TUJISE Turkish Journal of Islamic Economics

The Effect of Retail Loans on Bank Profitability

A Comparative Empirical Analysis

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Abstract: Retail loans became an important instrument of banking during 1960s. The effect of retail loans, in which mortgage and consumer loans have a great share, in the profitability of banks has not been analyzed in detail so far. The main items of retail loans, like mortgage and consumer loans, contribute greatly to the risk management of banks with their characteristics like having regular cash flow in banks. Due to the structure of the guarantee and mortgage loans, which provides low risk weight, it is important to determine the capital needs of banks. However, due to relatively long maturity structure, mortgage loans also feed the maturity mismatch risk, which is the basic problem of banking system. Such loans, with which low costs are provided in favor of the clients, play a considerable role in the profitability of banks. Consumer loans, on the other hand, are provided to the clients in shorter maturity periods and with costs that are more in favor of banks. In the scope of this study, the effects of retail loans on conventional banks and participation banks, which are active in Turkey, have been investigated for mortgage and consumer loans. The findings of the study show that retail loan types have strong negative effects on Net Interest Margin (NIM), which has been selected as the profitability indicator for conventional banks in the scope of the study. For Participation Banks, on the other hand, unlike conventional banks, retail loan types have stronger and more positive influences on Net Profit Share Margin (NPSM). The findings of the present study are important for further studies that will be conducted on retail banking and for comparative studies on performance assessment.
Key Words: Retail Loans, Profitability, Islamic Banking, Comparison, Participation Banking
JEL Codes: G21, G29

Introduction

The present economic model has acquired an important success with its direction towards supply. Today, any production activity may be performed at any place all over the world. The success of banking in the transfer of resources has been influential in the success that has been realized on the supply side. Basically, banking is the financial and intermediary activity for the purpose of financing investments. The success of the present economic system on the supply side has given birth

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DOI: 10.26414/tujise.2018.5.1.19-34
TUJISE, 5(1), 2018, 19-34
tujise.org

Submission : 05.08.2017
Revision : 08.11.2017
Acceptance : 25.11.2017
Online First : 31.12.2017

to many prospective solutions for the problems of demand side. For this reason, banking system has evolved towards financing the consumption from financing the investment, which is its basic function in reality (Dinc, 2017, p. 4).

The increase in consumption of goods being produced is basically possible with the increase in the income. Alternatively, the opportunity of going into debt is used. Although liberal policies do not provide adequate solutions in improving income levels, they have succeeded in improving the functions of banking system that works on the demand side together with technology. Calder analyzed this transformation in the context of a consumption based society, and considered the demand side as the cause of evolution of the loan concept (2009, p. 24).

Today, 20% of the total loans of the banking system in Turkey consist of retail loans. In addition to this, 54 million credit cards were added to the economy. With the influence of technological developments, the distribution channels of the banking system were diversified, and more people could be reached. Mortgage and consumer loans have an important share in retail loans. These loans have direct effects on the profitability of the banking sector, as well as affect prices and commissions because of being suitable for cross sales.

The loan portfolios of conventional banking and participation banking differ in Turkey. Participation banking shows a portfolio structure in which retail loans have relatively lower shares. On the other hand, the mortgage loans of participation banks have 90% share in retail loans. Although conventional banks have a stronger share in retail loans, the share of the mortgage loans is around 46% in their portfolios. While the consumer loans of participation banks have a limited share in total retail loans, the share of consumer loans in conventional banking is around 50% as seen from Banking Regulation and Supervision Agency (BRSA) data set. It is possible to consider that using the consumer loans for the aims, which are out of the scope of its real nature, is influential in the share of these loans being greater in conventional banking because such loans are paid in cash. Consumer loans are used actively in the requirements of finance to purchase houses and vehicles.

In this study, the effect of mortgage and consumer loans on the profitability of conventional banks, which were active in Turkey between January 2005 and February 2017, was investigated in a comparative manner. The findings are presented with interpretations in the present study in which the linear regression model has been used. This study is important in that it explains the differentiation of participation banks from conventional banks for the first time from the retail loans

perspective. In addition, it shows the separation between different dynamics of participation banks and conventional banks. It is important for further academic studies because it shows the trends in this field. The findings are also important for the professionals in banking sector.

