Business Dynamics of Iranian Commercial Banks

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ABSTRACT

Iran's banking system is one of important pillars of its financial system that affects its economic growth. The business model of Iranian banks, as vital vessels of Iran's economy, has a more complicated structure due to environmental circumstances engaged in it. Establishing and developing stable incomes as well as increasing profitability are the most fundamental issues for Iranian banks. Capital adequacy is one of the most important indicators of banking success in recent years, which requires a capital increase. It would result in an increase in banks' incomes, and in establishing appropriate businesses and their activities. But, available activities in Iran's banking, in turn, would increase incomes and decrease its capital adequacy. So banks would experience a paradox, in which, they need a system dynamic analysis of business banking to resolve that paradox. This paper investigates the dynamics of a business of an Iranian commercial bank as a case study, and also represents a causal model for that paradox by a system dynamic approach. Finally, it presents some solutions, based on each component's functions in a system. The results show that, based on business structure of Iranian banks, giving facility-related incomes up and making policies on the development of fees and service incomes are the most important approaches to resolve the mentioned paradox of Iranian banks.

I. INTRODUCTION

Iranian banking system is one of important pillars of Iran's financial system which is effective on its economic growth. Iranian banks play a great role in its economy by crediting facilities to manufacturing sections. Hence, incomes obtained from granting facilities are the most important way of business for Iranian banks. On the other hand, banks as financial service institutions offer their customers many services, which bring in extra incomes called mostly fee incomes. Due to these two kinds of incomes in Iran's banking system, establishing and developing sustainable incomes as well as increasing the productivity are the most fundamental goals of Iranian banks.

The business model of Iranian banks, as vital vessels of Iran's economy, has a more complicated structure due to environmental circumstances have been engaged in it. Regarding to the current business model of commercial banks of countries like Iran and their services, banks' incomes can be classified into two general groups, as follows:

- Interest incomes
- Non-interest incomes

Interest income or income obtained from crediting facilities is that part of bank's income which is gained from contributing with individuals. The bank earns income through receiving term deposits from customers, investing those deposits in different businesses, and offering term facilities to customers. This income arises from a difference between deposit interest rates and committed facilities and also the profit of investments. This income is due to main and vital operation of bank, i.e. intermediation of funds.

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In recent years, in Iran, banks are interested in earning income from a high difference between the interest rate received and the interest paid by them, as well as, absorbing long-term resources and crediting facilities that bring an appropriate profit for them. However, regarding to new government policies on reducing interest rates, this question would arise that if banks would follow their previous policy on earning the maximum income from the difference between interest rates?

It can be observed that the trend of Iranian banks has been changed in recent years. Maybe, an access to log-term (valuable) resources is not their main goal. Hence, they are trying to absorb affordable resources instead of valuable resources. Now, the question is, in this economic condition, whether Iranian banks can absorb affordable resources, or not?

Another question for bankers is how they can increase the profits. Answer to this question is hidden behind the second type of incomes (i.e., non-interest incomes) resulted from offering modern banking services.

Non-interest incomes are those parts of banks' incomes that is obtained from service fees and also from giving financial and investment advices. Some of these incomes are from:

- Letter of credit
- Banking guarantee
- Online banking
- Foreign exchange services
- Maintenance fee of documents and notes payable
- Check collection

The importance of non-interest incomes could be understood from their difference with interest incomes. However, on the other side, non-interest incomes as a cash are more effective on banks' profitability. As a result, banks understand the importance of such incomes and hence they start getting more shares of such incomes in markets by advertising their various services. This fact is clear by looking briefly at their annual financial statements showing an increase in their non-interest incomes from year to year. Hence, such incomes should be intensified in banks with a correct and long term plan to establish a good profitability condition for today banks.

In Iran, some people believe that the traditional banking, in which a large part of banks' incomes resulted from crediting facilities to people, is not flexible. They believe that the main task of banks is absorbing the resources and paying them in terms of facilities, but the process of earning incomes in banks is changing. In this new vision, earning incomes from offering services like the issuance of a letter of credit, foreign exchange services, banking guarantees, online banking services as card issuance, bills, and money transfer has gained more attention as a non-interest incomes.

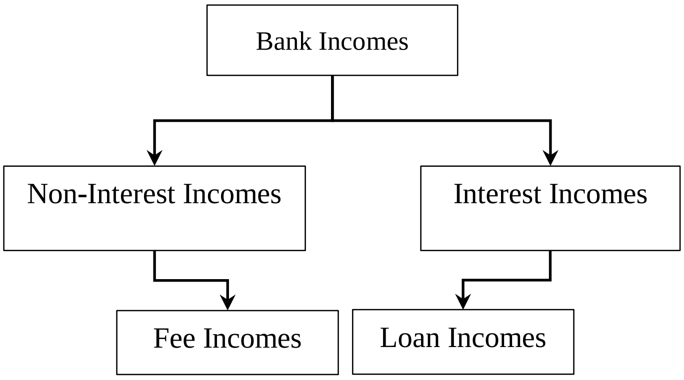

Figure 1- Different incomes of Iranian bank

Todays, banks are interested in offering more accurate, faster, and cheaper electronic services. These kinds of electronic banking developments significantly affect the banks' functions. Earlier, the main part of banks' incomes was of credited facilities, however, in recent years, more than 50 percent of American and European banks' incomes were of banking and fee services. Banks, by the use of this new approach, could decrease their dependency to the interest rates which tolerate highly. On the other side, they could also reduce the gap between their paid and received interests or their marginal profits to below 2 percent.

