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Review the Ways to Improve Debt Asset Management in Commercial Banks of Iran (Case Study Branches of Bank Sepah in Tehran)

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ABSTRACT

The main objective of this study is to investigate methods of improving debt asset management at branches of Bank Sepah in Tehran. This study is descriptive in nature and in term of collecting data, it is the combination ((Delphi (qualitative) and survey (quantitative)). Questionnaires were the tool to collect data, and statistical sample is 146 managers and experts of Bank Sepah in Tehran that have been selected by the simple random sampling method. In this study, by using multiple criteria decision-making techniques (MCDM) of fuzzy TOPSIS, we have ranked the goals of debt asset management in Bank Sepah. Based on the results, among the main criteria for debt asset management goals, “the risk management of interest rate” with a weight of 3.83 is at the first priority, then the “maintenance of adequate capital” with a weight of 3.67 is in the second place and then “liquidity risk management “ with a weight of 3.41 is in the third priority. Also, according to Friedman test results; there are differences between the achievements for each of the major debt-asset management in Bank Sepah in Tehran.

Keywords: Debt-asset management, liquidity risk, interest rate risk, capital management.

1. INTRODUCTION

Today, the banking industry plays an essential role in microeconomics and macroeconomics of countries. Banks, as advantage in macroeconomic policy, through the adjustment of bank interest rates, implement monetary policy and control and suppress inflation and unemployment, which is one of the most important objectives of macroeconomic. Banks play their role in term of macroeconomic, with attracting wandering money as resources and spending them by investors and entrepreneurs to invest in the production of goods

and services, resulting in increased production, reduced inflation, unemployment and increased public welfare. From the micro-economic dimension, banks play a major role in the development, expansion and investment by lending timely facilities to companies and individuals, in order to protect and support them, leading to employment, improve livelihoods of community and social well-being of individuals. Therefore, if banks act successfully in their role, especially in allocating resources, they will have a positive impact on the economy and cause economic growth and development, and if they do not act properly, they cause a waste of resources and a negative impact on the economy. Therefore, banks steadily, should monitor their assets and debts. Asset-debt Management includes a set of tools and techniques that creates value for shareholders, and also ensures the control and monitor risk (Pourzand, 2011).

Asset in accounting science follows all property and rights that have monetary value. Assets of a unit may be objective and evident phenomena, such as land, buildings, cash and inventory or non-visible financial rights and privileges, such as goodwill and the demands of the people. Assets, according to the definition of total balance sheet are debt and capital. Due to the crisis and the economic sanctions on Iran, profit and asset value guarantees against environmental changes, is a very important issue. The main problems of banks are the need for improved dynamic asset and debt structure to ensure profitability and reduce risk. This issue is possible with the common configuration of the asset and debt portfolio, by using the gap method for interest rate risk and development of profitable operations. The financial crisis in Europe, 2008 emphasized on multiple failure risk, which included relatively and apparently fair procedures, because, some commercial banks, which previously, skillfully managed their assets, their profitability suffered, while, in Banks that, had conservative asset structure, the loss was less. Therefore, the problem of maintaining a high quality and stable structure should be considered in a fixed way as features of assets and debts of any commercial bank dynamically change due to macroeconomic and investment environment.

In addition, this crisis revealed important differences between the management of financial and non-financial corporate balance sheets and macroeconomic implications. In non-financial companies, the assets on the balance sheet is considered positive as net present value of investment projects and bankruptcy, optimistic of debt and equity insist on providing finance for these assets. On the other hand, for financial firms, asset is considered as a predetermined variable, and the assets determined by the authorized penetration under current market conditions (Adrin and Shine, 2011). The key performance of macroeconomic is that financial resources (excluding net assets) of assets are under discussion and when market conditions are bad, liquidity management by banks can reduce credit supply (Cornett et al., 2011). In general, asset-debt management consists of a set of designing management tools to deal with the risks that banks are facing, meaning those risks that reduce the profitability and efficiency of the banks. In fact, asset-debt management includes costs associated with the performance of loans, deposits and investment portfolio management, and in fact, it was part of the bank's management, which consists of a systematic and structured process to manage the bank's balance sheet. In other reviews for the debt and asset management strategies of the bank, it was found: One perspective considers the purpose of debt and asset management, risk mitigation of short-term and long-term interest rates; however, it defends the interest rate risk management. A broad view defends that the purpose of the asset -debt management is strategic growth and it is measured to set bank balance sheet structure with its strategic plan. Increased profitability of asset is the main goal of asset structure, but increasing the least risk is important as much as increase profitability. The main contribution of portfolio theory in the field of asset structure management of the bank is the idea that the improved structure of bank assets depends on adjusted asset profitability for risk. All three parts of the balance

sheet involve in the asset structure management and in relation to each other, it can lead to improving the structure of assets (Sinkey, 2002).