Retail Loans

Retail banking practices, which are known as individual banking or consumer loans, emerged at a global scale in the year 1960 (Tschoegl, 1987, p. 67). However, Cardel analyzed the topic in his work by focusing on the United States of America (USA), and revealed that retail banking activities had started around the year 1920 (2009, p. 16). Economic problems stemming from inadequate demand were influential in the emergence of retail loans. The inability of modern economic model to produce solutions for wealth distribution overshadowed the success of capitalism on the supply side. The level which was achieved by capitalist model on the supply side accelerated the decrease in the efficiency of money and capital markets that provided idle resources. The money and capital markets, which had problems in terms of supply-demand function, started to seek alternatives, which is closely related with the development of individual banking. Meanwhile, technological developments also made it possible for banks to establish a healthy-working structure in this field. While the development of alternative distribution channels made it possible to reach more individuals, the increasing consumption demand ensured that individual banking was accepted by societies more and more over time. These developments were diversified in the direction of providing the finance for consumption and payment systems instead of financing investments, which is the basic function of banks.

The development of banks in retail banking field diversifies the structure of the active balance sheets of banks. Meanwhile, individual banking activities in which cash flow was more visible brought with them the developments in the field of securitization. In this way, it was ensured that specialties were developed in the field of risk management, and the risk was diffused to the base. The field of retail banking, which brought a better risk management, became influential in the empowering of the resources and profitability (Bluhm et al., 2016, p. 57). Meanwhile, the obstruction in demands side stemming from problems in wealth distribution, was overcome in a temporary manner by developing certain '*debt channels*'. In this way, a structure was established in which the *demand* that was fed would feed the *demand* again after creating new employees with the need for

investment, and then the employment for the investments. It is possible to consider that retail banking has positive effects on growth with such properties. Especially in developing economies, it is observed that this effect occurs more easily.

Development of Retail Loan Types in Turkey

The most important financing types in individual loans are the consumer, mortgage and vehicle financing. Specifically, in Turkey, individual banking is developing over the consumer and mortgage financing. 46% of the individual banking, which has 20% share in total banking sector, comes from mortgage financing. The remaining substantial part consists of consumer financing. In this context, individual banking is a side of the crowding out effect. 20% of the usable funds are transferred to consumption instead of investments. For this reason, the amount of the resources that are the basis of investments decreases; and what is more, the cost also increases.

For this reason, the literature on the *crowding out effect* must be developed since the retail loans crowd out corporate financing. The numbers in the given figures below help illustrate this effect. The 2016 year-end total loans of Turkish banking system reached 1.734 billion TRL which included 337 billion TRL retail loans.

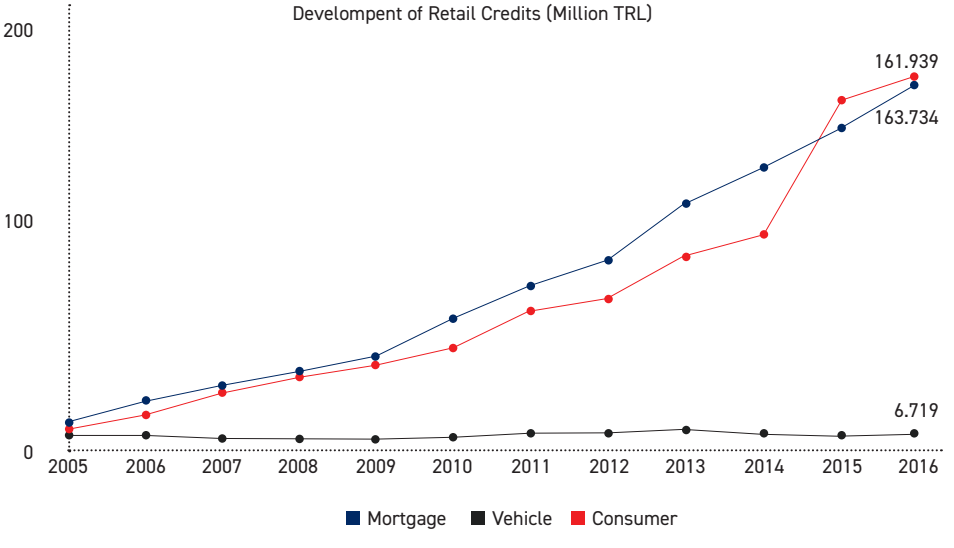

Figure 1: Development of Retail Loans in Turkish Banking System

Source: BRSA (Banking Regulation and Supervision Agency) Dataset

It can be seen in Figure 1 that the basic retail loan types of Turkish banking system are mortgage and consumer loans. It is possible to consider that a certain part of consumer loans is used in vehicle financing due to their open form in a market where vehicle loans have a limited share. In this context, consumer loans may also be used beyond their basic purposes and function.