Todays, some services like money transfer, withdrawing from ATMs, check collection, and foreign currency exchange, need fees. The banks' customers are satisfied with this evolution because putting deposits, even below a single digit number, in banks would be considered for fees. Those people who use check rarely will pay lesser and in turn they will also earn profits from their deposits. After banks nationalization and implementing non-interest banking, Iranian Central Bank was not interested in receiving fees by banks. Hence, it prohibited banks in different ways for receiving fees from their banking services. It was concerned about using these fees by banks as a banking profit or interest. As a result, banks' fee incomes have been significantly reduced in recent years, such that it was about 12 percent of their incomes. Despite a high inflation rate in recent years, Central Bank determined low tariffs and put a maximum level of fees. This policy denied banks from a considerable income which can be substituted by the banking profit and decreases its rate. At the international level, as it gets more competitive, banks managers tend to earn maximum profits from offering services. On the other side, the Basel committee's standard which puts emphasis on the observance of capital adequacy, causes that banks are not interested in sudden increase of their risk assets like the facilities. Hence, they try to take fees from different ways with respect to various kinds of risks.

After financial crisis of 2008, many of big banks in China, Europe, and the USA set strict rules to prevent repeating such events within their banking system and financial structure. Hence, the financial structure reformation and attentions to the profitability processes of the banks have been increased. As a result, different studies and modellings have been done to investigate the banks' profitability.

(Wu, Zhao, & Wong)evaluated the effect of systematic decisions on the banks' profitability. They investigated the effect of systematic decisions and restrictions made by governments after the financial crisis of 2008 using system dynamics modeling. They considered Volcker's rule through their study, in which government officials decided to set some restrictions on the accommodation deals and hedge funds, and on the other side, they wanted to encourage the banks to focus on the fee incomes as well as offering a variety of services. In this study, they presented a dynamic model for the banks' profitability. This model could be functional in critical situation of profitability.

The dynamics of financial crises (BCD1) is a model of the dynamics of banks' profitability that define the banks' profitability in critical situations resulted from internal and external factors. Hence, BCD consists of advantages and relations existed in dynamic model of profitability. The difference is the external factors which cause the financial crisis, have been included in the main model. According to an accurate definition, a BCD model tries to compensate for the shortages of mental model for systematic managing of banks with respect to the structural problems of banking system. In this study, according to capital ratio, a dynamic model is presented to test the decisions related to the banks' investments and profitability under different situations, and to create possible scenarios.

In another study which was done by students at University of St Andrews, they tried to evaluate the dynamics of American banks' profitability in years 1984-2010. They investigated the process of profitability in American banks in the long term. The objective of their research was whether banks took advantages of a short term view for earning short term profits, or not?

They drew the dynamic structure of profitability and observed an unusual behavior in the banking system. Hence, they concluded that this approach for profitability is one of important factors of financial crisis and maybe there was no need of such income structure for banks. In conclusion, they mentioned that the financial crisis existed in American banks in years 2007-2010, resulted from the focus of managers only on the profitability and hence other structural factors such as the capacity and a long-term perspective were not considered in these models.

(Corbae & D'erasmo, 2011)presented a quantitative model of dynamics of American banking system by modeling the dynamics of banks' structure. They presented a dynamic model of banks' profitability to determine the relationship between income structure of commercial banks and available risks in loans paid by banks. They studied biggest American banks to understand how they prepare their resources for crediting their facilities. At the end of this loop, its effect on the banks' profitability was shown. This model also investigated the internal variables of banks for paying numerous loans and establishing nekvel risks within them. Corabe considered some variables in his model, such as bank's interest rate, banks' bankruptcy ratio, nekvel abundancy, and the increase of costs. These variables are the main parameters of his model. Finally, this model was provided to investigate the effect of banks competition and profit-cost policies, restrictions on establishing agencies, and resource preparation costs.

This study tries to analyze the feedbacks and consequences of making policies on obtaining interest incomes, and crediting facilities by banks; while it also represents available business model risks. For this purpose, a model of business dynamics and profitability of Iranian banks is presented. This study focuses on business of private commercial banks. In Iran, new banks firstly start their business as a financial institution, and then they need to increase their capital to obtain a license from Central Bank for becoming a real bank. Entry to the capital markets is one of important ways to prepare the required capital. Hence, after converting from a bank to a marketing institution, increasing of profitability for shareholders becomes the first priority of banks to fulfil their shareholders. This needs a long-term and stable approach for earning profits. According to this policy, the first option is an increase in incomes because the reduction of costs is difficult with respect to special economic conditions in Iran.

To increase the incomes, the first and easier way is crediting facilities for earning interest incomes. These decisions not only violate the goal, but also lead the system to a worst condition.

In this paper, financial information of an Iranian private bank is evaluated to show the dynamics related to the banking business. It is noted that this bank is introduced as a great Iranian bank in 2010 because of its capital market entry. Moreover, the dynamics of its business is analyzed using a system dynamic approach.

II. PROBLEM DEFINITION

In Iran, after establishing a new bank as a financial institution, that bank could not invest heavily in electronic services for some reasons affecting the behavior of customers for accepting electronic services. Hence, the bank could not obtain fee incomes from its customers. This is also difficult due to the presence of old rivals that dominated the market. According to tough rules and observations of Central Bank on the performance of banks, innovation in service and product offering is not quite easy. Also, it is possible to focus mainly on a differentiation strategy based on long-term innovations, because those presentable products could be easily offered by others. This strategy could be used only if the product enables to absorb more market share and hence more profits. Obtaining fee incomes needs a huge investment in the field of electronic banking and providing appropriate platforms, which are not possible for most of the banks. According to the mentioned difficulties in obtaining fee

