Non-Performing Loans in Jordan

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ABSTRACT

The issue of non-performing loans has been a major area of concern in Jordan. This study was focused on analysing a quantitative study in Jordan on non-performing loans, by deriving data from 12 banks in Jordan. The data used for the analysis were extracted from 2001 to 2019. Several objectives were analysed in this study. These objectives include; investigation of bank specific determinants of non-performing loans, the analysis of macroeconomic variables of non-performing loans and an overall analysis of non-performing loans in Jordan. The data were analysed using e-views, which were later interpreted. Moreover, results from the correlation matrix indicated that CAR, LD, NL, GDP, EMP have a negative relationship with non-performing loans, and ROA, LTOA, INF, CRED, and BUDG have a positive relationship with the dependent variable. In addition, regression results shows that among bank specific variables CAR, ROA, DOA, LD and LTOA were found to be statistically significant and that increases in these banks' variables would affect the non-performing loans negatively. Beyond that, it was determined that only inflation among macroeconomic variables would affect the non-performing loans statistically significantly and positively.

Keywords: Non-performing Loans, Jordan Banks, Macroeconomic Factors.

ÖZ

Bankacılık sektöründeki tahsili gecikmiş alacaklar Ürdün'de önemli bir endişe kaynağı olmuştur. Bu çalışma, Ürdün'deki 12 bankadan veri toplayarak tahsili gecikmiş alacaklar üzerine nicel bir araştırmanın analizine odaklanmıştır. Analiz için kullanılan veriler 2001-2019 yılları arasında bu bankalardan alınmıştır. Bu çalışmada bir seri analiz yapılmıştır. Bunlar arasında; takipteki kredilerin bankaya özgü belirleyicilerinin incelenmesi, takipteki kredilerin makroekonomik değişkenlerinin analizi ve Ürdün'deki takipteki kredilerin genel analizi yer almaktadır. Veriler E-Views kullanılarak tahminler yapılmış ve yorumlanmıştır. Korelasyon matrisinden elde edilen sonuçlar CAR, LD, NL, GSYİH, ÇYP'nin tahsili gecikmiş kredilerle negatif ilişki içerdiğini ve ROA, LTOA, INF, CRED ve BUDG'nin bağımlı değişkenlerle pozitif ilişki içerdiğini göstermiştir. Bunun yanında regresyon sonuçları CAR, ROA, DOA, LD ve LTOA gibi bankalara ait değişkenlerdeki artışların tahsili gecikmiş alacakları olumsuz etkiledikleri istatistiksel olarak anlamlı bulunmuştur. Bunun ötesinde makroekonomik değişkenler arasında yalnızca enflasyon tahsili gecikmiş olacakları istatiksel olarak anlamlı ve olumlu yönde etkilediği tespit edilmiştir, ekonomilerdeki istikrarsızlığın tahsili gecikmiş olacakların artmasına neden olacağı bulunmuştur.

Anahtar Kelimeler: Takipteki Krediler, Ürdün Bankaları, Makroekonomik Faktörler.

DEDICATION

I dedicate this work to Almighty Allah Who, in His infinite mercy and guidance, saw me throughout this program.

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A very big thank to my entire family especially my father who is resting in the lord and I know you are watching over us father, rest in peace father we love and miss you so much.

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BUDG	Government Budget
CAR	Capital Adequacy
CLMR	Classical Linear Regression Model
CRED	Credit to Private Sector
DOA	Deposit to Total Assets Ratio
GDP	Economic Growth
INF	Inflation
LD	Loans to Deposits Ratio
LTOA	Size
NL	Net Loan
NPL	Non-Performing Loan
ROA	Profitability

Chapter 1

INTRODUCTION

1.1 Background of the Study

In recent years several issues have been of major concern in the banking sector such as non-performing loans. Several researches have suggested that non-performing loans in banks have been a major cause of delinquencies in banks. Some of the major contributing factors to bank losses are as a result of bad credit policies, which lead in a boost in the amount of non-performing loans in a majority banking sectors (Irum et al., 2012). Furthermore, non-performing loan generally is associated with an unpaid money to the bank that has elapsed a period of about 90 days. In the most cases, non-performing loans are likely not to be paid in full when it has taken a long time. This has had a consequential effect on several banks in Jordan. It is difficult to distinguish good loan applications in Jordan commercial banks from bad loan applications. The rejection of perceived non-performing loans can risk the change of future profits by most banks (Eletter and Yaseen, 2017).

A huge amount of the assets banks make are usually derived from loans, hence the interests made from loans helps to elevate the bank income. Moreover, this process of loan lending by banks is not a simple and easy process, several enquiries needs to be checked out by the bank, for example: credit worthiness of the borrower, their capacity and duration of paying the money. Despite the enquiries the banks may undergo during loan lending, it is not totally guaranteed because the outcome of the future is never

known, especially with organizations that usually engage different forms of risky businesses as well as fluctuations in economic stability (Khaled, 2017).

In the late 90s the work of Berger and DeYoung (1997) identified several components that are liable for the increase in non-performing bank loans. In their research, they used a method known as Granger-causality to analyse the hypothesis of four different banks in regards to the correlation between the bank capital, quality of loans and the cost efficiency. However, their findings revealed that several moral hazards has been a major cause of non-performing bank loans. Another study familiar to theirs was also investigated by Louzis et al. (2010), which was based on the separate factors that affects several types of loans, such as normal loan to costumers, mortgage and business loan. They argue that non-performing or failed loans have an affiliation with macro variables and managerial quality. Moreover, Beck et al. (2015) was of the opinion that the growth in GDP was a major factor to be considered as one of factors highly effecting the non-performing loans.

Many countries are faced with the delinquency of non-working loans. Defaults in bank loans and mortgage have reduced the GDP score of many countries over the years such as the US (Amit, 2015). Jordan has been known to have issues related to non-performing bank loans while this issue motivated several scholars to carry out several researches on the area of non-performing loans in Jordan. The distortion in financial stability does not only alter the economic performance of the banks but the economy of the nation as a whole. It has been reported that many banking sectors and financial analyst has regarded non-performing loans as pollution to financial stability, as a result of the detrimental effect it has on the financial status of the economy (Barseghyan, 2010; Gonzales-Hermosillo, 1999; Zeng, 2012).

The problem regarding non-performing loans has made several banks to be bankrupted, which has been as a result of impaired loans. The problem created by bank loans has an extension on other companies and establishments, hence creating financial stagnation for a majority of these companies. The effectiveness of the economy is usually tired to the stability of the financial state of banks. Lack of financial stability in most banks leads to economic crisis in many sectors (Ahlem and Fathi, 2013). Factors such as macro-economics and bank variables are some of the strategies that can be used to explain bad debts in most banks and non-performing loans.

Several different factors might also be very effective in analysing non-performing bank loans. Since there is a circular connection that exists with businesses and banks. The poor performance of these businesses can act as a signal on the condition of bank performances. Bad banking performances such as non-performing loans in turn reflect on businesses. Hence, a positive GDP growth is reflected as a consequence of well-functioning loans and a negative GDP growth as well as employments are as a outcome of the non-performing loans (Ahlem and Fathi, 2013; Nkusu, 2011).

