firm will not be able to efficiently meet both of the expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the firm. Market liquidity risk is the risk that a firm cannot easily offset or eliminate a position at the market price because of inadequate market depth” (less ability of bank to execute large transactions to influencing prices duly (Crockett, 2008)) or market disruption. These types of liquidity risks mentioned are not separate; there is a considerable interrelationship between them. Drehmann and Nicolaou (2013) pointed out that funding risk might lead banks to selling assets, which may lead to assets price decrease. In addition, lower market liquidity leads to higher margin, which increase funding liquidity risk. When banks satisfy their need of liquidity form capital markets, they should consider that these resources could be more volatile than traditional source (Deposits), and that showed in stress conditions when investors in money market instruments may demand higher compensation for risk. Moreover, illiquidity of markets may make it difficult
for bank to gain funds by selling assets, which increase funding risk (Basel, 2008). Moreover, these interactions between liquidity risk types could be strong in period of crisis, and the relationship between these two types is negative where higher funding liquidity risk implies lower market liquidity (Drehmann & Nikolaou, 2013).

3.6 Recent Financial Crisis and Liquidity

Several years before the global financial crisis, liquidity has not been one of priorities for bank management, where banking sector was sufficient and funding was readily available at low cost. Therefore, liquidity risks were not among their priorities, especially comparing with other types of risks. During this crisis, many banks suffered and tried to maintain adequate liquidity, which forced central banks to intervene with unprecedented levels of liquidity in order to maintain financial system. Despite these extensive effort and support, many banks failed and forced into mergers or required resolution (BIS, 2008).

The recent global crisis has shown that banks as major players in the financial universe need to adjust their aims for profitability in order to get protection against liquidity risk (Munteanu, 2012). However, the crisis completely changed market conditions and thus illustrated the importance of adequate liquidity risk (Vodova, 2011). In addition, these had big impact on banks, because they are required to hold a level of capital and liquidity higher than in the past, this inevitably have also an impact on the liquidity creation function performed by banks. (Cucinelli, 2013).

Periods of financial pressure like recent crisis undermine the ability of the bank to obtain liquidity from secondary markets, which in turn may affect the entire banking system and lead to failure, especially with the weakness of the bank to obtain liquidity through the market, which is more accessible in normal times.

3.7 Measuring liquidity risks

Managing banks liquidity is consider a vital for banks, where liquidity is the main driver of the Bank's operations and the negligence or mismanagement of liquidity is subject to real risk. BIS (2008) showed that many banks before global financial crisis have neglected to take into account many of the fundamental principles of liquidity
risk management when liquidity was plentiful. Many of the most exposed banks did not have an adequate framework that satisfactorily accounted for the liquidity risks posed by individual products and business lines. Therefore, incentives at the business level were misaligned with the overall risk tolerance of the bank. Thus, Management of banks liquidity to insure maintaining adequate level of liquidity considered high importance for banks to meet their customers' needs and their obligations when it comes due. Therefore, banks have to enhance and improve their methods of managing of liquidity to avoid liquidity shortage or crisis.

Therefore, before exploring the ways that banks can use to measure liquidity risks, we will try to express the main sources of banks liquidity risks and some of practices that banks could use and may help in avoiding these risks.

The risks that the bank can be exposed to are divided into two parts, the systematic risks and the unsystematic risks. The Systematic risk defined as “the risk that a shock will result in such a significant materialization of imbalances that it will spread on the scale impairing the functioning of financial system” (Smaga, 2014). According to the definition, the systematic risk is related to the financial system as a whole and cannot be controlled by the bank. This type of risk is named also as a market risk or non-diversifiable risk and banks cannot eliminate this risk with simply diversifying their securities (Brigham&Ehrhardt, 2013). While unsystematic risk is defined as “that component of total risk that is unique to the firm and may be eliminated by diversification” (Peirso&Brown, 2009). This makes it clear that systematic risk refers to internal variables of the banks, which may controlled and eliminated with a good diversification of their funding structure.

According to (Crockett, 2008) there is three sources of liquidity risk for a bank. The first one connected with liabilities side of balance sheet when bank has suspicion of insolvency and there is uncertainty about the volume of withdrawals of deposits or renewal of rolled-over interbank loans. The second is connected with the assets side as it is difficult to predict the volume of future loan orders to be submitted to the Bank, which could pose a risk if the orders are not commensurate with the Bank’s ability to provide liquidity. As the bank can reject these loans but this will cause losing
opportunity to profit. The third source is off-balance sheet operations including credit lines and other commitments.

To avoid such risks that mentioned above banks can follow a number of mechanisms to prevent liquidity shortage. According to (Aspachs & others, 2005) the first mechanism that banks should follow is banks self-insure by holding a buffer of liquid assets on the assets side to insure banks' ability to meet customers' demands, which contribute on lessen banks' exposure to risks by reducing threaten of liquidity demands on bank viability. The second mechanism is co-insuring in the interbank market, this mechanism depends on the lack of correlation between banks' exposure to liquidity risk, and requires the bank to hold liquid assets in order to provide assistance to other banks. The last mechanism is the role central bank acts as a "Lender of Last Resort" to provide emergency liquidity assistance; this role is highlighted in times of financial crises that threaten the entire financial system, as the central bank provides banks with liquidity, which contributes to the continuity of banking activities.

After view sources of liquidity risk and some of useful practices that banks can follow to insure against these risks. It is important to know what techniques that banks should use to recognize their exposure to liquidity risks and measuring them.

Generally, Liquidity risk can be measured by two main methods: liquidity gap/flow and liquidity ratio/stock as cited in (Vodova, 2011); (Vodova, 2012); (Ferrouhi & Lehadiri, 2013) (Lee & Others, 2013) ;(Fekadu, 2016) ;(Moore, 2010). Liquidity gap is the difference between the outstanding balances of assets and liabilities, or between their changes over time. Therefore, at any date, a positive gap between assets and liabilities is means a deficit, which in means there is need to increase liabilities, and vice versa (Bessis, 2002):
Researches find the liquidity gap approach is more confusing as it is data intensive yet no standard method to forecast inflows and outflows (Tseganesh, 2012). As a result, the ratio/stock approach are more popular in practice and the academic literature (Moore, 2010).

Liquidity ratio method are various balance sheet ratios used to identify main trends of liquidity. These ratios reflect the fact that bank should be sure that appropriate, low-cost funding is available in a short time (Vodova, 2011).

The two widely used stock ratios are the (loans to deposits ratio) and (liquid asset to total assets ratio), where the capacity of banks to meet customers demands for loans will be decreased with the higher the loans to deposits ratio (or the lower the liquid asset to total assets ratio). “Both ratios have their short-comings: the loans to deposits ratio does not show the other assets available for conversion into cash to meet demands for withdrawals or loans; while the liquid assets to total assets ratio ignores the flow of funds from repayments, increases in liabilities and the demand for bank funds. Fortunately, the ratios tend to move together”. As cited in (Moore, 2010), (Tseganesh, 2012) and (Fekadu, 2016).

Liquid assets to total assets ratio gives information about how much bank general liquidity shock absorption capacity, while loan to deposits ratio indicates the level of tied illiquid assets (loans) to liquid liabilities (deposits) (Vodova, 2011). Liquid assets to total assets ratio are cash and securities that can be converted into cash at a short time as a proportion of a bank total assets. While loans to deposits ratio reflect deposits
that have been converted into form of loans. This ratio is useful in bank liquidity management since its gives bank a guide for bank lending and investment, and evaluation of plans for expansion (Olagunju&others, 2012).

Generally, liquid assets that bank hold include cash balances in bank and others, balances held at the central bank, and other liquid securities such as (central bank paper, quoted government securities. “The definition of liquidity requirements differs sometimes quite substantially across countries, as supervisor include eligible securities based on the existence of a well-functioning market guaranteeing that they could be converted into cash quickly and at no or little loss of value” (Deléchat&others,2014).

The most liquid and secure bank assets are the balances that kept with the central bank. Banks also lend to each other, and any balances with other banks are considered liquid current assets as well. Loans and investments made by the bank become more liquid as they approach maturity (Ross, 2017). In general, an asset is considered liquid if it has low risk e.g. government bonds and less sensitive to interest rate movement (short maturity) which results to low risk of losses (Alger's, 1999).

Practically, international monetary fund (IMF) puts a guide to classify assets according to their maturity date. According to their classification, an asset classify liquid if it readily available to meet demand for cash. Moreover, it comprises cash, deposits and other financial assets that are available either on demand or within three months or less. These assets called (core liquid assets). Other securities that are traded in liquid markets can be included to liquid assets with term of be readily converted into cash, with insignificant risk of change in value under normal business conditions. Typically, securities are issued by the government and/or the central bank. Numerator of Liquid assets to total assets ratio can be compute either with only core liquid assets or by including marketable securities mentioned above (IMF, 2006).

In addition of the two ratios mentioned above, several studies used ratio of liquid assets to short-term liabilities in order to measure capability of a bank to meet the high demand of short-term liquidity. A Low ratio means a bank is illiquid at short-term and vice versa (Moussa, 2015).
For the purpose of this study, we will follow stock\ratio approach in order to measure liquidity risk using of three ratios mentioned above.
3.8 Determinants of banks liquidity

The study aims to identify of both bank specific and macroeconomic factors supposed to affect banks liquidity position. For this purpose, the study tried determining these variables by reviewing related literatures and previous empirical studies done connected with current study. The study had determined nine possible specific banks factors (Capital Adequacy, Size, Asset Quality, Profitability, Management Efficiency, Loans, Banks Lending, Funding Cost and Deposits) in addition to four Macroeconomic factors (Unemployment rate, Interest Rate Spread, Lending Interest Rate and Growth Rate of GDP). In this section, we will try to identify the supposed theoretical relationship between bank liquidity and its determinants.

3.8.1 Bank specific factors

3.8.1.1 Bank size and bank liquidity

Bank size supposed to have an effect on its liquidity creation; according to "too big to fail" Theory, larger banks are more risk takers and may be in excessive way more than other smaller banks, and tend to have less amount of liquid assets in its balance sheets. This behaviour by large banks is due to their belief that the central bank and the government will support them when needed, due to the fact that their impact on the financial sector or the economy as a whole (Lastuvkova, 2016).

Banks classified in terms of their size, assuming that a small bank will have more difficulties to maintain its lending behavior than a large bank does. Banks have to refinance their loans, and that small banks face a disadvantage with respect to large banks in the markets for these funds (Ehrmann&Worms, 2001).

Due to a perception that the creditors of large banks will be bailed out in case of bank distress, the cost of debt for large banks is lower. This makes banks more willing to use leverage and unstable funding, and to engage in risky market-based activities. this explaining of systematic risky profile of larger banks regarding to their better possibility to diversification of its funds resources by being operating in several market segments other than smaller banks, which decrease riskiness of their portfolio what in turn enables banks to operate with lower capital and less stable funding and possibly
more fragile. (Laeven&others). Thus, it is supposed that smaller banks attend to hold more liquid assets than bigger ones.

For the purpose of current study, we will use logarithm of total assets to express the size of banks in study sample. There are many empirical studies examine the relationship between bank size (expressed by logarithm of total assets) and liquidity; and the results was different. The coming empirical studies found a significant positive impact for size on bank liquidity as (Sushil&Bivab, 2011); (Tseganesh, 2012);(Malik& Rafique, 2013); (Chagwiza, 2014);(Mehdi& Abderrassoul, 2014); (Nigist, Melese, 2015). While other studies founded a significant Negative impact on bank liquidity as (Vodova, 2013); (Lee&others, 2013); (Singh&Sharma, 2016). Nevertheless, other researches did not found significant impact like (TRENCA&others, 2012).

3.8.1.2 Profitability and liquidity

Theoretically, Profitability and liquidity are two conflicting objectives for banks, where bank shareholders and investors would like to gain profit form there investing, this desire is realized by the role of bank transferring funds gained from lenders to financial assets wanted from borrowers in the form of credit facilities. This situation may affect bank financial solvency where banks depending on short-term liabilities like deposits to have adequate liquidity to meet customers’ demands; especially when bank have to face withdrawal needs from investors (like depositors). Banks mangers tend to hold liquid assets to face this need and to deal with expected risk related to inability of collecting principles of loans and interests; which may cause losses of investment opportunities and thus lower bank profit (Olagunju&others, 2012).

Despite of that, some empirical studies like (Lartey&otherws, 2013), (Bourke, 1989) find a positive relationship between bank liquidity expressed by liquid assets to total assets ratio and its profitability. They argued that bank with well management of its liquidity risk will be greater to absorb liquidity risk and financial crises which is reflected in its overall performance. However, this depends on take into consideration that liquid assets are not held excessively. While (Vodova, 2013) found a positive
relationship and argued that during the recent financial crisis profitability of many of banks declined, and liquidity remains almost at the same level or slightly decreased. Therefore, liquidity management is critical to bank which should be effectively and efficiently done; in terms to avoid illiquidity or excessive liquidity situations; both of them are unhealthy for banks.

Firms use several profitability ratios to evaluate their ability to generate profit relative to their expenses over a specified period of time. There are two ratios widely used by firms to measure their profitability. The first is return on assets ratio (ROA) and the second is return on equity ratio (ROE). According to (Alsaegh & Abohamad, 2003); (ROA) ratio measures the extent of profit that banks gain from investing their assets in their various activities and could be calculated by dividing Net Income to Total Assets of a bank. While (ROE) ratio measures the efficiency of management in using bank funds and generating profits, and could be calculate by dividing Net Income to Equity of a bank.

