Journal of Money and Economy
Vol. 14, No. 2, Spring 2019
pp. 255-276

Examination of Loan Loss provision Model of Iranian Banks from Managerial Discretion Perspective

Mohammad Hosein Safarzadeh* **Ibrahim Jafarimanesh†**

Received: 23 Jan 2019 Approved: 3 Nov 2019

The purpose of this paper is to study the suitability of loan loss provision (LLP) of Iranian banks when the industry is dealing with earning management behaviors. This goal has been reached using a two-step approach to analyze the discretionary component of LLP and then examine the relevant factors. This empirical study uses an unbalanced panel data of 15 listed banks during the 2006-2017 period. Estimating Iranian banks' discretionary loan loss provision and ranking them according to the average of DLLP is one of our findings. The results show that there is a significant relationship between DLLP and earning management, capital management, and external financing.

Keywords: Earning Management, Non- Performing Loans, External Finance, Capital Management.
JEL Classification: G21, M41, M48

1 Introduction

A broad proportion of accounting literature deals with earning management in the banking industry. Those researches show that banks all around the world endeavor earning management to minimize earning volatility during the long term horizon. The current research literature provides evidence implicating loan loss provision (LLP) is one of the instruments which is used by bank managers for earning management in the long term (Collins et al., 1995; Ismail and Be Lay, 2002; Anandarajan et al., 2005, 2007; Taktak et al., 2010). Most of the existing studies are done concerning conventional (non-Islamic) banks, however, there have been paid little attention to Islamic banks in the Middle East. Nevertheless, Iranian banks' LLP estimation model has never been studied so far. In other words, discretionary and non-discretionary of LLP (as an accrual item) has never been examined in terms of the tool of earning management.

* Faculty of Accounting, Shahid Beheshti University, Iran; m_safarzadeh@sbu.ac.ir (Corresponding Author)
† Faculty of Accounting, Shahid Beheshti University, Iran; i_jafarimanesh@sbu.ac.ir

Recent studies like Zoubi and Al-Khazali (2007) and Taktak et al. (2010) and Ben Othman & Mersni (2016) has studied using LLP to earning management in Islamic banks. Zoubi and Al-Khazali (2007) suggest that Islamic banks use LLP to earning management, while Taktak et al. (2010) contradicts this finding. Although there have been few studies about the utilization of LLP for earning management in Islamic banks, the discretionary part of this item is not well known in Iran. In this paper, following Kanagaretnam et al. (2004) and Kwal et al. (2009), we analyze the discretionary part of LLP (DLLP), and this measure serves as the research's dependent variable. The main question of this article is that which factors influence DLLP. However, some researchers believe bank managers in Iran can use LLP as a tool for earning and capital management because LLP calculation in Iranian banks is imperative and should be complied with the Central Bank of Iran's instruction and thereby it is not in management's discretion (Hassas et al., 1395). Therefore, the ability of directors to use LLP for earning and capital management in Iranian banks should be determined.

Another critical question is whether the Central Bank's imperative procedure results in meaningful differences from other Middle East countries or not. Ben Othman & Mersni (2016) using panel data of 21 Islamic, 18 conventional with Islamic counter and 33 traditional banks in 7 MENA countries (including Bahrain, Egypt, Jordan, Kiewit, Qatar, Saudi Arabia, and UAE) found that Islamic banks use DLLP for earning management too. Their result shows that earning before tax and loan loss provision affects DLLP. They also examined the relationship between capital adequacy ratio and DLLP and found a positive and significant relationship among them. These results show that Islamic banks' managers use LLP to manage capital and meeting minimum monitoring figures. Nonetheless, the questions which standard-setting bodies and the Central Bank of Islamic Republic of Iran are facing could be expressed as 1) whether the imperative procedure (of the Central Bank) will cause in decreasing of DLLP and increasing of its quality? And 2) whether Iranian bank manager's behavior (which is affected by this imperative procedure and other monitoring instruments) differs from their counterparts in other Middle East countries (as players with homogenous religious and environmental factors) in terms of earning and capital management.

We seek to address existing ambiguity in research and executive literature about the questions above and also could be named as one of the first empirical aforementioned in the quality of Iranian banks' LLP. Our findings could be used by investors, auditors and researchers, but our primary audiences include standard-setting bodies and the Central Bank of Iran as the leading players in

the bank accounting area. This paper helps them to identify managerial discretion in LLP estimation and put incentives or disincentive actions in place.

The remaining parts of the article follow by theoretical foundations, including Iranian banks' characteristics and LLP estimation, then we peruse literature related to earning management and LLP variables to form a research hypothesis. Research methodology and operationalization of research variables are included in the fourth section of the article. Our findings and conclusion are provided in the final section.

2 Theoretical Foundation

2.1 Iranian Banks' Characteristics

Islamic banking system differs from its conventional peers from many aspects, and the Iranian banking system differs from other Islamic countries too. The difference between the Iranian banking business model and other countries is noticeable. But it should be noticed that Iranian banking differs from Sunni banking because of using Shi'a jurisprudence, so presented models like Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) in Bahrain or Islamic Financial Services Board (IFSB) in Malaysia could not be used for them and thereby designing the framework which is customized to Iranian banks' business model would be necessary (Monetary and Banking Research Institute's taskforce on IFRS, 1395).

Prohibition of interest is the primary and discriminating characteristic of Islamic banking. Interest prohibition and the sharing of profit and loss principle cause in different and unique investment approach for them (Taktak et al., 2010; Hamdi and Zaraie, 2012). Derakhshan (1387) counts risky mortgage loans, financial innovation in mortgage loan transactions, and weakness of monetary and monitoring policies by central banks and financial and official corruption in the mortgage loan market as the main reasons for a financial crisis. Aivazlu and Meysami (2008) show employment of Islamic contracts (including partnership, transactional, and interest-free contracts) in Islamic banking causes stability and functional benefits by doing comparative comparison analysis. Noori et al. (2009) believe that reduction of capital amount of Iranian banks (in comparison to their balance sheet), incompatibility of assets with debts, abounding of leverage multiplier impact and mismanagement of risk by Iranian banks are main reasons of crisis emergence.