Majority of banks and other financial organizations has made use of non-performing loan ratio to indicate the rate of their financial functions (Epure&Lafuente, 2015). Studies have shown that there is a negative correlation running between the performance of several banking sectors and the ratio of their non-performing loans, however majority of the banking sectors has implemented low non-performing loan ratio as a strategy to analyse financial performances (Barros et al., 2012; Van, 2010).
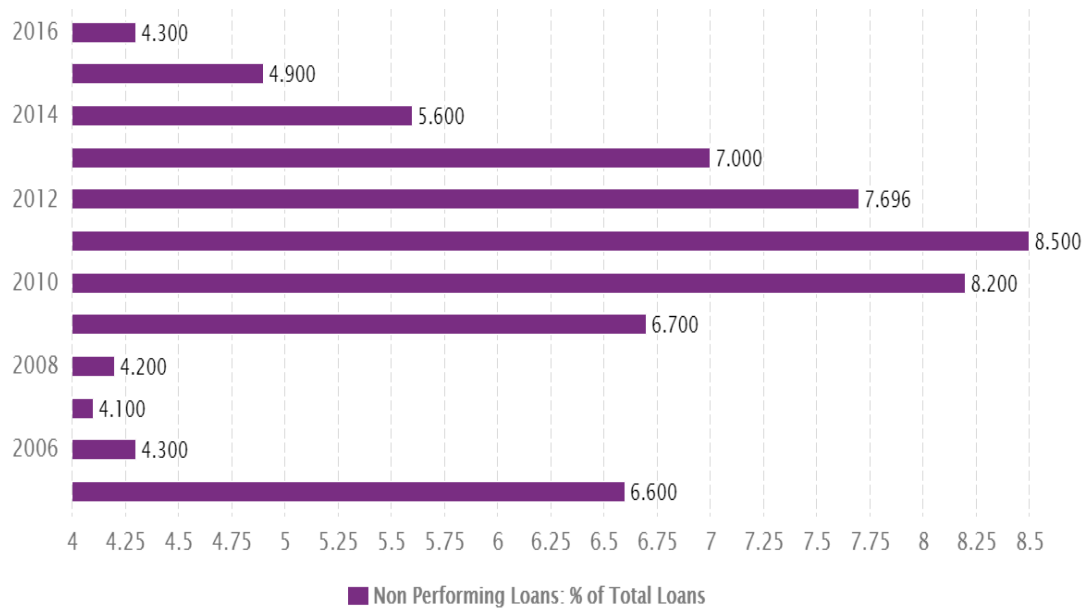
Figure 1: Jordan Non-performing Loans Ratio [www.ceicdata.com Central Bank of Jordan].

Banks in Jordan as at 2016 had a non-performance loan ratio of 4.3%. There was an increase in the non-performance ration in the year 2002 (17.1%) see Figure 1.

In Jordan, different business analysts and banking sectors deliberated on the effects of worldwide financial crisis occurring in Jordanian economy, as well as in the banking sectors. Increase in non-performing loans in Jordan since the global financial crisis keep mounting a high amount of pressure on banks, with conceivable and unfavourable impact on banks as well as other lending activities. Ever since there has been financial crisis, such as the event that was experienced in 2008, non-performance ratio has increased from 4.2 to -8.4 % in the year 2012 (Khaled, 2017). Despite the fact that the present degree of non-performing loan is considered inside the globally acknowledged levels in many sectors, there are still difficulties in its expansion. By taking into account these realities, it is important to focus on non-performing loans for the sector and Economic development in Jordan.

Banks usually make available credits for different people that are in need of financial aid, hence in return the banks tend to make profit from the interests attached to the loans. This form of non-payment risk usually gets its cover from collaterals that are financially equivalent or more that the credited sum credited out to the borrower. Most times, this non-payment risk affects the bank that they need to seek an external source of financial resource to carry out other forms of financial transactions. Moreover, fluctuations that occur in foreign currencies can affect several institutions and organizations that make their transactions in foreign currencies. Fluctuations in exchange rates usually have a negative effect on the capital structure of many banks, hence bringing about a downward trend in the availability of capital ratios of different banking sectors. This also has a similar effect on the borrowers, high levels of currency fluctuations can also increase the interest rates in loans (Mustafa et al., 2019).

Loans have been used by banking sectors as an external source of income. This has been occurring in both developed and undeveloped nations, hence helping to stimulate bank activities. Banks are more prone to risks than other establishments they are lending their money. When there is an availability of bank credit, banks usually lend funds at a lower interest rate, and these organizations usually engage in risky projects which makes the banks to be at the receiving end when there is a sabotage in the projects organized by the organization. Some of these events usually amount to non-performing loans (Repullo & Suarez, 2013). During recessions, there is usually difficulties experienced in the credit market, this usually increases the non-performing loan rate in the balance sheets of most banks and thus, leading into financial crisis. A study conducted by Ellul and Yerramilli (2013) stated that different risks options experienced in different banks can be a valid explanation for non-performing loans, operational functions and tail risks. Previous works on non-performing loans in the

literature have shown that macroeconomic fluctuations have compelling effect on the behaviour of different banks. This was argued by Maddaloni and Peydro (2011), which reported that short-range loans reduce the standards of most loans, and long-rang loans increases the standards of different loans. The connection among the non-performing loans and amount of losses of the banks is a very important area of interest. Increment in non-performance loan rate is alluded more often as the disappointment of credit approach as well. Non-performance loan has really been a tough area to control by different banking sectors. One of the most important strategy to reduce the effect of non-performing loan is in the restructuring of several banking strategies.

Moreover, Esteban et al. (2019) investigated the issue of non-performing loan and mismanagement, the model and hypothesis of the study was analysed based on performance and conformance, however, their report indicated that directorship has a great role to play in the management of non-performance loans in different banking sectors. The effect of Non-performing loans is two folds for the capital ampleness ratio and it disintegrates the productivity of a bank because of arrangements for non-performing credits. The expansion in non-performing loans would expand the bad weighted resources and it further decrease the hold profit which will be one of the parts considered for the capital of the Bank. The non-performing loans have been recognized as one of the fundamental driver of Bank loss in credits. A blown-up monetary foundation carries many negative impacts to the whole economy. Along these lines overseeing non-performing credits and keeping up it at a satisfactory level is a significant assignment for the soundness of Banks just as the monetary arrangement of a nation. So as to deal with the non-performing loans, it is critical to comprehend the determinants of the non-performing credits and their relationship which is the

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primary issue that would be tended to all through the examination (Eletter and Yaseen, 2017).

Furthermore, it guaranteed that macroeconomic elements and budgetary factors both have critical effect over the non-performing loan rates. Macroeconomic components incorporate the GDP development among budgetary factors, bank sizes, credits, and credit terms were included. A few examinations additionally thought about the effect of proprietorship structure on the non-performing loan rates (Louzis et al., 2010). Jordan banks are numerous in numbers, and they consist of 26 banking sectors. Among these 26 banking sectors, they are subdivided into different groups such as the Jordanian banks (16 banks) and the foreign banks (10 banks). Among these banks 22 banks are commercial and 4 banks are known to be Islamic banks. However, the banks utilized in this study were 12 in number, which consist of Jordan commercial bank, Bank of Jordan plc, Cario Amman bank, Bank Al Etihad, Housing bank for trade and finance, Jordan Ahli Bank plc, Jordan Kuwait bank, Arab Jordan investment bank, Capital bank of Jordan, Societe general de banque Jordanian, Invest bank, Arab banking corporation (Jordan). The data's extracted from these banks were between the periods 2001 to 2019. These data's contains different records of the banks that were very effective in the determination of non-performing loans in Jordan banks, which is the major focus of this study. However, the implementation of the findings in his study will be very effective in bring about stability in several Jordanian banks.