For the purpose of this study, we will use (ROE) ratio to measure banks profitability, this ratio used by several empirical studies similar to this study, and the results was different. The coming empirical studies found a significant positive impact on bank liquidity like (Bourke, 1989); (Lartey&otherws, 2013); (Vodova, 2013). While other studies founded a significant negative impact on bank liquidity as (Lee&others, 2013); (Mehdi& Abderrassoul, 2014); (Moussa, 2015). Nevertheless, other researches did not find significant impact like (Malik& Rafique, 2013).

### 3.8.1.3 Capital adequacy and bank liquidity

Capital Adequacy defined as Bank capital ability to absorb assets risks that funded by it owns and other types of funds secured by it at all time. Capital in banks generally plays a vital and important role in protecting depositor's funds and represents the protective shield that protects them against unexpected losses. As long as the capital of banks is small compared to the size of deposits, interest in the financial solvency is represented in the capital adequacy ratio, which is reflects the ability of capital to achieve safety and durability in banks financial centres (Saied, 2014).
“Both the capital adequacy ratio and the solvency ratio provide ways to evaluate a company's debt versus its revenues situation. However, the capital adequacy ratio is usually applied specifically to evaluating banks, while the solvency ratio metric can be used for evaluating any type of company” (Investopedia).

There are two opposite theoretical views that describe the relationship between bank capital and liquidity creation, the first believed that bank's capital will threat bank's ability to create liquidity through two specific effects: financial fragility structure and the crowding out of deposits: under the first effect (financial fragility structure); banks can create liquidity because their deposits are fragile and prone to runs. Increased uncertainty can make deposits excessively fragile in which case there is a role for outside bank capital. Greater bank capital reduces liquidity creation by the bank (Diamond & Rajan, 2000). That effect explained also by Fungáčová et al. (2017) as they argued that banks do their efforts to gain depositors trust by making fragile capital structure through holding a large amount of liquid deposits. As a result, they offer more loans besides the growth of deposits. On the other hand, banks raise their capital to reduce the financial fragility of its capital structure to strengthening their solvency what works to diminish liquidity creation. The second effect (crowding out of deposits) shows that a higher capital ratio may reduce liquidity creation by shifting investor's funds from relatively liquid deposits to relatively illiquid bank capital (Tseganesh, 2012).

The second view is related to the transformation role of banks by transforming liquid liabilities to illiquid assets to meet customers' demands of liquidity, which makes the bank vulnerable to liquidity risks and likely to need to hold more capital, to mitigate against the risk of losses (Farag&others, 2013). Firms with high liquidity ratios may have relatively higher debt ratios due to their greater ability to meet short-term obligations (Abu Mouamer, 2011). Thus, it is supposed that the higher capital ratios of banks the higher their liquidity creation.

It is worth to mention that despite of having a strong capital is one of the requirements for keeping of stability of banks, Equally important, banks should focus on monitoring their liquidity position, as the recent financial crisis showed how quickly liquidity can evaporate and that illiquidity can last for an extended period of time (BIS, 2008).
The process of measurement of capital adequacy has started through the ratio of equity to deposits, as the increase in this ratio means more safety for depositors. The measurement process has evolved to include assets by dividing the equity to total assets. The risk concept has been introduced on the asset side to include credit risk, market risks, and operational risks through what is known as the Basel Agreements or Basel II (Saied, 2014).

For the purpose of our study and with respect to the available data, we will use the ratio of bank equity to total assets to calculate capital adequacy ratio, this ratio used by similar empirical studies and found positive significant impact on banks liquidity like (Vodova, 2011; Vodova, 2013 and Mehdi & Abderrasoul, 2014). While others found negative significant impact like (Melese, 2015 and Moussa, 2015). Nevertheless, (Malik & Rafique, 2013) did not found significant impact.

3.8.1.4 Loans and liquidity

According to financial intermediation theory, banks play an important role in creating liquidity in any financial system, through the transfer of liquid liabilities (deposits) to illiquid assets (long-term loans) which are favorable to individual and institutions, that what is provide the rational of banks existence (Diamond & Dybvig, 1983). This traditional role leading banks to exposure risks that related to their fundamental role of banks which making illiquid loans that cannot be liquidate quickly at desirable price, and issue demand deposits where depositors can withdraw at any time. Making bank’s liabilities are more liquid than its assets, which lead to mismatch of liquidity (Diamond, 2007). Liquidity creation theories indicate that banks can also create liquidity off-balance sheet, through loan commitments and similar claims to liquid funds. Which indicated the rise of overall risk exposure of banks. Therefore, banks trying to absorb liquidity risks by holding liquid assets as buffers to deal with expected risk related to suddenly withdrawals or of cash by depositors, or inability of collecting principles of loans and interests (Olagunju & others, 2012).

Banks, which are more specialized in lending to customers, will would be expected higher loan to deposit ratios, but also lower interbank ratios and lower liquidity ratios. Bank specialization can be measured by an effective ratio by dividing bank net loan to
total assets. The more the ratio is, the more the bank specialized is in lending activity and the lower bank liquidity is (Cucinelli, 2013). Growth in loans is one of the factors that affect bank position of holding liquid assets, whereas the high demand of loans make bank less oriented to hold more liquid assets and vice versa. Therefore, it has expected the growth in loans to have negative impact on banks liquidity (Tseganeshe, 2012).

For the purpose of this study, we will try to identify loans impact on banks liquidity by measure speciality of banks in lending activity using net loans to total assets ratio which used by other researchers like Cucinelli (2013).

3.8.1.5 Asset Quality and liquidity

The asset quality reflects the existing and potential credit risk associated with the loan and investment portfolios. It's consider as one of the most critical variables that determine the overall condition of bank. Quality of loans affecting asset quality during that loans typically comprise a majority of banks assets (FDIC, 2017). Thus, the risk related to loans may affect bank liquidity through the failure in collecting principles of loans and interest; which may affect bank at a whole. This risk exposed by bank is known as "Transformation risk" while banks transfer less risky deposits to risky loans to meet its customers need of liquidity. The main contributor to liquidity risk is Non-Performing loans where borrowers are unable to make loan repayments. (Lee&others, 2013). Quality of a bank loans can be measured by loan loss reserve to gross loans. Where the higher the ratio is, the more problematic are the loans and vice versa (Cucinelli, 2013).

3.8.1.6 Banks lending and liquidity

Within any financial system, there are likely to be financial relationships among deposit takers. These can be significant and take the form of interbank borrowing and lending (IMF, 2006).

Banks "transformational role" by transfer liquid short-term liabilities into illiquid long-term assets which causing maturity gap leads bank to exposing liquidity risk.
Therefore, banks attend to hold buffers of liquid assets or have a loan from other banks in the interbank market in order to have the liquidity needed. As a well-functioning interbank market is essential for efficient financial intermediation (Vodová, 2015).

Bank will be more incentive to lend other bank in interbank market whenever it is maintained more liquid assets. The holding of liquid assets is reinforced whenever interbank interest rate as incentive (Munteanu, 2012).

Despite that, interbank markets allow banks to cope with specific liquidity shocks. At the same time, they may represent a channel for contagion since a bank default may spread to solvent banks through interbank linkages (Mistrulli, 2005). “The linkages between banks on the interbank market can destabilize the financial system in periods of higher liquidity risk. At the beginning, there is a liquidity shock as a result of imperfect market information such as poor solvency of any bank, the liquidity of such bank is threatened. This is the type of idiosyncratic liquidity risk, which may not significantly harm the banking sector. The problem arises when the risk is transferred to several financial institutions and becomes a systemic liquidity risk” (Vodová, 2015).

Interbank funding activity can have measured by analysing bank balance sheet using ratio of interbank assets to interbank liabilities, where the more bank holding of liquid assets is, the more it lends in interbank market (Munteanu, 2012). For the purpose of our study, we will use the mentioned ratio to identify interbank funding in banks liquidity.

3.8.1.7 Management Efficiency and liquidity

The efficiency of Bank management is one of the factors contributing to the overall performance of the bank and reflects the ability of the bank’s management to exploit the resources available for maximizing profit. A focal term “administrative proficiency”, which essentially indicates the capacity of a bank to increase benefits or minimize costs under given situations (Ishaq&others, 2016). A bank’s intermediation quality can be measured by its efficiency in converting inputs into outputs while either minimizing costs or maximizing profits (Belke&others, 2015). It is possible to measure the bank management efficiency through the cost to income ratio, which
compare banks expenses to its revenues; and can be compute by dividing bank operating (Non-interest) expenses to total generated revenue. The higher the ratio is the lower bank efficiency is, as the Bank’s increased costs are expected to increase its exposure to shocks (Angora& Roulet, 2011). In spite of that; (Diamond & Rajan, 2001) suggests that an “even more liquid” bank might not always be desirable for the efficiency of the financial system. This indicates that the relationship between liquidity and efficiency of the bank needs to be studied, and this relationship will be examined through the current study.

For the purpose of this study, we will use cost to income ratio to measure banks efficiency, this ratio used by several empirical studies similar to this study like (Munteanu, 2012) and (Zedan&Dass, 2017).

3.8.1.8 Funding Cost and Liquidity

“The cost of funding, which is a function of the composition of liabilities and the costs of raising the different liabilities. Beyond this, banks also consider a number of other factors including pricing for different types of risk – such as the credit risk associated with the loan and the liquidity risk involved in funding long-term assets with short-term liabilities” (Deans& Stewart, 2012). Liquidity risk increases as it becomes more difficult to obtain the required financing in order to meet the obligations of the bank at maturity or increase the cost of obtaining it, and that risk is named as funding liquidity risk “that the bank is not able to respond effectively to current needs as well as future cash needs without affecting its daily operations and financial condition” (Ferrouhi&Lehadiri, 2013).

cost of funding may affect bank position of holding liquid assets, as the increasing of funding cost; banks tend to hold more liquid assets rather than relying on interbank funding (Singh&Sharma, 2016).

Funding cost can have measured by analysing bank balance sheet using ratio of Total Interest Expenses to Total Liabilities (Munteanu, 2012).
3.8.1.9 Deposits and Liquidity

The bank represents the intermediary between the surplus units and the deficit units or the link between these parties. It accepts the funds from depositors in the form of deposits. In return, the bank invests these deposits for the purpose of covering the costs it gives to the depositors as well as covering its other expenses. Deposits are the main source of the Bank's resources and the lowest cost compared to the cost of capital, reserves and borrowing (Alshamrie, 2015).

According to the modern theory of financial intermediation, banks exist because they perform two central roles, they create liquidity by transferring liquid Liabilities to illiquid Assets and they transform risk by transforming less risky Deposits to risky Loans (Berger&Bouwman, 2009).

This financial intermediation role of banks shows there is a risk related to this role, when banks can exposure to risk beyond this cycle and vulnerable to runs if depositors less confidence in banks and withdrawal deposits in a high volume, which forcing the bank to liquidate illiquid assets early with a lower return than planned and affected its financial performance (Diamond & Dybvig, 1983). e.g. when the depositor have unexpected need to cash, maybe for investment opportunity which that need cannot be delayed, that liquidation of loans which banks forced to, and make liquidity problem happened when financial asset can be sold only discounted at market rates on interest (Diamond & Rajan, 2001).

Therefore, banks need to hold liquid assets to meet it customer's need of the cash. If bank does not have the liquidity needed to satisfy its customers demand, then it either has to borrow on the interbank market or the central bank, which incur an "interest penalty" (Moore, 2010).

Jehovaness (2011) in his study, founded that volatility of deposit holders’ cash preference is one of determinants of excess Liquidity in banks. Therefore, it is supposed banks increase holding of their liquid assets whenever the high growth of customer deposits. In our study, we will try to assess deposits effect on bank liquidity
using ratio of Deposits to Total Assets which used by (Ferrouhi & Lehadiri, 2013) and examine its relation with Liquidity ratios.

3.8.2 Macroeconomic Factors

3.8.2.1 Lending Interest Rate and Liquidity

Lending interest rate refers to interest rate on loans, which supposedly have an inverse relationship with a bank liquidity. The higher interest rate on loans make bank more interested in lending activity to customers, this behavior is related to the bank desire to take the advantage of the increased interest rate, which in turn causing lower bank level of liquidity.

Besides, the instability and the lending interest rate increase will deteriorate the business environment, affecting especially the reimbursement capacity of those clients that borrow from the bank. It may worsen their ability to repay the loans, which may lead to a decline in the liquidity level of the banking institution (Trenca & others, 2012).

In addition, Government normally control the increase of interest rate to keep the ongoing inflation pace. This increase may be interpreted by the market as a negative signal. The market responds to that condition by shifting some of its assets into stable valued real assets such as gold. Which in turn may reduce banks funding in the form of saving and deposits and that occurs a decrease in bank liquidity (Sudirman, 2014).

3.8.2.2 Interest Rate Spread and Liquidity

Banks, through their intermediary role to transfer funds between depositors who have funds needed and borrowers who wish to borrow by converting deposits into loans, in return, they pay the cost of financing to depositors and obtain the interest paid by the borrowers. The income earned by the bank through the difference between interest rate on deposits and interest rate on loans is called interest rate spread, which should cover the Bank's costs and the risks arising from its intermediary role (Männasoo, 2012).