2.2 Comparing Loan Loss Provision Estimation in Iranian Banks with Other Countries

Although the Iranian banking system thinks of itself as a part of Islamic banking, the LLP estimation procedure in Iranian banks is different from the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) standards. The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) requires the use of dynamic provisioning, which is a macro-prudential tool used to reduce the procyclicality of banks' provisions and earnings and thus their probability of default (Wezel et al., 2012). The fundamental principle underpinning dynamic provisioning is that a forward-looking provision, based on long-run expected annual losses, is made each year.

The AAOIFI's standard (11), which sets out the accounting for provisions and reserves, defines provisions as "setting aside a certain amount from income as expenses to reevaluate receivables, financing and investment assets" when the probability of uncollectible amounts or assets impairment occur. This standard advocates the recognition of two types of provision: general and specific provisions. The first one should be recorded to cover potential losses that result from unidentifiable risks related to assets, and the second one is recognized when the asset is impaired, to reduce its amount to its net realizable value. Therefore, the LLP is recorded to better anticipate the credit risk of the bank. These characteristics in provisioning policy adopted by Islamic banks are more sophisticated than conventional banks in that it does not take into consideration the actual loss only, but it considers the expected future losses (Salman, 2004; Taktak et al., 2010b; Taktak, 2011; Quttainah, 2011).

However, Iranian bank move granted loans to past-due suspended and bad debt categories based on Central Bank of Iran's circular (2823) dated 1385 which defines those categories using delay time from the due date to payment date of each installment. Resulting LLP consists of general and special provisions. A general provision is estimated as a percentage of the whole amount of granted loans, and special provision is calculated by using each category's dedicated percentage in which the loan is moved in based on the circular (Central Bank of Iran, 1385). The critical characteristic of the Iranian model is its past-looking approach. It was mentioned that Iranian banks estimate LLP based on central bank circulars and contract conditions. The Central Bank of Iran in 1391 published circular (2127) about the instruction of recognition, write off and disclosure of non-collectible loans in the financial statement, this circular was aimed to complete the last bulletin. 1391 circular

with emphasis on importance disclosure in theoretical accounting framework requires banks to disclose non-collectible loans separately and dedicate 100% loss percentage for their particular provision calculation. This circular states certain conditions and technical committee for identifying non-collectible loans which account for improvement from the previous one. For example, if the period which is passed from moving a loan to bad debt category exceeds ten years, then the bank must disclose it separately, then the loan is put to decide on the committee for write off and sequel actions. Two essential points should be mentioned about the latter circular comparing with the first one. Firstly, although 1391 circular shows considerable improvement in accounting disclosure procedure and increases informational content of banks' financial statement, but doesn't fundamentally change past looking nature of Iranian banks (versus forward-looking AAOIFI model). Second point is about legal and organizational aspects of this circular which regulates debt write-offs and requires certain steps to do so and thereby facilitates exact and professional opinion for auditors, but deadlines mentioned in clauses 3-1, 3-2 and 4 of the circular lead to a 3 to 7 years delay in emergence of intended results in banks' financial statement. However, now the question before us is to measure the ability of mentioned circulars and other laws in showing real profit (loss) situation of banks. Currently, lack of customer credit information system in Iran causes banks to estimate LLP based on the time interval which is passed since first in installment default and most of the Iranian banks do not take customers' financial situation into account for LLP estimation (Ebrahimi, 2010).

3 Literature Review and Hypothesis Development

A growing body of empirical research provides evidence that banks manage their earnings (Shen and Chih, 2005; Cornett et al., 2009; Wang et al., 2012). It is noteworthy that earnings management in banks is more problematic than in other firms. It is due to the importance of banks to national, regional, and global economies. Banks have an essential role in economic growth, stability, and the welfare of the countries (Quttainah, 2011; Hamdi and Zarai, 2012). As such, earnings manipulation can have harmful implications for the whole economy, as visualized by the last financial depression that originated in the banking sector. In the previous financial crisis, the collapse of banks made it clear that information asymmetry problems between managers and shareholders are very severe (Palia and Porter, 2007). Earnings management is considered as a constraint for investors to predict banks' future performance accurately using the current financial information. This practice increases

information dissemination problems between banks and investors and reduces banking sector stability (Quttainah, 2011; Hamdi and Zarai, 2012).

This information dispersal originates from the agency theory, which suggests that managers do not act in the best interest of the shareholders, they exhibit tendencies to divert from their duties and to "pursue strategies that meet their own goals, rather than those of the owners" (Jensen and Meckling, 1976; Fama, 1980). Theses agency problems occur when shareholders lack the necessary power to monitor and control the managers that have an opportunistic behavior (Macey and O'Hara, 2003).

Prior work offers evidence that accounting accruals are affected by agency issues and asymmetric information (Bae et al., 2009; Cornet et al., 2009). Managers in the banking industry have incentives to smooth earnings via LLPs considered as the most critical accruals in the banking sector. These incentives are related to earning management (Greenwalt and Sinkey, 1988; Beatty et al., 1995) and capital management (Moyer, 1990; Collins et al., 1995; Kim and Kross, 1998). Most of these studies focused on conventional banks, and their findings reveal some mixed evidence. A large body of empirical studies provides evidence that banks engage in earnings management throughout LLP (Ma, 1988; Collins et al., 1995; Greenwalt and Sinkey, 1988; Bhat, 1996; Lobo and Yang, 2001; Kanagaretnam et al., 2004; Anandarajan et al., 2005, 2007; Kwal et al., 2009; Pinho and Martins, 2009; Taktak et al., 2010a). In the same vein, Wetmore and Brick (1994, p. 299) showed that bank managers "take large LLPs in a good year so that extra reserves are available for bad years." Conversely, some other studies found no relationship between LLP and earning management (Wetmore and Brick, 1994; Beatty et al., 1995; Ahmed et al., 1998; Ismail et al., 2005). Table 1 provides a summary of these studies.