1.2 Problem Statement

Majority of banks in Jordan has been faced with series of non-performing loans and financial liquidation dues to several factors, such as foreign exchange instability, economic disruption cycle in firms, thus creating difficulties in the servicing of bank loans (Mustafa et al., 2019). A well structural model as utilized in this study, if properly implemented can be very effective and beneficial in resolving the issues associated with non-performing loans in Jordan banks.

However, it is very important to identify these problems of non-performing loans. This can only be done by analysing data's and previous records of non-performing loans in Jordan bank. A clear statistical figure can help to indicate the major factors that are responsible for the non-performing loans, hence providing possible functions and strategies to resolve the issues of non-performing loans in Jordan banks. Thus, the aim and objective of this study gives detailed information on how to resolve the problem of non-performing loans in Jordan banks.

1.3 Aim of the Study

The study was aimed at conducting a quantitative study on the non-performing loans of several banks in Jordan. This study was carried out on 12 different banks in Jordan with a quantitative analysis on several data's on non-performing loans within the periods of 2011 to 2019.

1.4 Objectives of the Study

In order to achieve the aim of this study, it was objectivized as shown below:

- Investigation and determination of bank specific determinants of non-performing loans.

- Investigation and determination of macroeconomic variables of non-performing loans.

- Overall determination of Non-performing loans of banks in Jordan.

1.5 Research Questions

During the course of this study, several research questions were raised:

- What are the major components that are responsible to non-performing loans in Jordan banks?

- What are the bank specific variables that determine non-performing loans in Jordan?

- What are the macroeconomic factors that determine non-performing loans in Jordan?

1.6 Significance of Study and Contribution to knowledge

The Jordanian banks have a history of struggling with non-performing loans. This has however, affected the economy of the nation as a result of poor performing policies. Moreover, the need to remediate this issue has been of paramount importance in the past few years. However, through a perfectly structured methodology as utilized in this study for the collection of data's from several banks in Jordan, and the illuminative ideas from previous studies on Non-performing loans in bank, the aim of this study can be achieved, thus providing evidence on the components of the Non-performing loans in Jordanian Banks.

1.7 Scope of the Study

This research covers the area of 12 banks in Jordan with a quantitative analysis on the non-performing loans. This study seeks to investigate the various causes and factors that are responsible for non-performing loans in Jordan. Several illuminative ideals were derived from previous and related studies on non-performing loans. Factors that

have been responsible for non-performing loans in Jordan will be analysed from 2001 to 2019, hence giving information's on the non-performing loan structure in Jordan banks.

1.8 Organization of the Study

Chapter I: The background of the study was introduced in this chapter, coupled with problem statement, aims and objectives of the study, research question, significance of study, and the scope of study.

Chapter II: Several articles and literatures on previously related studies were reviewed in this section, hence giving a base for comparison with this study.

Chapter III: The methodology of this study was explained in this chapter, as well as the structural model which will be very significant in outline the process on the entire quantitative data analysis.

Chapter IV: The results and discussion of the analysed data was reported in this chapter, as well as interpretations and comparisons.

Chapter V: The conclusion of the entire study and future recommendations were reported in this section.

Chapter 2

LITERATURE REVIEW

2.1 Theoretical Literature.

Non-Performing Loan (NPL) has attracted the attention of many for the past years. Numerous researchers have studied bank failing and has concluded that quality of assets can explain insolvency (Demirguc-Kunt, 1989; Barr and Siems, 1994). Moreover, Banks still own a greater amount of flawed loans before failure. It has been discovered that NPLs are the key factors of the economic instability challenges. When NPL is minimized this is a necessary requirement for ramping up the economic growth. NPLs are very essential because it enhances economic activity and minimizes the efficiency in the economy.

NPL can be described as debts that have been not paid back for three months or more. Though the basic definition for these loans differs across countries, but in all of them the definition is quite familiar. There is a clear connection between financial issues and Changes in the level of the debt: a rise in the amount of failing loans is an indication that the proportion of financially restricted households is rising. Household borrowing has expanded significantly in many nations over the decades, reaching all time high record of debt level. Such a sharp rise has received much attention because of its important macroeconomic and financial indication. Increasing the NPL in several Central and South eastern Europe (CESEE) continues to impose heavy pressure on the balance sheet of banks, including potential negative effects on lending activities of

banking institutions. NPL, to be precise include stock prices but exclude the exchange rate. The non-performing loans forecasting in BARBADOS was studied using a multivariate analysis, mix macroeconomic and bank specify the factors to prediction non-performing loans in the banking strip of BARBADOS. On a total level, our sample outperforms an unpretentious casual walk sample on all prediction horizons, while for person banks these prognostic have tendency to be more careful for lengthy prognosis term only (Keven et al. 2010).

NPL has occupied the interest of many scholars, most specifically attention should be paid to knowing the factors that are liable to monetary instability (Khemraj and Pasha 2009). This can be further explained by the role of bad debts as exposed by the strong relation amongst NPL and banking. Sorge (2004) stated through use of these parameters (the provisions on non-performing loans and loan losses) to determine the instability of financial system measures.

2.2 Bank Specific Components of Non-Performing Loans

Examining the determinants is a matter of great concern for financial stability regulators and for the management of banks. Reinhart and Rogoff (2010) argued that NPLs could be used to mark the beginning of a banking collapse. Many researchers have studied the determinants of NPLs, called the aggregate level of NPLs, and will either macroeconomic or bank-specific factors (not both) were used as explanatory variables. The determinant of non-performing loans in EURO-AREA banking order for the time 1990q1-2015q2 utilize GMM rating on upper of the bank and country-specific variables suggested by the letters the part of output gap and income tax are for the first time thoughtful and planted to be significant. The author finds the results useful when layout macro-prudential and financial policies (Dimitri et al. 2016). The

non-performing loans affect risk management and banking sector of Jordan and profitability. This article examines the macroeconomic determinants and bank-specific of non-performing loans of commercial banks in BARBADOS over the time1991-2015. Moreover, the empirical outcomes tick that the bank-specific agents return on assets, Return on equity, loan-to-deposit ratio and capital adequacy ratio are critical factors in determining of non-performing loans, and Economic growth is also influenced by macroeconomic variables, interest rate and unemployment (Anthony et al. 2018).