The increase in interest rate spread increases the concentration of banks on their lending function, which in turn may leads to a decline in the volume of liquid assets held by the bank (Vodová, 2012). In addition, the spread between the two rated
(Lending and Deposits rates) measure of the opportunity cost of holding liquid assets. (Deléchat&others, 2014)

3.8.2.3 Growth Rate of GDP and Liquidity

“Gross domestic product (GDP) measures the monetary value of final goods and services, those that are bought by the final user and produced in a country in a given period of time. It has become widely used as a reference point for the health of national and global economies. When GDP is growing, especially if inflation is not a problem, workers and businesses are generally better” (Callen, 2008). Therefore; any recession or crisis affect the business operations reduces the capability of borrowers to meet their obligations, which in turn increases bank non-performing loans and eventually banks insolvency (Tseganesh, 2012).

(Aspachs&others, 2005) showed in his study results that banks tend to hold higher buffers of liquidity in the periods of weak growth of GDP. Vice versa, in the periods of better growth of GDP, banks are oriented to draw down its buffers of liquidity. This is due to the more active of lending activity of banks in periods of strong growth of GDP.

3.8.2.4 Unemployment Rate and Liquidity

People who are not working but are actively seeking for work are counted as unemployed, and its reflects inability of an economic to generate employment for persons who are have the ability and desire to work (Card, 2011).

“In terms of policies, an increase in public liquidity (the weighted-sum of all assets that serve as media of exchange) through an increase in the supply of real government bonds, raises interest rates by reducing the convenience yield on liquid assets, reduces entry of firms, and increases unemployment.

An open-market sale of nominal government bonds by a central bank which withdraws currency or bank reserves from the economy, redistributes liquidity across trades as narrow liquidity (currency) shrinks while broad liquidity (including bonds) expands.
These changes in the composition of liquidity lead to higher interest rates and unemployment” (Rocheteau & Rodriguez, 2014).

More specifically, an increase in the unemployment rate is likely to have a negative impact on the bank’s liquidity. The higher the unemployment rate, the lower the liquidity of the bank. This is due to the fact that the bank is suffering from low liquidity creation in times of troubled economic (Horvát, Seidler, & Weill, 2014). Contrary to this, Munteanu (2012) study, suggested that increased unemployment rate of the economy will increased bank liquidity.
Chapter 4
Study Methodology
4.1 Introduction

This chapter explains the purpose of this study as well as shows the used design for the study. In addition, reviews the population and sample of the study, as well as data types, sources, and data collection tools. In addition, it reviews the statistical methods used to test data and to investigate the relationship between study variables.

4.2 Purpose

The purpose of this study is to identify and examine the effect of potential determinants of liquidity for both local and foreign banks working in Palestine on their liquidity.

4.3 Study Design

This research is classified as an analytical descriptive approach. Therefore, the quantitative approach used addition to study and analyse of the financial statements of the banks in a period of ten years from 2007 to 2016 in order to explore the relationship between the dependent variable which is expressed by three ratios of liquidity as follows: (Liquid Assets to Total Assets (L1), Liquid Assets to Short-term Liabilities (L2), and Loans to Deposits (L3)); and independent variables which divided into two parts. The first part is the internal characteristics of banks includes nine variables as follows: (Bank Size, Profitability, Capital Adequacy, Loans, Asset Quality, Banks Lending, Management Efficiency, Deposits, and Funding Cost). While the second part is external variables, which contains four macroeconomic variables as follows: (Unemployment Rate, Lending Rate, interest Rate Spread, Growth Rate of GDP). During the ten years, we will rely on official financial reports of working banks in Palestine, which are the study sample, and that reality of their annual financial statements (balance sheet and income statement). Besides the relying on national statistics that published by PMA in order to get values of macroeconomic variables.

4.4 Study Population:

The study population consists of all working banks in Palestine. According to PMA, there are 15 licensed banks operating in Palestine as of 01/04/2017, including seven local banks and eight foreign banks. Most of the foreign banks has been working as branches in Palestine for a mother bank out of Palestine and their financial statements
are often published in Jordanian Dinar, while local banks have their headquarters in Palestine and their financial statements are published in US Dollar (web).

**Table (4.1):** Describe the study population.

<table>
<thead>
<tr>
<th>Banks Type</th>
<th>Bank Name</th>
<th>Establish Date</th>
<th>No. of Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local Banks</strong></td>
<td>Bank of Palestine</td>
<td>1960</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Palestine Investment Bank</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Al Quds Bank</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arab Islamic Bank</td>
<td>1996</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Palestinian Islamic Bank</td>
<td>1997</td>
<td></td>
</tr>
<tr>
<td></td>
<td>National Bank</td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Al Safa Bank</td>
<td>2016</td>
<td></td>
</tr>
<tr>
<td><strong>Foreign Banks</strong></td>
<td>Cairo Amman Bank</td>
<td>1986</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Bank of Jordan</td>
<td>1994</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Egyptian Arab Land Bank</td>
<td>1994</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arab Bank</td>
<td>1994</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jordan Commercial Bank</td>
<td>1994</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Housing Bank for Trade and Finance</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jordan Kuwait Bank</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ahli Jordanian Bank</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

**4.5 Study Sample**

For the purpose of this study, the banks had to meet the following criteria to be considered relevant to this study:

1. The bank must have been in operation before January 2007.
2. Its annual accounts must have been accessible as the study based on measures that are accounting based.

Thus, The Sample of this study contains (14) banks from (15) banks. The reason for the exclusion of one bank (Al Safa Bank) because the condition "the bank operating before 2007" is not applicable; since it has began operating in 2016.
Table (4.2): Describe the study sample

<table>
<thead>
<tr>
<th>Banks Type</th>
<th>Bank Name</th>
<th>No. of Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Banks</td>
<td>National Bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Palestine Investment Bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Al Quds Bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bank of Palestine</td>
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</tr>
<tr>
<td></td>
<td>Arab Islamic Bank</td>
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<tr>
<td></td>
<td>Palestinian Islamic Bank</td>
<td></td>
</tr>
<tr>
<td>Foreign Banks</td>
<td>Cairo Amman Bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Housing Bank for Trade and Finance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Egyptian Arab Land Bank</td>
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<tr>
<td></td>
<td>Jordan Kuwait Bank</td>
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<tr>
<td></td>
<td>Bank of Jordan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arab Bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ahli Jordanian Bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jordan Commercial Bank</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

4.5.1 Facts about the study sample

1. Changes in values of published annual financial statements for some banks.
2. Non-publication of annual financial statements and accompanying explanations for most of foreign banks, and the difficulty of obtaining them from the competent authorities.
3. Foreign banks working as branches for banks which are operates outside Palestine, which in turn may have an effect on their performance.
4. The launch of the National Bank at the end of 2012 as a result of the merger agreement between Al-Rafah Microfinance Bank and Arab Palestine Investment Bank.

4.6 Investigative Techniques

In this study, the researcher used panel data regression models. Panel data involve the pooling of observations on a cross-section of units over several time periods. Panel data approach have several advantages over cross-sectional or time-series data, one advantage that it is more accurate inference of model parameters which usually contain more variability more degrees of freedom and less multicollinearity than cross-sectional data (Hsiao, 2007).
4.7 Data Collection

The task of data collection began after a research problem had been defined and a research plan had been prepared. While deciding about the method of data collection to be used for the study, the researcher kept in mind two types of data, primary and secondary. The primary data are those, which are collected afresh and for the first time, and thus happen to be original in character. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process (Kothari, 2004).

4.7.1 Secondary sources:

- Annual Financial reports.
- National Statistics issued by PMA.
- Books and scientific references dealing with the subject of the study.
- Researches in specialized journals and scientific journals.
- Master and doctoral theses relevant to the subject of study.

4.8 Data Analysis Plan

First: Financial Analysis: The financial ratios that serve the objective of the current study will be derived from the analysis of the annual financial statements of the banks in the sample of the study. The financial data of the local banks obtained through their published annual reports. While the financial data of foreign banks were obtained from annual report of association of banks in Palestine which obtains its data through the PMA.

Internal banks variables are measured as follows: bank size is measured as the natural logarithm of total assets, profitability is measured as the ratio of net income over equity, capital adequacy is measured as the ratio of equity over total assets, bank Loans is measured as the ratio of loans over total assets, Asset Quality is measured as the ratio of loan loss provision over gross loans, Banks Lending is measured as the ratio of interbank assets over interbank liabilities, management efficiency is measured as the ratio of non-interest expenses over total income, deposits is measured as the
ratio of deposits over total assets, and funding cost is measured as the ratio of total interest expenses over total liabilities.

Data obtained through Palestinian central bureau of statistics and PMA reports used in order to obtain values of macroeconomic variables, which are (Unemployment Rate, Interest Rate Spread, Lending rate, and Growth Rate of GDP).

The dependent variable "liquidity of banks" expressed by three liquidity ratios. They computed by analysing the annual reports as follows: first ratio is liquid assets over total assets. Liquid assets comprise cash, deposits and other financial assets that are available either on demand or within three months. Second ratio is liquid assets over short-term liabilities. These ratios intended to capture the liquidity mismatch of assets and liabilities in 3 months (IMF, 2006). Third ratio is loans over deposits. This ratio indicates the level of tied illiquid assets (loans) to liquid liabilities (deposits) (vodova, 2011).

<table>
<thead>
<tr>
<th>Table (4.3): Abstract of Measures of study variables.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group</strong></td>
</tr>
<tr>
<td>Internal banks variables</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Macroeconomic Variables</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Liquidity</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Second: The researcher used panel data statistical techniques and performed the data analysis by using SPSS 18. The researcher would utilize the following statistical tools:

Firstly, we will insure of the validity of data to be used in statistical analysis, to achieve this goal we will use number of verification tests as follows:

1) Correlation Matrix.
2) Variance Inflation Factor (VIF).
3) Normality of Residuals.

After confirming the validity of data, we will analyse the data using the statistical methods as follows:

1) Descriptive statistics (Minimum, maximum, mean, and standard deviation).
2) Multiple Regression models.
Chapter 5
Data Analysis and Testing of Study Hypothesis
5.1 Introduction

The nature of the study requires conducting a financial analysis and identifying data in tables, which can be observed and that requires making a statistical analysis. This chapter shows the results of the analysis of the financial statements for banks under study and the results of statistical tests, in order to determine the extent of the correlation between the dependent variable, which is liquidity of banks expressed by following three ratios (L1, L2, L3) and the independent variables which are (Size, Profitability, Capital Adequacy, Loans, Asset Quality, Banks Lending, Management Efficiency, Deposits, Funding Cost, Unemployment Rate, Lending Rate, Interest Rate Spread and GDP).

Three regression models are formulated to state the hypothesized relationship:

\[
L_1 \left( \frac{\text{Liquid Assets}}{\text{Total Assets}} \right); L_2 \left( \frac{\text{Liquid Assets}}{\text{short – term Liabilities}} \right); L_3 \left( \frac{\text{Loans}}{\text{Deposits}} \right) \\
= \alpha + \beta_1 \text{Size} + \beta_2 \text{Profitability} + \beta_3 \text{Capital Adequacy} + \beta_4 \text{Loans} \\
+ \beta_5 \text{Asset Quality} + \beta_6 \text{Banks Lending} + \beta_7 \text{Management Efficiency} \\
+ \beta_8 \text{Deposits} + \beta_9 \text{Funding Cost} + \beta_{10} \text{Unemployment Rate} \\
+ \beta_{11} \text{Lending Rate} + \beta_{12} \text{Interest Rate Spread} + \beta_{13} \text{GDP} + e
\]

Where:

L1 : is the ratio of Liquid Assets to Total Assets, Liquid Assets includes deposits and other financial assets that are available either on demand or within three months or less.

L2 : is the ratio of Liquid Assets to Short-term Liabilities, this ratio includes Liquid Assets and short-term liabilities that are mature either on demand or within three months or less.

L3 : is the ratio of Loans to Deposits.

\(B_{1-13}\) : are the coefficients for every independent variable.

Size : refers to the size of the bank and is measured by the natural logarithm of assets.

Profitability : Net Income to Total Assets.

Capital Adequacy : Equity to Total Assets.
Loans : Loans to Total Assets.
Asset Quality : Loan Loss Provision to Gross Loans.
Banks Lending : Interbank assets to Interbank Liabilities.
Management Efficiency : Non-interest Expenses to Total Revenue.
Deposits : Deposits to Total Assets.
Funding Cost : Interest Expenses to Total Liabilities.
Unemployment Rate : Annual Rate of unemployment.
Lending Rate : Annual Interest Rate on Loans.
Interest Rate Spread : Difference Between Lending Rate and Deposits Rate.
GDP : Annual Growth Rate of GDP.
e : Error
5.2 Data Verifying
To verify the validity of the data and their readiness to be used in statistical analysis and to be able to interpret the relationship between the variables, a number of verification tests were performed to evaluate the data.

5.2.1 Normality of the Error Term
The stability of random error variation was tested. Table (5.1) shows that the points are distributed in an equal horizontal strip around zero, indicating the availability of the hypothesis of analysis in general, where the model does not suffer from random error homogeneity (Aljuadi, 2014). In addition, they are able to monitor the relationship between the characteristics of banks and economic factors on the one hand and the liquidity of banks working in Palestine on the other.

Table (5.1): Normality of the Error Term.

