

Assessment of Effective Factors on Non-Performing Loans (NPLs) Creation: Empirical Evidence from Iran (2006-2011)

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ABSTRACT

Today, one of the fundamental problems in banks, finance and credit institutions is Non-performing Loans, because costumers don't pay this loans and a lot of part of these loans remain in costumers' accounts. This is one of the most important problems in our country. This study is an assessment of effective factors on Non-Performing Loans (NPLs) for preventing NPLs, increasing possibility of new income and improvement of scheduling power for using resources. Banks documents were investigated for collecting data. These data were analyzed with SPSS and results have shown that all hypothesizes except one of them were supported. This means that there are significant relationships between collaterals, bounced check, credit background of costumers, duration of loans payment and average of account quantity with NPLs. Relation between having several deposit accounts with NPLs was not supported.

KEYWORDS: Non-Performing Loans, credit, risk, Bank

1-INTRODUCTION

The issue of non-performing loans (NPLs) has gained increasing attentions in the last few decades. The immediate consequence of large amount of NPLs in the banking system is bank failure. Many researches on the cause of bank failures find that asset quality is a statistically significant predictor of insolvency (Barr and Siems, 1994, Demirguc-Kunt and Detragiache, 1998), and that failing banking institutions always have high level of non-performing loans prior to failure. It is argued that the non-performing loans are one of the major causes of the economic stagnation problems. Each non-performing loan in the financial sector is viewed as an obverse mirror image of an ailing unprofitable enterprise. From this point of view, the eradication of non-performing loans is a necessary condition to improve the economic status. If the non-performing loans are kept existing and continuously rolled over, the resources are locked up in unprofitable sectors; thus, hindering the economic growth and impairing the economic efficiency.

Banks as intermediaries of funds are responsible for attracting resources and inject it in the various economic sectors. In the process of resources allocation, banks while making profits, encounter with several risks and nowadays, one of the most important risks is default risk, which leads to increase in non-performing loans (NPLs). Based on rules in banking system, the amount of non-performing loans should not be more than %5 of remaining facilities of each bank, but increasing growth of NPLs amount concerned officials and with considering the role of banks in the country's economy this phenomenon could be named a "national" concern (Ghasemi, 2010)

NPLs are those of the monetary resources of banks which unlike of banking trade-off, flew in country's economy. Meanwhile increasing banking balance sheet assets, bank decides to invest in macroeconomic area, but with the lack of receipt of these resources, result is inversion of investments. This reduce in investment impact the level of employment of the community and in the next step, these two factors make the country's economic growth unstable. Of course, the adverse effects of NPLs have different dimensions and not restricted to these cases. Whit increasing NPLs, the State would have to react with increasing growth of money, that result in increasing of total demand as a result of increasing of liquidity, and since this demand growth are not programmed and officials have not any decisions for reaction to this demand, surely the general level of the prices will be increased. This inflation will be an obstacle for investment and increasing of product, that will intensified unemployment and slump. Further that this inflation will reduces real income and power of purchasing. Nowadays, Increasing of NPLs and searching strategies for dealing with it, is one of the concerns of main banking executives in country. And of course, the first and most effective step to treatment of this chronic and epidemic pain is pathology and then finding of effective solutions for modifying and improving of banks conditions as the country's greatest economic patient. The most important problems that country's banking system is faced, is increasing of banking NPLs and consequently, reduction of liquidity, disruption of resources' allocation and finally reduction of bank's profit. Pathology of causes and factors that will raise NPLs amount and provision of practical solutions can reduce the damaging effect of NPLs on the body of banks (Sinkey, 2002:90). Non-performing loans can lead to efficiency problems for banking sector. It is

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found by a number of economists that failing banks tend to be located far from the most-efficient frontier (Barr and Siems, 1994, Berger and De young, 1997), because banks don't optimize their portfolio decisions by lending less than demanded. What's more, there are evidences that even among banks that do not fail; there is a negative relationship between the non-performing loans and performance efficiency (Houghes and Moon, 1995, Kwan and Eisenbeis, 1994, Retsi, 1995).

For granting of facilities, borrower's credit score and payment ability for original and profit amount of credit have to designate. The chance that the borrower fails to pay the loan is known as credit risk or default risk (Sinkey and Greenwalt, 1991).

Basel committee define credit risk as: Credit risk is most simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms (Basel, 2000).

