JOFEB | Journal of Financial Economics and Banking

Journal homepage: http://www.jofeb.org/index.php/jofeb

Full Lenght Article

Determination of Income and Expense Items That Have A High Impact on The Profitability of Turkish Banks

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ARTICLE INFO

Article History:
Received October 22, 2020
Accepted December 14, 2020

Keywords:
Turkish Banks; Profitability, Income and Expense Items, Engle Granger Cointegration, Toda Yamamoto Causality

ABSTRACT

Banks are one of the important actors of the financial system as they offer variety of products and services depending on their field of activity. They collect funds from savers and transfers them to the segments in need. In this way, the banking sector ensures efficient use of the resources of the savers while fulfilling the needs of those with a fund deficit. Banks also enable the circulation of savings in domestic and foreign markets and contribute to trade. They increase the welfare of the society through efficient use of resources and meet the needs of individuals. Therefore, the existence of banks is vital for the economies. The purpose of this study is to identify income and expense items that have a high impact on determining the profitability of banks. Depending on this purpose, the income and expense items of Turkish banks are included in the scope of analysis. This data has been tested by Engle Granger cointegration and Toda Yamamoto causality methods. According to results of the analysis, the top priority item in determining the profitability of banks is the interests paid for the loans they used. Also, it has been identified that there is a long-term relationship between the interests gained from securities, interest on deposits and net profit. Considering all these results, Turkish banks should first consider the interest rates they pay for the loans they use in order to ensure their profitability. Banks are required to ensure careful liquidity control and minimize the risks that may cause credit needs.

How to cite:
Yüksel, S., Dinçer, H., & Karakuş, H. (2020). Determination of Income and Expense Items That Have A High Impact on The Profitability of Turkish Banks. *Journal of Financial Economics and Banking*, *1*(1), 1–9.

1. Introduction

A bank is an enterprise that accepts deposits from the parties, collects funds and transfers the funds they have collected to individuals, government or institutions as short and long term loans, based on liquidity, capital needs. In this context, the most basic function of banking is to borrow money or various financial instruments and lend them again (Hou et al., 2016; Eti et al., 2020). As one of the important parts of the financial system, banks bring together the savers and the people with fund deficit. Banks ensure the transfer of funds domestically and globally. They also guide individuals in managing their savings in the most effective way. In this way, they stimulate the market by providing the distribution of savings to the economy. In this regard, they also contribute to the development of the country's economy as they ensure efficient use of resources and meets the need for funds (Dinçer et al., 2019a,b; Gheeraert and Weill, 2015).

Banks vary according to their fields of activity. Central banks, investment banks, development banks, participation banks and deposit banks emerge depending on their fields of activity. Central banks ensure price stability by controlling the money supply (Goodhart and Lastra, 2018; Alhan et al., 2020). Investment banks fulfill the funding needs of companies or the state through issuance of securities. Development banks support investment capital and provide financing support to the parties for development (Erdal and Karahanoğlu, 2016; Jun et al., 2020). Participation banks operate on the principle of interest-free banking. In this context, it collects funds on the basis of profit and loss sharing and transfers it to the segment with fund deficit.

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Deposit banks, on the other hand, collect deposits from the segments with fund surplus and transfer the deposits they collect to the segment with fund deficit (Batir et al., 2017; Dinçer et al., 2017). Considering all these issues, banks become one of the important institutions that fulfill the demands of individuals, states, and institutions.

Banks also contribute to the development of national economies and to ensure their sustainable economic development. The banking sector is more important in developing countries because banks collect funds and savings to drive economic growth. Thanks to the funds and savings, the projects planned to be realized, researches and technology development studies are carried out (Dinçer and Yüksel, 2018a,b; Kalkavan et al., 2020). In this process, banks also helps employment rate to increase. Banks do not transfer funds to institutions with their each fund request. In this respect, they provide effective use of resources. They meet the short-term needs of individuals and institutions by transferring funds to those with capital insufficiency. In this way, they increase the welfare of the society (Gheeraert and Weill, 2015; Yüksel et al., 2018). Therefore, the existence of banks is important for the economies of countries.

