IJBPAS, December, 2015, 4(12), Special Issue: 503-519

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

THE EFFECT OF BANKS' INTERNAL FACTORS ON NON-PERFORMING LOANS: EVIDENCE FROM BANKING SYSTEM OF IRAN

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ABSTRACT

Non-performing loans has been known as the most important challenge in the Iranian banking system in recent years, especially regarding to the essential role of banks in the financial market of Iran. According to the prior studies, both internal and external factors are considered for non-performing loans. The present study mainly aims to investigate the internal factors of generating non-performing loans in Iranian banks. Thus, it seems necessary to identify the effective factors ofnon-performing loans used for improving banks' performance.

In the present study, bank size, credit risk, bank efficiency, bank structure and bank ownership are employed as influential indices which affect non-performing loans. To perform the analysis, panel data regression techniques over a period from 2007 to 2011 are used.The findings reveal that bank size and credit risk have a positive and significant relationship with the non-performing loans and bank efficiency. Furthermore, bank structure is found to have a negative association with non-performing loans. Moreover, the other findings of this study representthat bank ownership has a dual effect (both positive and negative) on creating non-performing loans in the Iranian banking system.

Keywords: Asymmetric Information, Banking Loan, Non-performing Loans, Iran.

1. INTRODUCTION

Banks play an essential role in each country's economy, since no growth can be obtained unless savings are efficiently channeled into investment. Money lending and deposit collecting are among the various fields of operations by banks. These are the current and continuous activities of banks. Simultaneous combination of these two operations is the most apparent characteristic of the banks, because the sources of money lending are public deposits and funds.

From the institutional perspective, banks are known as the intermediaries of financial funds. The institutes formed based on financial intermediaries seek to use the imperfect information in the market and achieve their personal benefits. As a result, the most significant role played by the banks is to overcome the information problems associated with channeling savings into investment. Making the best and correct decision by the investors depends on having appropriate information.

On the other hand, a new trend of banking has emerged in response to the weak directives and lack of experiences about monitoring and filtering the borrowers. This new stream sheds light on the perceptions of the financial experts and banking authors about financial markets and monitoring. Information asymmetry hypothesis examines a framework in which the economic agents are affected by the imperfect information and information neutrality. The authors believe that emphasizing on the asymmetric information hypothesis might be considered as the underlying basis of analysis and many other banking fields (Seif, 2013).

Information asymmetry hypothesis suggests that incorrect decisions are made as the result of imperfect, unreliable and wrong information. Asymmetric information is the situation in which one party of the transaction has more information compared to another. Banks are confronted with information asymmetry and they have insufficient knowledge about the loan applicant. Information asymmetry can result in two problems: Adverse selection that occurs before a transaction and moral hazard that takes advantage of asymmetric information after a transaction.

Asymmetric information and moral hazard are the theoretical bases which cause the risky behaviors of banks in lending money. In doing so, those banks with limited capital have more non-performing loans. In this framework, the more limited capital can lead to moral hazard. As a result, the contribution of risky loans and

non-performing loans have increased over the years (berger and DIang, 1997).

Conflict of interests is another major issue in banking operations. Mishkin and Eakins (2011) argue that conflict of interests happens when a bank lends money to an enterprise with convenient terms to take some advantages such as commitment to sell securities. This conflict of interests will result in inefficient allocation of credits and incremental credit risk.

As a consequence, information asymmetry is known as a factor that significantly impacts the incremental growth of non-performing loans. By defining non-performing loans as an indicator of information asymmetry, the present study seeks to examine the effect of internal factors on non-performing loans[1]. Using a panel data set, we study the impact of determinants on the formation of non-performing loans across selected banks[2] of Iran over a period from 2007 to 2011.

2. LITERATURE REVIEW

Total banking operations are classified into two main parts including accepting deposits and lending money. As a result, it can be argued that success and productivity require designing and implementing an appropriate system for loans and practical approaches for collecting the money borrowed by the public. Given the significance and sensitivity of principled loans and timely collection of installments, some methods and approaches should be established to enhance the efficiency of the system. Increasing emphasis is now being placed on non-performing loans in order to decrease or prevent new loans which contributesbanks todirect and control the inflows and outflows. Default risk is known as a serious essential element for banks. Therefore, it seems necessary to examine the factors related to the non-performing loans of banking system of Iran for the purpose of establishing approaches to prevent the creation of non-performing loans for the banks. According to the prior literature, non-performing loans are classified into internal and external factors[3].