Today, the growing trend of change in banking trends in the world, from the expansion of the balance sheet items to focus on the rate of return on capital and risk control, has caused the debt - asset management knowledge for bank managers becomes a necessity to optimize the performance of duties. If banks act successfully in risk control of the bank, not only sustains its survival, but also in crisis situations, it can protect itself. In view of the above, the aim of this study is reviewing asset-debt management system of Bank Sepah in Tehran. Thus, this study seeks to answer the following questions:

How are the methods to improve asset management by using asset-debt management technique for the Bank Sepah in Tehran?

2. THEORETICAL FOUNDATIONS

To maintain profitability and various risk control, banks have formed entities, particularly as the Committee of assets and debts. Usually, members of the committee consist of top and senior managers of the bank such as CEO, CFO, director of the Treasury, head of the banking division, head of banking institutions, senior director of Economics and Director of the accounting and controls. Some banks consider this Committee under other names; Committee of asset debt Group; or asset-debt management and implementation committee. Although, activities related to risk control and profitability are not new concepts, but in some countries, the implementation of new processes such as: allocation of information, accountability and responsiveness to the top management of the organization has been necessary for the central bank. Since, factors such as deregulation and competition led to the downward trend of profit margins in the world, therefore, provide detailed information and establish a comprehensive system to manage assets and debts, in such circumstances is considered an inevitable matter. Asset-debt management is strategic, execute and control processes that affect the volume, composition, maturity, sensitivity of rate, quality and liquidity of assets and debts of banks. To put it simply, ALM involves the acquisition and development of funds, so, it is the bank's financial heart. The purpose of ALM is to create a steady, large and growing stream of interest rate income. This aim will be provided with the combination and optimal levels of assets and debts and financial risks. Banks will be rewarded for bearing risk; investors, depositors, legislators and validity evaluation groups limit the risk-bearing capacity. The risk-bearing capacity should properly be allocated to obtain the maximum expected reward. The main objective of this study is to investigate methods of improving asset management by using asset-debt management techniques in Bank Sepah in Tehran.

Secondary Objectives

- Set macro major of Asset-debt Management in Bank Sepah in Tehran
- Prioritize major goals of Asset-debt Management in Bank Sepah in Tehran
- Assess the achievement of Bank Sepah in Tehran to each of the major goals of asset-debt management

3. RESEARCH EXPERIMENTAL BACKGROUND

In this study, methods to improve asset management were reviewed by using asset-debt management techniques, and appropriate to the context, we review some research:

3.1. Domestic Studies

The findings of Fathi et al (2014) entitled “Meta-analysis of the determinants of firms’ capital structure” indicates, size, asset structure, growth opportunities, profitability, liquidity and volatility play a decisive role in decisions about capital structure. In addition, the factors examined in this study in countries with different levels of development, have different effects on capital structure.

Khalifeh Soltani et al (2014) have done a study entitled “review the factors affecting the Capital Structure by using Tobit models: empirical test of the hierarchical theory, static parallelism and agencies”. The results show a significant relationship between the growth opportunities, firm size and tangible assets, profitability and liquidity with the capital structure. In addition, there is no significant relationship between business risk and capital structure.

Abdolah Azad and Aryan Tabar (2012) have done a study entitled “the liquidity of assets and capital structure of listed companies in Tehran Stock Exchange” that the results showed a direct and significant relationship between the liquidity of assets and the capital structure. Thus, firms can increase their financial advantage with increasing assets with high liquidity. The use of financial advantage depends on the asset structure and the loaning power of firms. Firms with liquidated assets can repay their debt easily. Moreover, the liquidity of the assets increases their bail value.

Izadi Nia et al (2011) in a study entitled “An overview of the assets and debts management” stated management of assets, debt is assessment processes, and risk controls of the company to achieve the designed financial targets. This process includes the activities of planning, directing and controlling flow, level and composition of funds as well as the company’s costs and revenues, is mixed with financial risk control process and achieve financial goals. Asset-debt management has utmost importance for all institutions, especially financial institutions, and among them banks. Managers always seek to know what techniques can be used with maximum efficiency to control risk and maximize the total shareholders’ wealth. In this regard, it has long been trying to provide the techniques and models to identify possible solutions and answers, and assist managers in the decision-making process.