According to Sinkey(1992) and Rose (1999) there are five major types of risk in banks: 1-credit risk 2-liquidity risk 3-Market risk 4- Interest rate risk 5-profitability risk. Other studies provide other types of risk such as Currency risk, investment risk, and economic decisions risk (Jamaat and Asgari, 2010).

The high amount of NPLs represents high credit risk in today bank system and this encounters banks with market risks and liquidity risk. Although banks are trying to control the risks within the organization, but high percentage of this risk and its consequences for the future could not be ignored (Ekrami and Rahnama, 2009)

In the global market reduction of credit position of borrower lead to loss because he has to accept higher risk for earning needed return. Lender risk is undertaker credit risk (Basis, 2002:13).

Credit risk is important in monetary and credit institution because resources applied for facilities are in debt of monetary institution (bank) to its shareholders and if the money doesn't have flow, power of giving credit and shareholders' capital return reduces (Jamaat and Asgari, 2010).

NPLs create due to weak criteria of credit assays, ineffective policies, risk acceptance without regard to limitation of bankroll and wrong functional indicators (Morton, 2003:1).

Responsibilities in bank should be determined clearly thereby ensure that bank's policies and procedures in risk management are managed effectively. For compatibility with integrated standards of bank for determination of customer identity, it is important that accounts and exchange of information be controlled continuously (Basel, 2004).

The purpose of credit risk management is that by maintaining of credit risk in acceptable range; the ratio of return level banking facility to risk be maximized. The banks also must be considering the relationship between credit risk and other risks. Efficient management of credit risk is a part of comprehensive risk management method and the basic condition for long term success of each bank (Basel, 1999).

Can banking system personnel manage this big problem lonely? Maybe the answer be positive from viewpoint of whom think all deficiencies are made by banking personnel but it is injustice when a problem has hundreds factors within and outside of organization, absolutely attach it to personnel's negligence of a system (Rabizadeh, 2007).

The effective factors in increasing of NPLs are divided into three sections:

- 1- Internal factors: these factors are caused by internal functions and activities of bank, and are due to decisions and practices of officials and staff's functions. These factors are controllable and manager can prevents them by using suitable method, determination of weakness and elimination them and improvement of process.
- 2- External factors: these factors can be controlled by bank hardly and are caused by external environment and its effect on implementation of decisions and also government policies. Unexpected events, changing in rules and obligations, political and economic changes (inflation and slump) are external factors.
- 3- Third sections are factors that although are similar to internal factors that are controllable but control of them is partially and because some of political and social expedients bank has to accept them. These factors are obstacles in following and recovery of NPLs.

Each problem in payment of facilities makes institutions disable for their depositors, and result in insecurity of bank and institution; because the minimum tribulation for these institutions is increasing of contingent reserves and decreasing revenue thereby organization lose its inefficiency (Ghasemi, 2010).

By identification of effective factors in creating NPLs and finding ways to prevent it, suggestions can be provided to recover of NPLs; this can help to correct orientation of granted facilities and is a step toward progress of excellent aim of Islamic banking –that is increasing of product and service and job creation for enhancing of social level of life.

Iran's financial institution include commercial banks, insurance institution, Gharzolhasaneh saving institution, pension funds and etc. these institutions as financial intermediaries provide possibility of transferring saving from savers to borrowers. So an important part of community savings conduct through banks and financial institutions. The loans that banks and financial institutions give to households, institutions and State are the most important source of community financing for purchasing the consumer goods and services, financing for purchasing the capital goods such as building dams, highways, bridges and purchase of machinery and tools. The investment will increase the efficiency of community resources and cause the citizens of a society has a higher level of life (Saeidi, 2009). Figure 1 and 2 shows the situation of public sector banks of Iran in NPLs issue during 2004-2007. According to these figures it is vital to consider NPLs creation's factors and give solutions for preventing them in banking system of Iran.