2.2.1 Across Countries Studies

Studies done in 85 banks in Italy, Greece and Spain from 2004-2008, to investigate the determinants of non-performing loans. The study suggests that time issue loans and the negatively charged with the growth rate of GDP and the profitability of banks asset have negative impact on the non-performing loans whereas the unemployment rate, the real interest rate have positively effect. (Fathi, 2013). Markri et al. (2014) find a powerful connection among non-performing loan and macroeconomics variables in Eurozone for the period of 2000-2008. A panel study of 75 countries for 10-year period, discovered that there is significant impact on non-performing loans ratios by share prices, real GDP growth, the lending interest rate and the exchange rate. The effect is found to be e greater in countries, which has a relatively bigger stock market proportional to GDP (Beck et al 2013). Studies have compared financial structures in Germany and UK and also USA and japan, demonstrating the insight on the operation of these financial systems. It is clear that scholars can expand their conclusion garnered from this nation to other nation (Gold Smith, 1969), emphasizes that a broader study should be done across countries evidence on the relation amongst financial structure and economic growth. Scholars have provided additional results on

financial growth and has offer a wider appraisal of the causal relation: firm level, industrial level and cross country studies, proposing that the level of financial development exerts a large positive effect on economic growth. Allen and Gale (2000) provided information and integrated this country studies into their analytic comparisons of various financial system.

2.2.2 Single Country Studies

Studies and evidence from Italian banking sector, the impact of non-performing loans on bank lending behavior, the purpose of this study is to know the bank lend conduct through fiscal squeeze, in special wither a rise of trust danger over this time can command banks to minimize their transfer vigor. Another topic is to research whether commercial bank and mutual display various conduct. The test is founded on a specimen of Italian bank. The results display a passive effect of credit risk on bank loan attitude with consideration both credit risk gauge the non-performing loans and the loan loss saving ratio. The explanatory power of macroeconomic variables as determinants of non-performing loans in PAKISTAN. There has been that both bank macroeconomic effect and particular the non-performing loans and present letters on macroeconomic methods propose that much macroeconomic variables do robustly affect them. Through the last little years, the literature that check non-performing loans has widened in the streak with the interest bear to understanding the agent responsible for financial sensitivity. The study results to research the explanatory force of macroeconomic variables as determinants of non-performing loans. Moreover, this study use time series data of non-performing loans ratio and nine macroeconomic variables through the time of 1990-2011 and OLS was used to exam the explanatory force of macroeconomic variables as determinants of non-performing loan (Fawad et al., 2013). The non-performing loans in Chinas banking sector and based lending are

studied by employing a panel dealt group of crowd roster firm in china empirically to scout connection among banks loan conduct a non-performing loans. The results show that state-owned projects bring extra loans than other corporations, other thing existence egalitarian and (soars) with rise retardation risks wear fit to borrow additional than the low-risk soars, especially those with rise retardation risks though the time down realization. The rise and implications of this conduct are debate (Shndre et al., 2005). Curak et al. (2013), studied non-performing loans of determinants evidence from Southeastern banking systemizing last year's banking order in southeastern Europe have veteran rise development of non-performing loans. The decay of credit portfolio goodness but could at minimum impact bank total rendering but also endanger the bank lead to the insolvency and capital. Moreover, in case of growing non-performing loans large portion of the banking regulation fiscal stabilization of the whole sector is menace. The outcome display that cat economical increase higher interest rate and inflation are linked with higher non-performing loan.

2.3 Country specific macroeconomic determinants of NPL

The credit risk is effected by bank-specific variables such as bank size pandering solvency and (ROA). Abid et al. (2014), studied bank-specific macroeconomic determinants of household's non-performing loans in Tunisia. Utilize panel data dynamic methods to evaluate over 2003-2012 to about 16 Tunisian banks, the stream paper to try to check the determinants of non-performing loans households. The major thematic is to research the possibility impact of both bank specific variables and macroeconomic on the loans of quality. The other tick the range to which non-performing loans households in the Tunisian banking system can be demonstrated especially not only by macroeconomic variables (interest rate, inflation, GDP) moreover, by bad quality management. The non-performing loans appear a large

hurdle to the development of banking sector, the main objective of the banking sector repair in China has thus been to decrease the rise standard of non-performing loans. The result checks the effect of non-performing loans on banks conduct in China employees as sill panel regression sample and a dataset coverage 60 town trade banks, 16 country-owned banks and joint-stock banks and owners. The outcome backing the moral hazard hypothesis, propose that a raise in the non-performing loans ratio lift perilous loan, potentially rise. Furthermore, decay of the financial system instability and loan quality. Politics implication of returns are evaluated (Zhang et al., 2016). In another study the non-performing loans pro-cyclical management of banks by public sector band in Indian, a survey supply and test of concentrate on the non-performing loans with bank index of India's public banks sector. The experimental test explain that banks NPAS are affected by three large group agent i.e. bank specific indicators related to the credit orientation, terms of credit, financial innovations. The survey plant that the expression of variables like collateral, rate of interest, maturity and bank specific variables has significant impact on the banks non-performing loan in the turnout of macroeconomic shocks. Moreover, the empirical returns banking the policy path to the banking sector in the India (Misra, 2010).

2.3.1 Across Countries Studies

Share prices the effect is set to be big in lands, which have a higher stock market proportional to GDP, these outcomes to solid alternative economic specification (Beck et al., 2015). Karim (2010), studied non-performing loans and bank efficiency evidence from Malaysia and Singapore. The outcome mark indicates that their relationship is not significant among difference in cost efficiency among banks in Singapore and Malaysia though banks in Singapore display a greater medium cost efficiency result.

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2.3.2 Single Countries Studies

Evidence from India the survey checks the society among corporate influence and banks non-performing loans. Employ data in Indian industrialization strip in India 1993-2004 the returns tick lag power to be a substantial determinants of poor loan of banks.in expression of magnitudes, a 10 proportion dot high in the corporate leverage is on medium involved with 1.3 percentage point high of viscous advance proportional to loans, next a one-time lag. Moreover, of policy inclusion the analysis propose that the leverage ratio can avail as a helpful badge of second and asset quality, the analysis points to the requirement to progress the gathering of data from the corporation sector. The non-performing loans in Nigeria suggested that credit risk rating is a large fundamental of macro efficient studies. While the total non-performing loan ratio favor as a representative for the broad economy prospect of retardation of the bank and financial sectors total loan hazard. Therefore, the agent that pay non-performing loan be applicable. This survey supplies a general macro model for non-performing loans in case of Nigeria. The tentative study emphasizes that in long-term, there is a negative relationship among GDP and non-performing loan exist. Moreover, credit provided to the private sector and foreign exchange rate spend favorable impact on non-performing loan in this study. However, rate of foreign exchange, credit provided to the private sector, the rate of lending and equity market index are determining non-performing rate to the most extent. Akinlo et al., 2014). Doriaana (2015), the non-performing loans assessing the factors in Kenyan banks is an essential financial favor in the sector, supporting evolution policy during channelizing treasury for prolific objective intercede stream of funds from excess to shortfall units and hold up financial and economic politics of government. The study focused at the agent share in rise rates of non-performing loans based on Kenya in spite of the prelude of CBR. Moreover, the

other goals are located consequence of NPLs in Kenyan commercial banks to setup the direction of bad loans after and before the preface of BRB in Kenyan general (commercial) banks and set, the pains possessed to decrease the risk because of NPLs. The discuss lid all banks in Kenya for the last 10 years (Ambaba et al., 2013). Azzez (2015), studied NPLs of determinants in authorized-commercial banks results from Sir Lanka. This paper research the determinant agents of ex-post credit risk bearing in mind NPLs as proxy methods in Sri Lanka's bank industry and is filled with a specimen of authorized banks for the time from 1999-2012.the results showed that the standard of non-performing loans could be refer to both banks specific factors and macroeconomic conditions it detect that non-performing loans resort to rise with relapsing banks competence. Furthermore, there is a favorable correlation among non-performing loan.