In order to sustain their assets, banks must earn profit from their activities. Therefore, it is necessary to examine income and expense items that are effective in determining their profitability. Banks' income items include interests from loans. Banks earn a certain amount of interest while transferring the funds they have collected to the segment with a fund deficit. Therefore, repayments of loans are in the form of interest and principal payments (Dietrich and Wanzenried, 2014; Dinçer et al., 2020). In this way, banks generate income from their main activities. One of the operating income of banks is the interests taken from securities. Interest expense items are also important in determining the profitability of banks. Banks open time deposit accounts and pay interest on deposits opened. Therefore, interest on deposits constitutes the expense items of banks and affects their profitability (Yüksel and Zengin, 2017; Owusu and Alhassan, 2020). Banks also receive rediscount loans from the Central Bank in order to meet their liquidity needs and pay interest at the specified rate to the loans they have received (Freeman, 1999). In this context, the interest expenses paid by the banks to the loans they use become important.

One of the factors that are effective in determining the profitability of banks is non-operating income and expense items. Personnel expenses, fees and commissions constitute the non-operating expenses of banks. Fees and commissions from loans and non-interest banking services income comprise non-operating income. Non-operating income and expense items are formed depending on the services provided by banks and their liabilities (Kosmidou et al., 2006; Acaravci and Calim, 2013). Therefore, the aim of this study is to determine the income and expense items that are effective in determining the profitability of Turkish banks. Depending on this purpose, income and expense items of Turkish banks are included in the scope of analysis. The data regarding these income and expense items for the 1960-2014 period is focused on. Moreover, the study is evaluated by using Engle Granger cointegration and Toda Yamamoto causality analysis. Therefore, this study is thought to contribute to the literature in every aspect.

This study consists of 5 parts. The first part is the introduction, and basic information about the subject is given. In the second part of the study, the results of the literature review on income and expense items that are effective in determining the profitability of banks are explained. In the third part of the study, information is given on the methods to be used for the data. The results of the analysis are given in the fourth chapter, and in the fifth chapter, the results are discussed, and solutions are offered.

2. Literature Review

Banks are one of the intermediary institutions that bring together the parties that offer and demand funds. Being one of the important parts of the financial system, banks meet the short-term fund needs of individuals with their activities and contribute to the development of the country's economy. However, the main purpose of banks is to make profit. Therefore, the issue of profitability in banks is important (Sarpong-Kumankoma et al., 2018). There are many studies in the literature on the factors that affect the profitability of banks. For example, Anbar and Alper (2011) investigated the effect of bank-specific and macroeconomic factors on bank profitability. Banking sector in Turkey in the 2002-2010 study period ranges have been investigated. As a result, it is determined that non-operating income and expenses affect the profitability of banks. A similar study was conducted by Zarrouk et al. (2016). The study examined the factors affecting the profitability of Islamic banks. 51 Islamic banks in the MENA region between 1994-2012 were evaluated in the related study. It has been determined that non-operating incomes of Islamic banks increase profitability.

Banks collect deposits and transfer the deposits they collect to those in need of funds. In this context, the income obtained by banks from their main activities is important in measuring profitability (Tunay et al., 2019; Wang et al., 2020). This topic has been studied by many researchers in the literature. Nagamani and Abirami (2015) investigated the factors affecting the financial performance of banks. In the study in which the banking sector of India was included in the scope of analysis, it was stated that the most important factors determining the profitability of banks were their operating income. Quader et al. (2020) highlighted

the factors affecting the expansion and profitability of bank branches. In the study, which was examined with a structured questionnaire, the banking sector of Bangladesh was included in the study. As a result, it has been determined that the deposits collected by banks and the loans they have extended have a significant and determinant effect on profitability. A similar study was conducted by Shukla et al. (2013). They evaluated the issues affecting the profitability of commercial banks. In the relevant study, rural branches between the period 1971-2012 were included in the study. As a result, it was emphasized that the interests taken from loans given affect the profitability of banks. Banks collect deposits from parties with fund surplus and give the deposits they collect to segments with fund deficit as loans. The interests taken from the loans given in this process constitute the main operating income. Therefore, operating income is important in determining the profitability of banks (Dietrich and Wanzenried, 2014; Abdullah et al., 2014). In addition to these studies, Swamy (2018) investigated the effect of capital regulations on bank profitability. The banking sector of India has been examined within this framework. It was determined that the interest income of banks increased with the capital regulations.