<table>
<thead>
<tr>
<th>Model</th>
<th>Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Model:</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Graph" /></td>
</tr>
<tr>
<td>(Liquid Assets to Total Assets)</td>
<td><img src="https://via.placeholder.com/150" alt="Graph" /></td>
</tr>
<tr>
<td><strong>Second Model:</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Graph" /></td>
</tr>
<tr>
<td>(Liquid Assets to Short-term Liabilities)</td>
<td><img src="https://via.placeholder.com/150" alt="Graph" /></td>
</tr>
<tr>
<td><strong>Third Model:</strong></td>
<td><img src="https://via.placeholder.com/150" alt="Graph" /></td>
</tr>
<tr>
<td>(Loans to Deposits)</td>
<td><img src="https://via.placeholder.com/150" alt="Graph" /></td>
</tr>
</tbody>
</table>
5.2.2 Correlation Matrix

Collinearity is a linear association between two explanatory (predictor) variables. Two regressor variables are perfectly collinear if there is an exact linear relationship between the two variables (Akinwande&others, 2015). Therefore, correlation matrix conducted in order to identify correlation between independent variables:

Table (5.2): Correlation between Study Independent Variables.

<table>
<thead>
<tr>
<th></th>
<th>TOA</th>
<th>ROE</th>
<th>CAP</th>
<th>LTA</th>
<th>QUA</th>
<th>BLN</th>
<th>EFF</th>
<th>DEP</th>
<th>FC</th>
<th>UNR</th>
<th>LR</th>
<th>IRS</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOA</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>0.683</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAP</td>
<td>-0.517</td>
<td>-0.541</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTA</td>
<td>0.211</td>
<td>0.023</td>
<td>-0.285</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QUA</td>
<td>-0.084</td>
<td>-0.304</td>
<td>-0.014</td>
<td>-0.100</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLN</td>
<td>0.004</td>
<td>0.032</td>
<td>-0.038</td>
<td>-0.040</td>
<td>0.079</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EFF</td>
<td>-0.200</td>
<td>-0.564</td>
<td>0.196</td>
<td>0.003</td>
<td>0.537</td>
<td>-0.021</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP</td>
<td>0.457</td>
<td>0.484</td>
<td>-0.572</td>
<td>0.094</td>
<td>0.058</td>
<td>0.051</td>
<td>-0.171</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FC</td>
<td>-0.285</td>
<td>-0.304</td>
<td>0.196</td>
<td>-0.025</td>
<td>0.239</td>
<td>-0.047</td>
<td>0.211</td>
<td>-0.064</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNR</td>
<td>0.108</td>
<td>-0.050</td>
<td>-0.039</td>
<td>0.155</td>
<td>-0.021</td>
<td>0.076</td>
<td>0.140</td>
<td>0.008</td>
<td>-0.064</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LR</td>
<td>-0.080</td>
<td>-0.015</td>
<td>-0.054</td>
<td>-0.205</td>
<td>0.203</td>
<td>-0.019</td>
<td>0.107</td>
<td>0.047</td>
<td>0.452</td>
<td>-0.353</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRS</td>
<td>-0.015</td>
<td>-0.038</td>
<td>0.089</td>
<td>0.046</td>
<td>-0.024</td>
<td>-0.026</td>
<td>0.098</td>
<td>-0.092</td>
<td>-0.102</td>
<td>-0.132</td>
<td>0.110</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>-0.105</td>
<td>0.009</td>
<td>0.060</td>
<td>-0.227</td>
<td>0.059</td>
<td>-0.065</td>
<td>0.015</td>
<td>-0.048</td>
<td>0.032</td>
<td>-0.634</td>
<td>-0.085</td>
<td>0.121</td>
<td>1.000</td>
</tr>
</tbody>
</table>

From Table (5.2), it is noted that there is a correlation between the independent variables of the study and vary in strength, where the correlation between some variables exceeded 60%. Therefore, we conduct the Variance Inflation Factor (VIF) test.
5.2.3 Multicollinearity

The strength of the general linear model depends on the hypothesis of independence of each independent variable. If this condition is not met, then the general linear model is not applicable and cannot be considered appropriate for the process of information estimation. Therefore, the Variance Inflation Factor (VIF) and tolerance are both widely used measures of the degree of multi-collinearity of the independent variable with the other independent variables in a regression model (O’brien, 2007).

There is serious multicollinearity if VIF is equal or more than 10, whereas, there is no serious multicollinearity if VIF is less than 10 or equal to 1 (Lee & Others, 2013).

To test multicollinearity between study independent variables a collinearity statistics test has been done for the three models of study, as shown in the table (5.3) below:

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Variance Inflation Factor (VIF)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model (1)</td>
</tr>
<tr>
<td>Bank size</td>
<td>2.680</td>
</tr>
<tr>
<td>Profitability</td>
<td>4.231</td>
</tr>
<tr>
<td>capital adequacy</td>
<td>2.375</td>
</tr>
<tr>
<td>Loans</td>
<td>1.496</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>1.457</td>
</tr>
<tr>
<td>Banks Lending</td>
<td>1.054</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>1.782</td>
</tr>
<tr>
<td>Deposits</td>
<td>1.576</td>
</tr>
<tr>
<td>Funding Cost</td>
<td>1.884</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>3.817</td>
</tr>
<tr>
<td>Lending Rate</td>
<td>2.414</td>
</tr>
<tr>
<td>interest rate spread</td>
<td>1.495</td>
</tr>
<tr>
<td>GDP</td>
<td>3.062</td>
</tr>
</tbody>
</table>

According to the table above, (VIF) Values for the Independent variables are below (5), thus they were far lower than the cut-off value of 10, which indicates there is no linearity problem among study explanatory variables.
5.3 Trends of Liquidity

Figure (5.1) shows liquidity trends among banks within the period 2007 to 2016. In general, note that banks are consider liquid especially their ability to have adequate coverage of their liquid liabilities, which can seen by liquid assets to short-term liabilities ratio. That means banks are able to meet their obligations that come to due within 3 months or less.

Besides, liquidity goes down with the years, and that noted in the three ratios that used to express banks liquidity. That may mean banks was holding liquidity in excessive pattern and that behavior changed over time.

also, can be noted that growth of banks loans is more than their deposits growth since 2007 to 2012, which means that banks transform their deposits in the form of illiquid loans. While this pattern declined in 2013.

Figure (5.1): Trends of banks liquidity.
5.4 Characteristics of study sample:

After insure data readiness to be used in the study, the next table summarize the basic characteristics of study sample. Table (5.4) shows the Descriptive statistics for Independent Variables:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank size</td>
<td>55974803</td>
<td>4118629230</td>
<td>678866139</td>
<td>825263008</td>
</tr>
<tr>
<td>Profitability</td>
<td>-0.185</td>
<td>0.379</td>
<td>0.071</td>
<td>0.080</td>
</tr>
<tr>
<td>capital adequacy</td>
<td>0.063</td>
<td>0.521</td>
<td>0.189</td>
<td>0.112</td>
</tr>
<tr>
<td>Loans</td>
<td>0.014</td>
<td>0.667</td>
<td>0.352</td>
<td>0.147</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>0.000</td>
<td>0.272</td>
<td>0.015</td>
<td>0.028</td>
</tr>
<tr>
<td>Banks Lending</td>
<td>0.080</td>
<td>9136.647</td>
<td>91.264</td>
<td>798.604</td>
</tr>
<tr>
<td>Management Efficiency</td>
<td>0.249</td>
<td>6.685</td>
<td>0.816</td>
<td>0.735</td>
</tr>
<tr>
<td>Deposits</td>
<td>0.270</td>
<td>0.988</td>
<td>0.722</td>
<td>0.152</td>
</tr>
<tr>
<td>Funding Cost</td>
<td>0.000</td>
<td>0.055</td>
<td>0.010</td>
<td>0.009</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>20.900</td>
<td>26.900</td>
<td>24.345</td>
<td>2.073</td>
</tr>
<tr>
<td>Lending Rate</td>
<td>0.062</td>
<td>0.080</td>
<td>0.069</td>
<td>0.006</td>
</tr>
<tr>
<td>interest rate spread</td>
<td>0.050</td>
<td>0.069</td>
<td>0.060</td>
<td>0.006</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.002</td>
<td>0.124</td>
<td>0.058</td>
<td>0.034</td>
</tr>
</tbody>
</table>

From the data of the previous table, the standard deviation of the size of the banks was large compared to the mean. This is due to differences of banks sizes according to the difference of their assets size. That may affect on difference between their performances.

In general, banks are achieving their profitability targets. The average of banks profit is 7.1%. Also notes the difference in the minimum and maximum values of banks profitability, which indicates differences between banks' performance according to their ability to generate profits through their activities and investments.

It has also noted that lending activity differ among banks, with a maximum of 66.7% and a minimum of 1.4% with an average of 35.2% and a standard deviation of 14.7%.

The average ratio of loans loss provision to gross loans was 1.5%, which indicates that banks have a high degree of asset quality and means that non-performing loans represent a small share of the total credit facilities granted by banks.

It is also noted that the standard deviation of banks lending is very large compared to the average. This indicates that banks lending activity varies between banks depending on the size of assets available for investment. In addition. It is clear that banks evolved to lend more than borrowing.
The management efficiency ratio indicates that some banks have difficulty in controlling their costs, it is noted that average of non-interest expenses to total revenue ratio reached 81%.

The average deposits accounted for 72.2% of the bank's total assets. This indicates that banks create liquidity by relying heavily on customer deposits compared to external financing. The standard deviation of deposits reached 15.2%, which indicates that banks' ability to attract and demand deposits varies from bank to bank.

It is also has noted that the rate of unemployment in Palestine is high, reaching 26.9%.

Interest rates on loans are close between banks, with an average interest rate of 6% with a standard deviation of 0.6%.
5.5 Testing of Study Hypothesis

Multiple linear regression model used to determine the effect of the independent variables including internal characteristics of banks and the economic factors on the dependent variable which is "liquidity of banks working in Palestine". For this purpose, statistical analysis is performed using three multiple linear regression models.

5.5.1 Testing of First Hypothesis

There is a statistically significant effect of the independent variables of the study on liquidity of banks working in Palestine expressed by liquid assets to total assets ratio (L1).

To test first hypothesis, the sub-hypotheses arising from it had tested as follows:

- Bank size has a significant effect on liquid assets to total assets (L1).
- Profitability has a significant effect on liquid assets to total assets (L1).
- Capital Adequacy has a significant effect on liquid assets to total assets (L1).
- Loans has a significant effect on liquid assets to total assets (L1).
- Asset Quality has a significant effect on liquid assets to total assets (L1).
- Banks Lending has a significant effect on liquid assets to total assets (L1).
- Management Efficiency has a significant effect on liquid assets to total assets (L1).
- Deposits has a significant effect on liquid assets to total assets (L1).
- Funding Cost has a significant effect on liquid assets to total assets (L1).
- Unemployment Rate has a significant effect on liquid assets to total assets (L1).
- Lending Rate has a significant effect on liquid assets to total assets (L1).
- interest rate spread rate has a significant effect on liquid assets to total assets (L1).
- GDP has a significant effect on liquid assets to total assets (L1).
Table (5.5) shows the multiple regression analysis results, regression coefficients and their P-values (Sig.).

- The multiple regression analysis shows that, the coefficient of determination for model (1) R-Square = 40.9%. This means 40.9% of the variability in the dependent variable L1 (Liquid Assets to Total Assets) is explained by all of the independent variables together.

- For the variable "SIZE", the probability value "Sig." is equals (0.827) which is greater than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, there is insignificant negative effect of the variable SIZE on L1. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable SIZE on L1.

The results show that there is insignificant effect for the variable SIZE on (L1). Researcher assumes that the reason for the absence of a decisive statistical result due to the narrow size of the sample which in turn limit the ability to capture bank size effect on liquidity. In other words, there is a high difference between banks sizes, that showed in the high standard deviation which is equal to (825263008) compared to the mean which equal to (678866139). Therefore, it will be useful to classify banks into different groups according to their sizes, which would help in analysing banks behaviour of holding of liquid assets and funding structure according to their large, medium and small sizes. This assumption is in line with Vodova (2011) who found the relation between Czech banks liquidity and their sizes is ambiguous and recommend dividing banks into groups according to their size to estimate determinants of liquidity separately for small, medium-sized and large banks. In addition, this assumption is consistent with Lastuvkova (2016) who found that the results of banks size effect on their liquidity differ among studies according to the differences of banks size, which reinforces the assumption that our results differ due to different study sample and the narrow size of the banking sector compared to banks in other countries. Besides, the researcher assumes that foreign banks, which are operating in Palestine as branches to mother banks are less motivated than local banks to hold liquid assets as a buffer to absorb risks of liquidity shocks as they rely on the support of their headquarters, which in turn limits their sizes effect on their liquidity.
Moreover, figure (5.2) shows the lack of clarity in the growth patterns between growth in total assets and growth in liquid assets as a share of total assets. The trends between the two factors were compatible with each other between 2007 and 2009 and banks were increasing their liquid assets comparing to the increase in their total assets. This behaviour fluctuated with the beginning of 2010; this may be due to that banks maintain liquid assets in excess of their needs and invest these assets in long-term investments.

![LIQUID ASSETS AND TOTAL ASSETS GROWTH](image)

**Figure (5.2):** liquidity and Loans Annual Growth.

- For the variable "PROFITABILITY", the probability value "Sig." is equals (0.811) which is greater than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, there is insignificant negative effect of the variable PROFITABILITY on L1. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable PROFITABILITY on L1.