2.4 Other Literature Review on NPL

The non-performing loans notes that asset quality is an important indicator, in 1983 the audience given its top chance to survey bank quality asset in the shape of non-performing loan information asset. The objective of this research is to estimate the input. A regression analysis parallel to the non-performing statistics asset with investigator rating of assets propose that the non-performing information can be helpful help in analyzing the asset quality of banks, especially when the datum is suitable (Meeker et al., 1987). The situational determinants and macroeconomic of non-performing loans. This paper present to analysis institutional and macroeconomic experimental determinants of growth of non-performing ratios discusses is concentrated on chosen SEE and Caeca land in the time 2006-2013.The researcher use panel model path with the logarithm shears of non-performing loan to total loans as a dependent variable. The outcome displays that there is negative relationship among

rise of the non-performing loans ratios and increased in GDP (Tansaskonie et al., 2015). Ghosh (2005), studied does leverage influence banks non-performing loans? The simultaneous neutralization regression outcome obviously signal that greater the non-performing loan amount minimize efficiency in cost. Also, cut cost efficiency raise non-performing loans. Moreover, the consequence also prop the hypothesis of bad management suggest by Deyoung and Berger (1992) that pauper management in the banking foundation outcome in bad quality loans, on the other hand, raise the amount of non-performing loans. With consideration to macro-economic methods, on, performing loans differ in a negative manner with the inflation's growth rate and has a positive relation with the base rate of lending. Vithessonthi (2016), studied non-performing loans bank, credit growth and deflation.

In another study, the non-performing loans in a group of developing countries bank specific factors effecting the cost study of Indonesia. In modern contracts, different lands in financial crises have overwhelmingly been forego in the high bin non-performing loans in the bank's asset portfolios. The rise in non-performing certain to have opposite effect in the banking sector thus, that comprehension the determinant of non-performing loans is very critical to include the competence and health of the total frugality. This study proposed to shed light-on bank specific agent that influence loan retardation issues in improvement lands whose banking game important role in the total economy. These returns behold that because slash loan retardation that can soured banks asset quality, banks must preserve their standard of profitability and rise, instead of reduction their credit supply to debtors (Rachman et al., 2018).

2.5 The impacts of Non-Performing Loans (NPL)

There have been numerous studies concerning the factors of NPLs, where some studies have used essential ties with bank specific factors and at the same time using macro variables. A study done for Hong Kong using regression has tried to show this relationship by using different variables such as rate of interest, consumer price index, price of estates price of equities, the total amount of failed businesses rate of people seeking jobs and rate of economic expansion as independent variables. The result indicated that the ratio for non-performing loans in Hong Kong has positive correlation with rate of interest and bankruptcy rate. However, CPI has and adverse relationship with NPLs similar to the relationship among GDP, and real estate prices with NPLs. In addition, it is found that non-performing loans for Czech corporations are having positive relationship between them and real exchange rate, the loan to GDP ratio, unemployment and interest-rate increases.

2.6 Bank Loan Classifications

Before a bank issues a loan out to a borrower, a proper authentication and verification of collateral documents needs to be carried out in order to avoid losses from borrowers. There are different forms of losses that can be incurred by a bank from a non-performing loan. There are virtual losses as well as unrecoverable losses. These unrecoverable loans are usually regarded to be debts that were incurred from companies for a legal protection, usually under conditions such as bankruptcy (Mustafa et al., 2019). These loans are required to be covered by the banks and result in losses on the side of the banks. However, loans could either be:

- **Passed loans:** These loans usually involving loans that has been paid back to the bank. Majority of these loans help to yield profit to the bank as a result of the added interest paid.

- **Special mentioned loans**: These kind of loans involving loans offered to firms and different organizations, intended for business purposes. These loans could have some troubles during payments as a result of business losses)

- **Substandard loans:** These loans are required to be paid after a three-month period. Moreover, the banks usually provide 10% of the unsecured part of the loans.

- **Doubtful loans:** Liquidation in the form of previous debts, can prohibit future loans, as a result of uncertainty of payment. 50% of such loans are usually made available by the bank.

2.7 Formulation of Hypothesis

A new evidence from a global sample tender minimarts of non-performing loans, the study employed group data and study macroeconomic determinants of non-performing loans across 75 lands over the past contract. The next methods are plant to significantly impact of non-performing loans ratios; share prices, GDP growth, lending interest rate, and exchange rate.in the condition of exchange rates the influence rely on the range of foreign exchange lending to unhedged borrowers which is specially rise in lands with dowel managed exchange rates. The evidence from japan. He cheeked connect between non-performing loan and credit growth in an economy with deflation compression. In this paper, he used two-step GMM regression and OLS regression. He

suggests the guide for the time-change connection among non-performing loans and growth in credit in a specimen of 82 overtly registered banks commercial banks in JAPAN over the time 1993-2013. The researcher found proof to backing the concept that great banks pay the spotted result of credit growth of non-performing loans. Moreover, non-performing loan and growth in credit have no impact on profitability.

Chapter 3

DATA AND METHODOLOGY

3.1 Data

The aim of this research is to investigate the influence of bank specific variables and macroeconomic variables on non-performing loans in commercial and Islamic banks of Jordan. To investigate the abovementioned relationship, we used a panel of 12 Jordanian banks, which were selected according to size (biggest commercial and Islamic banks of Jordan). The dataset spans over 8 years from the year 2011 to 2018. Banks chosen, are shown in table (1) below:

Table 1: Banks chosen for the study

Arab Banking Corporation (Jordan)
Bank al Etihad
Bank of Jordan Plc
Cairo Amman Bank
Capital Bank of Jordan
Islamic International Arab Bank
Jordan Ahli Bank Plc
Jordan Commercial Bank
Jordan Islamic Bank
Jordan Kuwait Bank
Safwa Islamic Bank
Sociétégénérale de Banque-Jordanie

The total asset size of the selected banks represents over 55 % of the sector which shows that the sample is representative.

To study the influence of bank specific variables and macroeconomic variables on non-performing loans, the following variables were selected: Profitability, capital adequacy, liquidity, size, loan to assets ratio, deposit to loan ratio, inflation, unemployment, economic growth, government debt, lending to private sector. The variables' description and sources are mentioned in table (2) below;

Table 2: Variables description

Code	Variable	Description	Formula	Source
CAR	Capital adequacy	Total capital adequacy ratio	(Tier 1 capital+ Tier 2 capital)/Risk weighted assets	Orbis -Bank Focus
ROA	Profitability	Return on Assets	Net income/Total assets	Orbis –Bank Focus
NL	Net Loans	Net loans of the bank	Net loans of the bank	Orbis –Bank Focus
LD	Loans to deposits ratio	Total loans/ total deposits	Total loans/ total deposits	Orbis –Bank Focus
LNPL	Non-performing loans	Logarithm of Non-Performing Loans	Logarithm of Non-Performing Loans	Orbis –Bank Focus
LTOA	Size	Logarithmic form of total assets	Logarithmic form of total assets	Orbis –Bank Focus
DOA	Deposit to asset ratio	Portion of total assets that is being funded by deposits	Total deposit/total assets	Orbis –Bank Focus
INF	Inflation	Inflation average consumer prices (%YOY)	Inflation, average consumer prices (%YOY)	World Bank
GDP	Economic growth	GDP growth (annual %)	GDP growth (annual %)	World Bank
BUDG	Government budget	Government budget balance (% of GDP)	Government budget balance (% of GDP)	World Bank
CRED	Credit to private sector	Domestic credit to private sector (% of GDP)	Domestic credit to private sector (% of GDP)	World Bank

Capital adequacy (CAR): Capital adequacy measures the financial strength of the bank. It is an assessment of the capital of a bank presented as the percentage of a bank's risky assets.