Most of earning management studies about Iranian banks focused on the effective factors which are shared between banks and companies. For example, Nadi Qomi et al. (2017) by examining financial and liquidity leverage's effect on earnings and capital management in Iranian commercial banks found that there is a significant relationship between them. He believes that the observed intention for earning management in non-financial industries could be generalized easily to the banking industry. Regardless of their negligence about the bank's particular accrual item, LLP quality is not being studied in their researches too. Noor Borujerdi et al. (2013) has used the domestic Jones model to examine the relationship between stock risk and income volatility with Iranian banks' earning management. Their results do not show a significant correlation between those risk and earning

management. It could be concluded from comparing two mentioned studies that there isn't an inclusive Consensus about earning and capital management by Iranian banks and additional research seems inevitable.

Table 1
Studies that examined the association between LLP and earnings management

Authors	Results	Observation/banks	Research period
Ma (1988)	Focusing on the income smoothing practices in US banks, results prove that US banks engaged in earnings management through provisioning policy	900 bank-year	1980-1984
Greenwalt and Sinkey (1988)	Results assert that US banks smooth their earnings using LLP. Thus, money center banks are less likely to engage in income smoothing than regional banking companies in the USA	106 banks	1976-1984
Collins et al. (1995)	Findings show that LLP is used as an instrument for earning management while loan charge-off and securities insurances are used for capital management	120 banks	1971-1991
Bhat (1996)	The result of examining the income smoothing hypothesis reveals that US banks do not use LLP for earning management	148 banks	1981-1991
Lobo and Yang (2001)	Using a sample of US banks and analyzing the use of discretionary LLP, findings indicate strong evidence for income smoothing, capital management, and signaling	14,080 bank-year	1981-1996
Ismail and Be Lay (2002)	Studying the case of commercial banks in Malaysia and "using a model of LLP which incorporates the sectorial effect and the economic risk of those sectors," results outline that conventional banks in Malaysia use LLP to manage their earnings	34 banks	1997-1999
Kanagaretnam et al. (2004)	Findings provide evidence that US banks use DLLP to reduce earnings volatility and to manage capital. Results also prove that bank managers' decisions to reduce earnings volatility are related to the need for external financing and securities gains and losses	22,640 bank-year	1992-2001
Anandarajan et al. (2005)	Using a panel of depository institutions in Spain during the 1986-1995 periods, empirical results assert the use of LLP for capital and earnings management	970 bank-year	1986-1995

Anandarajan et al. (2007)	Results prove that Australian banks use LLP for capital and earnings management. However, there is no evidence on the use of LLP for "signaling future intentions of higher earnings to investors." Further, listed banks are more likely to engage in earning management than unlisted commercial banks	50 banks	1991-2001
Kwal et al. (2009)	Based on a sample of Japanese banks, findings indicate that DLLP is used extensively for earnings and capital management. Results also show that DLLP, positively related to the demand for external financing, realized securities gains and prior year's taxes	31 banks	1996-1999
Pinho and Martins (2009)	Using a sample of financial institutions operating in Portugal, the findings indicate that Portuguese banks' have a discretionary behavior in setting up their provisions and find evidence of income-smoothing and capital management	35 banks	1990-200
Taktak et al. (2010)	Using a sample of commercial banks operating in OECD countries. Results highlight that a large number of banks use intentional smoothing results either by using LLP or by selling trading securities	278 banks	1994-2002
Jin et al. (2016)	Authors by studying discretion behavioral of the manager on LLP (opportunistic or efficient) found that U.S bank managers use their discretion for efficiency and signaling purposes	50,986 bank-year	2000-2006
Delis et al. (2018)	Examining the effect of regulatory interventions on earning quality of U.S banks found that their interventions lead to improvement of earning quality in term of earning smoothing, timely recognition of future loan loss, LLP estimation and loan loss expense.	772,314 bank-year	200-2014

Source: Research Findings.

3.1 Earnings Management

Empirical investigations about the relationship between DLLP and earnings management asserted that managers are inclined to recognize provisions when accounting earnings are high enough. Managers of banks with high earning variability will have stronger incentives to smooth earnings through LLP (Lobo and Yang, 2001; Pinho and Martins, 2009). Kwal et al. (2009) documented that "managers, through loss provisions, can shift earnings among periods to smooth income over time." The EBTP is widely used in the literature to capture earnings management practices. Based on the existing research, we expect that managers use discretion to underestimate LLP if the EBTP ratio is low, and overestimate LLP if the EBTP is high. Hence, the first hypothesis:

H1. There is a positive relationship between DLLP and EBTP in Iranian banks.

3.2 Capital Management

Following previous studies, the capital structure is measured by the CAR. Considering the use of DLLP for capital management, prior literature supports either a positive and negative relationship between DLLP or LLP and CAR. Some papers showed that banks with low capital ratios are inclined to use their discretion and report low DLLP to report higher capital and earnings (Kim and Kross, 1998; Ahmed et al., 1998). Other studies suggested that well-capitalized banks are subject to a lower level of monitoring by regulatory agencies (Kanagaretnam et al., 2004; Taktak et al., 2010b). Therefore, they can use more discretion to boost earnings and capital. Consequently, we hypothesize the following:

H2. There is a negative association between DLLP and CAR in Iranian banks.

