

## Optimal Asset Allocation of Portfolio of Banking System in Different Conditions of Iranian Economy (Case Study of Tejarat Bank)

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### Abstract

Having the portfolio of accessible assets is one of the main strategies and one of the central goals of the banks and financial institutions. Risk and return are two determinants of assets selection. The Banks such as all of the other financial institutions are looking to select the portfolio of assets with the least risk and maximum return over time and under different economic conditions. This study try to find the evidence in order to banks are changing their portfolio in different economic condition and how their optimal portfolio is . and how much they are affected by economic conditions. In fact, the main question is whether the banks are stuck in the asset and do not react in different economic conditions or have the necessary flexibility. For this purpose, the data of Tejarat Bank's is useng from the bank's balance sheet during the period 2001-2018. The research findings show that Tejarat Bank's asset portfolio has reacted to economic conditions in the period under review. During the low economic growth growth, the bank's asset portfolio hinstead during economic low growth had less risk and higher returns.

**Keywords:** Optimal Portfolio, Markovits model, Business Cycle.

**JEL Classification:** G21, G11, E22.

### 1. Introduciton

Like any economic institution, banks seek to maximize their beneficiaries' profits and benefits. In other words, considering the rising pressure in the competitive market and limitation of resources, banks try to maximize their revenues and minimize their expenses. Banks' sources of revenues (financial consumptions), are mainly the facilities and investments under current properties in the balance sheet and expenses (financial resources) are mainly related to the banks' deposits classified under debts in the balance sheet. However, the purpose of maximizing the profits is always influenced by different economic factors. These factors

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impact upon the banks' profitability by affecting the expenses and income; they even endanger the existence of the banks (Mahmoudi, 2016, p. 2).

The factors affecting banks' profitability can be classified into two groups of internal controllable factors related to bank management and external factors beyond bank management. Studies show that bank profitability is not only related to the decisions related to management of internal factors, but also by the changes of the macroeconomic environment (Duraj & Moci, 2015: 487).

## 2. Theoretical background

There are many discussions and models related to portfolio selection. These models have been mainly proposed based on Markowitz (1950) Mean-variance Model and have been developed over time. These methods are used to examine the performance of banks in portfolio selection.

Terms of trade (periods of prosperity and recession) express the economic developments during the time. Born and Mitchel (1946) provided a standard definition of trade cycles: Trade cycles are a kind of fluctuation that can be observed in all economic activities. Trade cycles are important to all economic activities not only due to fluctuation in economic activities, but also the direct relationship between the trade cycles and monetary policies, credit accessibility (providing facilities) and profit margin (Hilton and Louis, 2015).

The relationship between terms of economic prosperity and recession and banks' profitability is of particular importance. Fama and French were the first to examine portfolio in periods of economic prosperity and recession. They found a particular pattern based on trade cycle in the expected returns of ordinary share and long-term bonds. Different economic conditions influence banks' activities, which can, in turn, impact upon other economic sectors. According to the study by Levine (1997), the fundamental role of banks in national economies is a crucial variable in the process of financial development and economic growth. Levine pointed out that there is a positive and significant relationship between financial system and long-term economic growth. Therefore, it is essential to examine the effect of trade cycles on banks' activities (Qorbani, 2018).

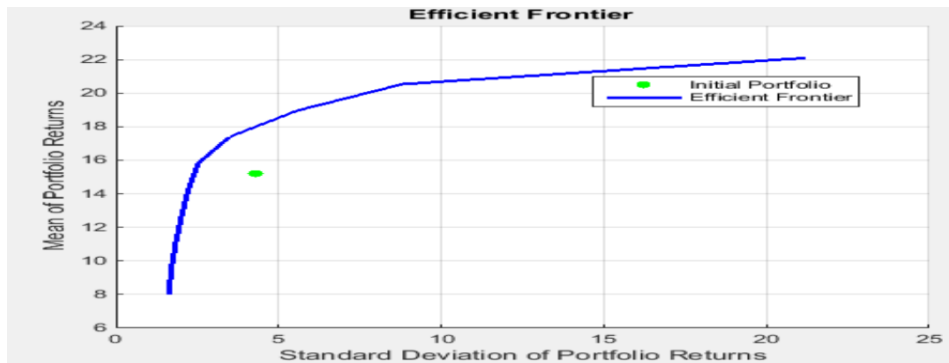
## 3. Research model and method of estimation

In summary, the following stages were followed in conducting the present study:

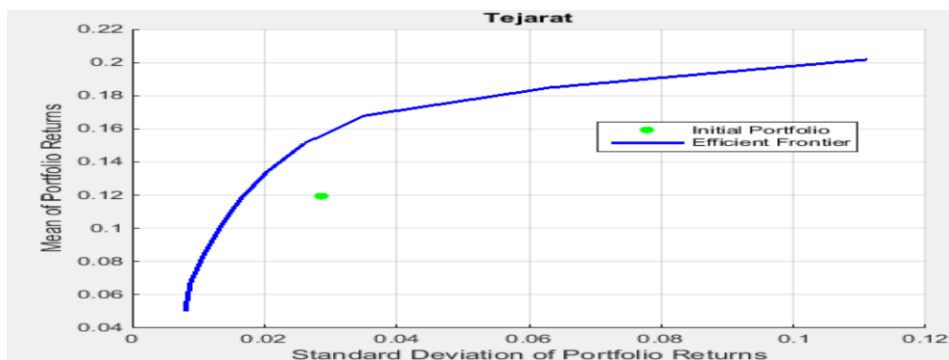
1. Collecting the statistics and information related to banks' assets;
2. Calculating the average return of bank's assets;
3. Calculating the annual return of bank's assets;
4. Calculating expected return and risk of bank's assets;
5. Calculating the coefficient of correlation related to return of bank's assets;
6. Calculating the weight of bank's portfolio based on the existing data;
7. Extracting the efficient frontier and determining optimal portfolios;
8. Dividing terms of trade based on the high economic growth and low economic growth conditions;

9. Determining bank's portfolio (real and optimal) for each economic condition;
10. Comparing optimal portfolio of the real and optimal assets as the result of changes in the economic conditions.

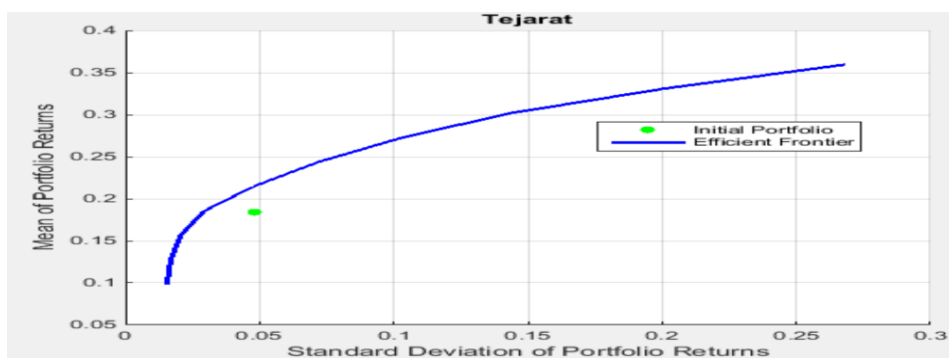
#### 4. Bank Tejarat's optimal portfolio



**Fig. 1: Efficient frontier and initial portfolio in the period 2001-2018**



**Fig. 2: Efficient frontier and initial portfolio for economic prosperity conditions**



**Fig. 3: Efficient frontier and initial portfolio for economic recession period**

The results related to the comparison between the two periods of high and low economic growth are presented in the following table.

Term	Portfolio	Return (percent)	Risk (percent)	Ratio of return to risk
The whole term	Initial portfolio	15.1	4.5	3.55
	Optimal portfolio	18	4.5	4
High economic growth	Initial portfolio	12	2.8	4.29
	Optimal portfolio	15.5	2.8	5.54
Low economic growth	Initial portfolio	18.2	4.95	3.68
	Optimal portfolio	21.5	4.95	4.34

Source: research findings

The ration of return to risk shows what return value has been obtained per a one-unit risk. This ratio is 4.3 based on the initial portfolio in the high growth period and 3.7 in the low growth period. Therefore, it gets a higher return for accepting risk under high growth conditions. Furthermore, the results show that banks' portfolio is different in different periods and, therefore, they are not faced with portfolio adhesion. On the other hand, in the periods of high economic growth, the difference between optimal and real return is 3.5% ( $15.5-12=3.5$ ). This difference in low growth periods is 3.3% ( $21.5-18.2=3.3$ ). Therefore, the only difference lies in the fact that in the low growth condition, the bank takes more risks. In other words, the ratio of lack of efficiency is 1 in the high growth condition compared to the low growth condition (the quotient of 3.3 by 3.5) and the ratio of risk is about 2 (the quotient of 4.95 by 2.8).

## 5. Conclusion

The results of the study show that there is a significant difference between initial and optimal portfolios in a way that in the whole period under study, Tejarat Bank can gain an additional return of 3% for the initial risk (4.5%). Therefore, it is possible to improve its performance by making changes in the bank's portfolio. On the other hand, a significant relationship was found between the bank's portfolio under different economic conditions. On this basis, Bank Tejarat's portfolio has reacted to economic conditions in the period under examination. In the high economic growth condition, its portfolio had a higher risk return ratio compared to the low growth condition.

Therefore, although Bank Tejarat has adjusted its portfolio according to the economic conditions and has reacted to them, it has faced inefficiency in the period under study.

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