Diversification in Banking and its Effect on Banks' Performance: Evidence from Turkey[1]

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Abstract

This paper examines the effect of sectoral and geographical diversification on the performance of Turkish banks and try to show how the diversification affects banks' performance. The study asks whether diversification via sectoral and geographical credits helps banks. To investigate the relationship between the credit diversification and performance of 50 Turkish banks between the time period of 2007 and 2011, data sources of Banking Regulation and Supervision Agency (BRSA), The Banks Association of Turkey (BAT) and Istanbul Stock Exchange (ISE) is used. Because of the mergers and acquisitions and being closed, it is failed to reach some of bank data in 2007-2011. In this manner the study is analysed on 40 banks' data. In the present study, ROA (Return on Assets) and ROE (Return on Equity) are used as measure of performance and Herfindahl Index (HI) is used as a measure of diversification of banks. The number of credits and the amount of credits that banks let borrewers' use are employed as control variables. According to the result of the analysis it is determined that dependent variables ROA and ROE are explained by diversification.

Keywords: Credit Diversification, Herfindahl Index, Bank Performance, ROA, ROE.

1. Introduction

Diversification is one of the important subject of the finance literature. This strategy is also crucial for a bank as a financial institution. Banks can intend to diversify its credit portfolio to increase the performance and to reduce the credit portfolio risk. In the literature there are variety of studies that analyse diversification and bank performance.

Acharya et al. (2002), performed one of the first and important study about diversification on banks' credit portfolio. They analysed Italian banks and found that both industrial and sectoral diversification reduces bank returns while producing riskier loans. However Hayden et al. (2007), investigated German banks and found that diversification tends to be associated with reductions in bank returns, even after controlling for risk. Only in a few cases (e.g., high-risk banks and industrial diversification) did they reach statistically significant positive relationships between diversification and bank returns. Kamp et al. (2004), analysed whether German banks diversify their loan portfolios or focus on certain industries and founded that a majority of banks significantly increased loan portfolio diversification. David and Dionne (2005), discussed how large banks in Sweeden manage their loan portfolios and investigated the strategy behind loan portfolio diversification at banks. Schertler (2006), found that total domestic lending by savings banks and credit cooperatives (including their regional institutions), smaller banks, and banks that are highly specialized in specific sectors responds positively and, in relevant cases, more strongly to domestic sectoral growth.

[1] This paper was presented at the *EBES 2012 Conference - Warsaw* organized by Euroasia Business and Economics Society, November 1-3, 2012 in Warsaw, Poland.

Busch and Kick (2009), examined income diversification in the German banking industry. Goetz (2012), studies how a bank's diversification affects its own risk taking behavior and the risk taking of competing, nondiversified banks. These findings indicated that a bank's diversification also impacts the risk taking of competitors, even if these banks are not diversifying their activities. Fang et al. (2011), resulted that asset diversification is associated positively and loan diversification negatively with bank performance.

Results of the studies provided from E.U. banks and U.S. experience (Stiroh 2004a,b; Stiroh and Rumble 2006) contradict to each other in terms of diversification. The study made for Italian banks resulted that income diversification increases risk-adjusted returns and found that there are limits to diversification gains as banks get larger (Chiorazzo et al., 2008). Cotugno and Stefanelli (2012), confirmed a positive relationship between product diversification and bank performance and identical results are obtained with respect to the geographical diversification. On the other hand for U.S. banks Morgan and Stolyk (2003), suggested that diversification increases the lending capacity of banks and the banking system, but it does not increase the profits of individual banks or reduce the risk in their portfolio. Stiroh (2004a), examined the link between diversification and risk adjusted performance for small community banks and resulted that diversification benefits within broad activity classes but not between them. Stiroh (2004b), explored the link between the growing reliance on noninterest income and the volatility of bank revenue and profits and results of the study from both aggregate and bank data provided little evidence that this shift offers large diversification benefits in the form of more stable profits or revenue.