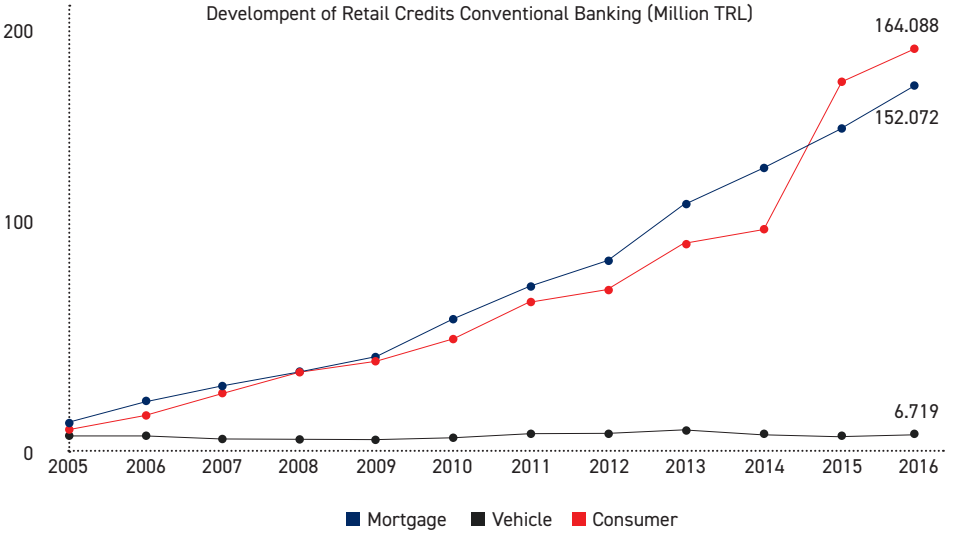

Figure 2: Development of Retail Loans in Conventional Banking

Source: BRSA (Banking Regulation and Supervision Agency) Dataset

Since conventional banks are the basic "*engines*" of Turkish banking system, they provide values that are parallel to this sector. In Figure 2, the development of the retail loans of conventional banks is shown. The loan concept of conventional banking in Turkish banking system is uncertain since it uses the consumer loans for purposes outside the scope of their basic functions. Since the interest-based system provides retail loans in cash in consumer loans, and since there are no limitations for the use of such loans, consumer loans may be used for purposes that are out of their basic scope (Dinc, 2017, p. 65).

In participation banking, since loans are not provided in cash form, it is the basic requirement to provide information and document the use of financing. For this reason, participation banks, which have limited share in consumer loans market, are strong within their own portfolios with mortgage and vehicle financing.