Profitability: Banks like other corporations have the aim of making profit by maximizing earnings from services and minimizing costs. Most of the bank's income comes from the interest charged on loans and fees charged on services. Profitability is represented by return on assets, which is the ratio of net income to total assets. We prefer return on assets rather than return on equity to capture the profitability of loans.

Loan portfolio quality: these are the key assets to the banks and other finance based establishments. The worth of a loan portfolio rests on not merely on the rates of interest earned, but on the quality or prospect that both the principal and the interest would be paid back as well.

Loans to deposits ratio: This variable measures the coverage of deposits alone to the loans that the bank has.

Deposit to total asset ratio: This variable indicates the amount of total assets is being financed by total deposits.

Non-performing loans: The dependent variable of this study, it shows the logarithmic form of impaired and non-performing loans.

Bank Size: The size of the bank is measured by taking the logarithmic form of the total assets of each bank. Percentage change in the overall level of prices for services

and goods in a given nation and it is calculated as a yearly percentage change. The variable is measured by capturing the percentage change of the Consumer Price Index (CPI).

Economic growth: Is the increase in goods and services produced by the country over a period. Economic growth is very important as it measures the advancement of the economy. The variable is measured as the percentage change in Gross Domestic Products (GDP).

Government budget: This variable represents the government's revenues and expenditures. The variable is represented by the government budget balance (% of GDP).

Lending to private sector: This variable captures banks' lending to the private sector of the economy. It is represented by the domestic credit to private sector (% of GDP).

3.2 Methodology

The linear regression model is the one of the most famous methodologies to analyse panel data and get robust results. In order for the classical linear regression model (CLRM) to be robust (best linear unbiased estimations or BLUE), its assumptions must be valid. One of its assumptions is the nonexistence of multicollinearity between the independent variables. This assumption is examined in this research by examining the correlation matrix. Moreover, another assumption of the CLRM that should hold is the assumption of no autocorrelation. In other words, no correlation between the error terms, this assumption is examined using the Durbin-Watson test. Furthermore, to specify the type of effects that is going to be applied on the either dataset, the Hausman-specification test is applied to find out the best suited model in case of fixed

or random effects. This section will continue by examining the correlation matrix, Hausman test, Durbin-Watson test, and will finish with model specification.

3.2.1 Correlation Analysis

To address the multicollinearity assumption of no correlation between the variables, correlation matrix should be developed. Correlation analysis shows the relationships and links between all variables (the analysis does not differentiate between variables and treats all variables as random). The presence of multicollinearity is found when a high correlation coefficient runs among two explanatory variables. This high correlation will make the examination of individual effects of an independent variable on the dependent variable hard, which makes the interpretation of the independent variable coefficients misleading, and the regression will result in biased estimates. To capture multicollinearity, Kennedy (2008) came up with a cut off criterion that amounts to 0.8 and stated that any correlation that is higher than 0.8 would mean that multicollinearity exists between the independent variables examined.

3.2.2 Hausman Test Effect Model

After dealing with multicollinearity assumption, the most suitable effects to apply on this data set have to be set. Looking at the dataset, we can see that the characteristics of the banks are very similar as they are in the same country operating under the same regulations, and with close size, fixed effect model is more suitable. However, the fixed effects model has some flaws, which can call to the estimation of the random effect model. The most robust way to choose between these two models is by applying Hausman test to the dataset. Hausman test examines the correlation between the independent variables and effects and has the following hypotheses:

H_0: Random effect model is the most appropriate to apply to the analysis.

H_1: Fixed effect model is the most appropriate to apply to the analysis.

If the probability value of the chi-square statistic is more than the significance level (alpha to be 10%), Random effect model is the preferred model by Hausman test (Greene, 2003).

3.2.3 Model Specification

In order to test the influence of bank specific and macroeconomic variables on the non-performing loans of Jordanian banks, this study will evaluate three models. The first model will include all the bank specific variables to see the effect on non-performing loans isolated from other selected variables. The first model is shown in equation (1).

$$LNPL_{i.t} = \alpha + \beta_1 CAR_{i.t} + \beta_2 ROA_{i.t} + \beta_3 DOA_{i.t} + \beta_4 LD_{i.t} + \beta_5 NL_{i.t} +$$

$$\beta_6 LTOA_{i.t} + \varepsilon_{i,t} \tag{1}$$

where LNPL stands for non-performing loans, CAR stands for capital adequacy ratio, ROA stands for return on assets, DOA stands for deposit to total assets ratio, LD stands for loan to deposit ratio, NL stands for net loans and LTOA stands for total assets.

Model (2) will determine the effects of macroeconomic variables on the non-performing loans of Jordan by including the selected 4 macroeconomic variables in the ordinary least squares' equation (2) shown below;

$$LNPL_{i.t} = \alpha + \beta_1 INF_{i.t} + \beta_2 GDP_{i.t} + \beta_3 CRED_{i.t} + \beta_4 BUDG_{i.t} + \varepsilon_{i,t} \tag{2}$$

Where LNPL stands for non-performing loans, INF stands for inflation, CRED stands for credit to private sector, BUDG stands for government budget.

Furthermore, the third model will discuss the effects of all selected variables on the non-performing loans of Jordanian banks. The model includes all variables contained in both equations (1) and (2) to generate the equation (3) as shown below;

$$LNPL_{i.t} = \alpha + \beta_1 CAR_{i.t} + \beta_2 ROA_{i.t} + \beta_3 DOA_{i.t} + \beta_4 LD_{i.t} + \beta_5 NL_{i.t} +$$

$$\beta_6 LTOA_{i.t} + \beta_7 INF_{i.t} + \beta_8 GDP_{i.t} + \beta_9 CRED_{i.t} + \beta_{10} BUDG_{i.t} + \varepsilon_{i,t} \tag{3}$$

Where LNPL stands for non-performing loans; CAR stands for capital adequacy ratio; ROA stands for return on assets; DOA stands for deposit to total assets ratio; LD stands for loan to deposit ratio; NL stands for net loans while LTOA stands for total assets; INF stands for inflation; CRED stands for credit to private sector, and BUDG stands for government budget balance.

Chapter 4

EMPIRICAL FINDINGS

To determine the factors influencing non-performing loans of Jordan's selected banks, we carried out descriptive analysis to see the characteristics of the variables, correlation analysis to check for multicolleniarity and Hausman test to see the suitable effects to apply on the dataset in hand. Then, a regression analysis is carried out to see the long run relationships and coefficients of the determinants of non-performing loans.