Operating income items, non-operating income and expense items affect the profitability of banks. This topic has been thoroughly examined by many researchers in the literature. For example, Kosmidou et al. (2006) investigated the factors affecting the performance of the banking sector. In the study, the banking sector in England was included in the study. However, the study was examined using the multi-criteria decision-making method. As a result, it was determined that non-interest income and expenses, interest from loans and all kinds of interest income are important in determining the performance of banks. Parallel to these studies, Acaravci and Calim (2013) investigated the factors affecting the profitability of commercial banks in their study. The Turkish banking sector between the period 1998-2011 has been analyzed. In the study examined with the Johansen and Juselius cointegration test, it was emphasized that bank-specific factors affect profitability the most. Interest rates on loans, net fee and commission income and expenses are the factors that affect the profitability of banks the most. Al-Tarawneh et al. (2017) examined the non-interest income and financial performance before banks. In the study, 13 banks in Jordan between the period of 2000-2015 were evaluated. It was determined that loan and non-interest income increased the performance of banks. It was also stated that general expenses negatively affect the performance of banks. The income generated by banks from their own activities and non-operating areas increases their profitability. However, all kinds of non-operating expenses have a negative effect on profitability (Abobaker, 2018; Ahamed, 2017). In addition to these studies, Topak and Talu (2016) investigated the issues affecting the profitability of commercial banks. 12 banks traded in Borsa Istanbul were included in the scope of investigation. It is stated that there are internal and external factors that affect the profitability of banks. It has been determined that fee and commission income, loans and interest are internal factors affecting the profitability of banks.

Interest expenses are also important in determining the profitability of banks. There are many studies in the literature where interest expenses and non-operating income and expense items are discussed together. As an example, Rahman et al. (2020) investigated the effect of bank-specific and macroeconomic factors on bank profitability. In the study, the banking sector in Pakistan between the period of 2003-2017 was examined. As a result, it has been determined that interest expenses and non-operating expenses such as the interest given by banks to deposits negatively affect the profitability of the bank. Unlike these studies, Scheiber et al. (2016) examined the effect of low and negative interest rates on bank profitability. Denmark, Sweden and Switzerland were included in the study. It has been determined that low and negative interest rates have no effect on banks' profitability. It was emphasized that interest incomes and interest expenses were not affected much. Alyousef et al. (2019) investigated bank-specific and macroeconomic variables in terms of bank profitability. In the related study, 5 Islamic and 5 non-Islamic banks between 2009-2016 were analyzed. It has been emphasized that the interest issue is important in Islamic banks. It has been stated that the profitability of the banks will increase in the absence of interest expenses. The interests paid by the banks to the loans they have taken and the interests they give to the deposits affect their performance. Therefore, interest expenses are important in measuring the profitability of banks (Xu et al., 2019; Owusu and Alhassan, 2020).

As a result of the literature review, it is seen that there are many studies aimed at determining the factors affecting the profitability of banks. The studies generally focused on panel data of certain period intervals. However, some of the studies dealt with a single country. Some have focused on regions such as MENA. It has been emphasized in the studies that there are many issues that generally affect the profitability of banks. It was emphasized that operating income, interest expenses, non-operating income and expenses affect the profitability of banks. In the in-depth studies, it has been determined that interest on loans, interest on deposits, interest on loans paid by banks, net fee commission income and expenses affect the profitability of banks. Therefore, it is necessary to test all the factors determined as a result of the scans on the profitability of the bank with different analysis methods. This study aims to examine the factors that affect the profitability of Turkish banks.

3. Methodology

Engle Granger cointegration and Toda Yamamoto causality methods are used in the analysis of this study. The long-term relationship between two variables is determined by Engle Granger cointegration method. In this analysis process, variables are

primarily subjected to stationarity analysis. The prerequisite of Engle Granger cointegration method is that the two variables subject to the analysis are not static with their natural form. When the first differences of the variables are taken, they should become stationary. Otherwise, it is not possible to use Engle Granger cointegration method. The variables that pass the prerequisite are then tested by regression analysis. As a result of the regression analysis, a data set of error terms is obtained. The obtained data set is subjected to unit root test again. If the error term variable is stationary, there is a long-term relationship between the two variables (Dinçer and Karakuş, 2020).