3.2. Foreign Studies

Kech et al (2014) have used Monte Carlo simulations to study the use of asset-debt management model in the management of foreign reserves in the Central Bank. They have used stimulation in the development of domestic debt management model in Canada. One extended version of this model was implemented in Canada bank; it provided the supporting in determining the optimal allocation of domestic debt securities Bank of Canada.

Saksonova (2013) has done a study in Latvia on “ways to improve the management of the assets in commercial banks”. Based on the results, the main problems of banks is the need for improved dynamic asset and debt structure (responsibility), to ensure profitability and reduce risk. This can be done with common structure of asset and portfolio of debt by using the gap method for interest rate risk and development of profitable operations. The management methods in this article include a high-level plan for the successful operation of a commercial bank. With emphasis on the management procedures, there must be a good analysis of the macroeconomic and financial indicators.

Jaiswal (2013) showed in a study that the use of excess cash amounts of investment and new lending in order to obtain greater efficiency, readiness to deal with the crisis and shortage of cash, is essential. It is necessary for proper management of liquidity to identify the right tools and factors affecting the job. One of the most important factors affecting banks' liquidity is the position of the banks assets and debts.

Romanyuk (2010) stated in the form of portfolio, only the return and risk of one item cannot be checked alone, but return and risk should be considered against each other as well as the correlation coefficient of all items. Among the different risks that an organization faces such as market risk, credit risk, liquidity risk, operational risk and business risk, ALM focuses on financial risks

Mohapatra and Chakraborty (2009) have done a study on management of asset structure, stated that asset-debt management to match the assets and debts about maturity and their sensitivity to interest rate and liquidity and liquidity risks and interest rate stem from the lack of adaptibility.

4. METHODOLOGY AND DATA ANALYSIS

This study is a mixed method ((Delphi (qualitative) and survey (quantitative)) in terms of performance and in terms of data collection. With regard to the fact that, the research data was collected by using a research-made questionnaire, among quantitative methods, survey method was used in this study. In addition, because the results could be used in the planning process of banks and financial institutions, in terms of classification, the research is based on the purpose of application. In the first step, we collected indicators, dimension and criteria considered for asset-debt management in the form of documentary and library. In the next step, with knowledge on this issue, that we face with some serious limitations in the achievement of the main objective of this study, which means to create a fundamental platform for providing models to improve the structure of assets, the Delphi method is used. The most important reason to choose can be considered to create a consensus between different stakeholders and experts with high credibility. After identifying some of the debt- asset management criteria, we design a questionnaire and then distribute it among the target population, and examine the results, until the experts and stakeholders' opinion in Bank Sepah for criteria and debt- asset management goals and the importance of each of these criteria become clear.

Lincoln and Guba have produced a criterion for qualitative studies that can help to ensure the validity of results. These criteria are based on four major categories of namely credibility (truthfulness), fittingness (applicability), and auditability (consistency) and confirmability (Hasn, and Kenny McKenna, 2000).

The statistical population of this study included all managers and professional staff of Bank Sepah in Tehran. In addition, their number is 473 people and they are limited and specific. To perform the first part of the study, meaning the Delphi method, after the decision, the selected experts must be justified on the issue. Some key features for the selection of experts are as follows: they will be involved with the discussed issue; they have enough information about the issue, and feel motivated to participate in the Delphi process and understand that the data from a collective agreement will also be valuable for them (Asgharpour, 2003). There is no strong and explicit law about choosing and the number of professionals. Their number depends on factors: homogeneous or heterogeneous sample, Delphi purpose or scope of the problem, the quality of the decision, the ability of a research team at the study office, internal and external validity, time for collecting data and available resources, the scope of the problem and acceptance of the answer.

Delphi typically uses homogeneous samples to obtain a wide range of comments, high quality responses and acceptable solutions. Some scholars have noted, usually 20 people are enough to provide information and by increasing, their replies will be repeated and no new information will be added. In the majority of cases, the sampling target is used (Kennedy, 2004). In the current study, 20 professionals were considered for Delphi method and the purposive sampling method is used. For the second part of the research, which means the field part, by using Cochran formula, with a confidence level of 95%, the error probability of 0.05 percent and with the assumption that 50 percent of the population gives similar answers, sample size is estimated 146 people. In this study, according to research methods and targets, simple random sampling method is used. In this study, to describe the data in the software spss, descriptive statistical methods, in the form of graphs and tables of frequency and central tendency and dispersion have been used and by using multiple criteria decision making (MCDM) techniques, the fuzzy TOPSIS, we have ranked the major objectives of asset-debt management in Bank Sepah.