Theoretical frameworks mostly represent the external factors with business cycle models. Based on this framework, non-performing

1 Non-performing loan is considered as a proxy for information asymmetry.

2 Sample state banks include Melli, Sepah, Maskan, Keshavarzi, Sanat-o-Madan, Toseeh Saderat and Post Bank. Private banks involve Eghtesad-e-Novin, Parsian, Saman, Karafarin, Pasargad, Sarmayeh and Sina. Three privatized banks are Saderat, Refah and Tejarat.

[3] Internal factors are the factors within the banks which depend on the managerial decisions, employees' operations and efficiency of the banks. These factors are controllable by the banks and they can be identified timely. The external factors, however, derive from the outside environment of banks and are not controllable. The banks play passive roles in confrontation with these factors.

loans increase in the prosperity situations and decrease in depression periods which follows a cyclic behavior. In addition to the business cycle model, the financial accelerator discussed by Bernanke and Gilchrist (1999) and Kiyotaki and Moore (1997) is another major theoretical base provided for explaining the role of macroeconomic factors on non-performing loans. Financial accelerator theory discusses about the interaction of financial market depression and real economy[1].

External and macroeconomic factors are not the only effective elements of NPL; however, internal factors and behaviors of a bank in granting loans, bank size, credit risk and competitive situations of the banks also play essential roles.

2.1. Bank Size and NPL

According to the theoretical bases and empirical evidences, there is an ambiguity about the impact of bank size on NPL. Due to economies of scope, large-scale banks might assess the risk better than other banks. In other words, large banks have better risk management strategies in comparison to the small banks (Salas and Saurina, 2002). On the other hand, some other studies refer to the positive association between NPL and bank size. This relationship is attributed to the difficulty in controlling and monitoring large banks which intensifies the conflict of interests and information asymmetry. They suggest that larger banks in some developing countries (such as India) do not have strong monitoring and credit rating systems and they are not able to correctly manage the credit risk (Rajan and Dahal, 2003 and 2004).

2.2. Credit Risk of Bank and Non-Performing Loans

Risk is an essential factor in financial institutes and banks. In fact, identifying and determining different types of risks play a major role in the stability and survival of financial institutions. Given the significance of risk and the using credit risk proxies for making lending decisions, it seems necessary to identify and examine credit risk in Iranian banks. As a result, many comprehensive aspects should be considered for making loan decisions in order to minimize the default risk. Due to the potential effects, it is very essential to measure, control and handle credit risks to prevent an increase in non-performing loans.

Loan to assets ratio[2] is one of the important indicators of analyzing credit risks which represents precautionary behavior of banks

[1] For the sake of brevity, the effect of internal factors on NPL and the significance of any of indicators are examined. The macroeconomic factors of loans are overlooked.

[2] Loan to assets ratio is known as one of the significant indicators of moral hazard on the behavior of banks.

and is one of the determinants of NPL ratio in banking system. Loan to assets ratio reveals the way the banks move to maximize their employment of resources in lending money. The level of granted loans is one of the most essential factors of default risk. This ratio measures the total loans outstanding as a percentage of total assets. The higher this ratio presents lower bank's liquidity and the more risky behavior of a bank due to higher defaults (Razini, 2007).

2.3. Bank's Efficiency and Non-Performing Loans

Efficiency is one of the most significant indicators of performance evaluation and is interpreted as optimum resource allocation. Efficiency is measured at entity-level and market-level. Efficiency analysis at market level is related to allocation efficiency and the results of allocating resources to different economic departments are compared with the ideal allocation (Pareto). Presence of complete information is one of the implicit assumptions of welfare. In the competitive market, it is assumed that the directors of banks are interested in maximizing their efforts to achieve the maximum efficiency. The first assumption of welfare is based on the fact that in the complete competitive situation in which the market is formed by the intercourse of economic factors, the market output is optimal under Pareto measure.