Another method considered in this study is Toda Yamamoto causality analysis. Toda Yamamoto analysis differs from Engle Granger cointegration analysis. First of all, there are no conditions that variables must comply with. In this analysis process, firstly, the variables are subjected to unit root test and it is determined to what degree they are most stationary (d). The VAR model is then created in the analysis. In this process, the ideal lag value (k) is calculated. Then, the VAR model is reconstructed as a result of "d + k". Causality analysis is performed with the created model. If the probability value (p) obtained as a result of the calculations is below 0.05, there is a causality relationship between the variables (Dinçer and Karakuş, 2020; Sankaran et al., 2019).

4. An Evaluation on Turkish Banking Industry

In this part of the study, an analysis is made on the income and expense items of Turkish banks. In this process, first of all, the data set and the income and expense items taken under examination are explained. Then, analysis results are given.

4.1. Data Set and Scope

There are some income and expense items that affect the profitability of banks. The main activity of banks is to collect funds from savers and transfer them to the segment with a fund deficit in return for interest. Therefore, one of the operating income of banks is the interests taken from loans. However, interests are also charged on securities brought to banks. Therefore, one of the operating income items of banks is the interests taken from securities (Shukla et al., 2013). On the other hand, banks that earn interest income also have interest expenses. Banks are obliged to pay interest to individuals or institutions that transfer their funds to their time deposit account. Therefore, the interest on deposits constitutes the interest expense items of banks (Rahman et al., 2020). However, banks also need funds. Therefore, it knocks on the door of the Central Bank. The Central Bank, on the other hand, meets the needs of banks with a certain interest rate. Depending on this issue, there are interests paid by banks to the loans used in the interest expense items (Alyousef et al., 2019). There are some income and expense items other than the activities of banks. The expenses of the personnel in the banks, the fees and commissions given constitute the non-operating expenses of the banks. However, banks also generate non-operating income. There are various fees and commissions taken from loans, and the income of banks from non-interest transactions (Topak and Talu, 2016). Therefore, non-operating income and expense items of banks are also important in determining their profitability. When all these issues are considered, it is necessary to examine the relationship between banks' income and expense items and profitability.

4.2. Analysis Results

In the study, variables were first tested by Engle Granger cointegration analysis. For this, first of all, variables were examined with unit root test. Analysis of the variables subject unit root test results are shown in Table 1.

Table 1: Unit Root Test Results of Variables

Variables	Probability Value (Level)	Probability Value (First Difference)	Probability Value (Second Difference)	Analysis Results
Interest on Loans	1.0000	0.2325	0.0000	It is stationary in the second difference
Interest on Securities	0.9956	0.0000	-	It is stationary in the first difference
Interest Given for Deposits	1.0000	0.0028	-	It is stationary in the first difference
Interest Given for Loans Used	1.0000	0.0110	-	It is stationary in the first difference
Net Fee and Commission Income / Expenses	1.0000	1.0000	0.0300	It is stationary in the second difference
Net Profit	1.0000	0.0000	-	It is stationary in the first difference

Table 1 includes the unit root test results for the variables of interest from loans, interests from securities, interest on deposits, interest on loans used, net fee commission income and expenses, and net profit variables. According to the test results, it has been determined that the interests taken from securities, interests given to deposits, interests given to loans and net profit are stable at the first rank difference. On the other hand, it is determined that the interest on loans and net fee commission income and expenses are stable at the second rank difference. Therefore, these variables will not be taken into account in the Engle-Granger cointegration analysis. Because it does not pass the prerequisite of this analysis.

Table 2: Engle-Granger Cointegration Analysis Results

Variables	Probability Values	Analysis Results
Net Profit-Interest on Securities	0.0005	There is a long-term relationship between net profit and interest on securities.
Net Profit-Interest Given for Deposits	0.0001	There is a long-term relationship between net profit and interest given for deposits.
Net Profit-Interest Given for Loans	0.0384	There is a long-term relationship between net profit and interest given for loans used.