D'Souza and Lai (2003), measured the efficiency of Canada's Big Five chartered banks and found that banks systematically underperform over time. Düllmann et al. (2010), examined if monitoring abilities of German cooperative banks and savings banks increase with their specialization on certain industry sectors and they observed that sectoral specialization generally entails better monitoring quality, particularly in the case of the cooperative banks. Deng and Elyasiani (2008), found that geographic diversification is associated with bank holding company value enhancement and risk reduction, increased distance between a bank holding company and its branches is associated with firm value reduction and risk increase. Tabak et al. (2010), assessed whether banks operating within the Brazilian banking system concentrate or diversify their credit portfolio and how this choice impacts their performance and risk and they founded that Brazilian Banks' loan portfolios are more concentrated than hose of developed countries like Germany, Italy and the U.S. Bebczuk and Galindo (2008), analysed sectoral diversification of Argentine banks and suggested that larger banks benefit more from diversification than smaller ones and that the benefits of diversification are greater during the downside of the business cycle.

Some other studies on diversification exist. Cabiles (2012), found that securitization activity is positively related to loan portfolio diversification or that securitization can make a bank's loan portfolios more diversified. Higgins and Mason (2005), demonstrated the potential to eliminate a significant amount of risk in a diversified financial institution. Berry-Stölzle et al. (2011), analyzed variations in line-of-business diversification status and extent among property–liability insurers. Their results showed that the extent of diversification is not driven by risk pooling considerations; insurers operating in more volatile business lines do not diversify more. Arora and Kaur (2009), analyzed the significance of internal determinants for diversification of banks in India. Bandyopadhyay (2010), analyzed the credit portfolio composition of a large and medium sized leading public sector bank in India also.

Because of the difficulty to reach related data and the complexity to compare the banks of different countries data related to diversification of banks, there is not so many international studies about diversification effects on banks. Griffith et al. (2002), demonstrated that the failure of the proposals to date to take account of the benefits of international diversification suggests that, in this instance at least, risk is not been accurately measured. That is, by excluding the possibility that banks' capital requirements should take account of portfolio and diversification effects, the proposals effectively impose an inaccurate measure of actual risk, at the portfolio level. Sanya and Wolfe (2011), investigated the effect of revenue diversification on bank performance and risk for emerging economies and founded that diversification decreases insolvency risk and enhance profitability. Buch et al. (2010), compute optimally diversified international asset portfolios for banks located in France, Germany, Italy, the United Kingdom and the United States using the mean–variance portfolio model with currency hedging.

The study of Gönenç and Kılıçhan (2004) was about the relationship between diversification of credit portfolio and performance level of Turkish banks. Their study limited for two years (2001-2002) because of data limitations and they observed opposite relationship between diversification and retun on asset.

As seen in the literature above, diversification affects financial institutions' performance. This paper asks whether diversification via sectoral credits helps Turkish banks for the period 2007-2011. Our results show sectoral credit diversification to be beneficial or not for banks to improve their performance. The remainder of the study is organized as follows; Section 2 details the banking sector in Turkey and credit portfolio diversification, Section 3 explains data and methodology, Section 4 presents the findings of the study and Section 5 concludes.

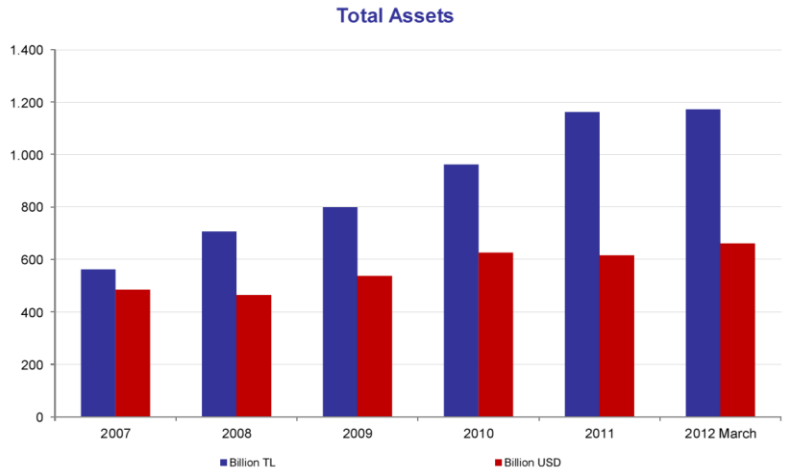
2. Banking Sector in Turkey and Credit Portfolio Diversification