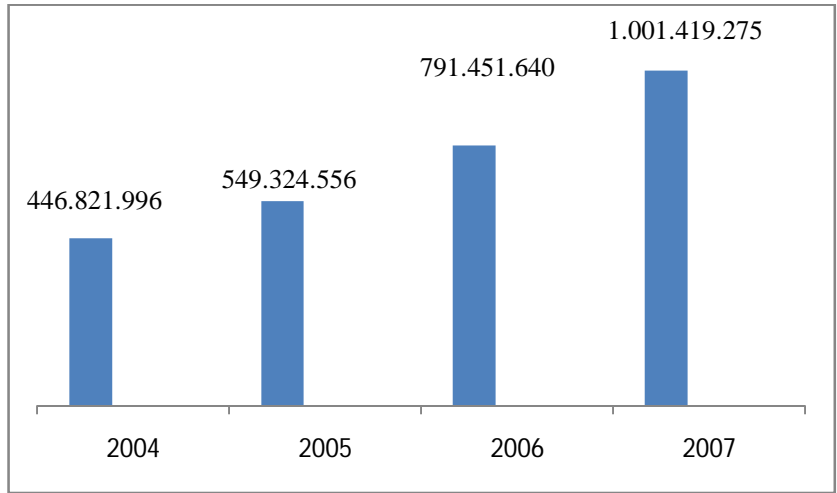


Figure1: Amount of grant facilities in public sector banks of Iran during 2004-2007 (million Rials)

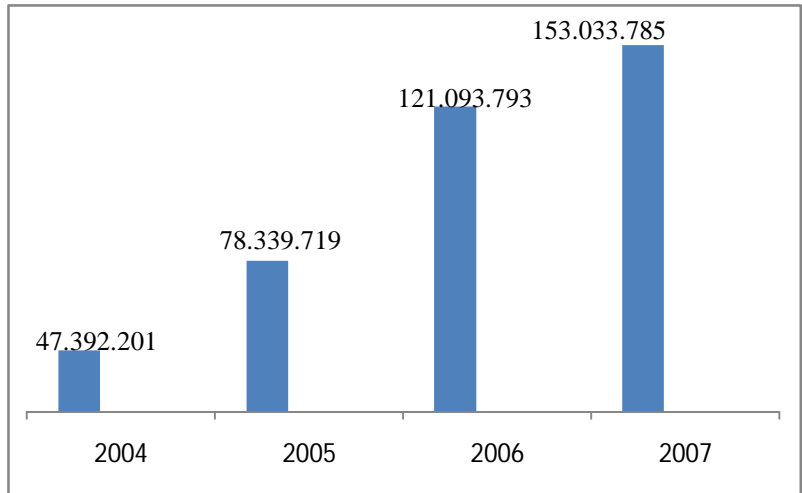


Figure 2: NPLs growth in public sector banks of Iran during 2004-2007 (million Rials)

Lot of researches has been conducted on the widespread issues of banking activities. NPLs also have a lot of literature due to its importance for the survival of banks. Keeton and Morris (1987) present one of the earliest studies to examine the causes of loan losses. In the latter paper the authors examined the losses by 2,470 insured commercial banks in the United States (US) over the 1979-85. Using NPLs net of charge-offs as the primary measure of loan losses Keeton and Morris shows that local economic conditions along with the poor performance of certain sectors explain the variation in loan losses recorded by the banks. The study also reports that commercial banks with greater risk appetite tend to record higher losses. Several studies which followed the publication of Keeton and Morris have since proposed similar and other explanations for problem loans in the US. Sinkey and Greenwalt (1991), for instance, investigate the loan loss-experience of large commercial banks in the US; they argue that both internal and external factors explain the loan-loss rate (defined as net loan charge offs plus NPLs divided by total loans plus net charge-offs) of these banks. These authors find a significant positive relationship between the loan-loss rate and internal factors such as high interest rates, excessive lending, and volatile funds. Similar to the previous study, Sinkey and Greenwalt report that depressed regional economic conditions also explain the loss-rate of the commercial banks. The study employs a simple log-linear regression model and data of large commercial banks in the United States from 1984 to 1987. Keeton (1999) uses data from 1982 to 1996 and a vector autoregression model to analyse the impact of credit growth and loan delinquencies in the US. It reports evidence of a strong relationship between credit growth and impaired assets. Specifically, Keeton shows that rapid credit growth, which was associated with lower credit standards, contributed to higher loan losses in certain states in the US. In this study loan delinquency was defined as loans which are overdue for more than 90 days or does not accrue interest. Consistent with international evidence Khemraj and Pasha (2009) found that the real effective exchange rate has a significant positive impact on non-performing loans. This indicates that whenever there is an appreciation in the local currency the non-performing loan portfolios of commercial banks are likely to be higher. Their empirical results show that GDP growth is inversely related to non-performing loans, suggesting that an improvement in the real economy translates into lower non-performing loans. They also found that banks which charge relatively higher interest rates and lend excessively are likely to incur higher levels of