4.1 Descriptive statistics

Table (3) below shows the descriptive statistics of the variables examined. As shown in the table, this table shows all data descriptions such as maximum, minimum, median, and mean, as we can see from the table for non-performing loans percentage of total loans, the mean is 4.39 with a maximum value of 5.57 and a minimum value of 2.48 which also shows that the series does not have any outliers. Similar case can be seen for all the variables as the minimum values and maximum values are not very dispersed from the mean.

Table 3: Descriptive Statistics

	LNPL	CAR	ROA	DOA	LD	NL	LTOA	GDP	INF	CRED	BUDG
Mean	4.391	2.936	1.165	0.708	3.163	3.949	14.669	0.025	0.037	0.732	-0.061
Median	4.705	2.857	1.225	0.701	3.205	3.942	14.853	0.026	0.040	0.729	-0.054
Max	5.572	3.927	2.120	0.906	3.982	4.482	15.596	0.031	0.062	0.784	-0.034
Min	2.485	2.368	-0.170	0.541	1.033	3.526	13.109	0.020	0.013	0.702	-0.100

CAR is capital adequacy, ROA is profitability, NL represents net loans, LD is loans to deposits ratio, LNPL is non-performing loans, LTOA represents size, INF is inflation DOA represent deposit to total asset ratio, GDP represents economic growth, BUDG is government budget, and CRED is the credit to private sector.

In the second stage of the analysis, correlation matrix is analysed to see the initial relationships among the explanatory variables and the dependent variables and to examine the degree of multicollinearity between the independent variables. Table (4) presents the correlation matrix results.

Table 4: Correlation Matrix

	LNPL	CAR	ROA	DOA	LD	NL	LTOA	GDP	INF	CRED	BUDG
LNPL	1										
CAR	-0.717*	1.000									
ROA	0.159	-0.093	1.000								
DOA	-0.186***	0.135	-0.163	1.000							
LD	0.097	-0.169	0.084	0.092	1.000						
NL	-0.259**	0.269**	-0.151	0.449*	-0.241**	1.000					
LTOA	0.693*	-0.448*	0.323	0.261	0.161	0.118	1.000				
GDP	-0.007	0.045	0.209**	-0.108	0.021	-0.167**	-0.182**	1.000			
INF	0.067	0.029	0.108	-0.183***	-0.076	-0.143***	-0.257*	0.734*	1.000		
CRED	0.052	-0.086	-0.156	0.024	-0.161	0.204	0.131	-0.657**	-0.411*	1.000	
BUDG	0.032	-0.070	-0.077	0.018	-0.103	0.139	0.078	-0.332*	-0.336*	0.733*	1.000

Note: *,** , *** represents significance at 1%, 5% and 10% respectively.

Table (4) shows the pairwise correlation coefficients between each two variables. When examining the coefficients between the independent variables and the dependent variable, we can see that CAR, DOA, NL, have a negative relationship with non-performing loans, and LTOA, CRED, and BUDG have a positive relationship with the dependent variable. However, after conducting the Prob values for our correlation matrix we have seen that 4 variables of ROA LD GDP and INF are not significant so it means that their values are not reliable. When examining the correlations for multicollinearity we can see that all correlations among variables are less than 0.8, which shows that there is no multicollinearity between the variables.

4.2 Regression analysis

After assuring no high multicollinearity between the independent variables, we estimate three models; the first model includes all bank specific variables and the second will includes macroeconomic variables. The third model has both bank specific as well as e macroeconomic variables as discussed in model specification section.

4.2.1 Hausman Test

In order to find the best fitted effect for our model after running the first model we have applied the Hausman specification test in order to determine whether Random Effect suits our model or Fixed Effects, table below shows the result for Hausman test.

Table 5: Model (1) Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0	10	1.000

As shown from table above for our general model, the null hypothesis that random effects are more appropriate is not rejected, as the probability value is more than any

level of alpha, therefore based on Hausman test results, Random effect has been chosen
to be applied in our model.

4.2.2 Bank specific variables

Table 5: Shows the Results of the First Model

	Coefficient	t-statistic	P-value
CAR	-1.001424	-6.277647	0
ROA	-0.129812	-2.011514	0.0474
DOA	-1.197964	-2.49569	0.0145
LD	-0.007545	-2.128104	0.0362
NL	-0.231811	-0.854438	0.3952
LTOA	0.00000012	2.815811	0.006
Constant	9.110964	7.116795	0
R-squared		0.399472	
F-statistic		9.645425	
Prob (F-statistic)		0	
Durbin-Watson stat		1.427533	

$$LNPL_{i.t} = 9.11 - 1.001CAR_{i.t} - 0.129\,ROA_{i.t} - 1.19DOA_{i.t} - 0.007LD_{i.t}$$

$$- 0.23NL_{i.t} + 0.00000012LTOA_{i.t} + \varepsilon_{i,t} \qquad (4)$$

Table above shows the results of the first random effect model regression. We can see that all bank specific variables except NL are significant at 10% level of significance where for LD. ROA, CAR, DOA show a negative relationship with the non-performing loans of Jordan's banks. While LTOA has a positive relationship with LNPL. When profitability increases by 1%, non-performing loans decrease by 0.129%. Similarly, When LTOA increases by 1%, non-performing loans will increase by 0.00000012%, and this positive relationship is not expected but as we can see this relationship is very weak so LTOA is not actually effecting LNPL in the same vein, When CAR increase by 1%, non-performing loans drop by 1%. Profitability is involved with risk bearing behaviour of the bank, with less profitability, quality of credit assessing of the bank is lower and the bank tends to give riskier loans. This negative relationship between profitability and non-performing loans is in line with the findings of Cotugno, Stefanelli, and Torluccio (2010) and Louzis, Vouldis, and Metaxas (2010). Low capital adequacy ratio would increase non-performing loans according to moral hazard hypothesis by Berger and DeYoung (1997). Larger banks have the strength and ability to avoid the problems resulting from information asymmetry, which results in less non-performing loans, while smaller banks have limited access to resources to carryout efficient and complete credit analysis. Moreover, an increase of 1% in DOA leads to a decrease of 1.1% in non-performing loans. This high ratio can be explained by the fact that when diversification increases in case of costumers of the bank there can be decrease in the risk of failing loans (Demsetz & Strahan,, 1997). Furthermore, an increase in loans to deposits causes a decrease in non-performing loans by 0.007%.

The model has an adequate power explaining the variations in nonperforming loans as the independent variables can explain 39.9% of the variations of the dependent variable according to the R-square value. In addition, the model is best fitted as the null hypothesis of the model is not best fitted is rejected by the value of F-statistics.

4.2.3 Macroeconomic variables

Table 6 below demonstrated model (2) which captures the effect of selected macroeconomic variables on the dependent variable nonperforming loans.