5. RESEARCH RESULTS

5.1. Descriptive Results

The results of the Delphi first step: analysis of the first questionnaire responses: In the first stage, an open questionnaire about the methods for improving asset management with asset-debt management techniques in Bank Sepah was given in the hands of professionals. After receiving the response and expert views, similar or close statements were merged with each other, the results are given below. It is worth noting that the first phase of the returned questionnaires was 85% (17 out of 20 cases). Based on the results of Bank Sepah, asset-debt management purposes include:

- Interest rate risk management
- Liquidity Risk Management
- Capital Management

5.2. The Results of the Delphi Second Step: Prioritizing the Major Objectives of Asset-debt Management in Bank Sepah in Tehran

Since, in the Delphi method, the consensus of the experts is the decision-making criteria. Therefore, questionnaires were distributed and collected in two stages to obtain a consensus about the classification. After collecting the first round questionnaire that the results were presented in the previous section, in order to identify the most important components of asset-debt management purposes, the responses obtained from the first phase were categorized and were the base of setting the second questionnaire. The second questionnaire, a closed questionnaire, in the form of statements, to prioritize and determine the amount of each of the experts agreement with the category, by using a Likert scale (1-very low 7. too much), was given to them. Experts have to state the “importance” of each component through the variables. Using variables with certain values will make problems for experts in commenting. For this reason, it is clear that qualitative variables give greater freedom to experts. Using qualitative variables such as “low”, “medium”, “high” and ... will solve the above problems to some extent. The opinion of people to qualitative variables such as high or low is not the same. Since, experts have different characteristics, so they have different ideas. In addition, if the questions will be answered based on different ideas, analysis of

variables will have no value. However, with defining the scope of qualitative variables, experts will respond with the same mentality. Therefore, the qualitative variable will be defined in the form of trapezoidal fuzzy numbers in Figure 1 and Table 1 (Chang, 1998).

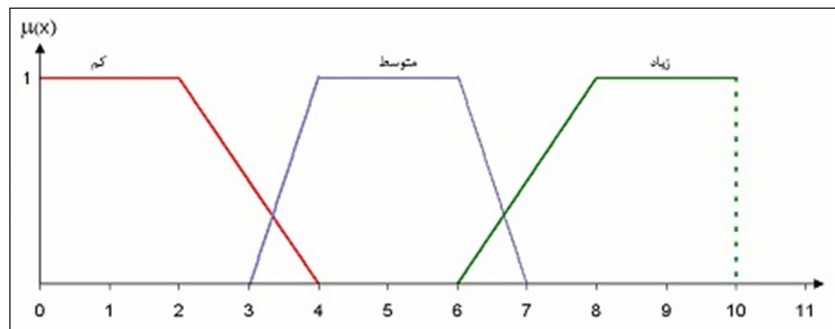


Figure 1: Membership function of linguistic variables

Table 1
Linguistic variables to determine the weight of each criterion

Very low	VL	(0,0,1,2)
Low	L	(1,2,2,3)
Lower than average	ML	(2,3,4,5)
Average	M	(4,5,5,6)
More than average	MH	(5,6,7,8)
High	H	(7,8,8,9)
Very high	VH	(8,9,10,10)

To determine the most important components of asset- debt management purposes, the responses obtained from the second stage were averaging according to the proposed options and define the linguistic variables. The components that have the highest average were selected as the most important components of debt-asset management objectives that in Table 2, the results of examining the second phase questionnaire responses were presented.

Table 2
The most important components of each asset-debt management objectives in the Bank Sepah

Level Zero	Level One	Level Two
Asset-debt management	Interest rate risk management	<ol style="list-style-type: none"> 1. Design of new financial instruments that are able to reduce interest rate risk 2. Paying facilities that have a lower interest rate risk 3. Announcing new initiatives to encourage customers to open short-term accounts so that we have the necessary flexibility to change interest rates 4. Make the same interest rate for five years deposits with one-year interest rate deposits to encourage customers to open annual deposit 5. Setting interest rates based on productivity urged major release 6. Reduce the period of repayment of loans, for example, from one year to six months or less 7. Setting interest rates due to inflation and the cost of all the money