incomes, new banks would make their business model based on obtaining interest incomes through crediting facilities and financial intermediation.
In Iran's banking system, the bank spends its resources in joint activities (i.e. crediting facilities, spending and savings) and based on Central Bank's regulation, it could receive up to 2.5 percent of annual net worth of savings (total worth of savings after reducing Central Bank reserve requirement) as an honorarium. Any surplus on the honorarium should be split between depositors. Since depositors benefit from the primary profit, then if the sum of the annual profit obtained from crediting facilities, investments and the bank's deposits, after reducing the honorarium, becomes greater than the bank's primary profit, the difference among primary and certain profits should be split between depositors. If it is not, the primary profit is taken into consideration and deducted from the bank's honorarium. Similarly, the bank uses the depositors' resources in the above-mentioned tasks and eventually the share of both depositors and shareholders (bank) is separated from the bank's interest incomes.
As discussed earlier, banks, depositors, and shareholders have a share of this kind of incomes and hence they are called interest incomes. To obtain the interest incomes in some countries like Iran, banks would absorb the resources from their customers' term deposits. They would benefit from investing absorbed resources in different businesses and from crediting long-term facilities to other customers with respect to the available difference between the interest rate on deposits and the facilities credited to the customers, or the profits resulted from the investments. In this business model, bank is a financial intermediation organization. However, what would be the feedbacks of continuing these functions?
Based on a linear approach to the problem on the hand, as shown in the figure in below, benefiting of bank's shareholders would depend on the availability of the resources. More resources should be absorbed from customers to fulfil them because the resources would classified in two groups of available and new resources and the capacity of available resources is limited.

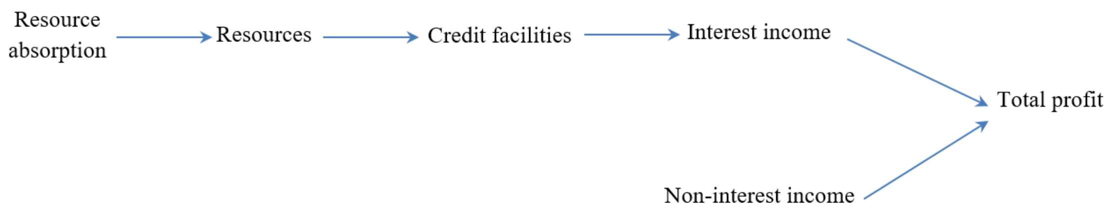

Figure 2-near analysis of profitability

According to this policy, banks would try to absorb exponentially the limited resources in competitive conditions. Based on the available competitive environment in Iran's banking system and also the conditions governing the macroeconomics of Iran in years 2010-2013, it was not easy to absorb cheap resources, which increased the total cost of money. Because the profit rate of crediting the facilities made by Central Bank was less than the total cost of money. As a result, banks need to be involved in other functions such as enterprising or violating the profit rate. However, the main policy of banks was an increase in the resource absorption to enhance the facilities. Regarding this policy, the bank studied here, absorbed the resources about 22 times its capital. This value should usually be 12 times the basic capital. Above this, the ratio of basic capital to absorbed resources would violate the available standard. Now what would be its consequences?

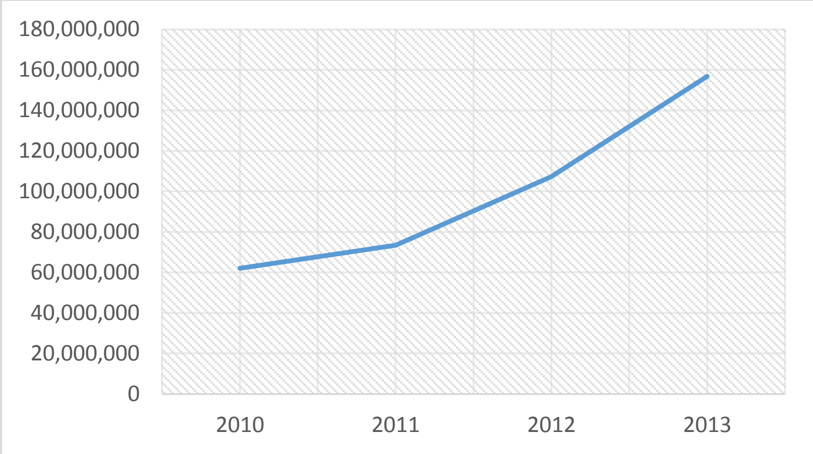

Figure 3-Dynamic behavior of total resources absorbed from Bank Customers in years 2010-2013(Million Rials)

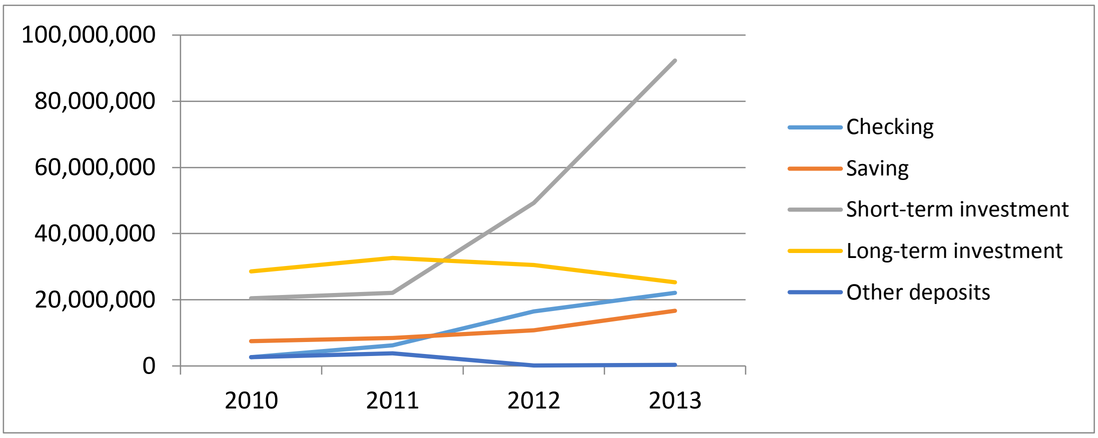

Figure 4-Dynamic behavior of various kinds of resources absorbed in the time interval