This hypothesis deals with the principal-agent model. Information asymmetry theory questioned the complete competitive situation and Pareto optimality. Principal-agent model describes that moral hazard exists in any enterprise, because the principal can't control the whole decisions of the agent. Principal-agent problem refers to the situation in which the agent is able to make decisions on behalf of, or that impact the principal. The principal only observes the output of the agent and this is an imperfect signal of agent's decisions. That is, the output of the entity (production or profitability) depends on both agents' efforts and random effects. As a result, the agents' effort is not in accord with the Pareto optimality. Based on principal-agent principle, it can be concluded that the efficiency and operation of the banks result from management quality of the banks. The efficient and effective management leads to profitability and performance improvement of the banks at micro level. However, the efficient and effective management of the bank leads to the economic growth and prosperity at macro level. Otherwise, weak management causes lower efficiency and performance. Inefficiency of the banks is represented in terms of low skills for filtering

loan applicants (improper selection of the loan applicants), improper assessment of collaterals and moral hazard of the loan applicants. Consequently, inefficient financial institutes are more inclined to have credit risks associated with non-performing loans (Rajan and Dahal, 2003).

2.4. Concentrated Structure of Banks and Non-Performing Loans

Degree of concentration is one of the subjects affecting banks' performance and risks. Market concentration is a position in which an industry or market is controlled by a few number of large manufacturers operating in an industry.

Suppose that *n* is the number of firms in an industry and *i* is the size of distribution inequality such as production or employment of the firms and concentration (c) is defined as:

C= f (n,i) where $\frac{dc}{dn} < 0$ and $\frac{dc}{di} > 0$.

By increasing the number of firms in an industry, market concentration decreases, ceteris paribus. And by increasing inequality in the market share of the entities, market concentration increases, ceteris paribus.

Degree of concentration is considered as a proxy for the exclusive structure of the market and monopolized power of the entities which is an effective factor of bank receivables. Degree of concentration indicates the degree of market control by the main entities of an industry. The higher the degree of concentration, the lower is the competition. Degree of concentration might have dual impacts on receivables. As a result, there is an ambiguity in the relationship between concentration and outstanding claims.

Allen and Gale (2000, 2004) showed that a banking structure with low concentration is more inclined to default risk and financial distress. By increasing the competitiveness, profitability of the banks decrease and banks have more incentives to grant high-risk loans. In this situation, credits are financed by deposits. By decreasing the degree of concentration, profit margin and bank risks increase. They also concluded that the concentrated banking system might be more effective than the competitive banking system.

Similarly, Cao and Shi (2001) represented that in the competitive situation, banks are confronted with noisy information related to the credits of loan applicants which increases the risk assessment of banks. They also concluded that in a concentrated banking system, more money is lent due to the better advantages than competitive banking. Gilbert (1984) examined the relationship between

market concentration, interest rates and profits of banks. The findings revealed that competitiveness is directly associated with the deposit interest rate. Furthermore, competitiveness is found to have a negative relationship with the interest rate and bank profitability. The results confirm that by increasing competitiveness among banks, deposit interest rates increase and the interest rates decrease. This leads to lower profitability of banks.

However, another group argued that it is more convenient to control a limited number of banks in a concentrated banking system. Based on concentration stability, monitoring and directing banks are more efficient and result in lower credit risk and financial instability. In addition, higher instability of American banking system with many banks in relation to the lower instability of England and Canada banking systems with fewer banks confirms the above arguments. They declared that in the exclusive structure of banking, higher interest rates are charged to cover future losses. In this situation, less efficient banks are not able to liquidate their loans timely. As a result, banking system confronts with outstanding claims. This does not occur in competitive situation because those entities with lower efficiency can't accept the interest rates higher than market interest rate and they are removed from the market (Fernandez, 2000).

In an empirical study by Boyd and Gianni (2005), it was found that higher industry concentration and market forces of most banks lead to higher interest rates which direct loan applicants to demand riskier operations. Finally, the credit risk and default claims of the banks increase and the financial system underperforms.

2.5. Banking ownership and non-performing loans

For many years, state banks have governed the money market of Iran and this might be one of the reasons for the lower quality of their services. Undoubtedly, private banks play significant roles in accepting deposits and creating competitive situation in the market. According to the prior literature, the relative advantage of Iranian private banks is their ability in attracting valuable funds and lending money. However, the relative growth of these institutes and expansion of bureaucratic functions and fixed costs of branches and labor have made administrative costs of these banks exceed than the bank's earnings. On the other hand, the outstanding receivables might also increase and they require the establishment of preventive policies without strict regulations of state banks.