non-performing loans. Haneef et al (2012) concluded that non-performing loans are increasing due to lack of risk management which threatens the profitability of banks. Study of Rajan & Dhal (2003) employed the regression analysis for Indian banks. It claimed that macroeconomic factors and financial factors both have significant impact over the NPLs rate. Reported macroeconomic factors include the GDP growth, among financial factors; maturity, bank size, credit orientation, and credit terms were included. Empirical results of Saba et al (2012) support the view that macro-factors, such as, Interest rate and Real GDP per capita have association with the NPLs rate. Hashemi Nodehi (1998) suggested that no development of bank's system and society's economic facts such as inflation and different between lending rate and market interest rate are effective factors in NPLs creation. Goudarzi (2005) argued that with increasing of inflation and GDP the NPLs in banks will increase. Increasing of lending rate and currency rate have contrary relationship with NPLs and internal factors such as bank's managers' skill and availability of bank's branches are effective factors to increase NPLs. Although these factors have less effect in decreasing of NPL but are important factors that banking system has to attention them. Najaf (2008) explained that types of facilities will increases NPLs; also economic fluctuations and inflation rate will affect NPLs. Another factor is lack of monitoring and control in banks. Ekrami and Rahnama (2009) found that with increasing in one unit of bounced check and credit background the NPLs will increase and with increasing in volume liquidity of creditor's current account the NPLs will decrease. Ahadian (2010) suggested that there are significant relationships between granted facilities and GDP with NPLs. Akbari (2010) found that there are relationship between lack of controlling and monitoring before, during and after granting facilities. Mastani (1999) argued that there are significant relationships between rate of profit, overdue notice, payment duration and customer's education with NPLs. Abdollahian (1996) posited that effective and adequate control in granting facilities will prevent NPLs, insufficiency of rules related to NPLs and economic fluctuations can cause NPLs.

2-METHODOLOGY

This is a descriptive study. Statistical populations are all of NPLs documents in housing facilities during 2006-2011 in Mazandaran's Bank-e-Maskan. Using of Morgan table volume of samples was determined and 374 documents were selected with cluster sampling in housing section (buying, building, maintenance and joint-venture). Data were analyzed with Chi-square test in SPSS.

Independent variables are: duration of granted facilities' payment, collateral, average of account quantity, having bounced check, having another deposits, credit background and dependent variable is NPLs.

Non-performing loan (NPL) is defined as a sum of borrowed money upon which the debtor has not made his or her scheduled payments for at least 5 months.

Collateral in its simplest definition is a form of security to a lender in case the borrower fails to repay a loan. Collateral plays an important role in the financial sector, as it is a means of covering potential losses. Collateral is therefore considered a secondary method of repayment. Here collaterals defines in forms of check, exchange bill, properties, credential for docking of pay and bank guarantee.

Duration of granted facilities' payment: this includes all short term and long term granting facilities.

Average of account quantity is calculated as:

$$\frac{\text{Sum of the least balance in hand during of waiting day's period}}{\text{Number of days}}$$

Waiting day's period is significant period/periods that average of account quantity will calculate based on it.

Having bounced check is defined as having check/checks that will be ordered notice for non-payment because of account deficits, signature mismatching or being changed.

Having another deposit defines as the number of deposits that applicant of facilities have had in the bank before borrowing.

Credit background is defined as the history of granted facilities to applicant in all banks of country and assessment of payment background.

Documents of borrowers used for data collection. Relationship between independent variables and dependent variable were analyzed with chi-square in SPSS software.

3-RESULTS

Descriptive analysis:

Type of document:

From 374 selected documents, 78 items were joint venture (20.9%), 83 items were buying house out of bond (22.2%), 90 items were buying with bank deposit (24.1%), 60 items were unilateral contract (16%) and 63 items were differed payment sale (16.8%). (see table 1)

Table 1: descriptive of document type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Joint venture	78	20.9	20.9	20.9
	Buying out of bond	83	22.2	22.2	43.0
	Buying with deposit	90	24.1	24.1	67.1
	Unilateral contract	60	16.0	16.0	83.2
	Differed payment sale	63	16.8	16.8	100.0
Total		374	100.0	100.0	

Having bounced check:

As table 2 is shown 261 items had not bounced check (69.8%), 76 items had 1 Bounced check with assurance (20.3%), 36 items had 2 or more bounced checks with authority for payment (9.6%) and 1 item had bounced check without authority for payment (0.3%).