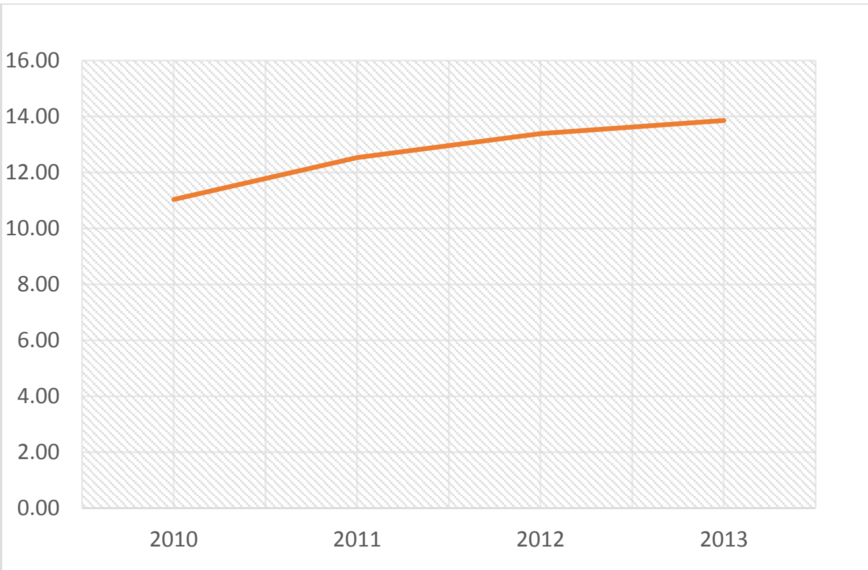

Figure 5- Absorbed resources to bank's basic capital ratio in years 2010-2013

The figures show that this bank succeed in implementing good strategies and absorbing a lot of resources. Hence, it could reach its goal, i.e. increasing the interest incomes and profits.

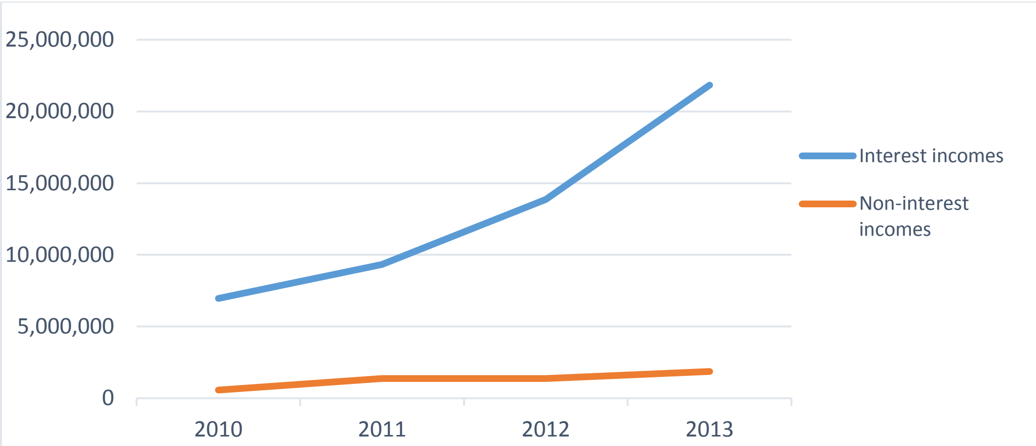

Figure 6-Bank's interest and non-interest incomes in years 2010-2013

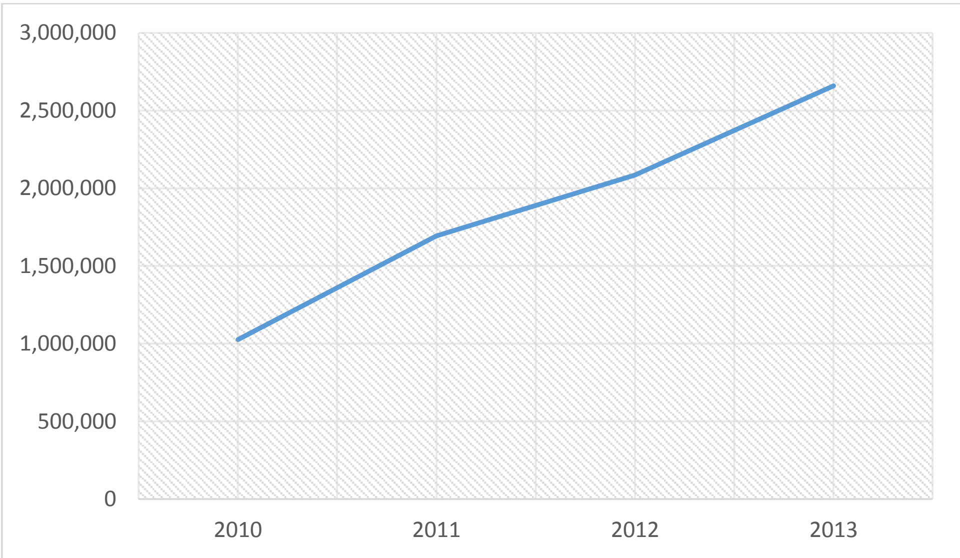

Figure 7-Dynamic behavior of bank's net profit in years 2010-2013

Based on this approach, banks succeed in implementing their business strategies, which was justified with the business-obtained profit. However, the difference between these two incomes is important and its understanding needs a holistic approach. It is good for banks if the ratio of non-interest incomes and interest incomes becomes about 0.5, but in this case, this ratio was 8 to 92. This ratio also decreased over time (Stiroh, 2004)