Ownership structure of banks explain the risk taking behavior and level of non-performing loans. Type of ownership has been always considered as an effective factor in banking performance. According to Coase theorem, when the transaction cost in the economy is zero, the ownership structure does not impact the economic efficiency (Coase, 1960).

In the real world, however, the transaction cost is not zero. In doing so, changes in the ownership structure leads to different performance (Cooter and Ulen, 2000).

There is no unified theory about the role of ownership in performance. Governmental ownership is mostly interpreted as a factor of inefficiency and weak performance of entities (Alchain, 1965). Salas and Saurina (2002) argue that state ownership leads banks participate in riskier projects and strive to allocate credits to small and medium size enterprises. Risk taking behavior of the banks determine the level of non-performing loans.

Micco et al (2004) suggest that state banks do not pay attention to their loan capacities and are confronted with more claims. The most significant reason is the lack of sufficient incentives for improving the performance of state entities. In addition, state entities have more advantages such as governmental support, privileges and availability of resources which improves the performance of entities. On the other hand, in a society in which corruption and rent are serious problems, the private financial institutions are owned by specific families and political groups. Money laundering is a common issue in banks and there is no compliance with required standards for granting loans and risky loans are paid by private banks to supply the financial needs of people and related groups. As a result, private or privatized banks do not necessarily have loan losses.

3. RESEARCH MODEL

As described in the previous section, there are various factors affecting the non-performing loans and a summary of these variables are represented in table 1.Using panel data approach in STATA software, the effect of following factors on the receivables of banking system of Iran is examined[1]. Table 1 shows the way the variables are measured.

[1]Default claims are the loans which are not repaid over 2 to 6 months. Outstanding claims are the loans which are not repaid over 6 to 18 months and the client has not tried to pay them. Doubtful claims are the loans which have not been repaid over 18 months or more and the client has not even tried to pay them.

Table1: Variables of non-performing loans and their calculation method

Variables	Symbol	Calculation formula	Expected sign
Bank size	**LSize**		+/-
Credit risk	**Lloas**		+
Bank efficiency	**Leff**	**Based on DEA method**	-
Concentration structure	LHHI		+/-
Ownership structure	State Owner		+/-

Definition of Variables

1. *Bank size*: Some measures used for bank size include total assets, contribution rate of each bank from the deposits, productivity level, number of branches, growth and development and using new financial methods and electronic banking.

Table 2 represents the measures used for bank size in the prior literature. The present study employs ratio of total assets of a bank to the total assets of selected banks of Iran.

Table 2: A summary of prior literature using bank size as a vairable

Authors	year	Measure	Relationship with the receivables
Limam	**2000**	**Total assets**	**Positive**
Fontez and Vergera	**2002**	**Total assets**	**Positive**
Rajan and Dhal	**2002**	**Total assets**	**Positive**
Koradicheh and Pardel	**2011**	**Total assets**	**Positive**
Berger and Deyoung	**1997**	**Total assets**	**Negative**
Lious	**2000**	**Total assets**	**Negative**
Hiu	**2004**	**Total assets**	**Negative**

2. *Credit risk:* Calculating the credit risk of the banks requires comprehensive information that is not easily available. Therefore, the ratio of loans to assets, total outstanding and default receivables to the loans and capital adequacy are used to compute credit risk (Goudarzi and Falahati, 2006). In the present study, the ratio of loans to assets is used to calculate the credit risk proxy of banks and this is selected based on the effect of ratio of loans to assets on credit risk and loan loss (Mohebbi, 2012).

3. *Bank efficiency:* table 3 represents the ways to measure efficiency (Razini and Souri, 2007).

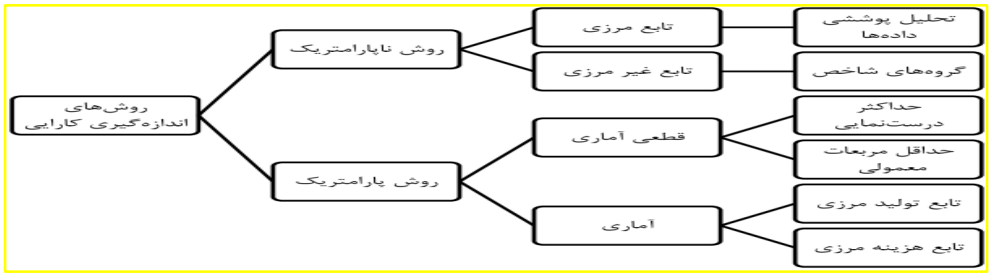

Table 3: Ways to measure efficiency

To measure the efficiency of banks, DEA method and parametric and non-parametric approcahes are frequently used. In this study, non-parametric DEA method and constant returns to scale (CCR) are empoyed to measure the efficiency of banks (Mohebbi. 2012).