In the previous section, we have noticed that Iranian banks work under special environmental (unique central bank circulars in comparison from AAOIFI's standard) and legal conditions, which leads to earning management using LLP. The incentives of Iranian banks to manage accounting earnings via LLP are likely to be influenced by bank-specific factors. We examine two factors that may affect the earnings management behavior of Iranian banks' managers.

3.3 External Financing

Several studies considered external financing as an instrument to smooth reported earnings. To attract external funds, a bank reports low LLP to reduce the perceived risk and to increase reported income. Loan to deposit (LD) ratio is often used as a proxy for external financing (Kanagaretnam et al., 2004; Zoubi and Al-Khazali, 2007). If the LD ratio is high, this indicates that total loans are greater than deposits and, therefore, banks need to attract more deposits from customers. For that, banks' managers have incentives to report low LLP. Thus, we expect that the degree of earnings management through DLLP is negatively related to the demand for external financing. This suggests the following hypothesis:

H3. There is a negative relationship between DLLP and LD ratio in Iranian banks.

3.4 Bank Size

In the existing literature, it is often argued that bank size is considered as an essential factor that influences earnings management behavior. Many studies like Zoubi and Al-Khazali (2007), Taktak et al. (2010b) and Ben Othman and

Mersni (2016) show that there is a positive relationship between bank size and DLLP, but some other studies (like Saghafi and Jafarimanesh, 2016) suggest higher LLP quality for bigger banks. We expect bigger banks to have lower incentives to use discretion in LLP. So we state the following hypothesis as:

H4. There is a negative relationship between DLLP and bank size in Iranian banks.

4 Methodology

All listed banks in Tehran Stock Exchange from 1385 to 1396 period are included in the research sample. Our data mainly extracted from their financial statements and notes. The banks in our sample and respective period is shown in Table (2).

Table 2
List of banks in Research Sample

Row	Bank name	Stock Exchange listing period	Data collection period
1	Eghtesad Novin	2003-2017	2006-2013
2	Ansar	2011-2017	2010-2017
3	Iran Zamin	2011-2017	2011-2017
4	Pasargad	2011-2017	2008-2017
5	Parsian	2004-2017	2006-2017
6	Tejarat	2009-2017	2007-2017
7	Hekmat Iranian	2011-2017	2010-2017
8	Khavar Mianeh	2013-2017	2012-2017
9	Saman	2011-2017	2006-2017
10	Sarmaieh	2011-2017	2008-2017
11	Sina	2008-2017	2010-2017
12	Saderat	2009-2017	2007-2017
13	Karafarin	2003-2017	2006-2017
14	Mellat	2008-2017	2007-2017
15	Post Bank	2010-2017	2007-2017

Source: Research Findings.

To examine the use of discretion by the managers of Islamic banks and compare it to conventional banks in the Middle East region, we use the two-stage approach. At the first stage, we use specific accruals to measure artificial earnings management in Islamic banks. More specifically, we use a significant accrual in the banking sector, LLP. This proxy is divided into two components: discretionary and non-discretionary. Whence, the basic model, takes the form:

$$LLP = NDLLP + DLLP \quad (1)$$

The non-discretionary component of LLP represents the portion of total accruals dictated by changes in bank business conditions. Because it cannot be directly observed, it is estimated through variables reflecting the level of losses in the loan portfolio. Similar to Kanagaretnam et al. (2004) and Kwal et al. (2009), the NDLLP component is estimated using a set of informational variables including the beginning balance of non-performing loans, change in non-performing loans and change in total loans. We expect to have a positive correlation between LLP and the independent variables mentioned above. We expect that, if the beginning balance of non-performing loans is high, banks will report a high level of loss provisions.

On the other hand, an increase in non-performing loans is likely to increase LLP, and a positive change in total loans increases the risk of uncollectible accounts. It involves an increase in the number of loss provisions. We estimate NDLLP using equation (2).

$$LLP_{it} = \beta_{۰} + \beta_{۱} NPL_{i,t-۱} + \beta_{۲} \Delta NPL_{i,t} + \beta_{۳} \Delta TL_{i,t} + \varepsilon_{i,t} \quad (2)$$

We've used panel data over the period 1385-1396. Each observation of our sample has two dimensions (bank, year). The estimation method of our model using panel regression techniques is fitting. Due to data availability, we used non-balanced panel data techniques. Our sample consists of unbalanced panel data because each variable is observed over varying time-period length.

The DLLP consists of the LLP prediction error; it is estimated through the residual obtained from equation (2). First of all, we estimate equation (1) for all banks to get the estimates of β_0, β_1, β_2 and β_3. The Hausman specification test is used to choose between the fixed or random-effects model for our sample. The explanatory effect and coefficients consist of the next estimation step in our analysis. Then, using the estimated coefficients ($\widehat{\beta_0}$, $\widehat{\beta_1}$, $\widehat{\beta_2}$ and $\widehat{\beta_3}$) from equation (2), we evaluate the non-discretionary component of LLP, NDLLP:

$$NDLLP_{i,t} = \hat{\beta}_0 + \hat{\beta}_1 NPL_{i,t-1} + \hat{\beta}_2 \Delta NPL_{i,t} + \hat{\beta}_3 \Delta TL_{i,t} \quad (3)$$

Finally, we obtain the discretionary component of LLP by calculating the difference between total LLP and estimated non-discretionary LLP. Our basic estimation equation becomes:

$$DLLP_{i,t} = LLP_{i,t} - \left[\hat{\beta}_0 + \hat{\beta}_1 NPL_{i,t-1} + \hat{\beta}_2 \Delta NPL_{i,t} + \hat{\beta}_3 \Delta TL_{i,t}\right] \quad (4)$$