The results showed that there is insignificant effect for the variable PROFITABILITY on (L1). This result is contrary to theoretical argument of trade-off relation between liquidity and profitability of banks. The researcher thinks that the reason of the absence of a statistically significant relationship between liquidity and profit of banks because of the increase of banks operational costs despite of the rapid increasing of loans growth compared to Deposits taking until 2012 as showed in figure (5.1). Descriptive
analysis for study sample shows that the mean of cost to income ratio equals to 81.6%, which means that costs affect banks profitability negatively with the high overhead costs. This results in consistent with Aborahma (2009) study results of the relationship between liquidity risk measures and banks profitability, in which she did not find a significant relationship between liquidity of banks working in Palestine and their profitability. However, this study contrary with her argued that the reason of the absence of significant relation between banks profit and liquidity is due to banks' high investment in liquid assets, the weak growth of loans and investments compared to the increase in the volume of deposits. The researcher thinks that the difference may because of the different time series between two studies.

- For the variable "CAPITAL ADEQUACY", the probability value "Sig." is equals (0.016) which is lower than (0.05). Hence, this variable is statistically significant. Since the sign of the test is negative, there is a significant negative effect of the variable CAPITAL ADEQUACY on L1. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable CAPITAL ADEQUACY on L1.

- The results showed that there is significant negative effect for the variable CAPITAL ADEQUACY on (L1). Researcher assumes that the negative relationship between bank capital and its liquidity is explained as a result of the pressure exerted by shareholders on the bank's managers to improve profitability. Banks are transferring part of their liquid assets that are low yielding to non-liquid assets in the form of loans and credit facilities that are considered more profitable. This assumption reinforces the inverse relationship that can be observed between the liquid assets to total assets ratio and the loan-to-deposit ratio which shown in Figure (5.1) and explains the growth of loans against liquid assets. Thus, differences in relationship results between ratios used in this study to express liquidity and capital adequacy ratio can be explained depending on the previous assumption, which will be discussed this in the next sections. This assumption is in line with Sargu and Roman (2015) assumptions in which that happens as a result of pressure shareholders did on bank management in order to raise their profitability. Banks transfers amount of their liquid assets, which considered as a
low return investments into illiquid assets such as loans and credit facilities that considered more profitable. In addition, the results differ with Deléchat et al. (2014) assumption where they found a negative relationship between banks capital and their liquidity; they argued that lower capitalized banks have a limit opportunity to access capital market compared to well capitaizd banks. Thus. They are hold liquid assets in order to strengthen their financial solvency and readiness to absorb funding liquidity risk.

- For the variable "LOANS", the probability value "Sig." is equals (0.000) which is lower than (0.05). Hence, this variable is statistically significant. Since the sign of the test is negative, there is a significant negative effect of the variable LOANS on L1. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable LOANS on L1.

The results show that there is significant effect for the variable LOANS on (L1). Researcher attributes that the negative effect for the variable loans on bank liquidity to the fact that Palestinian banks are considered among traditional banks focusing in lending activity, where they rely heavily on customers' deposits to create liquidity and grant credit facilities. Figure (5.1) shows that loans to deposits ratio did not exceed 70% among the study focusing years, which means that banks on average issued their loans depending on 70% of their deposits. In addition, that means banks relying on other funding sources is weak, which lower funding liquidity risk and make banks less oriented in hold liquid assets, especially with the general stability of deposits. These results are consistent with Cucinelli (2013) findings that banks which are more specialized in the lending activity are more likely to have a lower liquidity. The results also intersect as well as intersects with Zaghdoudi and Hakimi (2017) who found that credit risk has a significant effect on banks liquidity. They cleared that the increase of this kind of risk leads to the drying up of bank liquidity and the increase of liquidity risk threatening.

- For the variable "ASSET QUALITY", the probability value "Sig." is equals (0.308) which is greater than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, there is insignificant positive effect of the variable ASSET QUALITY on L1 (Note: the higher this ratio is the
more problematic banks loans. Thus, the researcher interprets this ratio in reverse). Therefore, researcher rejects the hypothesis that there is a significant effect for the variable ASSET QUALITY on L1.

The results show that there is insignificant effect for the variable ASSET QUALITY on (L1). Table (5.4) shows that banks' assets quality is considered fair. Where the average of loans loss provisions to gross loans reached 1.5% with a standard deviation of 2.5%, indicating that banks generally have a good credit risk assessment. Therefore, the impact of asset quality on the bank's liquidity is limited as banks are less oriented to hold liquid assets as a result of good quality of their assets. Our finding is opposing with Cucinelli (2013) which she found a significant positive relationship between bank liquidity and loans loss provision ratio which express quality of banks assets, where the high ratio of loans loss provision to gross loans meant that the assets are more problematic, therefore banks being more oriented to hold liquid assets as the higher credit risk exposure by it.

- For the variable "BANKS LENDING", the probability value "Sig." is equals (0.046) which is lower than (0.05). Consequently, this variable is statistically significant. Since the sign of the test is positive, there is a significant positive effect of the variable BANKS LENDING on L1. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable BANKS LENDING on L1.

The results showed that there is significant effect for the variable BANKS LENDING on (L1). The positive effect is due to the fact that more liquid banks are more oriented to lend other banks in interbank market. In addition, banks tend to borrow from each other in order to obtain liquidity needed, which in turn make them less motivated to holding liquid assets, our result is consistent with Lucchetta, (2007) findings, as he showed that banks will be more incentive to borrow from interbank market whenever they hold less liquid assets and contrary with Munteanu (2012) findings which found a significant negative relationship between interbank funding and bank liquidity, which was different to his expectation, as he argued that recent financial crisis brought substantial changes over the structure of bank liquidity determinants. Focusing on Palestinian financial system, PMA pointed that Palestinian government steps toward
activating efficient interbank market through adopting new updates to interbank payment management systems and issue bonds to maintain government debt with limited trading of bonds between banks only as a first step, which may make banks more oriented to involve in interbank market.

- For the variable "MANAGEMENT EFFICIENCY", the probability value "Sig." is equals (0.731) which is higher than (0.05). That means that this variable is statistically insignificant. Since the sign of the test is negative, then there is insignificant positive effect of the variable MANAGEMENT EFFICIENCY on L1 (Note: This result should be interpreted in reverse where the higher ratio of banks expenses to total revenue means low efficiency of bank management). Therefore, researcher rejects the hypothesis that there is a significant effect for the variable MANAGEMENT EFFICIENCY on L1.

The results show that there is insignificant effect for the variable MANAGEMENT EFFICIENCY on (L1). The researcher assumes that the results are inconclusive due to the fact that banks are experiencing a high increase in their operating costs. Descriptive analysis for study sample shows that the mean of cost to income ratio equals to 81.6%, which shows that management of banks find it difficult to control their operating costs, which limits the impact of management efficiency on the position of liquidity. This result is in line with other researcher's findings like Sudirman (2014) who found insignificant relationship between the two variables and contrary with other researcher's findings like Munteanu (2012) who found a positive relationship between bank liquidity and management efficiency measured by cost to income ratio. In addition, the subject of efficiency has multiple ramifications and should be measured in many aspects, which make it difficult to measure using one financial ratio. The aspects that should covered are a lot. Elhabeel and Hillis (2014) conducted a study to measure Palestinian banks efficiency, they recommended to measure efficiency using more than one aspect like cost efficiency, which means the efficiency of the Bank's use of available resources through cost control. Size efficiency happens by distributing costs to achieve economies of scale, in addition to efficient scale assessment through diversification of financial products through diversification of the Bank's activities.
Therefore, it is better to study the efficiency of banks in some details and privacy and to study the subject using different aspects and indicators.

- For the variable "DEPOSITS", the probability value "Sig." is equals (0.058) which is lower than (0.10). Hence, this variable is statistically significant. Since the sign of the test is negative, there is a significant negative effect of the variable DEPOSITS on L1. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable DEPOSITS on L1.

The results show that there is a significant negative effect for the variable DEPOSITS on (L1). This result is contrary with the theoretical consumption that banks tend to hold liquid assets to absorb liquidity risk and raise the readiness status to meet any withdrawals by depositors may affect bank liquidity position. This means that banks are not increasing their liquidity reserves in a direct way with the increase of deposits. Researcher assumes that this behaviour is due to the fact that banks invest higher level of funds in less liquid elements such as credit facilities and various low-liquidity investments with long maturities. Figure (5.1) shows rapid increase in loans to deposits ratio opposed to liquid assets to total assets ratio increase. This is due to the fact that banks liquid assets to total assets ratio considered high compared to some other countries. That had been pointed out in Financial Stability Report for 2016 issued by PMA as shown in figure (5.3) below.

**Figure (5.3):** Comparisons of Liquid Assets to Total Assets.

**Source:** (PMA, 2016).

Besides, PMA indicated that it had established the Palestinian Deposit Insurance Corporation to protect small depositors in the event of bank liquidation or bankruptcy,
explaining that the institution covered 92% of the total deposits of depositors (Web). This in turn may have reduced banks' interest in hold liquidity. This argue is consistent with Trinugroho et al. (2016) findings, where they found a negative impact of deposit insurance coverage on bank liquidity.

In general, our result is contrary with other researcher's findings like Bonner et al. (2013), Singh and Sharma (2016) who found a positive effect of deposits on bank liquidity.

- For the variable "FUNDING COST", the probability value "Sig." is equals (0.796) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, there is insignificant positive effect of the variable FUNDING COST on L1. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable FUNDING COST on L1.

The results show that there is insignificant effect for the variable FUNDING COST on (L1). The researcher assumes that the reason of the absence of a significant relationship to cost of funding on bank's liquidity is due to the fact that banks heavily depend on customers and corporations deposits as a key resource of funding compared to other funding instruments. That is noted in figure (5.1) with the Annual growth of loans to deposits ratio that not exceed 70% at most. That means banks holding of liquid assets lowly affected by their funding structure due to the depending on deposits to create liquidity, which considers stable and low-cost funding source with low funding risk. This insignificant effect is consistent with Singh and Sharma (2016) findings where they found insignificant positive effect of funding cost on bank liquidity. Moreover, contrary with Munteanu (2012) findings where he found a significant positive relationship between banks liquidity and their cost of funding as he argued as the more depend of banks on borrowing from outside they will tend to hold more liquid assets.

- For the variable "UNEMPLOYMENT RATE", the probability value "Sig." is equals (0.508) which is higher than (0.05) and that mean it is statistically insignificant. The sign of the test is positive, consequently, there is insignificant positive effect of the variable UNEMPLOYMENT RATE on L1. Therefore,
researcher rejects the hypothesis that there is a significant effect for the variable UNEMPLOYMENT RATE on L1.

The results show that there is insignificant effect for the variable UNEMPLOYMENT RATE on (L1). The researcher assumes that the reason of the absence of a significant relationship to unemployment rate on bank's liquidity is due the fact of the frequent economic and political fluctuations that occur in Palestine, and the difficulty to control unemployment rates, which is considered as one of the highest rates compared to the surrounding region as high levels of unemployment constitute one of the most important challenges facing the Palestinian economy, especially in the Gaza Strip. In its annual report issued in 2016, the Palestinian Monetary Authority (PMA) said that unemployment rates in Palestine are witnessing a remarkable increase, reaching 26.9% of the total workforce, which make the Palestinian economy one of unstable economies in the region and limit the effect of unemployment rate on bank liquidity. The results are consistent with other researchers findings like Vodova (2011); Trenca et al. (2012); Mehdi and Abderrassoul (2013) and Singh and Sharma (2016) where they found insignificant effect of unemployment rate on bank liquidity.

- For the variable "LENDING RATE", the probability value "Sig." is equals (0.682) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, there is insignificant positive effect of the variable LENDING RATE on L1. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable LENDING RATE on L1.

- For the variable "INTEREST RATE SPREAD", the probability value "Sig." is equals (0.702) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, there is insignificant positive effect of the variable INTEREST RATE SPREAD on L1. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable INTEREST RATE SPREAD on L1.

The results showed that there is insignificant effect for the variables LENDING RATE and INTEREST RATE SPREAD on (L1). The researcher assumes that the reason for the absence of a decisive statistical results for lending rate and interest rate spread are
attributed to the weakness of the Palestinian government's monetary policy due to the absence of a special currency for Palestine, and the dependence on three major currencies: the US dollar, the Jordanian Dinar and the Israeli Shekel. PMA (2016) showed that the determination of interest rates on deposits and loans is in accordance with the Bank's internal policy and market competition between banks. It also noted that the interest rate on the three currencies traded in Palestine is higher than that of the exporting countries. On the other hand, the deposit rate on these currencies in Palestine is higher than in the countries of the currency exporting countries in terms of the shekel and the dollar, while it is always lower in terms of the dinar currency. As a result, the margin between the lending and deposit rate in Palestine is much higher than the margin in the three currencies exporting countries in Palestine. Therefore, with the absence of monetary policy affecting the banks' decisions regarding interest rates on lending and deposits, the policy of determining interest rates is affected with policy of the main currency exporting countries, which makes it difficult to measure the effect of these variables directly on the liquidity of local banks. The findings of this study are consistent with other researcher's results like Vodova (2011) who did not find a significant effect for these variables on bank liquidity.

- For the variable "GDP", the probability value "Sig." is equals (0.379) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, there is insignificant positive effect of the variable GDP on L1. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable GDP on L1.