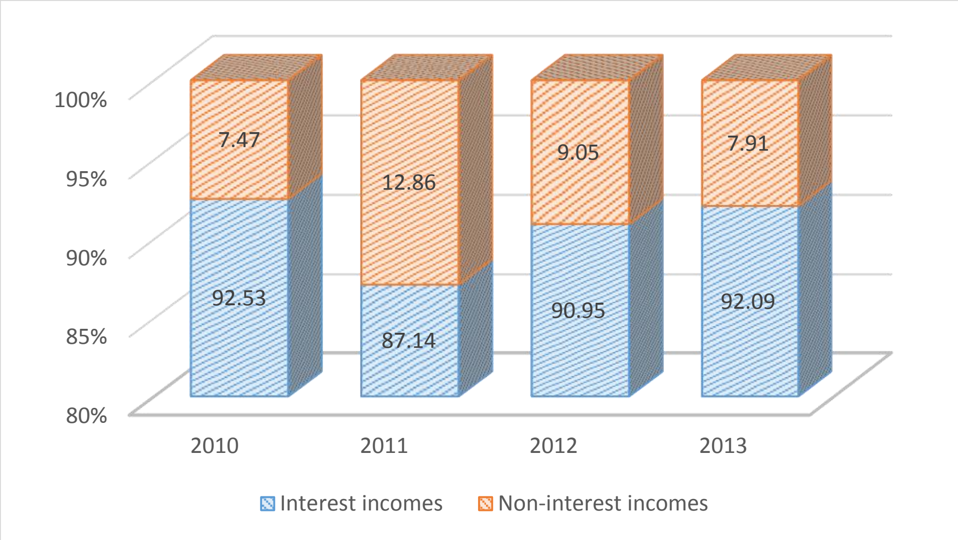

Figure 8-Normalized interest and non-interest incomes to total bank's incomes in years 2010-2013

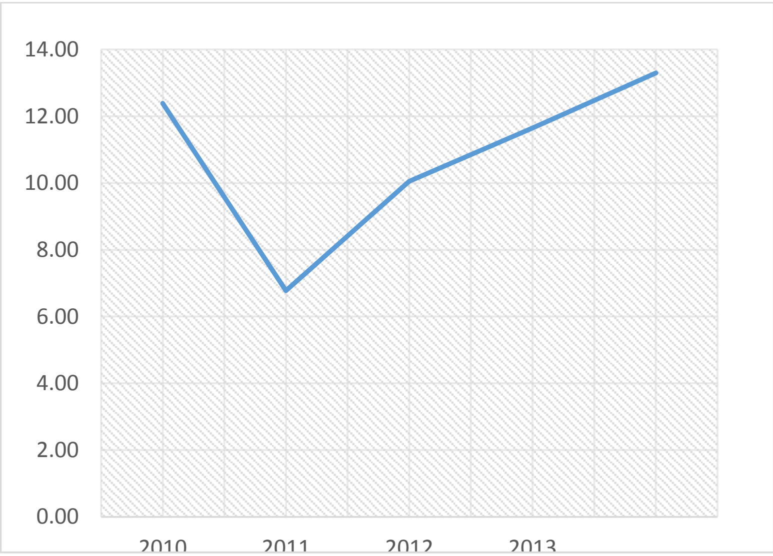

Figure 9-Normalized interest incomes to non-interest incomes in years 2010-2013

Return on assets (ROA) is a profitability evaluation indicator for an organization, as follows:

ROA = Net profit / total assets

Return on assets gives us an idea on an efficient management at using the assets to generate earnings (productive assets). This measure determines how much profits obtained from the investments. As absorbed resources increases, bank's debts increases resulting in an increase in the low-quality asset. As a result, the risk-weighted asset would be increased. That means there is a significant difference between the profit and the assets added to the system, as shown in the figure 10. Figure 11 shows that the return on assets has been decreased in years 2010-2013.

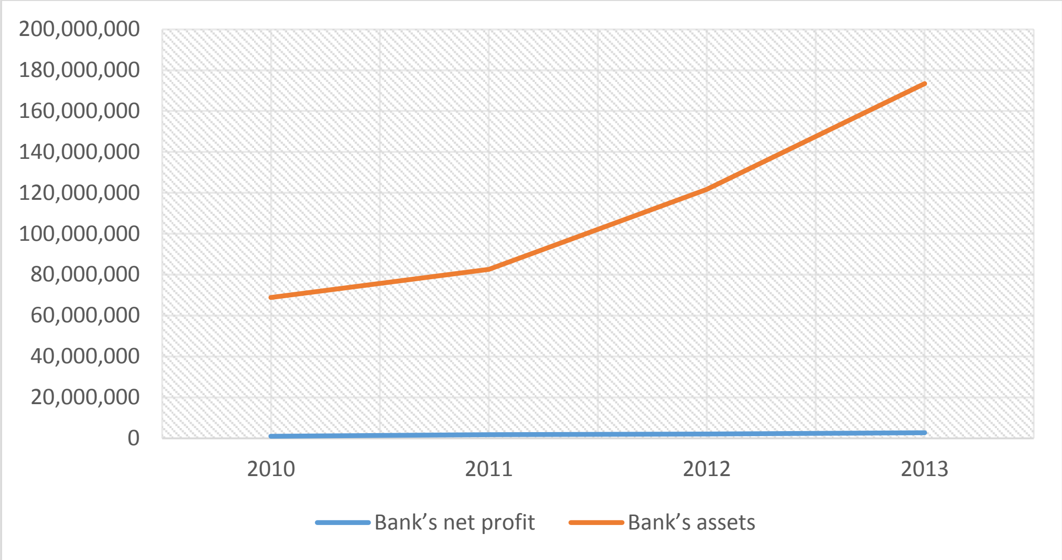

Figure 10-Comparison of dynamic behavior of the bank's profit and assets in years2010-2013