4. *Concentrated structure of the bank:* Degree of concentration is a proxy for the exclusive market structure and monopoly power of the entities. It is known as an effective factor of non-performing loans. Degree of concentration in an industry might be measured by various indicators. Herfindahl- Hirschman Index (HHI) is the most popular method to measure the degree of concentration. This index is defined as $HHI = \sum_{i=1}^{n} s_i^2$.

Where in it, N is the number of banks and S_i is the market share of each bank. Due to its simplicity and frequent use in banking studies, HHI is used to measure the degree of concentration in the present study. The market share of each bank is calculated by the ratio of deposits in each bank to the total deposits of the selected banks (Mohebbi, 2012).

5. *Ownership structure of the bank:* This is a dummy variable because the banks are categorized into state and private banks. This variable equals one when the bank is a state-owned bank and it equals zero when the bank is a private bank. It must be mentioned that Saderat Bank, Refah Bank and Tejarat Bank are the three banks which have been privatized. For these banks, the variable equals one for the years that banks have been state-owned; and zero for the years the banks have been private-owned (Mohebbi, 2012).

3.1. Definite research models

Equations 1, 2 and 3 are considered as the definite models of the study and are separately estimated by using panel data approach. The models are as follows:

$$Lsdc_{it} = \alpha_1 + Lsize_{it} + Lloas_{it} + Leff_{it} + LHHI_{it} + StateOwner_{it} + \varepsilon_{it} \quad (1-$$

$$Lddc_{it} = \alpha_2 + Lsize_{it} + Lloas_{it} + Leff_{it} + LHHI_{it} + StateOwner_{it} + \varepsilon_{it} \quad (2)$$

$$Lmdc_{it} = \alpha_3 + Lsize_{it} + Lloas_{it} + Leff_{it} + LHHI_{it} + StateOwner_{it} + \varepsilon_{it} \quad (3)$$

Where in it;

***Lsdc*: Logarithm of default claims of banks as a proxy for information asymmetry (in billion rials)**

***Lddc*: Logarithm of outstanding claims of banks as a proxy for information asymmetry (in billion rials).**

***Lmdc:* Logarithm of doubtful claims of banks as a proxy for information asymmetry (in billion rials).**

***LSize*: Logarithm of bank size.**

***Lloans*: Logarithm of credit risk**

***Leff*: Logarithm of efficiency**

***LHHI*: Logarithm of degree of concentration**

***StateOwner*: Ownership of the bank.**

To estimate the described models, panel data approach is used in order to examine the impact of variables shown in table 1 on the receivables of the banks.

4. Model estimation and analysis of findings

As the first step, panel data approach is used to estimate the described models over a period from 2007 to 2011 for the selected banks of Iran. Before estimating the models, the following tests should be performed:

1. Stationarity test and Cointegration test

Cointegration is defined when the error term in the regression is stationary. First, total stationarity of the variables is tested by using Hardi, Levin-Lee and Chu and Im-Pesaran.Shin. Due to the limited time period of the study (2007-2011), it is impossible to use unit-root test. As a result, cointegration test is not necessary (Baltaji, 2005).

2. F-Limer Test

The first step in estimating the regression models is to determine the propositions in the econometric model. In other words, it must be first identified whether cross-section or panel data approach should be used (Ashraf Zadeh and Mehrgan, 2008; Baltaji, 2005). As a result, F-Limer test is used.

3. Hausman test

After identifying panel data approach as the best model (in this study), it is required to decide whehter to use fixed-effect model or random-effect model. In doing so, Hausman test isemployed.

4. Inequality of variances

In using panel data approach, inequality of variances might occur. Based on the significant effect of variance inequality on estimating the standard deviation of coefficients and statistical inferentials, it is necessary to test the existence of inequality of variances. Likelihood ratio (LR) is employed to conduct this test. Generalized least squares (GLS) method is a method used to resolve the inequality of variances (Gojarati, 2006).