Turkey has made influent reforms after the 2001 banking crisis. Generally, following the crises in 2001 and the restructuring process, the banking sector showed a rapid growth performance in 2002-2008 period. The total assets rose from USD 130 billion to USD 465 billion, their ratio to GDP from 57 percent to 77 percent. The numbers of branches and staff rapidly increased (The Banks Association of Turkey, 2009: 5).

The Banking Regulation and Supervision Agency (BRSA), on the other hand, adopted certain measures aimed at preserving the financial strength of banks and containing the effects of abrupt changes in the financial asset prices on banks' capital adequacies. The global developments have also affected the banking sector in Turkey, although to a rather limited extent in comparison with many other countries. The reasons behind the relatively limited negative effects on the banking system are a high capital adequacy ratio, a high asset quality, low currency and liquidity risks, successful risk management and effective public supervision, and good management of the interest, counterparty and maturity risks (The Banks Association of Turkey, 2009: 4).

Thus, the structure of the banking system has become healthier. An independent agency was formed for increasing the effectiveness of banking supervision and control (The Banking Regulation and Supervision Agency- BRSA). The Banking Act and other banking regulations has been considerably harmonized with international best practices (The Banks Association of Turkey, 2005: 9).

Graph 1. Total Assets of Turkish Banks



Source: BRSA, BAT

As seen in the graph above total assets os Turkish banks increase gradually. According to the the banks submitted to Banking Regulation and Supervision Agency (BRSA Number 2012/19), the asset size of the Turkish Banking Sector is TL 1.270.603 million as of May 2012. Total assets of the sector have increased by TL 52.908 million (4.3%) comparing to end-2011. As of May 2012, loans and securities which are amongst the biggest placement items showed a balance respectively by TL 730.199 million and TL 285.646 million. Loans increased by 6.9% and securities by 0.2% comparing to end-2011. It is observed that non-performing loans (gross) increased evenly with loans.

Table 1. Turkish Banking Sector Non-Consolidated Main Indicators

(TL million)	May 2011	Dec.2011	May 2012
Asset Total	1.115.390	1.217.695	1.270.603
Loans	598.421	682.893	730.199
Non Performing Loans (Gross)	18.784	18.973	20.287
Securities	279.618	284.983	285.646
Deposit	644.109	695.496	711.828
Own Funds	137.608	144.646	154.625
Period Profit/Loss	8.428	19.844	9.617
Capital Adequacy Standard Ratio (%)	17,4	16,6	16,2

Source: BRSA

In Table 1, main indicators of Turkish banking system can be seen. Measures taken to slow down the credit growth were affective in the second half of 2011. It is seen that loans have increased annually by 29.9% on nominal basis, by 17.6% on real basis and by 6% on US Dollar basis in 2011, while these rates were respectively 33.9%, 25.9% and 30% in 2010 and that any of them exceeded the threshold value representing credit expansion according to credit expansion model. Within the frame of these developments, it seems that the credit expansion present as of end-2011 is not damaging the financial and economic stability and that the credit system is still operating actively (BRSA 2011: 4).

With reference to main banking indicators, with a successful performance during the global crisis, the banking sector continued its growth in real terms also in 2011, and supported the financing of economic activity. Total assets of deposit, development and investment banks increased by 9 percent in real terms, and its ratio to GDP reached 90 percent. The share of loans in total assets rose to 56 percent, while that of total deposits increased to 99 percent. Credit portfolio continued to diversify (BAT, 2012: 6).