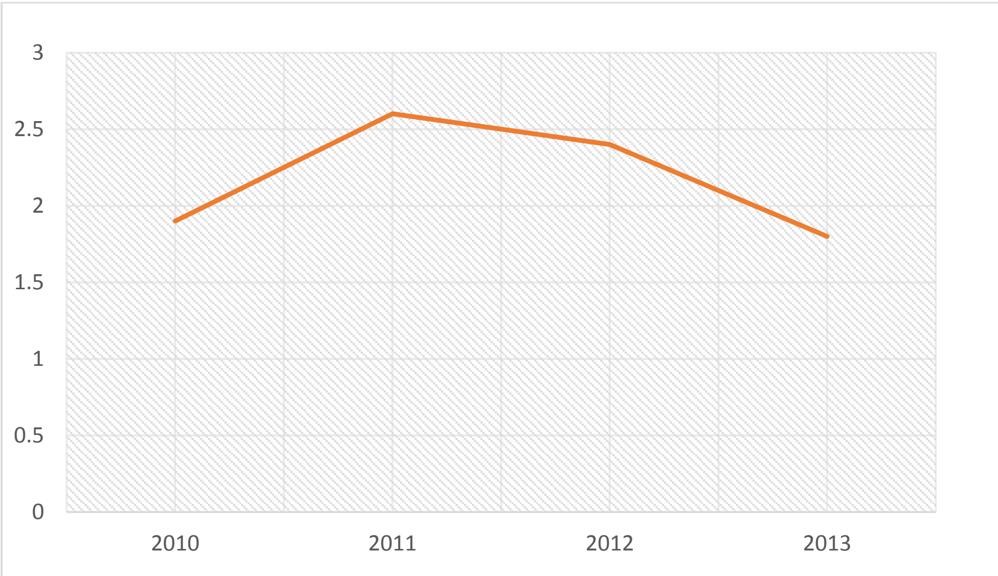

Figure 11-Dynamic behavior of the return on assets indicator in years 2010-2013

It is obvious although profit is increased, but the bank's profitability decreased. Other efficiency evaluation indictors (like ROE and ROI) also show similar behaviors on the attenuation of the profit generator system.

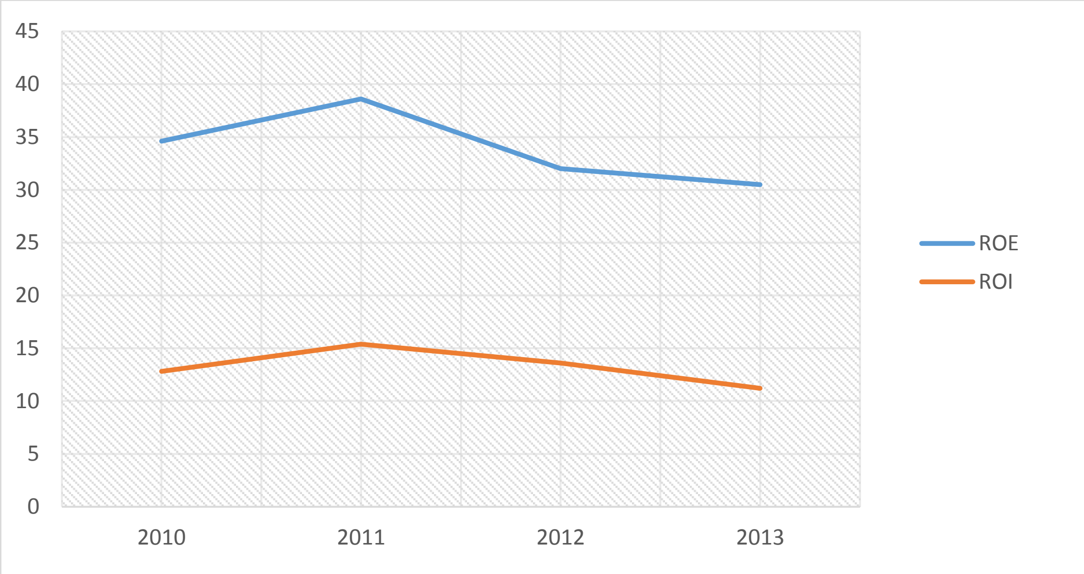

Figure 12-Dynamic behavior of ROE and ROI in years 2010-2013

An organization needs a capital increase when its assets have been increased and ROA decreased resulting in a reduction in its capital adequacy. As a result, shareholders' salaries decreases which violates the primary goal. If the organization continues in this way, capital adequacy ratio goes below 8%, resulting in its bankruptcy.

Resolving the ambiguity in increasing profits, decreasing ROA, and shareholders' salaries needs a systematic understanding of productive system of these behaviors, which is studied in this paper using system dynamics. There are several approaches to review and analyze the dynamic behavior of systems, but the methodology chosen for this research is Qualitative system dynamics. People often consider the relations among variables as linear in order to predict the outcomes which can clearly lead to wrong inferences.

Many researches have been done on issues of service organizations such as banks(Tabandeh & Bastan, 2014),(Akbarpour, Bastan, Mohammad Hosseini, & Akbarpour, 2014),(Mokhtari, Salmasnia, & Bastan, 2012) and (Salmasnia, Bastan, & Moeini, 2012). Also using system dynamics approach for same problem modeling is common (Ahmadvand, Varandi, Bastan, & Yahyaei, 2014; M. B. Alimohammad Ahmadvand, Mohammad Nasiri, 2013; N. G. Alimohammad Ahmadvand, Mahdi Bastan, 2013; M Bastan, Abdollahi, & Shokoufi, 2013; Mahdi Bastan & Ghoreishi, 2016; Farideh Khoshneshin, 2013; Mahdi Bastan, 2013) (Abbasi, Bastan, & Ahmadvand, 2016),(Bastan and Ghoreishi, 2016).