Given the above mentioned points, F-Limer, Hausman and LR are used for models 1, 2 and 3, respectively. Table below represents the estimated results for models 1 to 3. Based on the statistics, panel data approach is used for all models. Furthermore, fixed-effect method is used for models 1 and 2 and random-effects method is employed for model 3. Inequality of variances is confirmed for all models.

Table 4: Results of F-test, Hausman and inequality of variances in the models

Models	Test	Statistic	Sig. level	Result
Model 1	**F-Limer**	5/36	(0/00)	**Panel data**
	Hausman	23/74	(0/0002)	**Fixed-effect efficiency**
	Inequality of variances	61/34	(0/00)	**Inequality of variances**
Model 2	**F-Limer**	3/78	(0/0001)	**Panel data**
	Hausman	11/99	(0/0349)	**Fixed-effect efficiency**
	Inequality of variances	40/31	(0/0007)	**Inequality of variances**
Model 3	**F-Limer**	3/75	(0/0001)	**Panel data**
	Hausman	9/43	(0/0932)	**Random-effect efficiency**
	Inequality of variances	128/13	(0/00)	**Inequality of variances**

4.1. Estimating Model 1

Some internal factors of banking system (bank size, credit risk, bank's efficiency and concentration structure and ownership type) are used as the explanatory variables. The dependent variable is the balance of default claims. In this regression, all variables except for ownership type are added to model in logarithmic form. The model is estimated as follows:

$$Lsdc_{it} = \alpha_1 + Lsize_{it} + Lloas_{it} + Leff_{it} + LHHI_{it} + StateOwner_{it} + \varepsilon_{it} \quad (1\text{-}4)$$

Table 5: Results of estimating the first model by GLS

Dependent variable: Lsdc (default claims)				
Variable		**Coefficients**	**Z**	**p> | z |**
Intercept		88/47	22/70	(0/000)
Explanatory variables	**Lsize**	1/23	25/27	(0/000)
	Lloas	1/47	4/26	(0/000)
	Leff	-0/75	-16/75	(0/000)
	LHHI	-10/68	-19/97	(0/000)
	SteteOwner	-0/34	-3/34	(0/001)
Prob= 0/000			**Wald chi2**=1361/17	

Source: Findings of the researcher

According to the findings, bank size is significant and positive. It is found that one percent increase in bank size leads to 1.23 percent increase in default claims as a proxy of information asymmetry. This finding can be attributed to the fact that larger banks in comparison with smaller banks intensify information asymmetry because of difficulty in controlling. In terms of the ratio of loans to assets (proxy for credit risk), it can be concluded that one percent increase in this ratio results in 1.47 percent increase in the level of default claims. The findings also reveal that efficiency indicator has a negative impact on default claims. Degree of concentration is also negative and it means that concentrated decision making about granting loans results in lower banking claims. Dummy variable of ownership type has a significant negative relationship with the default claims and it confirms that the state-owned banks confront with lower default claims. Since private banks have no strict rules for lending moneyin order

to increase their profitability, the individuals are motivated to receive risky loans.

4.2. Estimating model 2

The second model describes the relationship between effective internal factors of outstanding claims described in model below:

$$Lddc_{it} = \alpha_2 + Lsize_{it} + Lloas_{it} + Leff_{it} + LHHI_{it} + StateOwner_{it} + \varepsilon_{it} \quad (2\text{-}4)$$

Table 6 represnets the findings related to the effects of intenral factors on the outstanding claims (model 2) and it shows that bank size has a significant positive impact on the outstanding claim. The findings also reveal that credit risk is positive and significant and it can be concluded that one percent increase in the loans to assets ratio results in about 1.32 percent increase in the outstanding claims. Efficiency proxy is also found to be inversely associated with outstanding claims of banks and it is significant at the 95 percent level. The bank concentration proxy is negatively associated with the banking system of Iran. According to the findings, there is a negative relationship between ownership type and outstanding claims.