Table 6: Shows the Results of the Second Model

	Coefficient	**t-statistic**	**P-value**
INF	4.538977	2.297342	0.0243
CRED	1.937464	1.126007	0.2637
GDP	-10.611	-0.882944	0.38
BUDG	-0.02593	-0.015876	0.9874
Constant	3.046545	1.977756	0.0515
R-squared		0.12103	
F-statistic		2.650629	
Prob (F-statistic)		0.039427	
Durbin-Watson stat		1.521938	

$LNPL_{i.t}$

$$= 3.04 + 4.53INF_{i.t} - 10.6GDP_{i.t} + 1.93CRED_{i.t} - 0.02BUDG_{i.t}$$

$$+ \varepsilon_{i,t} \tag{5}$$

Results indicate that only inflation affects nonperforming loans positively. As inflation increase by 1%, nonperforming loans increase by 4.53%. These results are in line with

our expectations, as with the increase of inflation, interest rates will increase which would put pressure on borrowers with loans interest increasing which might lead to default on the loan. Other macroeconomic variables showed no relationship with nonperforming loans in the case of Jordanian banks. Regarding the power of the model, the model is well fitted since the null hypothesis of the F statistic is being rejected at 5% level of significance. However, since all variables except for inflation are insignificant, R-square is low and the independent variables can explain only 12% of the variations in the dependent variable.

4.2.4 Model with all Variables

The third and last model of the analysis observes the effects of all selected variables on the nonperforming loans of Jordanian banks. Table (6) below shows the results of the third model.

Table 7: Shows the Results of the Third Model

	Coefficient	t-statistic	P-value
CAR	-0.768921	-4.404381	0
ROA	-0.178867	-2.798914	0.0066
DOA	-0.79858	-1.682975	0.0968
LD	-0.0055	-1.580671	0.1184
NL	-0.212746	-0.800642	0.426
LTOA	0.000000202	3.498107	0.0008
INF	7.508902	3.342178	0.0013
CRED	-0.944317	-0.557806	0.5787
GDP	-14.46495	-1.2646	0.2102
BUDG	1.116271	0.721553	0.4729

Constant	8.686369	4.511997	0
R-squared		0.392252	
F-statistic		4.582476	
Prob (F-statistic)		0.000051	
Durbin-Watson stat		1.680772	

$$LNPL_{i.t} = 8.68 - 0.768CAR_{i.t} - 0.178ROA_{i.t} - 0.798DOA_{i.t} - 0.0055LD_{i.t} -$$

$$0.212NL_{i.t} + 0.0000002LTOA_{i.t} + 7.5INF_{i.t} - 14.4GDP_{i.t} - 0.94CRED_{i.t} +$$

$$1.11BUDG_{i.t} + \varepsilon_{i,t} \qquad (6)$$

The model is consistent with the findings in the first and second models with the exception for the LD, which is insignificant in the final model. The rest of our independent variables show the same relationship found in the first model, and second model. For the macroeconomic variables, inflation shows the same relationship examined in the second model. Where 1% rise in inflation causes a 7.5% rise in non-performing loans the rest of macroeconomic variables remain insignificant for bank specific variables the results are more robust in the final model and are as follow an increase in CAR by 1% leads to 0.76% decline in non-performing loans, 1% increase in profitability leads to 0.17% decrease in non-performing loans. Moreover, an increase of 1% in DOA results in 0.79% decrease in non-performing loans, and a rise of 1% in total assets lead to 0.000000202% increase in NPL.

Regarding the power of the model, the model is well fitted as we can easily reject the null of F-statistic at 1% level of significance. R-square is relatively acceptable with an

amount of 39% explanatory power, which means our model can explain 39% of the changes in the non-performing loans.

Chapter 5

CONCLUSION

This section sums up findings and results of the research. Nowadays, numerous cases have been of main importance in the banking sector such as non-performing loans. Quite a lot of researches have showed that non-performing loans in banks have been an important reason of delinquencies in banks. Typically, non-performing loans are probable not to be rewarded in complete when it has taken an extended time. In this situation, there will be a significant cause on numerous banks in Jordan in which it has been acknowledged to have matters related to non-performing loans and this has encouraged researchers to fulfil several studies on the part of non-performing loans in Jordan. On the other hand, diverse business analysts and banking sectors deliberated on the belongings of global financial crisis occurring in Jordanian economy, and banking sectors as well. Increasing non-performing loans level in Jordan is affected by the global financial crisis keep mounting a high amount of pressure on banks, with conceivable and unfavourable impact on banks as well as other lending activities.

There is a large literature on non-performing loans such as Akinlo et al., (2014). Doriaana (2015) (Ahlem and Fathi, 2013; Nkusu, 2011), (Ambaba et al., 2013). Azzez (2015), Deyoung and Berger (1992), Vithessonthi (2016) who studied non-performing loans bank, credit growth and deflation, (Rachman et al., 2018) and many other researchers.

The model employed in this study is the classical linear regression model which is a widely used methodology in analysing panel data and getting robust outcomes. Achieving robust feature for the classical linear regression model (CLRM). Moreover, the nonexistence of multicollinearity between the independent variables should be satisfied. Furthermore, to state the kind of effects that is going to be practised on the either dataset, Hausman test is employed to specify the use of fixed or random effects.

We estimate three models; the first model consists of all bank specific variables and the second will consists of macroeconomic variables. The last model includes both bank specific as well as e macroeconomic variables. The variables employed in this study are: capital adequacy (CAR), profitability (ROA), net loans (NL), loans to deposits ratio (LD), Deposit to total asset ratio(DOA), non-performing loans (LNPL), size (LTOA), inflation (INF), economic growth (GDP), government budget (BUDG), and the credit to private sector (CRED).

The counted of banks employed in this study is twelve: Jordan commercial bank, Bank of Jordan plc, Cario Amman bank, Bank Al Etihad, Housing bank for trade and finance, Jordan Ahli Bank plc, Jordan Kuwait bank, Arab Jordan investment bank, Capital bank of Jordan, Societe general de banque Jordanian, Invest bank, Arab banking corporation (Jordan). The data's accumulated for these banks in the periods from 2001 till 2019. These data include distinct records of the banks that was very valuable in the determination of non-performing loans in Jordan banks, which is the most important spotlight of this study. Moreover, the employing of the results in this study will be very valuable in bring about constancy in numerous Jordanian banks.

The data was investigated by using random effect model. For the objective of study, Eviews program was used. The returns of the way of NPLs indicate a downward sloping of NPLs of commercial banks in Jordan over the period of the research.

The general findings of this study shows that non-performing loan is highly affected by capital adequacy ratio, and deposit to total asset ratio since they are having high effects and profitability also has a significant effect on nonperforming loans. The non-performing loans can be majorly explained by bank specific variables while macro-economic variables struggle to explain the components of the non-performing loans but the fact that inflation has a high effect on non-performing loans cannot be ignored also.

The findings of this study can be very helpful to the managers and policy makers of Jordan since it offers a wide perspective about non-performing loans and it can be used in order to enhance quality of the loans in general and in order to receive better results in the long term.

The study suggests that the banks in Jordan can increase their deposits by making more efforts in attracting new depositors in order to increase their diversity. Furthermore, banks are suggested to improve their capital adequacy ratio since this shows that banks with strong capital adequacy have a tendency to decrease the level of NPLs due to efficient utilization of its capital.

This study was conducted only on Jordanian banks which can be considered the limitation of this study. Moreover a limited number of variables have been used in order to investigate this issue. Further studies can be done using more variables like

sector based loans. In addition, more macroeconomic variables can be added to the model to strengthen the macroeconomic perspective of the study. Last but not least, more banks and not limited to Jordanian banks but also foreign banks would also contribute more to this field of study.

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