<i>Level Zero</i>	<i>Level One</i>	<i>Level Two</i>
	Liquidity risk management	8. Enforce regulations to combat money laundering and the obligation to report suspicious deposit and sums 9. Customers divided into specialized groups within the scope of its work 10. Not lending more facilities of resources and continuous monitoring of resource consumption 11. Establish a joint venture fund with a higher interest rate than the banking system 12. Received collaterals which have high liquidity feature while lending facilities 13. Proper and independent internal and external audit and adaptive tasks 14. Printing and publishing certificates of deposit and bonds
	Maintenance of adequate capital	15. Lending facilities to support the Group in cash and immovable furnitures and improved pricing adequacy ratio of the Bank 16. Increase the contingency reserve at the end of each year 17. Determine the capital on the basis of assets and non-reliance on fixed assets 18. The use of inquiry validation system of credit records 19. Lack of lending facilities to customers with arrears and Playoffs 20. Raise capital through the stock exchange 21. Not lending facilities more than ten times lending recorded capital to companies

To prioritize major goals of Asset-debt Management in Bank Sepah in Tehran, the fuzzy TOPSIS technique is used. The decision process by using the fuzzy TOPSIS technique is as follows:

Step 1: To obtain vector of weights $w \sim j$

At first, the Decision Matrix of fuzzy and fuzzy weights was obtained by using experts and managers' opinion:

Table 3
Fuzzy Decision making Matrix and Fuzzy Weights

<i>Fuzzy decision making matrix and fuzzy weights</i>	<i>(4,5,5,6)</i> <i>Interest rate risk management</i>	<i>(7,8,8,9)</i> <i>Liquidity risk management</i>	<i>(8,9,10,10)</i> <i>Maintenance of adequate capital</i>
Q1	(2,3,4,5)	(7,8,8,9)	(5,6,7,8)
Q2	(7,8,8,9)	(2,3,4,5)	(8,9,10,10)
Q3	(8,9,10,10)	(8,9,10,10)	(2,3,4,5)
Q4	(5,6,7,8)	(2,3,4,5)	(8,9,10,10)
Q5	(1,2,2,3)	(8,9,10,10)	(8,9,10,10)
Q6	(7,8,8,9)	(8,9,10,10)	(1,2,2,3)
Q7	(8,9,10,10)	(8,9,10,10)	(8,9,10,10)
Q8	(7,8,8,9)	(0,0,1,2)	(8,9,10,10)
Q9	(8,9,10,10)	(8,9,10,10)	(0,0,1,2)

Fuzzy decision making matrix and fuzzy weights	(4,5,5,6)	(7,8,8,9)	(8,9,10,10)
	Interest rate risk management	Liquidity risk management	Maintenance of adequate capital
Q10	(5,6,7,8)	(5,6,7,8)	(8,9,10,10)
Q11	(8,9,10,10)	(2,3,4,5)	(7,8,8,9)
Q12	(8,9,10,10)	(7,8,8,9)	(5,6,7,8)
Q13	(4,5,5,6)	(8,9,10,10)	(2,3,4,5)
Q14	(1,2,2,3)	(4,5,5,6)	(8,9,10,10)
Q15	(8,9,10,10)	(0,0,1,2)	(7,8,8,9)
Q16	(5,6,7,8)	(8,9,10,10)	(8,9,10,10)
Q17	(5,6,7,8)	(2,3,4,5)	(8,9,10,10)
Q18	(7,8,8,9)	(2,3,4,5)	(8,9,10,10)
Q19	(7,8,8,9)	(8,9,10,10)	(7,8,8,9)
Q20	(2,3,4,5)	(7,8,8,9)	(5,6,7,8)
Q21	(5,6,7,8)	(0,0,1,2)	(8,9,10,10)

Step 2: Normalizing the obtained matrix, from the opinion of experts, in conjunction with the options that the new matrix is as follows:

$$\tilde{R} = [\tilde{r}_{ij}]_{m \times n} \tag{1}$$

Corresponding to the index in relation to profits (Formula 2)

$$B \subseteq \{1, \dots, n\}$$

Corresponding to the index in relation to cost (Formula 3)

$$C \subseteq \{1, \dots, n\}$$

$$\tilde{r}_{ij} = \left(\frac{a_{ij}}{d_j^*}, \frac{b_{ij}}{d_j^*}, \frac{c_{ij}}{d_j^*}, \frac{d_{ij}}{d_j^*} \right), j \in B \tag{2}$$

$$\tilde{r}_{ij} = \left(\frac{a_j^-}{d_{ij}}, \frac{a_j^-}{c_{ij}}, \frac{a_j^-}{b_{ij}}, \frac{a_j^-}{a_{ij}} \right), j \in C \tag{3}$$