Table2: descriptive of bounce check

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hasn't bounced check	261	69.8	69.8	69.8
	1 bounced check with assurance	76	20.3	20.3	90.1
	2 or more bounced check with authority for payment	36	9.6	9.6	99.7
	Bounced check without authority for payment	1	.3	.3	100.0
	Total	374	100.0	100.0	

Collateral type:

From 374 items, 310 items were property collateral (82.9%), 37 items were bill of exchange (9.9%), 24 items were guarantee's credential for docking of pay(6.4%) and 1 item was bank guarantee (0.3%). 2 items were without answer (0.5%). (see table 3)

Table 3: descriptive of collateral

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Property	310	82.9	83.3	83.3
	Bill of exchange	37	9.9	9.9	93.3
	Credential for docking of pay	24	6.4	6.5	99.7
	Bank guarantee	1	.3	.3	100.0
	Total	372	99.5	100.0	
Missing	System	2	.5		
Total		374	100.0		

Duration of granted facilities' payment for applicant:

In this area, 139 items were less than 5 years (37.2%), 87 items were between 5 and 10 years (23.3%) and 148 items were more than 10 years (39.6%). (See table 4)

Table 4: descriptive of duration of granted facilities' payment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	139	37.2	37.2	37.2
	Between 5 and 10 years	87	23.3	23.3	60.4
	More than 10 years	148	39.6	39.6	100.0
	Total	374	100.0	100.0	

Having another deposit in bank:

As table 5 shows 200 items had another deposit in bank (20.9%), 173 items had not another deposit in bank and 1 item was without answer.

Table 5: descriptive of having another deposit in bank

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	200	53.5	53.6	53.6
	No	173	46.3	46.4	100.0
	Total	373	99.7	100.0	
Missing	System	1	.3		
Total		374	100.0		

Customer's credit background:

In this area, 37 items were timely payment (9.9%), 258 items were without any background (69%), 76 items were something else (20.3%) and 3 items were without answer (0.8%). (see table 6)

Table 6: descriptive of customer’s credit background

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Timely payment	37	9.9	10.0	10.0
	Without background	258	69.0	69.5	79.5
	Something else (having NPLs, pay-off after becoming NPLs, having current facilities)	76	20.3	20.5	100.0
	Total	371	99.2	100.0	
Missing	System	3	.8		
Total		374	100.0		

Having average of account quantity:

According to table 7, 152 items had average of account quantity (40.6%), 221 items had not average of account quantity (59.1%) and 1 item were without answer (0.3%).

Table 7: having average of account quantity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	152	40.6	40.8	40.8
	No	221	59.1	59.2	100.0
	Total	373	99.7	100.0	
Missing	System	1	.3		
Total		374	100.0		

DATA ANALYSIS:

H1: there is meaningful relationship between type of collateral and NPLs creation.

Table8: chi-square of collateral type

		Q1
Chi-square		682.258 ^a
df		3
Asymp. Sig.		.000

Since the Significant level is less than 0.05 we can result that there is significant relationship between type of collateral and NPLs creation.(table 8)

Table 9: compare of observed and expected frequency in collateral types

	Observed N	Expected N	Residual
Property	310	93.0	217.0
Bill of exchange	37	93.0	-56.0
Credential for docking of pay	24	93.0	-69.0
Bank guarantee	1	93.0	-92.0
Total	372		

Table above shows that the most observed frequency is for “property” (310 items) and the least observed is for “bank guarantee” (1 item).

H2: there is significant relationship between having average of account quantity and NPLs creation.

Table 10: chi-square of having average of account quantity

		Q2
Chi-square		12.764 ^a
df		1
Asymp. Sig.		.000

Since the Significant level is less than 0.05 we can result that there is significant relationship between having average of account quantity and NPLs creation.(table 10)

Table 11: compare of observed and expected frequency in average of account quantity

	Observed N	Expected N	Residual
yes	152	186.5	-34.5
No	221	186.5	34.5
Total	373		

Above table shows that the most observed frequency is for “without average” (221 items) and the least observed is for “with average” (152 items)

H3: there is significant relationship between having bounced check and NPLs creation.