III. Systemic Model

3.1. Dynamic Hypothesis

A dynamic hypothesis is a working theory of how the problem arose(Sterman, 2000). It is obvious that increasing incomes and decreasing costs would lead to an increase in profits. Increasing efficiency might be the best way for enhancing incomes and reducing costs, but it would not be easy. According to economic conditions in the country, banks cannot reduce their costs easily. So banks would choose the way of increasing incomes to enhance their profits. Increasing incomes could be achieved through enhancing incomes obtained from crediting facilities or services and fees. Increasing the first income needs crediting more facilities which results in an increase in resource absorption. But this resource absorption from deposits (debts) leads to an increase in the banks' debts. So their risk-weighted assets would increase, which decreases the capital adequacy. Then this reduction would bring a need of increasing the capital. As a result, the organization should increase incomes again to enhance their capital that will get in the previous loop, or that needs to gain the increased incomes from shareholders resulting in a reduction of shares value and shareholders' profits.

On the other hand, crediting more facilities could increase delayed demands. In this case, banks would consider profits obtained from facilities have been credited but not realized, in calculating profit or loss. Then banks might credit facilities again with respect to the above-mentioned profits. This means that crediting facilities is based on unrealized profits. As a result, assets would increase rapidly and their profits would decrease again. Pending in facilities would also increase liquidity risk and deficiency payments. This fact would intensify the problem.

Crediting more facilities would increase general and specific resources. This increases basic capital and decreases capital efficiency for banks. Late fees for facilities (named penalty charges in Iran) are categorized as non-interest incomes. But they cannot be considered as stable incomes for banks. As understood, in recent years, the most important reason for delayed payments was a high difference between lending rates and inflation. In a way, customers preferred to pay their installment later, although they were charged.

The profitability of an organization is its asset turnover and the efficiency of shareholders' salaries. Any huge reduction in profitability of an organization could influence the behavior of shareholders and their fundamental analysis in the long term as well as decreasing bank's interest for increasing its capital. On the other hand, if bank increases its non-interest incomes in such a situation, it would need an increase in its capital and a reduction in shareholders' profits. Absolutely, this is not acceptable for shareholders and it will bring another challenge.

3.2. Causal Loop Diagram

According to the dynamic hypothesis explained for available dynamics of banking business in Iran, the most important feedback loops in a system could be presented, as follows:

Bank's resources are allocated to crediting facilities, shareholders' capital and resources absorbed from customers in a year. Crediting facilities by a bank would establish dynamic loops and other routes. As shown in Figure 3, absorbing more resources increases facilities credited by the bank and also enhances the level of its reserves. This causes an increase in shareholders' salaries and finally it increases the bank's assets. Based on this fact, increasing assets decreases ROA.

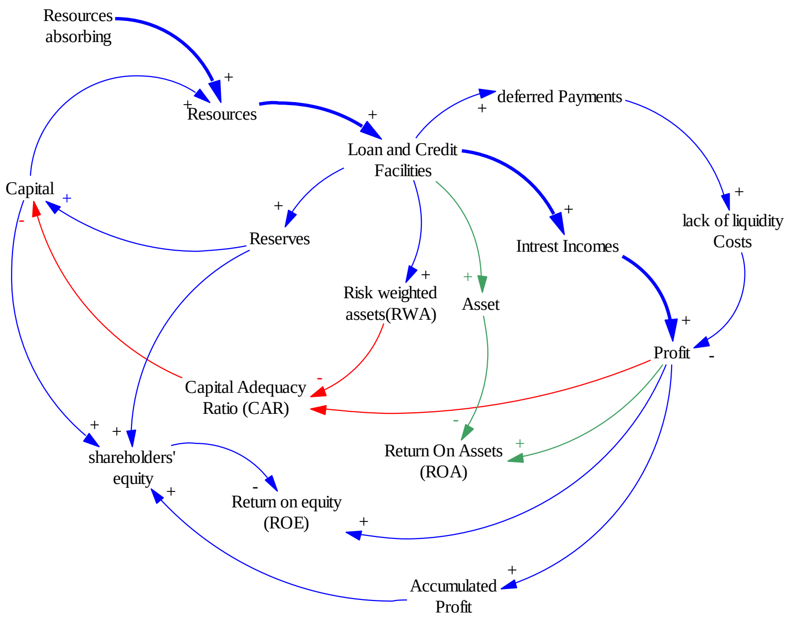

Figure 13-Interest incomes dynamics

As shown in Figure 14, the bank would allocate another part of its resources to other tasks such as investments, bonds, offering loans to other banks, etc. These tasks would change profitability, the level of capital adequacy and ROA. So allocating resources to the above-mentioned tasks would increase risk-weighted assets and it decreases capital adequacy. For this reason, the bank should increase its capital, which would increase its resources and repeat the previous loop. This increases shareholders' salaries and bank's asset, and reduces ROA.

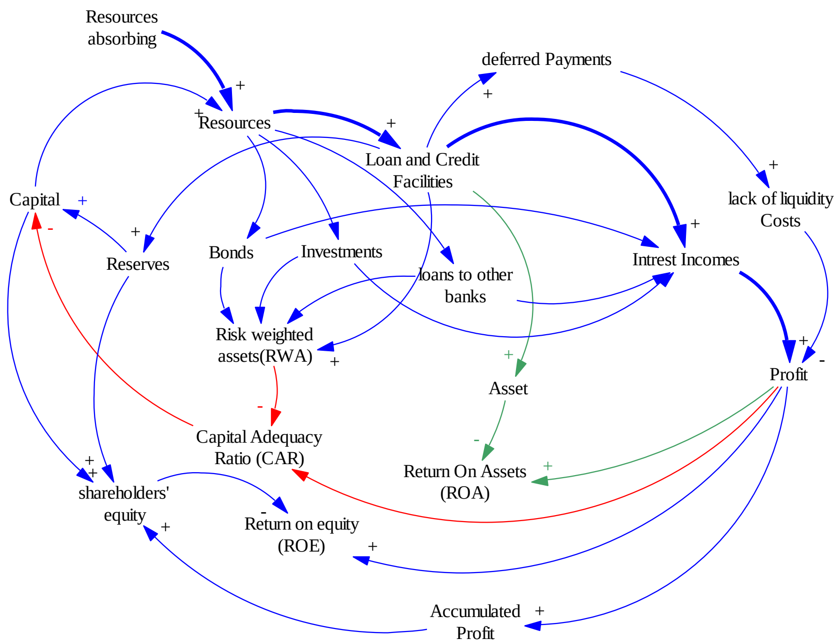

Figure 14-Interest incomes (other incomes)