According to 5411 numbered Turkish Banking Law the definitions of these banks described as follows (The Banks Association of Turkey, 2008: 10):

Deposit Banks: The institutions operating primarily for the purpose of accepting deposit and granting loan in their own names and for their own accounts as per the provisions of this Law and the branches in Turkey of such institutions established abroad,

Development and Investment Banks: The institutions operating primarily for the purposes of collecting fund through special current accounts and participation accounts and granting loan pursuant to this Law and the branches in Turkey of such institutions established abroad,

Participation Banks: The institutions operating primarily for the purposes of granting loan and/or to fulfill the duties assigned there to by their special laws, other than accepting deposit or participation fund pursuant to this Law, and the branches in Turkey of such institutions established abroad.

In Turkish banking sector there are 48 banks as of May 2012. As seen in the Table 2, 31 of them are deposit banks (3 public, 11 private, 16 foreign), 13 are development and investment banks and 4 are participation banks. One deposit bank is under the supervision of the SDIF (Savings Deposit Insurance Fund).[2]

[2] SDIF system works between deposit owners, banks accepting the deposits and the institutions taking the deposits under insurance guarantee. It takes its sanction power from rule of law based on country's legislation. The association providing insurance collect specific premium against this transaction. The Association steps in through the resolutions written in the related legislation when the bank in which deposits are invested can not repay the owner's deposit. It pays the total amount under the insurance to the depositor/s. In order to take back the totals it paid, It initiates the legal process about the bank having difficulty in paying. (http://www.tmsf.org.tr/idari.hukuki.yapi.tr)

Table 2. The Number of Turkish Banks

	2007	2008	2009	2010	2011	2012 March
Deposit Banks	33	32	32	32	31	31
State-owned	3	3	3	3	3	3
Privately owned	11	11	11	11	11	11
Foreign Banks	18	17	17	17	16	16
Banks under SDIF	1	1	1	1	1	1
Development and Investment Banks	13	13	13	13	13	13
Participation Banks	4	4	4	4	4	4
TOTAL	50	49	49	49	48	48

Sources: BDDK, TBB

The commercial banks do not have participation accounts and the participation banks are not licensed to accept deposits. The development and investment banks are not allowed to issue deposit and participation certificates. The commercial banks and the development and investment banks are members of the Banks Association of Turkey while the participation banks are members of the Participation Banks Association of Turkey (The Banks Association of Turkey, 2009: 7).

3. Data and Methods

3.1. Data Sources

Our database consists of 200 observations of annual bank data over the period 2007-2011. Because of the mergers and acquisitions and being closed, it is failed to reach some of bank data in 2007-2011. In this manner the study is analysed on 40 banks' data annually. Our data sources are Banking Regulation and Supervision Agency (BRSA), The Banks Association of Turkey (BAT) and Istanbul Stock Exchange (ISE). Bank-level credit data were attained from Banking Regulation and Supervision Agency database of www.finturk.org.

For analysing the effect of sectoral diversification, data is available for each bank registered to BRSA. Sectors that banks lend money loans are grouped as eight sectors: (1) Food, Beverage and Tobacco, (2) Construction, (3) Metal and Crude mine, (4) Financial institutions, (5) Textile and Textile products, (6) Wholesale trade and Intermediate trade, (7) Tourism and (8) Agriculture and Fishing. Below in the charts the sector distribution of credits that banks lend can be seen:

Table 3. Percentage Sectoral Distribution of Banking Sector Credits (2007-2011)

	2007	2008	2009	2010	2011
Food, Beverage and Tobacco	%12	%11	%10	%11	%11
Construction	%16	%18	%20	%18	%19
Metal and Crude Mine	%12	%13	%12	%12	%12
Financial Institutions	%10	%9	%11	%11	%7
Textile and Textile Products	%13	%11	9	9	10
Wholesale Trade and Intermediate Trade	%18	%19	%19	%18	%19
Tourism	%6	%7	%7	%7	%7
Agriculture and Fishing	%13	%12	%12	%14	%15
DOMESTIC	%78	%74	%83	%99	%98
FOREIGN	%22	%26	17	%1	%2

"Wholesale trade and intermediate trade" and "Construction" are two sectors that banks lend preeminently for all years. According to geographical diversification Turkish banks mostly lend domestic loans. Especially, foreign credits considerably low for last two years.