The results show that there is insignificant effect for the variables GDP on (L1). The researcher assumes that the reason for the absence of a decisive statistical results as the Palestinian environment is considered as one of the most politically and economically volatile environments, which has a major impact on its local economy, especially in the context of the economic restrictions imposed by the Israeli occupation and its dominance over land and sea ports, which in turn affects the independence of the Palestinian economy and makes it a controlled economy. In addition, the fluctuations in external financial aids affect the general budget of the Palestinian state, especially as it relies heavily on these aids, which in turn affects the plans for economic
recovery. It should be noted that the policy pursued by the Israeli occupying power to destabilize the Palestinian economy through military attacks on industrial facilities and the destruction of infrastructure undermines the chances of economic growth within Palestine. What has been mentioned above shows that growth in the GDP of the Palestinian economy is held hostage by the non-independent decisions of the government and the political fluctuations that dominate the region. Therefore, in the absence of the independence of the Palestinian economy, it is difficult to control the growth of the Palestinian economy through the Palestinian sovereign institutions, which in turn makes it difficult to measure the impact of this variable on the liquidity of Palestinian banks. Our findings are in line with other researcher’s findings like Trenca et al. (2012), Munteanu (2012), and Tseganesh (2012) who did not find a significant relationship between growth rate of GDP and bank liquidity.

The regression equation is:

\[ L1 = 0.620 - 0.000 \times (\text{SIZE}) - 0.071 \times (\text{PROFITABILITY}) - 0.385 \times (\text{CAPITAL ADEQUACY}) - 0.656 \times (\text{LOANS}) - 0.707 \times (\text{ASSET QUALITY}) + 0.000 \times (\text{BANKS LENDING}) - 0.009 \times (\text{MANAGEMENT EFFICIENCY}) - 0.165 \times (\text{DEPOSITS}) + 0.523 \times (\text{FUNDING COST}) + 0.007 \times (\text{UNEMPLOYMENT RATE}) + 1.342 \times (\text{LENDING RATE}) + 0.932 \times (\text{INTEREST RATE SPREAD}) + 0.460 \times (\text{GDP}). \]
5.5.2 Testing of Second Hypothesis

There is a statistically significant effect for the independent variables of the study on liquidity of banks working in Palestine expressed by liquid assets to short-term liabilities ratio (L2).

To test second hypothesis, the sub-hypotheses arising from it had tested as follows:

- Bank size has a significant effect on liquid assets to short-term liabilities (L2).
- Profitability has a significant effect on liquid assets to short-term liabilities (L2).
- Capital Adequacy has a significant effect on liquid assets to short-term liabilities (L2).
- Loans has a significant effect on liquid assets to short-term liabilities (L2).
- Asset Quality has a significant effect on liquid assets to short-term liabilities (L2).
- Banks Lending has a significant effect on liquid assets to short-term liabilities (L2).
- Management Efficiency has a significant effect on liquid assets to short-term liabilities (L2).
- Deposits has a significant effect on liquid assets to short-term liabilities (L2).
- Funding Cost has a significant effect on liquid assets to short-term liabilities (L2).
- Unemployment Rate has a significant effect on liquid assets to short-term liabilities (L2).
- Lending Rate has a significant effect on liquid assets to short-term liabilities (L2).
- Interest Rate Spread rate has a significant effect liquid assets to short-term liabilities (L2).
- GDP has a significant effect on liquid assets to short-term liabilities (L2).

Table (5.5) shows the multiple regression analysis results, regression coefficients and their P-values (Sig.).
The multiple regression analysis shows that, the coefficient of determination for model (2) R-Square = 45.8%. This means 45.8% of the variability in dependent variable L2 (Liquid Assets to Short-term Liabilities) is explained by all of the independent variables together.

For the variable "SIZE", the probability value "Sig." is equals (0.376) which is greater than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, there is insignificant positive effect of the variable SIZE on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable SIZE on L2.

This result is matching the result we found in section 5.7.1 where we tested the first hypothesis and did not find a significant relationship between bank size and liquidity. As we mentioned, the researcher assumes that the reason for the absence of a decisive statistical result is due to the narrow size of the sample, which limits the ability to capture bank size effect on liquidity. This assumption is in line with Vodova (2011) who found the relation between Czech banks liquidity and size is ambiguous and recommend dividing banks into groups according to their size. In addition, this assumption is consistent with Lastuvkova (2016) who found that the results of banks size effect on their liquidity differ among studies according to the differences of banks size, which reinforces the assumption that our results differ due to different study sample and the narrow size of the banking sector compared to banks in other countries.

For the variable "PROFITABILITY", the probability value "Sig." is equals (0.225) which is greater than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, there is insignificant negative effect of the variable PROFITABILITY on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable PROFITABILITY on L2.

This result goes with the result we found in section 5.7.1 where we tested the first hypothesis and did not find significant relationship between bank profitability and liquidity. As we mentioned, there is no statistically significant relationship between liquidity and profit of banks for the increase of banks operational costs despite of the
rapid increasing of loans growth compared to Deposits taking until 2012 as showed in figure (5.1). This result is in line with Aborahma (2009) study results of relationship between liquidity risk measures and banks profitability, where she did not find a significant relationship between liquidity of banks working in Palestine and their profitability. However, the result contradict her argument that the reason of the absence of significant relation between banks profit and liquidity is due to banks’ high investment in liquid assets; the weak growth of loans and investments compared to the increase in the volume of deposits. This difference may be as a result to the different time series between two studies.

- For the variable "CAPITAL ADEQUACY", the probability value "Sig." is equals (0.003) which is lower than (0.05). Hence, this variable is statistically significant. Since the sign of the test is positive, there is a significant positive effect of the variable CAPITAL ADEQUACY on L2. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable CAPITAL ADEQUACY on L2.

This result is contrary to the result we found in section 5.7.1 where the researcher tested the first hypothesis and found a significant negative relationship between bank capital and liquidity. The researcher assumes that the positive relation between bank capital and liquidity is related to the transformational role of banks by transforming liquid liabilities to illiquid assets in order to meet customers' need of liquidity, which makes the bank vulnerable to liquidity risks and likely need to hold more capital to mitigate against the risk of losses. That reflects the higher capital ratio raises bank capacity to absorb risks, which is considered as a positive signal to external public and enables bank to attract new deposits which let banks do their liquidity creation role and likely to hold more liquid assets in the short horizon in order to be able meet their short-term obligations. This is consistent with other researcher's findings like Tseganesh (2012), he argued that the well capitalized banks are more able to create liquidity for external public and that would make banks more oriented to hold liquid assets. Besides, the results in this study is in line with other researcher's findings like El Mehdi& Abderrassoul (2014); Vodova (2011); Tseganesh (2012); Vodova (2013);
Chagwiza (2014) who found a significant positive relationship between banks capital and their liquidity.

- For the variable "LOANS", the probability value "Sig." is equals (0.000) which is lower than (0.05). Hence, this variable is statistically significant. Since the sign of the test is negative, then there is a significant negative effect of the variable LOANS on L2. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable LOANS on L2.

This result goes with the result we found in section 5.7.1 where we tested the first hypothesis and found a significant relationship between bank lending activity and its liquidity. As it mentioned, the negative relationship between bank loans and its liquidity is due to the fact that Palestinian banks are considered as traditional banks focusing on lending activity, where they rely heavily on customers' deposits to create liquidity and grant credit facilities. Figure (5.1) shows that loans to deposits ratio did not exceed 70% among the study focusing years, which means that banks on average issued their loans depending on 70% of their deposits. In addition, that means banks relying on other funding sources is weak. That lowers funding liquidity risk and make banks less oriented in hold liquid assets, especially with the general stability of deposits. This result is consistent with Cucinelli (2013) findings that banks that are more specialized in the lending activity are more likely to have a lower liquidity as well as intersects with Zaghdoudi and Hakimi (2017) who found that credit risk has a significant effect on banks liquidity. They cleared that the increase of this kind of risk leads to the drying up of bank liquidity and the increase of liquidity risk threatening.

- For the variable "ASSET QUALITY", the probability value "Sig." equals (0.556) which is greater than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, there is insignificant positive effect of the variable ASSET QUALITY on L2 (Note: the higher this ratio is the more problematic banks loans. Thus, we interpret this ratio in reverse). Therefore, researcher rejects the hypothesis that there is a significant effect for the variable ASSET QUALITY on L2.
This result matches the result we found in section 5.7.1 where we tested the first hypothesis and did not find a significant relationship between bank ASSET QUALITY and liquidity. As we mentioned, bank assets quality are considered "fair". As table (5.4) shows that the average of loans loss provisions to gross loans reached 1.5% with a standard deviation of 2.5%, indicate that banks generally have a good credit risk assessment. Therefore, the impact of asset quality on the bank's liquidity is limited as banks are less oriented to hold liquid assets. Our findings contradict with Cucinelli (2013) findings which she found that banks with more problematic assets are more oriented to hold liquid assets as the higher expected credit risk exposure by it.

- For the variable "BANKS LENDING", the probability value "Sig." equals (0.002) which is lower than (0.05). Hence, this variable is statistically significant. Since the sign of the test is positive, then there is significant positive effect of the variable BANKS LENDING on L2. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable BANKS LENDING on L2.

This result goes with the result we found in section 5.7.1 where we tested the first hypothesis and found a significant a positive relationship between bank BANKS LENDING and liquidity. As I previously mentioned, the positive effect is because the liquid banks are more oriented to lend other banks in interbank market. In addition, banks are motivated to borrow from each other in order to obtain liquidity needed, which in turn make them less motivated to hold liquid assets, this result is consistent with Lucchetta, (2007) findings as he showed that banks will have more incentive to borrow from interbank market whenever they hold less liquid assets. Moreover, the results are contrary with Munteanu (2012) findings that found a significant negative relationship between interbank funding and bank liquidity, which was different to his expectation, as he argued that recent financial crisis brought substantial changes over the structure of bank liquidity determinants. Focusing on Palestinian financial system, PMA pointed that Palestinian government steps toward activating efficient interbank market through adopting new updates to interbank payment management systems and issue bonds to maintain government debt with limited trading of bonds between banks only as a first step, which may make banks more oriented to involve in interbank market.
- For the variable "MANAGEMENT EFFICIENCY", the probability value "Sig." equals (0.195) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, then there is insignificant positive effect of the variable MANAGEMENT EFFICIENCY on L2 (Note: This result should be interpreted in reverse where the higher ratio of banks expenses to total revenue means low efficiency of bank management). Therefore, researcher rejects the hypothesis that there is a significant effect for the variable MANAGEMENT EFFICIENCY on L2.

This result matches the result we found in section 5.7.1 where we tested the first hypothesis and did not found significant relationship between bank MANAGEMENT EFFICIENCY and liquidity. As mentioned earlier, the researcher assumes that the results are inconclusive due to the fact that banks are experiencing a high increase in their operating costs as shown in table (5.4). Descriptive analysis shows that the mean of cost to income ratio is equal to 81.6%, which shows that banks management find it difficult to control their operating costs, which in turn limits the impact of management efficiency on bank liquidity position. This result is in line with other researcher's findings like Sudirman (2014) who found insignificant relationship between the two variables and contrary with other researcher's findings like Munteanu (2012) who found a significant positive relationship between bank liquidity and management efficiency measured by cost to income ratio.

- For the variable "DEPOSITS", the probability value "Sig." equals (0.912) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, there is insignificant negative effect of the variable DEPOSITS on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable DEPOSITS on L2.

This result is contrary to the result we found in section 5.7.1 where we tested the first hypothesis and found a significant negative relationship between bank deposits and liquidity. This result is in line with other researchers results like Moussa (2015) who did not find a significant relationship between bank deposits and liquidity.
For the variable "FUNDING COST", the probability value "Sig." equals (0.720) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, this indicated insignificant positive effect of the variable FUNDING COST on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable FUNDING COST on L2.

This result matches the result we found in section 5.7.1 where we tested the first hypothesis and did not found significant relationship between bank FUNDING COST and liquidity. As we mentioned earlier, it is assumed that the reason of the absence of a significant relationship to cost of funding on bank's liquidity is due to the fact that banks are heavily depended on customers and corporations deposits as a key resource of funding rather than other funding instruments. This result is consistent with Singh and Sharma (2016) findings where they found insignificant positive effect of funding cost on bank liquidity and contrary to Munteanu (2012) findings where he found a significant positive relationship between banks liquidity and their cost of funding as he argued as the more depend of banks on borrowing from outside they will tend to hold more liquid assets.

For the variable "UNEMPLOYMENT RATE", the probability value "Sig." is equals (0.476) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, then there is insignificant positive effect of the variable UNEMPLOYMENT RATE on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable UNEMPLOYMENT RATE on L2.

This result matches the result that found in section 5.7.1 where the researcher tested the first hypothesis and did not find a significant relationship between bank UNEMPLOYMENT RATE and liquidity. As we mentioned earlier, the Palestinian Monetary Authority (PMA) said that unemployment rates in Palestine are witnessing a remarkable increase, reaching 26.9% of the total workforce. This means that government has difficulty in to controlling unemployment rates. This in turn make the Palestinian economy one of unstable economies in the region and limit the effect of unemployment rate on bank liquidity. Our result is consistent with other researchers results like Vodova (2011); Trenca et al. (2012); Mehdi and Abderrassoul (2013) and
Singh and Sharma (2016) where they found insignificant effect for unemployment rate on bank liquidity.

- For the variable "LENDING RATE", the probability value "Sig." equals (0.578) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, then there is insignificant positive effect of the variable LENDING RATE on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable LENDING RATE on L2.

- For the variable "INTEREST RATE SPREAD", the probability value "Sig." is equals (0.529) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, then there is insignificant negative effect of the variable INTEREST RATE SPREAD on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable INTEREST RATE SPREAD on L2.