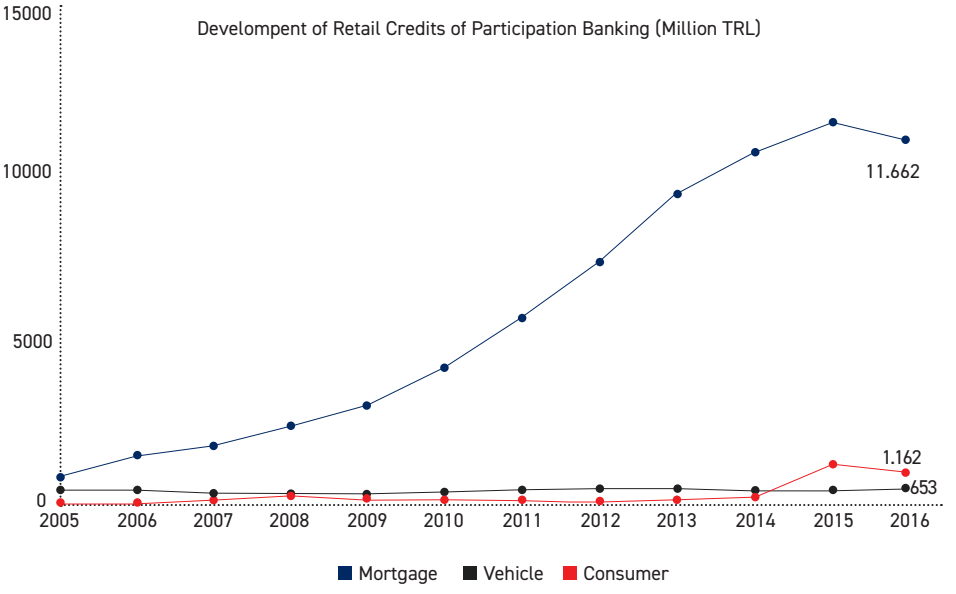

Figure 3: Development of Retail Loans in Participation Banks

Source: BRSA (Banking Regulation and Supervision Agency) Dataset

As it is seen in Figure 3, vehicle loans in participation banking had been surpassing the consumer loans along the 2005-2014 period. In the last period, it can be observed that consumer loans were stronger. However, it can also be seen that mortgage financing, which is more suitable for the functioning of participation banks, constituted the major part of the retail loan portfolio of participation banks.

Comparative Analysis of Retail Loan Performance

Retail loans have become the active power of the product development side of banking. Menor and Roth conducted an empirical study on retail loans and determined that the effect of developing new products was clear for this loan type (2008, p. 280). Cohen and Mazzeo (2007) conducted another study and determined that product development provided additional profitability.

On the other hand, it is also seen that retail loans are handled as the intermediaries of risk management through regular cash flow. Allen et al. (2004) conducted another empirical study to determine the risk weight and capital adequacy for the retail loans. Hirtle et al. (2005) conducted a study in the USA for 1997-2004 period, and investigated the effects of retail loans on performance. In this respect, Hirtle et al. used regression analyses and included some variables like

loan-to-asset ratio, deposit-to-asset ratio, and capital ratio. Among the findings of the study, they mentioned that retail loans contribute to the profitability at a low rate, however, they have an important contribution in terms of stability.

Hasan et al. (2012) investigated the effects of retail products on banks performances, and examined the economies of 27 European countries. The regression method was used in the study for 2000-2007 period. Among the variables of the study, there were the loans, deposits and equity values. It was shown in the findings of this study that the contribution of retail loans to the performance stemmed from '*fees*'.

Comparative studies on retail banking are limited in the literature. However, there are several studies dealing with the performance of participation banks and conventional banks in a comparative manner. In such studies, it is observed that linear regression method has been widely used. Ibrahim (2015) conducted a comparative study for the United Arab Emirates for 2002-2006 period, and showed that Shariah compliant banks produced better performance in terms of liquidity, profitability and capital structure. Loans, capital assets and similar variables were used in this study. Youssef and Samir (2015) conducted an empirical study for Egypt and used the linear regression method. The loan-loss reserves, capital assets and the scale were taken as the variables in the study. Among the findings, there is one claiming that there were no differences between the two banking groups in performance. Mollah et al. (2016) conducted an empirical study for 2005-2013 years for 14 countries. The regression analysis was used in this study as well, and it was shown that Islamic banks were highly capitalized.

Method

The effects of retail banking on the profitability of Turkish banking system have been analyzed in a comparative manner. The data of conventional and participation banks for January 2005 - December 2015 period has been used, and the dataset were received from BRSA. The findings of the investigations in which linear regression method was used have been shared and interpreted in the study.

The basic equation of the econometric model used in the study is as follows;

$$NIM_t = \alpha + \beta_1 TCTA_t + \beta_2 NPL_t + \beta_3 CoR_t + \beta_4 TDTA + \beta_5 EQTA + \beta_6 COTC + \beta_7 MOTC + \sigma NIM_{(t-1)} + \mu_t$$

The model was run in a dynamic manner to avoid autocorrelation problem.
NIM (NPSM) was taken as the dependent variable. The regression results were reported for the NIM (NPSM) dependent variable and the relation between other

variables was reported as well. In the model; α represents the model constant, β represents the vector of the coefficients, σ represents the coefficient of the Dynamic Variable, and μ represents the error vector. The variables and the explanations are given in Table 1.

In the context of this study, monthly data of the conventional and participation banks that are active in Turkey between 2005 January - 2015 December were obtained from BRSA database, and were modelled with linear regression method. A total of 131 observations were reached. Both group data were taken as consolidated data. The bank-based data being not received on monthly basis was among the limitations of the study.