The bank could allocate a part of its resources to offering foreign exchange facilities and warranties. These services could increase its profitability within a framework of non-interest incomes. The bank could also increase its incomes through investing in infrastructure for establishing new services. As shown in Figure 5, infrastructure investment and an increase in fee incomes could increase bank's profitability and hence affect capital efficiency ratio. It is noted that this investment should be done purposely. But banks have limitations on allocation of their resources to non-interest incomes with respect to available regulations.

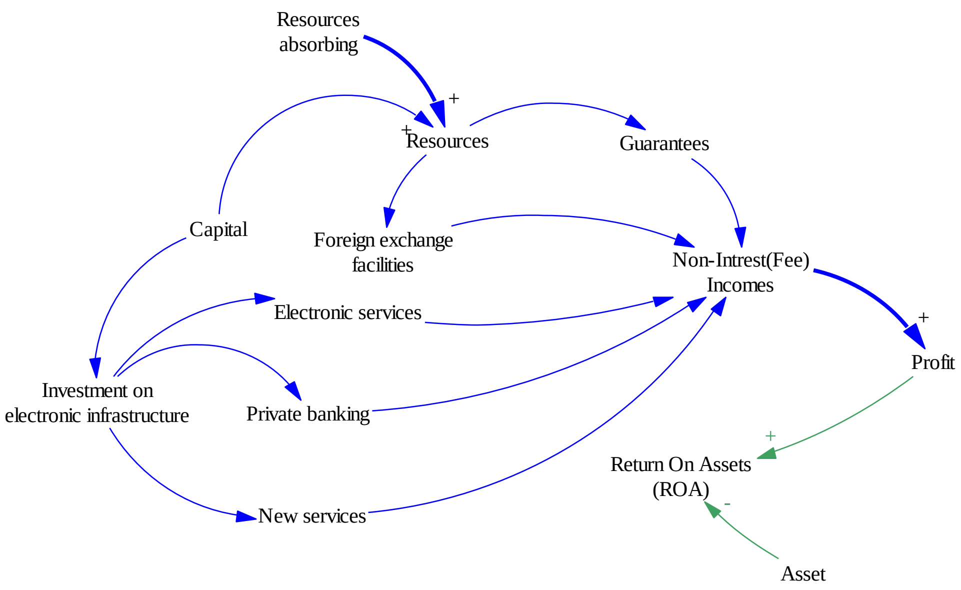

Figure 15-Non-interest incomes dynamics

IV. CONCLUSION

In this paper, profit generating structures of banks have been investigated. On the other hand, we came up with this question that whether increasing of profits is sufficient for the growth of the financial indicators of a bank or profits should be seen as a profitability system comprising of components and relationships. Thus, the profitability of the bank was drawn a dynamic system of feedback processes, using a systematic approach. As mentioned in previous sections, one of the main problems with banks is that unlike their net profit and market share have been increased in years, but profit indicators of banks, including: ROE, ROA and capital ratio, have been decreased. This is an alarm for the system which shows that there are some gray functional loops within the system. These loops have been activated through implementing specific policies and introducing some dynamics of the system.

Based on this study, it could be said that absorbing resources or focusing only on the profits and their growth would lead to a reduction in profitability and public interests in the bank shares in the long term. This means that the bank should absorb more resources to credit more facilities. So these resources have been allocated to crediting facilities, contributions and similar functions. Finally, the bank would have an income through the difference between fee incomes after clearing the debts. But this resource allocation would increase the bank's risk-weighted assets, which would decrease its capital adequacy. Since banks cannot have a capital adequacy ratio below 8%, according to Central Bank's policies, they would increase their capital. Increasing capitals would decrease the capital ratio and return on equity (ROE) ratio.

So the rate of profit growth of the bank would decrease in the long term, leading to a reduction in public interests for investment in banks and for buying shares. Then the bank would run into trouble for absorbing resources in the long term.

This situation would occur if the bank focuses on absorbing more resources to increase interest incomes. In fact, as shown in the dynamic model, if the bank allocates huge amounts of its resources on non-interest incomes such as fee incomes, it is not necessary to evaluate weighted assets and capital adequacy. This part of incomes would increase total profit and profitability ratios, then the growth rate of shares and public interests for investing in banks would increase. Based on a recognition obtained from feedback loops of business and profitability structure of Iranian banks, it could be said that activating the loops related to the establishment and development of fee incomes would not have the consequences of negative feedbacks due to the continuation and development of interest incomes. According to this systemic view it could be explained that, developing fee incomes and abandoning incomes increasing capital and facility-related incomes, are an appropriate approaches for resolving McKinsey Company's paradox, in which those banks could not resolve this paradox were defined as bad banks.

It is suggested to develop a quantitative model from available dynamics in the profitability structure of the bank. This could be an appropriate tool for comparison of if-then analyses to make more efficient policies for improving system functions. In future, dynamics of non-interest incomes could also be discussed in detail and their impacts on the bank's profitability could be analyzed accurately.

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