This result goes with the result we found in section 5.7.1 where we tested the first hypothesis and did not find any significant relationship between LENDING RATE and INTEREST RATE SPREAD in the one hand and bank liquidity in the other. As we mentioned earlier, PMA pointed out that the determination of interest rates on deposits and loans is in accordance with the Bank's internal policy and market competition between banks. That means the absence of monetary policy affecting the banks' decisions regarding interest rates on lending and deposits, which in turn make the policy of determining interest rates affected with policy of the main currency exporting countries and makes difficulty to measure the effect of these variables directly on the liquidity of local banks. Our findings are consistent with other researcher's results like Vodova (2011) who did not find a significant effect for these variables on bank liquidity.

- For the variable "GDP", the probability value "Sig." equals (0.669) which is higher than (0.05). Hence, this variable is statistically insignificant. The sign of the test is positive accordingly there is insignificant positive effect of the variable GDP on L2. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable GDP on L2.
This result matches the result found in section 5.7.1 where we tested the first hypothesis and did not find a significant relationship between GDP and bank liquidity. As we mentioned earlier, Palestinian environment is considered as one of the most politically and economically volatile environments, which has a major influence on local economy and makes it a controlled one. Therefore, in the absence of the independence of the Palestinian economy, it is difficult to control the growth of the Palestinian economy through the Palestinian sovereign institutions, which in turn makes it difficult to measure the impact of this variable on the liquidity of Palestinian banks. Our findings are in line with other researcher’s findings like Trenca et al. (2012), Munteanu (2012), and Tseganesh (2012) who did not find a significant relationship between growth rate of GDP and bank liquidity.

The regression equation is:

\[
L2 = 0.665 + 0.000 \times (SIZE) - 0.843 \times (PROFITABILITY) + 1.134 \times (CAPITAL ADEQUACY) - 1.022 \times (LOANS) - 0.953 \times (ASSET QUALITY) + 0.000 \times (BANKS LENDING) - 0.078 \times (MANAGEMENT EFFICIENCY) - 0.022 \times (DEPOSITS) + 1.692 \times (FUNDING COST) + 0.017 \times (UNEMPLOYMENT RATE) + 4.263 \times (LENDING RATE) - 3.597 \times (INTEREST RATE SPREAD) + 0.523 \times (GDP).
\]
5.5.3 Testing of Third Hypothesis

There is a statistically significant effect for the independent variables of the study on liquidity of banks working in Palestine expressed by loans to deposits ratio (L3).

To test this hypothesis, the sub-hypotheses arising from it had tested as follows:

- Bank size has a significant effect on Loans to Deposits (L3).
- Profitability has a significant effect on Loans to Deposits (L3).
- Capital Adequacy has a significant effect on Loans to Deposits (L3).
- Loans has a significant effect on Loans to Deposits (L3).
- Asset Quality has a significant effect on Loans to Deposits (L3).
- Banks Lending has a significant effect on Loans to Deposits (L3).
- Management Efficiency has a significant effect on Loans to Deposits (L3).
- Deposits has a significant effect on Loans to Deposits (L3).
- Funding Cost has a significant effect on Loans to Deposits (L3).
- Unemployment Rate has a significant effect on Loans to Deposits (L3).
- Lending Rate has a significant effect on Loans to Deposits (L3).
- Interest Rate Spread has a significant effect on Loans to Deposits (L3).
- GDP has a significant effect on Loans to Deposits (L3).

Table (5.5) shows the multiple regression analysis results, regression coefficients and their P-values (Sig.).
NOTE: high value of ratio (L3) means low liquidity; thus, results have to be interpreted in reverse: e.g. Positive sign of the coefficient means negative impact on liquidity and conversely.

- The multiple regression analysis shows that, the coefficient of determination for model (3) R-Square = 95.3%. This means 95.3% of the variability in the dependent variable L3 (Loans to Deposits) is explained by all of the independent variables together.

- For the variable "SIZE", the probability value "Sig." equals (0.346) which is greater than (0.05). So, this variable is statistically insignificant. The sign of the test is positive as a result there is insignificant negative effect of the variable SIZE on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable SIZE on L3.

This result conforms to the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and did not find a significant relationship between bank size and liquidity. As mentioned previously, the researcher assumes that the reason for the absence of a decisive statistical result is due to the narrow size of the sample, which limits the ability to capture bank size effect on liquidity. This assumption is in line with Vodova (2011) who found the relation between Czech banks liquidity and the size is ambiguous and recommend dividing banks into groups according to their size. In addition, this assumption is consistent with Lastuvkova (2016) who found that the results of banks size effect on their liquidity differ among studies according to the differences of banks size, this reinforces the assumption that our results differ due to different study sample and the narrow size of the banking sector compared to banks in other countries.

- For the variable "PROFITABILITY", the probability value "Sig." equals (0.892) which is greater than (0.05). Consequently, this variable is statistically insignificant. The sign of the test is positive which means that there is insignificant negative effect of the variable PROFITABILITY on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable PROFITABILITY on L3.
This result goes with the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and did not find a significant relationship between bank profitability and liquidity. As we mentioned earlier, the researcher attributes the absence of a statistically significant relationship between liquidity and profit of banks to the increase of banks operational costs despite of the rapid increase of loans growth compared to Deposits taking until 2012 as showed in figure (5.1). This result is in line with Aborahma (2009) study results of relationship between liquidity risk measures and banks profitability, where she did not find a significant relationship between liquidity of banks working in Palestine and their profitability.

- For the variable "CAPITAL ADEQUACY", the probability value "Sig." equals (0.000) which is lower than (0.05). Hence, this variable is statistically significant. As the sign of the test is negative, there is significant positive effect of the variable CAPITAL ADEQUACY on L3. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable CAPITAL ADEQUACY on L3.

This result conforms with the results we found in section 5.7.2 where we tested the second hypothesis. As mentioned earlier, the positive relation between bank liquidity and its capital is related to the transformational role of banks by transforming liquid liabilities to illiquid assets in order to meet customers' need of liquidity, which makes the bank vulnerable to liquidity risks and likely needs to hold more capital to mitigate against the risk of losses. This means that the higher capital ratio raises bank capacity to absorb risks, which is considered as a positive signal to external public and enables bank to attract new deposits which make banks do their liquidity creation role and likely to hold more liquid assets in the short horizon in order to be able meet their short-term obligations. This is consistent with other researcher's findings like Tseganesh (2012), he argued that the well capitalized banks are more able to create liquidity for external public and that would make banks more oriented to hold liquid assets. Besides, our result is in line with other researcher's findings like El Mehdi & Abderrassoul (2014); Vodova (2011); Tseganesh (2012); Vodova (2013); Chagwiza (2014) who found a significant positive relationship between banks capital and their liquidity.
- For the variable "LOANS", the probability value "Sig." equals (0.000) which is lower than (0.05). Which mean that this variable is statistically significant. The test is positive and that indicates that there is significant negative effect of the variable LOANS on L3. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable LOANS on L3.

- This result goes with the results we found in sections 5.7.1 and 5.7.2 wherein we tested the second hypothesis and found a significant negative relationship between bank lending activity and liquidity. As we mentioned previously, the negative relationship between bank loans and its liquidity is due to the fact that Palestinian banks is considered as traditional banks focusing on lending activity, where they rely heavily on customers' deposits to create liquidity and grant credit facilities. Figure (5.1) showes that loans to deposits ratio did not exceed 70% among the study focusing years, which means that banks on average issues their loans depending on 70% of their deposits. In addition, that means banks relying on other funding sources is weak. That in turn lowers funding liquidity risk and make banks less oriented in holding liquid assets, especially with the general stability of deposits. This result is consistent with Cucinelli (2013) findings that banks that are more specialized in the lending activity are more likely to have a lower liquidity as well as intersects with Zaghdoudi and Hakimi (2017) who found that credit risk has a significant effect on banks liquidity. They cleared that the increase of this kind of risk leads to the drying up of bank liquidity and the increase of liquidity risk threatening.

- For the variable "ASSET QUALITY", the probability value "Sig." equals (0.768) which is greater than (0.05). Hence, this variable is statistically insignificant. As the sign of the test is negative, there is insignificant negative effect of the variable ASSET QUALITY on L3 (Note: the higher this ratio is the more problematic banks loans. Thus, we interpret this ratio in reverse). Therefore, researcher rejects the hypothesis that there is a significant effect for the variable LOANS on L3.

This result matches the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and did not find a significant relationship between bank assets quality and liquidity. The researcher assumes that the cause of
weak relationship between the quality of the bank assets and its liquidity is due to the difference in credit policy between banks according to their ownership. As PMA (2013) pointed out in its annual report that local banks tend to deploy their funds in the local economy while foreign banks tend to placements abroad. This means that local banks are more able to identify the risks associated with credit facilities rather than foreign banks, which in turn may have an impact on the nature of the relationship between the two variables. This is backed with PMA (2013) report, which clarified the different proportion of non-performing loans for foreign banks compared to local banks. This contradiction in behaviour between banks results in the lack of clarity in the statistical relationship between bank asset quality and its liquidity. The researcher recommends to focus on this side in the future studies.

- For the variable "BANKS LENDING", the probability value "Sig." is equals (0.655) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, then there is insignificant negative effect of the variable BANKS LENDING on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable BANKS LENDING on L3.

This result is contrary to the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and found a significant positive relationship between BANKS LENDING and liquidity. The researcher assumes that the reason for the absence of a decisive statistical result between interbank funding and (L3) because the bank loans volume decreased and deposits increased with the raising of interbank funding. This is consistent with Toolsema et al. (1999) findings in which an increase in the interbank market rate leads to a decrease in a bank’s volume of loans, an increase in its volume of deposits.

- For the variable "MANAGEMENT EFFICIENCY", the probability value "Sig." equals (0.890) which is higher than (0.05). Hence, this variable is statistically insignificant. The sign of the test is negative and that means that there is insignificant negative effect of the variable MANAGEMENT EFFICIENCY on L3 (Note: This result should be interpreted in reverse where the higher ratio of banks expenses to total revenue means low efficiency of bank management).
Therefore, researcher rejects the hypothesis that there is a significant effect for the variable MANAGEMENT EFFICIENCY on L3.

This result conforms with the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and did not find a significant relationship between management efficiency and liquidity. The researcher thinks that the results are inconclusive because banks are experiencing a high increase in their operating costs as shown in table (5.4). Descriptive analysis shows that the mean of cost to income ratio is equal to 81.6%, which shows that the banks management finds difficulty to control their operating costs, which in turn limits the impact of management efficiency on bank liquidity position. This result is in line with other researcher's findings like Sudirman (2014) who found insignificant relationship between the two variables and contrary with other researcher's findings like Munteanu (2012) who found a positive relationship between bank liquidity and management efficiency measured by cost to income ratio.

- For the variable "DEPOSITS", the probability value "Sig." is equals (0.000) which is lower than (0.05). Hence, this variable is statistically significant. Since the sign of the test is positive, then there is significant negative effect of the variable DEPOSITS on L3. Therefore, researcher accepts the hypothesis that there is a significant effect for the variable DEPOSITS on L3.

This result matches the results we found in section 5.7.1 where we tested the first and found a significant relationship between deposits and liquidity. Moreover, the result is contrary to the result we found in section 5.7.2 where we tested the second hypothesis and did not find a significant relationship between deposits and liquidity. This means that banks are not increasing their liquidity reserves in a direct way with the increase of deposits. The researcher assumes that this behaviour is due to the fact that banks investing higher level of funds in less liquid elements such as credit facilities and various low-liquidity investments with long maturities. This is may be because banks liquid assets to total assets ratio considers high compared to some other countries. That pointed out in Financial Stability Report for 2016 issued by PMA as shown in figure (5.3). Our result is contrary to other researcher's findings like Bonner et al. (2013), Singh and Sharma (2016) who found a positive effect of deposits on bank liquidity.
- For the variable "FUDNING COST", the probability value "Sig." equals (0.879) which is higher than (0.05). Hence, this variable is statistically insignificant. Because the sign of the test is negative, there is insignificant positive effect of the variable FUDNING COST on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable FUDNING COST on L3.

This result matches the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and did not find a significant relationship between Funding Cost and liquidity. As mentioned previously, the researcher assumes that the reason of the absence of a significant relationship to cost of funding on bank's liquidity is because banks are heavily depending on customers and corporations’ deposits as a key resource of funding rather than other funding instruments. This insignificant effect is consistent with Singh and Sharma (2016) findings where they found insignificant positive effect of funding cost on bank liquidity, and contrary to Munteanu (2012) findings where he found a significant positive relationship between banks liquidity and their cost of funding as he argued as the more dependence of banks on borrowing from outside the more liquid assets they will tend to hold.

- For the variable "UNEMPLOYMENT RATE", the probability value "Sig." equals (0.430) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is negative, then there is insignificant positive effect of the variable UNEMPLOYMENT RATE on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable UNEMPLOYMENT RATE on L3.

This result goes with the results I found in section 5.7.1 and section 5.7.2 where I tested the first and second hypothesis and did not find a significant relationship between unemployment rate and liquidity. As previously mentioned, the Palestinian Monetary Authority (PMA) said that unemployment rates in Palestine are witnessing a remarkable increase, reaching 26.9% of the total workforce. Which means that government have a difficult to control controlling unemployment rates. This in turn makes the Palestinian economy one of unstable economies in the region and limit the effect of unemployment rate on bank liquidity. Our result is consistent with other researchers results like Vodova (2011); Trenca et al. (2012); Mehdi and Abderrassoul
(2013) and Singh and Sharma (2016) where they found insignificant effect for unemployment rate on bank liquidity.