Table 1
The Variables used in the Model

Rank	Ratio	Type	Source	Formula
1	(NIM (NPSM	Performance	Financial Reports	Interest Income – Interest Expense/ Total Assets
2	TCTA	Risk	Balance Sheet	Total Loans/Total Assets
3	NPL	Risk	Balance Sheet	Non-performing Loans/ Total Loans
4	Cost of Risk (Cor)	Risk	Balance Sheet	Non-performing Loans Equivalent/Loans
5	TDTA	Liquidity	Balance Sheet	Participation Funds (General Deposit)/Total Liabilities
6	EQTA	Liquidity	Balance Sheet	Shareholder Equity/ -Total Assets
7	COTC	Risk	Balance Sheet	Consumer Loans/Total Loans
8	MOTC	Risk	Balance Sheet	Mortgage/Total Loans
9	1-NIM t			Dynamic Variable

The control variables are common in the literature moreover COTC and MOTC ratios are unique for this research.

Findings

The model was run for the participation banks and conventional banks. A two-stage process was followed in the estimation of the multi-variate regression models. Firstly, the reference model, which included all the variables, was estimated, and then the

models that gave the most meaningful coefficient values were reached by eliminating the variables that produced the meaningless coefficient estimations one-by-one.

Since nearly all of the models that were estimated gave extremely high R-square values, it is observed that their explanation powers are high. The "F" values that are high and have a value at 1% level indicates to high-level general meaningfulness of the models. The model was run in a static manner and the issue of whether there was an auto-correlation problem was tested with Durbin-Watson test and Durbin-h test. In order to prevent the auto-correlation problem, the model was run in a static way. The results of these tests show that there were no such problems in the model. In the context of these determinations, an auto-correlation result emerges for conventional banks. The conventional banks group did not stay within the acceptable limits for both tests. No drawbacks were considered in interpreting the coefficients of the meaningful models for participation banks. The regression results calculated for NIM (NPSM) are as follows.

The findings were obtained by modelling the data for participation banks and conventional banks. For both bank groups, the model was run separately for NIM and NPSM dependent variables. The findings were reported and the results were interpreted.

Participation Banks

The data for the conventional banks between January 2005 and December 2015 were used; and the descriptive statistics and correlation matrices are given. Table 2 shows descriptive statistics for selected variables of participation banks.

Table 2
Descriptive Statistics of Participation Banks

	NPSM	TCTA	NPL	CoR	TDTA	EQTA	COTC	MOTC	CAR	NPSM t-1
N of cases	131	131	131	131	131	131	131	131	131	132
Minimum	0.030	0.573	0.031	0.021	0.606	0.085	0.000	0.047	0.107	0.030
Maximum	0.068	0.782	0.077	0.059	0.848	0.145	0.010	0.178	0.169	0.068
Mean	0.044	0.681	0.045	0.030	0.731	0.111	0.002	0.114	0.142	0.044
Standard Dev	0.010	0.047	0.011	0.009	0.071	0.017	0.002	0.033	0.013	0.010
Skewness(G1)	0.146	-0.168	0.805	1.619	-0.329	0.243	2.707	0.191	-0.817	0.146
SE Skewness	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212
Kurtosis(G2)	-1.381	-0.378	-0.151	2.329	-1.102	-1.141	5.989	-0.837	0.655	-1.381
SE Kurtosis	0.420	0.420	0.420	0.420	0.420	0.420	0.420	0.420	0.420	0.420

When the correlation matrix in Table 3 is analyzed it can be seen that many variables have strong effects on the NPSM variable of participation banks. The negative relation between the growing value of TCTA ratio with NPSM ratio is due to the strong relation between TCTA ratio and NPL ratio. Meanwhile, it is also possible to consider that the capital requirement of loans has a negative effect on performance indicator. On the other hand, the relation between COTC, MOTC, which are individual loan types, and the dependent variable may be explained with the low capital requirement of mortgage loans and with the relation between these loan types and NPL.