In Table 2, Engle Granger cointegration analysis results are given for the variables of net profit and interests taken from securities, interests given to deposits, interests given to loans used. According to the analysis results, there is a long-term relationship between the net profit and the interests taken from securities, which is one of the operating income items from banks. However, there is a long-term relationship between interest on deposits and net profit, which is one of the interest expense items of banks. There is also a long-term relationship between the interests given by banks to the loans they use and the net profit. Because the error terms obtained by the regression model have been subjected to the unit root test and the probability value is below 0.05. This result shows that there is a long-term relationship between the variables subject to the analysis.

Table 3: Toda Yamamoto Analysis Results

Variables	d Values	k Values	p Values	Analysis Results
Interest on Loans	2	2	0.0013	Interest on loans is the primary cause of net profit.
Interest on Securities	1	3	0.9248	Interest on securities is not the primary cause of net profit.
Interest given for Deposits	1	3	0.3179	Interest on deposits is not the primary reason for net profit.
Interest given for Loans Used	1	5	0.0364	Interest on loans used is the primary reason for net profit.
Net Fee and Commission Income / Expenses	2	5	0.0079	Net fee commission income and expenses are the primary reason for net profit.

Table 3 includes Toda Yamamoto causality analysis results. It has been determined that the interests on loans are stable (d: 2) at the second rank difference. However, it is determined that the most optimal lag value is 2 (k: 2). Considering these values, the VAR model should be established with (2 + 2) 4. As a result of the test with this model, interest on loans was the primary cause of net profit. In other words, the interests taken from loans are important in determining the profitability of banks. However, the VAR model for the interest on loans item (1 + 5) 6 has been established. According to the results of this analysis, the primary reason for the interests given to the loans used is the net profit. It is identified that the second order difference (d: 2) of the net fee commission income and expenses item is stable and the most optimal delay value is 5 (k: 5). As a result of the VAR model established with 6, it has been determined that net fee and commission income and expenses item is the primary cause of net profit. On the other hand, it has been defined that the interests taken from securities and interest paid to deposits are not the most important reason for the net profit. Based on the results of this analysis, it is seen that the interest received from loans, the interests given to the loans and the net fees and commission income and expenses items have a high effect in determining the profitability of banks.

5. Conclusion

Banks are one of the institutions that act as intermediaries between the segment with fund surplus and the segment with fund shortage. This intermediary role performs its duty in different fields of activity. However, in general, it transfers the resources it obtains from the savers to the segment with fund deficit. In this process, it enables the savings to circulate in the market. It increases the welfare of the society as it meets the short-term funding needs of those with fund deficits and ensures the effective use of saving of individuals. Also, it ensures the circulation of foreign resources within the country. In this context, the existence of banks is important. Therefore, Engle Granger cointegration analysis is used in order to determine the relationship of the identified income and expense items with net profit. The analysis focuses on the data between the 1960-2014 period. According to Engle Granger cointegration analysis results, there is a long-term relationship between net profit and the interest item taken from securities. Also, there is a relationship between the interest paid to deposit owners and profitability. At the same time, there is a long-term relationship between the interest that banks must pay on the loans they have received and profitability.

Another evaluation has been performed by considering Toda Yamamoto causality analysis. According to the results of this analysis, the interest on loans was the primary reason for the net profit. In other words, the interest obtained from the resources that banks transfer as loans to the segment with a fund deficit is one of the items that banks should take into account in determining their profitability. However, it is seen that the primary reason for the profitability is the interest paid to the loans taken by the banks. It has been determined that net fees and commission income and expenses, which are among the non-operating income and expense items of banks, are the primary reason for the net profit. Looking at the results of the general analysis, it is seen that the only item that passes through Engle Granger cointegration and Toda Yamamoto causality analysis is the interest on the loans used.