- For the variable "LENDING RATE", the probability value "Sig." equals (0.910) which is higher than (0.05). Hence, this variable is statistically insignificant. Since the sign of the test is positive, there is insignificant negative effect of the variable LENDING RATE on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable LENDING RATE on L3.

- For the variable "INTEREST RATE SPREAD", the probability value "Sig." equals (0.943) which is higher than (0.05), accordingly, this variable is statistically insignificant. The sign of the test is positive so there is insignificant negative effect of the variable INTEREST RATE SPREAD on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable INTEREST RATE SPREAD on L3.

This result conforms to the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and did not find a significant relationship between lending rate and interest rate spread in the one hand and bank liquidity in the other. As previously mentioned, PMA pointed out that the determination of interest rates on deposits and loans is in accordance with the Bank's internal policy and market competition between banks, which means the absence of monetary policy affects the banks' decisions regarding interest rates on lending and deposits, which in turn make the policy of determining interest rates affected with policy of the main currency exporting countries and makes difficulty to measure the effect of these variables directly on the liquidity of local banks. Our findings are consistent with other researcher's results like Vodova (2011) who did not find a significant effect for these variables on bank liquidity.

- For the variable "GDP", the probability value "Sig." equals (0.996) which is higher than (0.05). Hence, this variable is statistically insignificant. the sign of the test is positive and that means that there is insignificant negative effect of the variable GDP on L3. Therefore, researcher rejects the hypothesis that there is a significant effect for the variable GDP on L3.
This result matches the results we found in section 5.7.1 and section 5.7.2 where we tested the first and second hypothesis and did not find a significant relationship between GDP and bank liquidity. As mentioned earlier, Palestinian environment is considered as one of the most politically and economically volatile environments, which has a major influence on local economy and makes it a controlled one. Therefore, in the absence of the independence of the Palestinian economy, it is difficult to control the growth of the Palestinian economy through the Palestinian sovereign institutions, which in turn makes it difficult to measure the impact of this variable on the liquidity of Palestinian banks. Our findings are in line with other researcher's findings like Trenca et al. (2012), Munteanu (2012), and Tseganesh (2012) who did not find a significant relationship between growth rate of GDP and bank liquidity.

The regression equation is:

\[
L3 = 1.343 - 0.000 \times (SIZE) - 0.020 \times (PROFITABILITY) + 0.768 \times (CAPITAL ADÉQUACY) - 1.431 \times (LOANS) + 0.078 \times (ASSET QUALITY) - 0.000 \times (BANKS LENDING) + 0.002 \times (MANAGEMNT EFFICIENCY) + 1.534 \times (DEPOSITS) + 0.164 \times (FUNDING_COST) + 0.004 \times (UNEMPLOYMENT RATE) - 0.195 \times (LENDING RATE) - 0.079 \times (INTEREST RATE SPREAD) - 0.001 \times (GDP).
\]
### Table (5.5): Multiple Regression Analysis Results for Three Models.

<table>
<thead>
<tr>
<th>Variables</th>
<th>L1</th>
<th></th>
<th>L2</th>
<th></th>
<th>L3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Sig.</td>
<td>Coefficient</td>
<td>Sig.</td>
<td>Coefficient</td>
<td>Sig.</td>
</tr>
<tr>
<td>Constant</td>
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<td>0.199</td>
<td>0.665</td>
<td>0.555</td>
<td>1.343</td>
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<td>SIZE</td>
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<td>0.827</td>
<td>0.000</td>
<td>0.376</td>
<td>0.000</td>
<td>0.346</td>
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<td>-0.843</td>
<td>0.225</td>
<td>0.020</td>
<td>0.892</td>
</tr>
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<td>CAPITAL ADEQUACY</td>
<td>-0.385</td>
<td>0.016**</td>
<td>1.134</td>
<td>0.003***</td>
<td>-0.768</td>
<td>0.000**</td>
</tr>
<tr>
<td>LOANS</td>
<td>-0.656</td>
<td>0.000***</td>
<td>-1.022</td>
<td>0.000***</td>
<td>1.431</td>
<td>0.000***</td>
</tr>
<tr>
<td>ASSET QUALITY</td>
<td>-0.707</td>
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<td>-0.953</td>
<td>0.556</td>
<td>-0.078</td>
<td>0.768</td>
</tr>
<tr>
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* The variable is statistically significant at 0.1 level
** The variable is statistically significant at 0.05 level
*** The variable is statistically significant at 0.01 level

**NOTE:** high value of ratio (L3) means low liquidity; thus, results have to be interpreted in reverse: e.g. Positive sign of the coefficient means negative impact on liquidity and conversely.
5.5.4 Study results

After the analysis and testing of hypotheses, the study reached to the following results:

- Bank Size hasn't a significant effect on Liquid Assets to Total Assets (L1).
- Bank Size hasn't a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Bank Size hasn't a significant effect on Loans to Deposits (L3).
- Profitability hasn't a significant effect on Liquid Assets to Total Assets (L1).
- Profitability hasn't a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Profitability hasn't a significant effect on Loans to Deposits (L3).
- Capital Adequacy has a significant effect on Liquid Assets to Total Assets (L1).
- Capital Adequacy has a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Capital Adequacy has a significant effect on Loans to Deposits (L3).
- Loans has a significant effect on Liquid Assets to Total Assets (L1).
- Loans has a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Loans has a significant effect on Loans to Deposits (L3).
- Asset Quality has not a significant effect on Liquid Assets to Total Assets (L1).
- Asset Quality has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Asset Quality has not a significant effect on Loans to Deposits (L3).
- Banks Lending has a significant effect on Liquid Assets to Total Assets (L1).
- Banks Lending has a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Banks Lending has not a significant effect on Loans to Deposits (L3).
- Management Efficiency has not a significant effect on Liquid Assets to Total Assets (L1).
- Management Efficiency has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Management Efficiency has not a significant effect on Loans to Deposits (L3).
- Deposits has a significant effect on Liquid Assets to Total Assets (L1).
- Deposits has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
- Deposits has a significant effect on Loans to Deposits (L3).
- Funding Cost has not a significant effect on Liquid Assets to Total Assets (L1).
• Funding Cost has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
• Funding Cost has not a significant effect on Loans to Deposits (L3).
• Unemployment Rate has not a significant effect on Liquid Assets to Total Assets (L1).
• Unemployment Rate has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
• Unemployment Rate has not a significant effect on Loans to Deposits (L3).
• Lending Rate has not a significant effect on Liquid Assets to Total Assets (L1).
• Lending Rate has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
• Lending Rate has not a significant effect on Loans to Deposits (L3).
• Interest Rate Spread has not a significant effect on Liquid Assets to Total Assets (L1).
• Interest Rate Spread has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
• Interest Rate Spread has not a significant effect on Loans to Deposits (L3).
• GDP has not a significant effect on Liquid Assets to Total Assets (L1).
• GDP has not a significant effect on Liquid Assets to Short-term Liabilities (L2).
• GDP has not a significant effect on Loans to Deposits (L3).
• The results suggest that banks are considered liquid.
• The results show that banks are experiencing difficulties in control their operating costs.
• PMA does not have the full control on interest rates movement as a result of absence of national currency.
5.5.5 Recommendations

The study provides useful recommendations for policy direction and management of banks liquidity. It proposes a set of recommendations related to the identification and practical framework of financial decision-making in the process of determining liquidity position, which achieves better expected management of liquidity risk and makes banks more awareness. Besides, empowerment of government control and raise of its efficiency:

- In general, each bank shall have an adequate internal control system to manage liquidity risk and shall review and evaluate the system periodically to ensure its adequacy and effectiveness.

- The study suggests that banks are considered liquid and maintain high liquidity levels. Therefore, the researcher recommends that banks exploit their liquidity surplus in different investments that raise profitability for banks.

- Based on results between bank capital and liquidity, banks should consider maintaining an appropriate amount of capital to contribute to enhancing their financial stability, considering the ongoing supervisory management of their liquidity.

- According to results between bank loans and liquidity, banks should balance between the principle of maintaining an appropriate level of liquidity in the bank and financing and investment operations.

- Banks should concern about deposits as a source of funding risk, therefore, they should concern about liquidity needs against suddenly withdrawals of deposit.
• Results shows that banks experience a high level of operating costs, therefore, researcher recommends banks to control their operating costs efficiently in order to maintain their ability to generate profits.

• The results show that banks are involved in banks lending activity. Therefore, the researcher recommends the necessity of preparing a scenario study to examine the effect of banks' financial performance failure on each other.

• It is remarkable that PMA does not control interest rates. Therefore, there is a need to strengthening the role of the PMA by converting to a central bank in order to develop and empowerment of monetary policy tools.

• It is noted that foreign banks do not publish their annual financial statements in full. Thus, each bank must adhere to a system that ensures a high degree of disclosure, which requires accurate data and information that is sufficiently transparent to reflect its real liquidity position.

5.5.6 Future studies

• Re-apply the current study in the future with a focus on a different period of time.
The Reference List


Alshurafa, Y. (2007). The role of the PMA in managing cash flow in the Palestinian banking system. Paper presented at the study day organized by the Business Studies Unit at the Faculty of Commerce, Islamic University-Gaza.


Moussawi, S. (2015). The ability of the explanatory indicators of liquidity in the trends and levels of risk analysis Analytic study of a sample of Iraqi commercial banks. *magazine of college Administration&Economics for economic & financial studies, Babylon University, 204*(17), 57-81.


Appendix
Annex 1: Banks Names (Sample).

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2011 | 0.812 | 2.329 | 0.068 |
2012 | 0.613 | 1.340 | 0.235 |
2013 | 0.829 | 1.790 | 0.218 |
2014 | 0.750 | 1.529 | 0.182 |
2015 | 0.507 | 1.250 | 0.193 |
2016 | 0.486 | 1.148 | 0.207 |

2007 | 0.233 | 539765897 | 0.089 |
2008 | 0.214 | 580484674 | 0.158 |
2009 | 0.674 | 1.131 | 0.213 |
2010 | 0.644 | 1.083 | 0.250 |
2011 | 0.624 | 0.961 | 0.324 |
2012 | 0.588 | 0.896 | 0.290 |
2013 | 0.571 | 0.982 | 0.323 |
2014 | 0.569 | 1.119 | 0.293 |
2015 | 0.609 | 1.194 | 0.399 |
2016 | 0.536 | 1.057 | 0.428 |

2007 | 0.264 | 2333140508 | 0.170 |
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Variables Entered/Removed\(^a\)

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a. Dependent Variable: liquid assets/total assets

b. All requested variables entered.

Model Summary\(^b\)

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a. Predictors: (Constant), GDP, Management Efficiency, Banks Lending, Lending Rate, capital adequacy, Asset Quality, Loans, interest rate spread, Deposits, Bank size, Funding Cost, Unemployment Rate, Profitability

b. Dependent Variable: liquid assets/total assets

ANOVA\(^a\)

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a. Dependent Variable: liquid assets/total assets

b. Predictors: (Constant), GDP, Management Efficiency, Banks Lending, Lending Rate, capital adequacy, Asset Quality, Loans, interest rate spread, Deposits, Bank size, Funding Cost, Unemployment Rate, Profitability
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a. Dependent Variable: liquid assets/total assets
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a. Dependent Variable: liquid assets/total assets
<table>
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<th>Method</th>
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a. Dependent Variable: liquid assets/short-term Liabilities  
b. All requested variables entered.

**Model Summary**

<table>
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<tr>
<th>Model</th>
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<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
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a. Predictors: (Constant), GDP, Management Efficiency, Banks Lending, Lending Rate, capital adequacy, Asset Quality, Loans, interest rate spread, Deposits, Bank size, Funding Cost, Unemployment Rate, Profitability  
b. Dependent Variable: liquid assets/short-term Liabilities

**ANOVA**

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a. Dependent Variable: liquid assets/short-term Liabilities  
b. Predictors: (Constant), GDP, Management Efficiency, Banks Lending, Lending Rate, capital adequacy, Asset Quality, Loans, interest rate spread, Deposits, Bank size, Funding Cost, Unemployment Rate, Profitability
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<tr>
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a. Dependent Variable: liquid assets/short-term Liabilities
### Residuals Statistics

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a. Dependent Variable: liquid assets/short-term Liabilities
### Variables Entered/Removed

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a. Dependent Variable: Loans/Deposits
b. All requested variables entered.

### Model Summary

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<tr>
<th>Model</th>
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<th>R Square</th>
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a. Predictors: (Constant), GDP, Management Efficiency, Banks Lending, Lending Rate, Deposits, interest rate spread, Loans, Bank size, Funding Cost, Asset Quality, capital adequacy, Unemployment Rate, Profitability

b. Dependent Variable: Loans/Deposits

### ANOVA

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a. Dependent Variable: Loans/Deposits

b. Predictors: (Constant), GDP, Management Efficiency, Banks Lending, Lending Rate, Deposits, interest rate spread, Loans, Bank size, Funding Cost, Asset Quality, capital adequacy, Unemployment Rate, Profitability
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a. Dependent Variable: Loans/Deposits
## Residuals Statistics

<table>
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<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
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a. Dependent Variable: Loans/Deposits

### Histogram

Dependent Variable: Loans/Deposits

### Scatterplot

Dependent Variable: Loans/Deposits