Table 3
Pearson Correlation Matrix of Participation Banks

	NPSM	TCTA	NPL	CoR	TDTA	EQTA	COTC	MOTC	CAR	NPSM t-1
NPSM	1.000									
TCTA	-0.319	1.000								
NPL	-0.384	-0.548	1.000							
CoR	-0.376	-0.491	0.902	1.000						
TDTA	-0.895	0.463	0.252	0.355	1.000					
EQTA	-0.321	0.688	-0.201	-0.334	0.379	1.000				
COTC	0.454	-0.657	0.329	0.236	-0.598	-0.489	1.000			
MOTC	0.799	-0.510	-0.292	-0.341	-0.891	-0.477	0.662	1.000		
CAR	0.140	0.136	-0.297	-0.469	-0.274	0.439	0.063	0.333	1.000	
NPSM t-1	0.965	-0.325	-0.365	-0.354	-0.886	-0.322	0.459	0.800	0.165	1.000

Another important finding shows that the TDTA ratio has a strong negative effect on NPSM due to its strong effect on profit share expenses. When the model findings are analyzed it is seen that the majority of the variables are at an acceptable level in terms of significance. However, it is also clear that total loans are not included in the most significant model. The findings of regression are given in Table 4.

Table 4
Regression Findings

	NPSM			Most significant model		
Independent Variables	Coefficient	t Test		Coefficient	t Test	
Constant	0.067	4.726	***	0.061	6.544	***
TCTA	-0.013	-1.082				
NPL	-0.206	-2.934	**	-0.168	-3.050	***
CoR	0.177	2.163	***	0.172	2.119	**
TDTA	-0.048	-4.803	***	-0.052	-5.711	***
EQTA	0.073	2.768	***	0.051	2.577	**
COTC	0.050	0.256				
MOTC	0.003	0.137				
CAR	-0.087	-3.290	***	-0.075	-3.524	***
NPSM t-1	0.632	11.432	***	0.641	11.816	***
R Square	0.950			0.949		
Flat R Square	0.946			0.946		
F Test	252.784			382.166		
	[0.000]			[0.000]		
Durbin Watson Test	2.270			2.274		
Std. Error (1)	0.002			0.002		
Observation Number	131			131		

(1) Standard error of the delayed variable.
Meaningful t tests at (***) %1, (**) %5, (*) %10 levels.

In addition, individual loan types are not included in the most significant model. Right at this point, it is understood that strategies are developed over the aggregate loan portfolio. In this respect, participation banks are inclined to create an average profitability and capital requirement over different loan types. This situation might pose advantages as well as several disadvantages. This may provide an advantage in terms of the holistic management concept, but it will also cause the imbalance when the loans in the portfolio are removed with some activities like securization. In this context, the securitization activity of participation banks for individual loans is not suitable because it will change the profitability and risk structure of the total portfolio.

Conventional Banks

The data for the conventional banks between January 2005 and December 2015 were used; and the definitive statistics and correlation matrices given in Table 5 show descriptive statistics for selected variables of conventional banks.

Table 5
Descriptive Statistics for Conventional Banks

	NIM	TCTA	NPL	CoR	TDTA	EQTA	COTC	MOTC	CAR	NIM t-1
N of cases	131	131	131	131	131	131	131	131	131	132
Minimum	0.030	0.324	0.028	0.022	0.540	0.099	0.060	0.022	0.141	0.030
Maximum	0.060	0.628	0.066	0.062	0.653	0.146	0.132	0.118	0.276	0.060
Mean	0.044	0.511	0.039	0.034	0.606	0.116	0.093	0.102	0.174	0.044
Standard Dev	0.008	0.080	0.011	0.011	0.036	0.009	0.016	0.019	0.027	0.008
Skewness(G1)	0.121	-0.392	0.904	0.784	-0.433	0.654	-0.396	-2.833	1.547	0.135
SE Skewness	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.212	0.211
Kurtosis(G2)	-1.067	-0.653	-0.412	-0.476	-1.477	0.525	-0.015	7.950	2.578	-1.073
SE Kurtosis	0.420	0.420	0.420	0.420	0.420	0.420	0.420	0.420	0.420	0.419

The correlation matrix for conventional banks is given in table 6. When the correlation matrix is analyzed, it is seen that there is a strong relation between NIM and all the other variables for conventional banks. Especially between the TCTA ratio and NIM, there is a very strong and negative relation. This situation is related with the important place of deposits for the resources side of the Turkish Banking System. Meanwhile, the strong relation between NPL and TCTA is also the determinant of the negative effect on NIM. The data shows that the resources side must be diversified. It is also seen that the relation with NIM is strong and negative for individual loan types. The effect of total loans on NIM is the determinant of this relation right at this point.