At the second stage, we use the discretionary LLP component as our dependent variable. The independent variables in equation (4) below represent factors hypothesized to influence DLLP.

$$DLLP_{i,t} = \beta_0 + \beta_1 EBTP_{i,t} + \beta_2 CAR_{i,t} + \beta_3 LD_{i,t} + \beta_4 Size_{i,t} + \varepsilon_{i,t} \quad (5)$$

Table 3 represents the variables used in equations (2) and (3):

Table 3
Research Variable Description

Row	Variable	Description
1	LLP_{it}	Total LLP for bank i at the year t, deflated by beginning loans
2	NPL_{it-1}	The beginning balance of non-performing loan for bank i at the year t deflated beginning loans.
3	ΔNPL_{it}	Change in the value of non-performing loan for bank i at the year t, deflated by beginning loans.
4	ΔTL	Change in the value of the total loan, for bank i at the year t, deflated by beginning loans.
5	$DLLP_{it}$	discretionary loss provisions for a loan for bank i at the year t.
6	$EBTP_{it}$	Earnings before taxes and provisions deflated by total assets for bank i at the year t.
7	CAR_{it}	Capital adequacy ratio for bank i at the year t, measured by average total equity over average total assets.
8	LD_{it}	Loan to deposit for bank i at the year t.
9	$Size_{it}$	Bank size for bank i at the year t, expressed as the natural log of the asset.

Source: Research Findings.

5 Findings

As stated in previous sections, we estimated model (2) for all banks in our sample at first, the following table presents descriptive statistics for the variables used in this study.

Table 4
Descriptive Statistics for Model 2 Variables

Variable	Mean	Median	Standard Deviation	Max	Min
$LLP_{i,t}$	0.076859	0.053923	0.1308	1.411264	0
$NPL_{i,t-1}$	0.153572	0.142548	0.131257	0.988625	0
$\Delta NPL_{i,t}$	0.058327	0.031194	0.091987	0.482796	-0.241755
ΔTL	0.245648	0.20247	0.300648	1.6612	-0.912787

Source: Research Findings.

One of the interesting points which could be mentioned from first glance on descriptive statistics is observed figure for maximum amount of non-performing loans at the beginning of year, this statistic (98.8%) is related to Sarmaieh Bank in 1396 and might be the cause for its loss, exchange prohibition in Tehran Exchange Market and successive change in management during that year. Minimum of change (-91%) in total loans in observed for Mellat bank in 1389, which is recuperated by loan granting accretion in the following years. The following figure depicts the graph of change trend for LLP scaled by beginning total loans. Considering its dependence on the macro-economic situation in different intervals, we can see that its proportion to total loans in 1390 coincident with a considerable increase in the exchange rate and inflation, the crisis in producing section and devaluation of Rial has jumped upward and shows a sharp increase. However, 1391 Central Bank of Iran's circular to disclose non-collectible loans and dedication of 100% special provision rate to them has a significant role in this occurrence, and the jump represents the provisions which are disclosed because of that circular. In the year 1392, concurrent with a relative stabilization of Rial, inflation decline and consequent economic boom; the financial condition of loan recipients has improved and non-performing loans and default among customers reduced. Certainly, the declining trend could be viewed as the result of 1391 circular and its appointed committee. In the year 1395 banks were required to comply with new accounting standards which led to the disclosure of new parts of hidden loss, at the same time, the banking section faced crises that were out their control so that we can see another intensification in LLP.

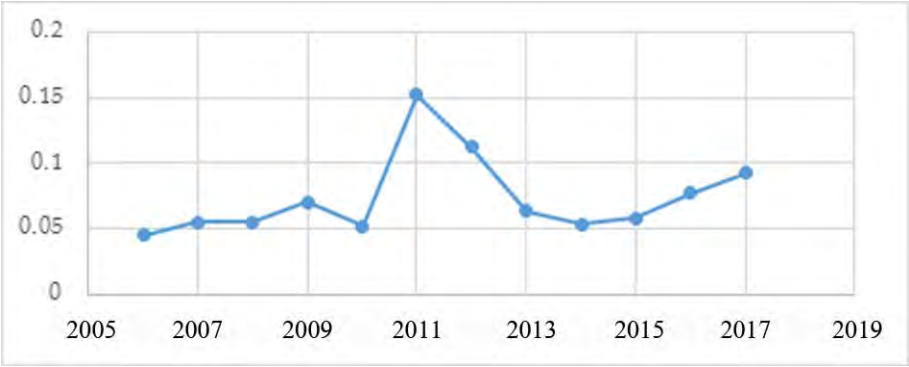

Figure 1. LLP Trend. *Source:* Research Findings.

Finally, the first model is estimated to compute DLLP. The following table represents the coefficients and model statistics for the estimation:

Table 5
Estimation result for equation (2)

Variable	Coefficient	(p-value)
Intercept	-0.006853	0.0951
$NPL_{i,t-1}$	0.3562	0.0000
$\Delta NPL_{i,t}$	0.1573	0.0000
ΔTL	0.0158	0.0000
Fisher Statistics	570.8823	
R^2	91.996%	

Source: Research Findings.

Results from estimation show high good model explanatory power and, as expected, we capture a significant positive relationship between LLP and Loan measures, including non-performing loans at the beginning, non-performing loan change, and total loans. High Model's Coefficient of Determination suggests functional model fitness. In the next step, we estimate DLLP using those coefficients. The following table represents banks in ascending order based on the absolute value of DLLP.

Table 6
Ranking Banks based on the absolute value of DLLP

Bank	Ranking in term of DLLP	Bank	Ranking in term of DLLP
Parsian	1	Karafarin	9
Saman	2	Eghtesad Novin	10
Mellat	3	Post Bank	11
Ansar	4	Iranzamin	12
Pasargad	5	Sina	13
Saderat	6	Sarmaieh	14
Khavare Mianeh	7	Tejarat	15
Hekmate Iranian			

Source: Research Findings.