Considering these results, Turkish banks should firstly consider the interest rates they pay for the loans they use in order to ensure their profitability. Interest expenses are effective in determining the profitability of banks. Therefore, banks need to ensure careful liquidity control and minimize the risks that may require credit. Banks sell money to make money. In order to ensure the recycling of the money it has sold, it should pay attention to the customer profile and give credit to its customers according to their credit ratings and non-performing loan rates. Because the more money is recycled into the system, the less credit needs of banks decrease. This means less interest incurred. Because with the return of the system, banks can meet their obligations. There is also a relationship between interests received from securities and net profit. Therefore, the control of the interests targeted to be given to securities should be done in a way that will benefit banks and customers. However, there is a relationship between interest on deposits and net profit. Based on these results, it is thought that banks should manage their assets-liabilities in a way that reduces risk.

The most important limitation of this study is the determination of only income and expense items that have a high impact in determining the profitability of Turkish banks. Therefore, other issues affecting the profitability of banks are excluded from the scope of the review. In this framework, it is important to pay attention to the effect of social, political and technological developments on profitability in new studies. Another limitation of this study is that it only takes the Turkish banking sector into consideration. Therefore, it is thought that it will be useful to consider banks with asset size in other studies. However, the study was tested by Engle Granger cointegration and Toda Yamamoto causality analysis. It is thought that dealing with different methods depending on the countries or sectors covered by the study in new studies will contribute to the literature.

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Appendix

Table A1: Optimal Lag Selection for Interest on Loans

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1962.779	NA	3.66e+28	71.44651	71.51950	71.47474
1	-1817.252	275.1788	2.13e+26	66.30006	66.51904	66.38474
2	-1805.100	22.09401*	1.59e+26*	66.00364*	66.36861*	66.14477*
3	-1801.498	6.287758	1.61e+26	66.01810	66.52905	66.21569
4	-1800.120	2.304342	1.78e+26	66.11346	66.77040	66.36750
5	-1795.373	7.595797	1.74e+26	66.08628	66.88921	66.39678

Table A2: Optimal Lag Selection for Interest Received on Securities

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1913.413	NA	6.09e+27	69.65139	69.72438	69.67962
1	-1792.253	229.1026	8.59e+25	65.39102	65.61001*	65.47571
2	-1786.122	11.14787	7.96e+25	65.31352	65.67849	65.45466
3	-1780.334	10.10166*	7.47e+25*	65.24852*	65.75948	65.44612*
4	-1779.168	1.951884	8.31e+25	65.35155	66.00849	65.60559
5	-1778.108	1.695219	9.29e+25	65.45847	66.26141	65.76897

Table A3: Optimal Lag Selection for Interest on Deposit

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1937.131	NA	1.44e+28	70.51386	70.58686	70.54209
1	-1822.686	216.4053	2.60e+26	66.49768	66.71666*	66.58236
2	-1814.815	14.31058	2.26e+26	66.35692	66.72189	66.49806*
3	-1809.272	9.675643	2.14e+26*	66.30080*	66.81176	66.49839
4	-1808.250	1.709210	2.39e+26	66.40910	67.06604	66.66314
5	-1801.561	10.70247*	2.18e+26	66.31131	67.11425	66.62181

Table A4: Optimal Lag Selection for Interest Paid on Loans

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1825.017	NA	2.44e+26	66.43698	66.50997	66.46520
1	-1705.951	225.1423	3.73e+24	62.25277	62.47175	62.33745
2	-1684.987	38.11721	2.01e+24	61.63588	62.00085*	61.77702*
3	-1680.991	6.974820	2.02e+24	61.63603	62.14699	61.83362
4	-1680.241	1.253542	2.28e+24	61.75423	62.41118	62.00828
5	-1670.022	16.35138*	1.82e+24*	61.52806*	62.33100	61.83857

Table A5: Optimal Lag Selection for Net Fee and Commission Income / Expenses

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1843.123	NA	4.72e+26	67.09537	67.16837	67.12360
1	-1702.470	265.9607	3.28e+24	62.12620	62.34518	62.21088
2	-1685.905	30.11818	2.08e+24	61.66929	62.03426	61.81043
3	-1678.343	13.19951	1.83e+24	61.53975	62.05071	61.73734
4	-1672.131	10.39127	1.69e+24	61.45931	62.11626	61.71336
5	-1647.104	40.04349*	7.93e+23*	60.69469*	61.49762*	61.00519*