Table 6
Pearson Correlation Matrix for Conventional Banks

	NIM	TCTA	NPL	CoR	TDTA	EQTA	COTC	MOTC	CAR	NIM t-1
NIM	1.000									
TCTA	-0.833	1.000								
NPL	0.849	-0.841	1.000							
CoR	0.856	-0.904	0.989	1.000						
TDTA	0.824	-0.859	0.710	0.764	1.000					
EQTA	0.560	-0.566	0.675	0.670	0.421	1.000				
COTC	-0.420	0.675	-0.407	-0.484	-0.394	-0.383	1.000			
MOTC	-0.488	0.590	-0.573	-0.594	-0.202	-0.444	0.626	1.000		
CAR	0.751	-0.889	0.861	0.896	0.640	0.767	-0.672	-0.743	1.000	
NIM t-1	0.976	-0.820	0.825	0.831	0.818	0.526	-0.406	-0.479	0.728	1.000

The findings of the regression for conventional banks are given in Table 7. When the findings of the model are analyzed, it is seen that few variables are included in the most significant model. While TCTA ratio is included in the most significant model, it is also seen that the EQTA ratio is included in the most significant model in the resources side. The need for diversifying the resources in banking system is also clear in conventional banking system. COTC and MOTC ratios are insignificant as were for participation banks.

It may be understood from the findings that conventional banks have a specialized structure in loan portfolio unlike participation banks. In this context, it may be understood that individual loan types may be securitized in a way that will not disrupt the balance for conventional banks. In this respect, conventional banks may use an advantage in diversifying the resources side.

Table 7
Regression Findings of Conventional Banks

	NPSM			Most significant model		
Independent Variables	Coefficient	t Test		Coefficient	t Test	
Constant	-0.015	-1.226				
TCTA	0.007	0.618		-0.005	-3.186	***
NPL	0.105	0.523				
CoR	-0.002	-0.008				
TDTA	0.029	2.025	**			
EQTA	0.040	1.374		0.055	3.810	***
COTC	-0.014	-0.902				
MOTC	-0.021	-1.249				
CAR	-0.019	-0.817				
NIM t-1	0.806	16.143	***	0.917	36.144	***
R Square	0.962			0.999		
Flat R Square	0.959			0.999		
F Test	339.843			331.019		
	[0.000]			[0.000]		
Durbin Watson Test	2.003			2.032		
Std. Error (1)	0.002			0.002		
Observation Number	131			131		

(1) Standard error of the delayed variable.

Meaningful t tests at (***) %1, (**) %5, (*) %10 levels.

With strong R Square values, both models show that success is achieved in terms of explaining the NIM and NPSM values. With the dynamic model, the autocorrelation problem was avoided. In this context, no determinations were made about the dynamic variable.

Results

The importance of retail banking is increasing in the developing banking system. Retail banking is considered as an important tool in temporary sustaining of the

demand problem of the modern economic model, and it has converted the theory of banking with its structure that feeds consumption.

In the period that was analyzed under the scope of the study, it is seen that individual loan types have positive effects on the performance of participation banks. Based on the findings of the study, it is understood that the diverse loan portfolios of participation banks are made use of in the same basic profitability and risk management portfolio. In this respect, it is understood that securitizing for the purpose of diversifying resources, which might have positive effects on the performances of participation banks, may have negative effects on profitability and risk management as well. For conventional banks, on the other hand, it is seen that individual loan types have negative effects. The negative effect is fed by the total loans. It is possible to consider that low profitability of the mortgage loans may be influential on the consumer loans because of the structure of their capital assets. It might be understood that conventional banks have specialized in the management of loan portfolios and have internalized the risk-profitability balance in their loan types. It might be discussed further whether this situation may provide the opportunity of diversifying resources through securitization by conventional banks, and depending on this, it might help to acquire better performance levels. However the COTC and MOTC ratios, representing the consumer and mortgage loans, seems insignificant both in participation and conventional banks. So the effect of retail loans cannot be proven within the context of this analysis. The entire findings in this study show that participation banks have opportunities in individual banking field specifically in terms of performance indicators. The relation of this situation with portfolio management may be investigated further.

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