In the second step, we estimate equation (3) with DLLP as the dependent variable. Descriptive Statistics for independent estimator variables of the second step are presented in the following table.

Table 7
Descriptive Statistics for Model (3) Variables

Variable	Mean	Median	Standard Deviation	Max	Min
$EBTP_{it}$	0.0202	0.0204	0.0315	0.1256	- 0.245061
CAR_{it}	0.1096	0.0898	0.1061	0.9400	-0.3500
LD_{it}	0.7543	0.7771	0.2477	2.2752	0.0227
$Size_{it}$	14.1539	14.2276	0.3006	15.3492	12.4009

Source: Research Findings.

Descriptive statistic of these variables contains several material points which will be discussed briefly. Firstly, capital adequacy in our study is computed according to the Central Bank of Iran's definition, and although its imperative minimum should not be less than 8%, several observations capture lower values, and we even have few negative figures too, this matter signals insufficient monitoring and preventive action in our Iranian banking system. Another interesting point is about the loan to deposit ratio. The loan to loan ration means in our sample is equal to 75.4%, which reveals inappropriate deposit employment by Iranian banks. This percentage shows that Iranian banks do not use all of the deposits to grant loans and use 25% of the deposit to other investment purposes (Cooperating and Property). It is noticeable that the loan to deposit ratio for U.S banks concurrent with crisis occurrence declined from 90% to 80% in late 2014 and then bounced back (Disalo and

Jonston, 2017). However, the actuate study of this ratio and its relationship with bank business cycles requires separate detailed analysis. The Limmer F-Test test is used to choose the model estimation specification for the second step. The test statistic for that test is equal to 19.05 which exceeds a critical value, and thereby the null hypothesis is rejected (versus using Cross – Section Fixed Effects). Hausman test is done to make sure of not using random effect which resulted in 3.67 (less than critical value). Finally, estimation results with a fixed effect in the form of the unbalanced panel is represented in the following table.

Table 8
Estimation Result of Model (3)

Variable	Coefficient	(p-value)
Intercept	0.004729	0.0936
$EBTP_{it}$	-0.252429	0.0157
CAR_{it}	0.004967	0
LD_{it}	-0.000630	0.0076
$Size_{it}$	-0.059856	0.6619*
Fisher Statistics	20.42773	
Durbin-Watson Statistic	1.729848	
R^2	0.790278	
Adjusted R^2	0.751592	

Source: Research Findings.

6 Discussion and Conclusion

The estimation results for the second step shows adequate explanatory power and other fitness statistics, so we can explain DLLP using earning management, capital management, loan to deposit ratio and bank size to a considerable extent.

Regarding the first hypothesis, although resulted coefficient for Earning before tax and provision is negative, its significance leads to the confirmation of the first hypothesis about the relationship between DLLP and earning before tax and provision. Although we expected (according to capital crunch theory) banks to use DLLP to underestimate their earnings, our results show reverse direction. On the word, Iranian banks behave in contrast with the capital crunch theory and overestimate their earning by reducing DLLP. Our results in terms of confirming the relationship between DLP and bank earning is consistent with prior studies like Ben Othman & Mersni (2016) and Zoubi

and Alkhazali (2007), but our estimated coefficient direction doesn't align with their findings. Highlighting these two articles from numerous studies at the international level is done because of their focus on Islamic banks so that we can compare Iranian banks' behavior with their Islamic peers. Our findings concerning earning management behavioral pattern are consistent with studies like Kim and Krous (1998) and Ahmed et al (1998).

It was discussed about our second hypothesis that we expect DLLP to be used for capital management and therefore, a significant negative relationship between these two is anticipated. Our findings show that although their relationship is significant, the resultant coefficient sign conflicts our expectations. However, we have mentioned in previous sections that there was insufficient monitoring for capital adequacy; banks will behave in contrast with our expectations. Scrutinizing capital adequacy descriptive statistics in our sample distinguishes negative capital adequacy observations, whereas the imperative minimum proportionate shouldn't be less than 8%; these observations indicate insufficient monitoring and disincentive actions concerning capital adequacy in the Iranian banking system. Our findings of capital management via DLLP are consistent with studies like Kanagernam et al. (2004) and Taktak et al (2010), and it is in contrast with studies like Bushman (2016).

We assumed a negative relationship between DLLP and external financing (proxied by loan to deposit ratio). Our main reason for this assumption is based on the bank's need for a higher level of deposit in higher levels of this ratio and their trend to underestimate their loss and overestimate their earning to attract more deposits. The estimated coefficient for the deposit to loan variable in the second step analysis confirms our expectations. In another word, Iranian banks, facing higher levels of loan to deposit ratio (and the consequent need for more deposits to grant loans), tend to underestimate DLLP. Our results concerning the third research hypothesis are consistent with studies like Kanagertnam et al. (2004), Zoubi and Alkhazali (2007) and Ben Othman & Mersni (2016). The effect of our results on deposit employment was discussed in the second step descriptive statistics section.

Our findings of the revers relationship between DLLP with bank size do not have statistical significance, and thereby the fourth hypothesis got rejected. The results of their relationship contrast with studies like Ben Othman & Mersni (2016) and Saghafi and Jafarimanesh (2015).