Table 6: Results of estimating model 2 by GLS method

Dependent variable: Lsdc (outstanding claims)				
Variable		**Coefficients**	**Z**	**p> | z |**
Intercept		46/34	5/35	(0/000)
Explanatoryvariables	**Lsize**	0/92	14/82	(0/000)
	Lloas	1/32	3/56	(0/000)
	Leff	-0/29	-2/81	(0/005)
	LHHI	-4/89	-4/01	(0/000)
	SteteOwner	-0/39	-3/89	(0/000)
Prob= 0/000			**Wald chi2**=715/60	

Source: Findings of researcher

4.3. Estimating Model 3

In the third model, internal factors are added as the explanatory variables and doubtful claims are employed as the dependent variable shown in model 3-4.

$$Lmdc_{it} = \alpha_3 + Lsize_{it} + Lloas_{it} + Leff_{it} + LHHI_{it} + StateOwner_{it} + \varepsilon_{it} \quad (3\text{-}4)$$

Table 4-4 represents the results of estimating GLS method and significance of the variables is tested.

Table 7: Results of estimating model 3 by GLS method

Dependent variable: Lmdc (doubtful claims)				
Variable		**Coefficient**	**Z**	**p> | z |**
Intercept		83/20	16/39	(0/000)
Explanatoryvariable	**Lsize**	0/94	28/41	(0/000)
	Lloas	0/009	0/04	(0/07)
	Leff	-0/65	-7/90	(0/000)
	LHHI	-10/21	-14/53	(0/000)
	SteteOwner	0/55	6/94	(0/000)
Prob= 0/000			**Wald chi2**=6132/08	
Source: Findings of researcher				

Table 7 above represents the results of the third model in which bank size has a positive significant impact on doubtful claims. It can be argued that larger banks are inefficient and economics of scope require an expert management. Although credit risk in the third model has a significant positive impact on doubtful claims, it is significant at the 90 percent levels. The findings also show that efficiency of banks has a negative impact and one percent increase in efficiency results in 0.65 percent decrease in the dependent variable.

As well as the first two models, the degree of concentration in the banking system has a negative impact. In contrary to the first two models, bank ownership has a positive significant association with the balance of doubtful claims. It can be argued that the state-owned banks accomplish riskier projects and try to allocate credits to small and medium enterprises. As a result, risk taking behavior of the banks results in more claims.

5. CONCLUSION

In the present study, the effect of internal factors on the trend of non-performing loans has been investigated. Using three models, the relationship between explanatory variables of bank size, credit risk, and efficiency, degree of concentration and ownership and dependent variables of default claims, outstanding claims and doubtful claims is estimated. The difference in these models deals with the difference in type of claims.

Bank size is documented to have a significant positive relationship with the balance of claims in all three models. This positive association can be attributed to the difficulty in managing loans and controlling larger banks which lead to information asymmetry and conflict of interests. That is, in comparison with the smaller banks, larger banks lack a strong monitoring and credit rating system. Therefore, larger banks are more likely to ignore precise financial, technical and economic monitoring and they do not pay enough attention to the capacity and entity of the loan applicants.

Ratio of loans to assets (an indicator of credit risk) is known as a ratio which indicates the risky and cautionary behavior of the banks in granting loans to the clients. As mentioned earlier, the effect of this variable in creating receivables has been positive but with a declining trend. It can be concluded that banking system had a more cautionary behavior over the last years of the investigation period.

All coefficients of bank efficiency are statistically significant in the three models and they refer to the negative relationship between efficiency and receivables. This finding reveals the non-optimal performance of banking

system; that is, the lower efficient banks have more receivables. Thus, it is clear that optimal performance of banking system prevents creating receivables.

Banking structure in Iran has experienced a smooth structure. The negative effect of concentration structure on the non-performing loans represents that the higher competitive situation of Iranian banks will increase the non-performing loans. It might be concluded that increasing competition of banks results in lower profitability which motivates banks to lend money with higher risks. By increasing the degree of competition among banks, the profit margin decreases and the risk increases.

The other findings of the study reveal that ownership type of banks has a dual (both positive and negative) impact on non-performing loans. State-owned banks play a negative role on the outstanding and default claims. However, the state ownership has a positive impact on doubtful claims. It might be concluded that state banks try to collect their receivables through installations which increases the doubtful receivables and is positively associated with that.

The findings of the present study can provide valuable information for the directors and supervisors of banking system of Iran in terms of considering internal factors of non-performing loans. This information impacts the managerial decisions, employee's working behavior, bank's efficiency level and implementation strategies.

Finally, banks should follow appropriate policies and measures to lend money and grant loans. These measures have information content about the target market, loan applicants, aims to receive credits and sources of repaying loans in addition to the effective internal factors including bank size, credit risk, efficiency, structure concentration and ownership type.

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