Step 3: Therefore, the weighted matrix is as Formula 4:

$$\tilde{v}_{ij} = \tilde{r}_{ij} \otimes \tilde{w}_j$$

$$\tilde{V} = [\tilde{v}_{ij}]_{m \times n}, i = 1, 2, \dots, m, j = 1, 2, \dots, n \tag{4}$$

Table 4
Normalized Matrix of weighted fuzzy

Index	Interest rate risk management				Liquidity risk management				Maintenance of adequate capital			
Q1	0.2	0.15	0.2	0.3	0.49	0.64	0.64	0.81	0.4	0.54	0.7	0.8
Q2	0.28	0.45	0.5	0.6	0.56	0.72	0.8	0.9	0.16	0.27	0.4	0.5
Q3	0.08	0.4	0.4	0.54	0.14	0.24	0.32	0.45	0.64	0.81	1	1

Index	Interest rate risk management				Liquidity risk management				Maintenance of adequate capital			
Q4	0.16	0.3	0.35	0.48	0.35	0.48	0.56	0.72	0.4	0.54	0.7	0.8
Q5	0.32	0.1	0.1	0.18	0.56	0.72	0.8	0.9	0.64	0.81	1	1
Q6	0.32	0.45	0.5	0.6	0.56	0.72	0.8	0.9	0.08	0.18	0.2	0.3
Q7	0	0.45	0.5	0.6	0.56	0.72	0.8	0.9	0.64	0.81	1	1
Q8	0.32	0.4	0.4	0.54	0	0	0.08	0.18	0.64	0.81	1	1
Q9	0	0.45	0.5	0.6	0.56	0.72	0.8	0.9	0	0	0.1	0.2
Q10	0.08	0.3	0.35	0.48	0.35	0.48	0.56	0.72	0.64	0.81	1	1
Q11	0.28	0.45	0.5	0.6	0.14	0.24	0.32	0.45	0.56	0.72	0.8	0.9
Q12	0.08	0.45	0.5	0.6	0.49	0.64	0.64	0.81	0.4	0.54	0.7	0.8
Q13	0.04	0.25	0.25	0.36	0.56	0.72	0.8	0.9	0.16	0.27	0.4	0.5
Q14	0.28	0.1	0.1	0.18	0.28	0.4	0.4	0.54	0.64	0.81	1	1
Q15	0.08	0.45	0.5	0.6	0.49	0.64	0.64	0.81	0.56	0.72	0.8	0.9
Q16	0.2	0.3	0.35	0.48	0.56	0.72	0.8	0.9	0.64	0.81	1	1
Q17	0.16	0.3	0.35	0.48	0.14	0.24	0.32	0.45	0.64	0.81	1	1
Q18	0.28	0.4	0.4	0.54	0.14	0.24	0.32	0.45	0.64	0.45	0.5	0.6
Q19	0.2	0.4	0.4	0.54	0.56	0.72	0.8	0.9	0.56	0.72	0.8	0.9
Q20	0	0.15	0.2	0.3	0.49	0.64	0.64	0.81	0.4	0.56	0.7	0.8
Q21	0.08	0.3	0.35	0.48	0	0	0.08	0.18	0.64	0.81	1	1

Step 4: Determining the ideal solution positive fuzzy (FPIS) \tilde{v}_j^* and fuzzy negative ideal (FNIS) \tilde{v}_j^- (Formula 5 and 6)

$$\tilde{v}_j^* = \begin{cases} \max_{i=1, \dots, m} \tilde{v}_{ij}; j \in B \\ \min_{i=1, \dots, m} \tilde{v}_{ij}; j \in C \end{cases}$$

$$\tilde{v}_j^- = \begin{cases} \min_{i=1, \dots, m} \tilde{v}_{ij}; j \in B \\ \max_{i=1, \dots, m} \tilde{v}_{ij}; j \in C \end{cases} \tag{5}$$

$$\text{FPIS} = \{\tilde{v}_j^* | j = 1, \dots, n\}$$

$$\text{FNIS} = \{\tilde{v}_j^- | j = 1, \dots, n\} \tag{6}$$

Step 5: Calculate the distance of measurements, by using fuzzy Euclidean distance:

$$D(\tilde{a}, \tilde{b}) = \sqrt{\frac{1}{4} [(a_1 - b_1)^2 + (a_2 - b_2)^2 + (a_3 - b_3)^2 + (a_4 - b_4)^2]} \tag{7}$$

Step 6: The distance of each option of positive and negative ideals is calculated with the 8 and 9 formula.