6.1 Conclusion

The primary purpose of this study was to investigate effective factors on the usage of DLLP by Iranian banks. The research purpose is achieved using a sample consisting of 15 banks from 2006 to 2017. Ranking banks by their level of DLLP counts as one of the interesting considerable findings, and in the next step, we found that factors like the need for external financing and meeting imperative minimum capital adequacy affects using DLLP for earning management. Our results reveal a negative relationship between earnings before tax and loan loss provision and DLLP which confirms a reverse correlation between them and shows that lower levels of earning before tax and loan loss provision leads to higher levels of DLLP. These findings are consistent with earning management theories regarding underestimating declared income tax and avoiding excessive monitoring.

In summary, this article makes conspectus that DLLP is related to earning management in Iranian banks. Furthermore, capital adequacy and loan to deposit ratio has a significant effect on DLLP and should be regarded by monitoring authorities. Examination of the latter factor showed that banks which are facing higher levels of loan to deposit ratio should finance more deposits to grant loans and thereby tend to manage their earning via DLLP and underestimate their loss.

Our results have considerable insights for monitoring authorities; including the Central Bank of the Islamic Republic of Iran, standard-setting bodies, auditors and investors which should be noted during codification of circulars and standards concerning Loan Loss Provision. This consideration could lead to preventing banks from earning management via DLLP. On the other hand, investors and depositors can use our findings to take account managerial behavior of banks in their decisions.

The main limitation of our study was the lack of data regarding national banks as essential players in the banking system. Future studies can provide an overall conclusion about managerial behavior by attaining the governmental banks' financial statement. Another important consideration was the restatement of financial statements by banks during the sample period, which affects the credibility of resultant proxies. Interested researchers in financial reporting and banking literature could provide essential insights regarding governmental and the banks which are in the process of formation (who are under different circulars and standards) by the repetition of similar researches.

References

Ahmed, A. S., Takeda, C., & Thomas, S. (1998). Bank Loan Loss Provisions: A Reexamination of Capital Management, Earnings Management, and Signaling Effects. *Journal of Accounting and Economics*, Vol. 28, 1-25.

Aivazlu, H., & Meisami, H. (2008) Stability and Efficiency of Islamic Financial in Comparison with Conventional Financial Institutes. *Islamic Economics*, 8(31), 161-190 (in Persian).

Anandarajan, A., Hasan, I., & Lozano-Vivas, A. (2005). Loan Loss Provisions Decisions : An Empirical Analysis of the Spanish Depository Institutions. *Journal of International Accounting, Auditing, and Taxation*, Vol. 14, No. 1, 55-77.

Anandarajan, A., Hasan, I., & McCarthy, C. (2007). Use of Loan Loss Provisions for Capital, Earnings Management and Signaling By Australian Banks. *Accounting and Finance*, Vol. 47, 357-379.

Bae, G. S., Hamao, Y., & Kang, J. K. (2009). *Bank Monitoring Incentives and Borrower Earnings Management: Evidence from the Japanese Banking Crisis of 1993-2002* (Working Paper No. 279), Vol. 279, Center on Japanese Economy and Business, Columbia University, New York, NY.

Beatty, A., Chamberlain, S., & Magliolo, J. (1995). Managing Financial Reports of Commercial Banks: The Influence of Taxes, Regulatory Capital, and Earnings. *Journal of Accounting Research*, Vol. 33, 231-262.

Ben Othman, H., & Mersni, M. (2016). The Use of Discretionary Loan Loss Provisions by Islamic Banks and Conventional Banks in the Middle East Region A Comparative Study. *Studies in Economics and Finance*, Vol. 31, No. 1, 106-128.

Bhat, V. (1996). Banks and Income Smoothing: An Empirical Analysis. *Applied Financial Economics*, Vol. 6, No. 6, 505-510.

Bushman, R. (2016). Transparency, Accounting Discretion, and Bank Stability. *Economics Policy Review*, 8(4), 129-149.

Central Bank of Islamic Republic of Iran (2015). Circular No. 94/258020 dated (1394/09/09) on stopping point for recognition of some of the banking earnings.

Central Bank of Islamic Republic of Iran (2007). Circular No. MB/2823 dated (1385/12/05) on Asset Classification for Credit Institutes and Loan loss Provision Estimation (in Persian).

Central Bank of Islamic Republic of Iran (2012). Circular No. 91/21270 dated (1391/01/31) on Collection of Due, Suspended and non-collectible Receivables for Credit Institutes and Banks (in Persian).

Collins, J., Shackelford, D., & Wahlen, J. (1995). Bank Differences in the Coordination of Regulatory Capital, Earnings, and Taxes. *Journal of Accounting Research*, Vol. 33, No. 2, 263-292.

Cornett, M. M., McNutt, J. J., & Tehranian, H. (2009). Corporate Governance and Earnings Management at Large US Bank Holding Companies. *Journal of Corporate Finance*, Vol. 15, 412-430.

Delis, M. D., Hasan, I., Losifid, M., & Li, L. (2018). Accounting Quality in Banking: The Role of Regulatory Interventions. *Journal of Banking & Finance*, Volume 97, 297-317.

Derakhshan, M. (2008). *The Nature and Causes of Financial Crisis in 2008 and its Impact on Iranian Economy*. The Expediency Discernment Council's research center. (In Persian).

Ebrahimi, A. (2010). Loan Loss Provision and its Effect on Earning Transparency. *Hesabdar Rasmi*, No. 8, 13-14 (in Persian).

Fama, E. F. (1980). Agency Problems and the Theory of the Firm. *Journal of Political Economy*, Vol. 88, 288-307.

Greenwalt, M., & Sinkey, J. (1988). Bank Loan Loss Provisions and the Income Smoothing Hypothesis: An Empirical Analysis. *Journal of Financial Services Research*, Vol. 1, 301-318.

Hamdi, M. F., & Zarai, M. A. (2012). Earnings Management to Avoid Earnings Decreases and Losses: Empirical Evidence from Islamic Banking Industry. *Research Journal of Finance and Accounting*, Vol. 3, 88-107.