Table 12: chi-square for having bounced check

	Q3
Chi-square	430.214 ^a
df	3
Asymp. Sig.	.000

Since the Significant level is less than 0.05 we can result that there is significant relationship between having bounced check and NPLs creation.(table 10)

Table 13: compare of observed and expected frequency in having bounced check

	Observed N	Expected N	Residual
Hasn't bounced check	261	93.5	167.5
1 bounced check with assurance	76	93.5	-17.5
2 or more bounced check with authority for payment	36	93.5	-57.5
Bounced check without authority for payment	1	93.5	-92.5
Total	374		

Above table shows that the most observed frequency is for “not having bounced check” (261 items) and the least observed is for “bounced check without authority for payment” (1 item).

H4: there is significant relationship between having bounced check and NPLs creation.

Table 14: chi-square for having another deposit

	Q4
Chi-square	1.954 ^a
df	1
Asymp. Sig.	.162

Since the Significant level is more than 0.05 we can result that there is not significant relationship between having another deposit in bank and NPLs creation.(table 14)

Table 13: compare of observed and expected frequency in having another deposit

	Observed N	Expected N	Residual
yes	200	186.5	13.5
No	173	186.5	-13.5
Total	373		

Above table shows that the most observed frequency is for “having another deposit” (200 items) and the least observed is for “not having another deposit” (173 item).

H5: there is significant relationship between credit background and NPLs creation.

Table 16: chi-square for credit background

	Q5
Chi-square	225.030 ^a
df	2
Asymp. Sig.	.000

Since the Significant level is less than 0.05 we can result that there is significant relationship between credit background and NPLs creation.(table 16)

Table 17: compare of observed and expected frequency for credit background

	Observed N	Expected N	Residual
Timely payment	37	123.7	-86.7
Without background	258	123.7	134.3
Something else (having NPLs, pay-off after becoming NPLs, having current facilities)	76	123.7	-47.7
Total	371		

Above table shows that the most observed frequency is for “without background” (258 items) and the least observed is for “timely payment” (37 items).

H6: there is significant relationship between duration of granted facilities’ payment and NPLs creation.

Table 18: chi-square for duration of granted facilities’ payment

	Q6
Chi-square	17.396 ^a
df	2
Asymp. Sig.	.000

Since the Significant level is less than 0.05 we can result that there is significant relationship between duration of granted facilities' payment and NPLs creation.(table 18)

Table 19: compare of observed and expected frequency for duration of granted facilities' payment

	Observed N	Expected N	Residual
Less than 5 years	139	124.7	14.3
Between 5 and 10 years	87	124.7	-37.7
More than 10 years	148	124.7	23.3
Total	374		

Above table shows that the most observed frequency is for "more than 10 years" (148 items) and the least observed is for "between 5 and 10 years" (87 items).

4-DISCUSSION

The results show that all hypotheses except 1 were supported and this means that among independent variables just "having another deposit" has not significant relationship with NPLs creation. In this study we just mentioned to those variables that existed in borrowers documents in Banke-e-Maskan and it didn't include of all known factors. Findings have some limitation. It should be note that this study had done in Bank-e-Maskan of Iran and since this bank is one of the special public sector banks and has to do most of the government projects and imposed facilities, so results can be affected by these reasons. Based on results of this study there are some suggestion for prevention NPLs creation. First, bank has to beget an integrated database that is available for all branches and update borrowers' information such as: amount of granted facilities, amount of debts and NPLs and credit background of customers. Second, bank must supply and buy software for clarity and accurate division of accounts heading and true balance of debts transfer to relevant heading automatically. Third, bank must have decisive behavior with those personnel who disregard rules and offend deliberate specially whom that collude or take bribes. These items should be considered for performance appraisal and job promotion of branches' managers. Fourth, it is necessary that credit insurances be designed and performed to prevent of NPLs. Fifth, ministry of economic affairs and finance should support and encourage investment and financial consultant corporate for evaluating of applicants' plan for receiving bank facilities. They could have significant role in reducing of banks risk. And finally, bank must train banking personnel for giving adequate consultant to bank's customer and monitoring them. This can help to prevent of creation of NPLs and bankruptcy.

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