$$d_i^* = \sum_{j=1}^n d(\tilde{v}_{ij}, \tilde{v}_j^*), i = 1, \dots, m \tag{8}$$

$$d_i^- = \sum_{j=1}^n d(\tilde{v}_{ij}, \tilde{v}_j^-), i = 1, \dots, m \tag{9}$$

Step 7: Calculate the relative closeness to the ideals and ranking (Formula 10)

$$Cc_i = \frac{d_i^-}{d_i^- + d_i^+} \tag{10}$$

Table 5
Sets of positive, negative ideal spots and final weight of indices

Index	D_i^+	D_i^-	Cc_i	Rank
Q1	0.0932	1.4829	0.6214	4
Q2	1.5054	1.5901	0.5136	9
Q3	1.5270	1.5998	0.5116	10
Q4	1.5850	1.5205	0.4896	12
Q5	1.3836	1.7469	0.5580	8
Q6	1.6394	1.4389	0.4644	15
Q7	1.0292	2.1090	0.6720	1
Q8	1.7435	1.3892	0.4434	18
Q9	1.7543	1.3453	0.4340	19
Q10	1.3697	1.7671	0.5633	7
Q11	1.5471	1.5426	0.4992	11
Q12	1.3333	1.7619	0.5692	6
Q13	1.7118	1.3765	0.4457	17
Q14	1.7019	1.4069	0.4525	16
Q15	1.1983	1.8884	0.6117	5
Q16	1.1620	1.9882	0.6298	2
Q17	1.6000	1.5319	0.4891	13
Q18	1.7823	1.2771	0.4174	21
Q19	1.1695	1.9252	0.6221	3
Q20	1.6128	1.4829	0.4790	14
Q21	1.8165	1.3214	0.4211	20

According to Table 5, it can be seen that indices “setting interest rates due to inflation and costs of money”, “increase the contingency reserve at the end of the year” and “lack of lending facilities to customers with arrears and returned check “ have the highest close rate, and they were placed among the most important aspects. Also, among the main criteria for asset-debt management goals, “the management of interest rate risk” with a weight of 3.83 was at the first priority, and then “maintenance of adequate capital” with a weight of 3.67 was in the second place and then the “liquidity risk management” with a weight of 3.41 was in the third priority.

5.3. The Achievement of Bank Sepah in Tehran, Major Goals of Asset-Debt Management

5.3.1. Describing the Univariate of Respondent Variables

Table 6
Distribution of respondents according to background variables

<i>Variable name</i>	<i>Groups</i>	<i>Frequency</i>	<i>Percent</i>	<i>The cumulative percentage</i>
Level of Education	Bachelor	47	32.2	32.2
	MA	82	56.2	88.4
	P.H.D	17	11.6	100
Work Experience	Under 5 years	17	11.6	11.6
	5 to 10 years	36	24.7	36.3
	10 years and older	93	63.7	100
Gender	Male	93	63.7	63.7
	Female	53	36.3	100

5.3.2. Frequency Distribution and the Acquisition Percent of Bank Sepah in Tehran to Each of the Major Goals of Asset-debt Management

Based on the results presented in Table 7, according to the employees, the acquisition of Bank Sepah in Tehran to risk management Interest rate is 14.4 percent lower, 32.2 percent average and 53.4 percent higher. The acquisition of Bank Sepah in Tehran to hold enough capital is 25.3 percent lower, 41.8 percent average and 32.9 percent higher and the achievement of Bank Sepah in Tehran to the objective of liquidity risk management is 61.6 percent lower, 7.5 percent average and 30.8 percent higher.

Table 7
Frequency distribution and the acquisition percent of Bank Sepah in Tehran to each of the major goals of asset-debt management

<i>Variable name</i>	<i>Groups</i>	<i>Frequency</i>	<i>Percent</i>	<i>The cumulative percentage</i>
Interest rate risk management	Low	21	14.4	14.4
	Average	47	32.2	46.6
	High	78	53.4	100
Maintenance of adequate capital	Low	37	25.3	25.3
	Average	61	41.8	67.1
	High	48	32.9	100
Liquidity risk management	Low	90	61.6	61.6
	Average	11	7.5	69.2
	High	45	30.8	100

5.3. Examine the hypothesis

Research Hypothesis: There are differences between the achievements to each major goal of asset-debt management in Bank Sepah in Tehran.

Results in Table 8 indicate the difference between the average grade levels of achievement in each of the major asset-debt management, so based on a significant level, there are differences between the achievements of each major goal of asset-debt management in Bank Sepah in Tehran.