Ismail, A. G., & Be Lay, A. T. (2002). Bank Loans Portfolio Composition and the Disclosure of Loan Loss Provision: An Empirical Evidence of Malaysian Banks. *Asian Review of Accounting*, Vol. 10, No. 1, 147-162.

Ismail, A. G., Shaharudin, R. S., & Samudhram, A.R. (2005). Do Malaysian Banks Manage Earnings Through Loan Loss Provisions? *Journal of Financial Reporting and Accounting*, Vol. 3, No. 1, 41-47.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. *Journal of Financial Economics*, Vol. 3, 305-360.

Jin, J., Kanagaretnam, K., & Lobo, G. J. (2016). Discretion in Bank Loan Loss Allowance, Risk-Taking and Earnings Management. *Accounting and Finance*, Volume58, Issue1, 171-193.

Kanagaretnam, K., Lobo, G. J., & Mathieu, R. (2004). Earnings Management to Reduce Earnings Variability: Evidence from Bank Loan Loss Provisions, *Review of Accounting and Finance*, Vol. 3, 128-148.

Kim, M., & Kross, W. (1998). The Impact of the 1989 Change in Bank Capital Standards on Loan Loss Provisions and Loan Write-Offs. *Journal of Accounting and Economics*, Vol. 25, No. 1, 69-100.

Kwal, W., Lee, Y. H., & Eldridge, S. (2009). Earnings Management by Japanese Bank Managers: Using Discretionary Loan Loss Provisions. *Review of Pacific Basin Financial Markets and Policies*, Vol. 12, No. 1, 1-26.

Lobo, G. J., & Yang, D. H. (2001). Bank Managers' Heterogeneous Decisions on Discretionary Loan Loss Provisions. *Review of Quantitative Finance and Accounting*, Vol. 16, 223-250.

Ma, C. K. (1988). Loan Loss Reserve and Income Smoothing: The Experience in the US Banking Industry. *Journal of Business Finance & Accounting*, Vol. 15, No. 4, 487-497.

Macey, J. R., & O'Hara, M. (2003). The Corporate Governance of Banks. *Economic Policy Review*, Vol. 9, 91-107.

Moyer, S. E. (1990). Capital Adequacy Ratio Regulations and Accounting Choices in Commercial Banks. *Journal of Accounting and Economics*, Vol. 13, No. 2, 123-154.

Nadi Qomi, V., Hajizadeh, B., & Gomar, A. (2018). The Effect of Leverage and Liquidity on the Management of Earnings and Capital of Iranian Commercial Banks. *Quarterly Journal of Monetary and Banking Research,* winter 2018, 131-156 (in Persian).

Noori, P., Madani Esfehani, M., & Ghaderi, O. (2009). *Examination of Banks' Role on Financial Crisis*. Monetary and Banking Research Institute, nineteenth Conference on monetary and financial policies (in Persian).

Palia, D., & Porter, R. (2007). Agency Theory in Banking: An Empirical Analysis of Moral Hazard and the Agency Costs of Equity. *Banks and Bank Systems*, Vol. 2 No. 3, 142-156.

Pinho, P. S., & Martins, N.C. (2009). Determinants of Portuguese Bank's Provisioning Policies: Discretionary Behavior of Generic and Specific Allowances. *Journal of Money, Investment and Banking*, No. 10, 43-56, special issue.

Quttainah, M. A. (2011). *Do Islamic Banks Employ Fewer Earnings Management?* Working paper, paper presented at ERF 17th Annual Conference, Turkey, March 20-22.

Saghafi, A., & Jafarimanesh, I. (2015). Effect of International Institutional Factors and Earning Quality of Listed Banks in Tehran Exchange Market versus Other Countries. *Journal of Iranian Accounting Review*. Vol. 2, No. 6, 29-52 (in Persian).

Salman, S. A. (2004). *Islamic Modes of Finance and Associated Liquidity Risks* (working paper), paper presented at Conference on Monetary Sector in Iran: Structure, Performance, and Challenging Issues Tehran, February.

Shen, C., & Chih, H. (2005). Investor Protection, Prospect Theory, and Earnings Management: An International Comparison of the Banking Industry. *Journal of Banking & Finance*, Vol. 29, 2675-2697.

Taktak, N. (2011). The Nature of Smoothing Returns Practices: The Case of Islamic Banks. *Journal of Islamic Accounting & Business Research*, Vol. 2, No. 2, 142-152.

Taktak, N., Shabou, R., & Dumontier, P. (2010a). Income Smoothing Practices: Evidence from Banks Operating in OECD Countries. *International Journal of Economics and Finance*, Vol. 2, No. 4, 140-151.

Taktak, N., Zouari, S., & Boudrigua, A. (2010b). Do Islamic Banks Use Loan Loss Provisions to Smooth Their Results? *Journal of Islamic Accounting & Business Research*, Vol. 1, No. 2, 114-127.

Wang, C. Y., Chen, M. C., Lee, C. C., & Shyu, S. D. (2012). Income Smoothing and Earnings Management in the Banking Industry: Evidence in Asian Countries. *International Research Journal of Finance and Economics*, No. 99, 37-52.

Wetmore, J. L., & Brick, J. R. (1994). Loan-Loss Provisions of Commercial Banks and Adequate Disclosure: A Note. *Journal of Economics and Business*, Vol. 46, 299-305.

Wezel, T., Jorge, A., Lau, C., & Columba, F. (2012). *Dynamic Loan Loss Provisioning: Simulations on Effectiveness and Guide to Implementation* (IMF working paper), May.

Zoubi, T. A., & Al-Khazali, O. (2007). Empirical Testing of the Loss Provisions of Banks in the GCC Region. *Managerial Finance*, Vol. 33, No. 7, 500-511.