Table 8
Ranking Test for the achievement to major objectives of Asset-debt Management

<i>Friedman test</i>		
X^2	<i>The significance level</i>	<i>Result</i>
71.505	0.000	Meaningful relationship

Table 9
The average rank of each major goals of asset-debt management

<i>Major goals of asset-debt management</i>	<i>The average rank</i>
Liquidity risk management	1.62
Maintenance of adequate capital	2.02
Interest rate risk management	2.36

6. SUMMARY AND CONCLUSION

The main objective of this study is to investigate methods of improving asset management with asset-debt management techniques in Bank Sepah in Tehran. Asset-debt management techniques were created for strategic planning and forecasting earnings and modeling based on the balance sheet that displays the resources and expenditures. Bank balance sheet management includes specifying the size and composition of the assets and debts of the bank in a multi-period time horizon and it is one of the most important issues in strategic planning of a bank. The political, economic and operating environment dictated not only the management policies, but also legal restrictions and minimum safety requirements, that the purpose of all is creating balance between the conflicting goals of liquidity profitability and risk in the bank. It changes the bank's balance sheet management in a complex program that not only, the planning process is not easy, but also the process of its implementation process is more complicated.

After Delphi method, and setting major goals of Asset-debt Management in Bank Sepah in Tehran, by using information from 20 banking experts, the second part of the study was conducted to assess the achievement of Bank Sepah in Tehran to each major objective of asset-debt management by using a survey. The data-collecting tool was a questionnaire and the statistical population was managers and experts of Bank Sepah in Tehran in 2016. By using Cochran formula, 146 companies were selected as sample population. The formal credentials were used for the reliability and validity. The results showed that the spectra have high reliability and no item was removed. For the reliability of the research tool, it was also tried to calculate the Cronbach's alpha, which results were higher than 70% for all spectra that were acceptable. After collecting data, research data were examined by using SPSS software, in two levels of descriptive and inferential statistics in the form of frequency distributions and percentage table and Friedman test. In this study, a main hypothesis has been proposed that has been approved. Below, the descriptive results are shown in the summary and the hypothesis was reviewed with relating between comments and literature. According to the fuzzy topsis results, it was seen that among the main criteria for asset-debt management goals, "the management of interest rate risk" with a weight of 3.83 is in the first priority, then the "maintenance of

adequate capital” with a weight of 3.67 is in the second place and then the “liquidity risk management” with the weight of 3.41 is in the third priority. According to Friedman test and significant level, there are differences between the achievements of each major goal of asset-debt management in Bank Sepah in Tehran. The result of this study is similar with some national and international studies that explained below:

Mehregan and colleagues (2012) in a research of Mathematical Modeling for asset and debt management, by using goal programming in the Iranian insurance companies, refer to management goals, such as achieving a certain share of the market and reduce the loss ratio up to a point and assist for optimum allocation of resources (optimal investment) and its optimum equipment (absorption certain insurance fee in each insurance field), as major goals of asset-debt management. Izadi Nia et al (2011), in a research, introduced the asset-debt management as a technique that can maximize efficiency, control risk and, in general, maximizes shareholders’ wealth and help managers in the decision process. Karimi and Moshiri (2006), in their research defined the asset-debt management of the bank as the simultaneous planning of all assets and debts of the bank that is the composition of bank balance sheets under different requirements, such as bank management objectives, legal and administrative requirements and market conditions in order to reduce interest rate risk, liquidity and strengthen the Bank value. Saksonova (2013) in a study in Latvia; the main problems of banks are the need for improved dynamic asset and debt structure (responsibility), to ensure profitability and reduce risk. This can be done with the common structuring of asset and debt portfolio, by using the gap method for interest rate risk and spread the area of profitable operations. Jaysowal (2013) showed in a study that the use of excess cash amounts for investment and lending new facilities are essential in order to obtain greater efficiency, readiness to deal with the crisis and shortage of cash. For proper management of liquidity, it is necessary to identify right tools and factors affecting the job properly. One of the most important factors affecting banks’ liquidity is the position of the banks assets and debts. On the other hand, asset-debt management is a key factor in explaining debt financial stability of the banking and the economy sector. Romaniok (2010) stated: Among the different risks that an organization faces such as market risk, credit risk, liquidity risk, operational risk and business risk, ALM focuses on financial risks. Mahapatra and Chakraborty (2009) have done a study in the field of asset structure management, stated that asset-debt management is an attempt to match the assets and debts, for maturity and their sensitivity to interest rate and liquidity and interest rate risks stem from imbalances.

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