3.2. Methods

3.2.1. Diversification Measure

To measure diversification, we use the Herfindahl Index. This index is the sum of the squares of exposures as a fraction of total exposure under a given classification (Acharya et al. 2002).

The Herfindahl index is calculated as the sum of squares of lending as a percentage of the square of total lending. A Herfindahl index close to its minimum means that banks are highly diversified across sectors (Schertler et al. 2006).

$$DI(I) = I - HI = \sum_{i=1}^{N} W_i^2$$

Where, DI is the diversification index, HI is the Herfindahl Index, W_i is the proportion of portfolio market value invested in security i (in decimal form), and N stands for the number of securities in the portfolio (Yiğit and Tür, 2012).

3.2.2. Performance Measures of Banks

It is accepted that "Return on Assets" and "Return on Equity" are important measurement ratios to determine the effectiveness of banks (Acharya et al. 2002; D'Souza and Lai, 2003; Schertler, 2006; Busch and Kick, 2009; Cotugno and Stefanelli, 2012). Return on Assets and Return on Assets are calculated as follows:

Return on Assets (ROA): Net Income / Total Assets
Return on Assets (ROE): Net Income / Equity.

3.2.3 Control Variables

Control variables are the size of banks and the number of loans supplied by banks.

3.3. Hypothesis of the Study

The hypothesis of the study can be explained as follows:
H1: There is a negative relationship between sectoral diversification and banks'performance.
H2: Sectoral diversification affects banks' performance negatively.

4. Results of the Study

The aim of the study is to specify whether there is a significant difference between geographical diversification and performance values, i.e. ROA, ROE.
From a theoretical point of view, it is expected that banks that have sectorally specialized their lending patterns and lend primarily to a particular sector will be likely to have eter information on this sector than banks lending to a large number of sectors (Schertler et al. 2006).

Table 4 Frequencies for Diversification, ROA and ROE Values

AVERAGE					
Bank Number	**Loan Amount**	**Loan Number**	**Diversification**	**ROA**	**ROS**
40	2930154,8	6,7	0,6587	0,314257	0,229320

As Table 1 demonstrates, 40 bank are included in the research. It is understood that the average diversification degree of the sectoral loan included in the research is 0,6587, the ROA value is 0,314257, the loan number is 6,7, loan amount is 2930154,8 and the average ROE value is 0,229320.

Table 5 Diversification, ROA and ROE Correlation (Pearson) Analysis

Variable	Roa	Roe	Herfindahl Index	Loan Amount	Loan Number
Roa	1				
Roe	,792(**)	1			
Herfindahl Index	-,726(**)	-,466(**)	1		
Loan Amount	-,351(*)	-,392(*)	,307 (*)	1	
Loan Number	-,733(**)	-,446(**)	,844(**)	,360(*)	1
N	40	40	40	40	40

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

H1 is accepted.

In order to understand the relationship, ROA and ROE, the dependent variables, loan amount, loan number and degree of sectoral diversification (Herfindahl Index), the independent variables, are subjected to correlation analysis separately. Table 2 demonstrates the correlations between diversification-ROA (Sig=0,001), loan amount-ROA (Sig=0,05) and loan number-ROA (Sig=0,001). It can also be seen in the table that there are correlations between ROE and each variable of the research as well. Thus, hypothesis 1 is accepted. Accordingly, there is a negative relation between dependent variables and independent variables.

Table 6 Diversification Degree ROA Regression Analysis Results

Dependent Variable: ROA	**Model 1**		**Model 2**		**Model 3**	
	Sig	Beta	Sig	Beta	Sig	Beta
Herfindahl Index	0,000	-0,726	0,000	-0,683	0,071	-0,371
Loan Amount			0,231	-0,142	0,397	-0,099
Loan Number					0,067	-0,385
Model R^2	0,527		0,545		0,586	
ΔR^2			0,018		0,041	
Model F	42,352		22,184		17,011	

Dependent Variable: ROA

H2 is accepted.

The hierarchical regression analysing results obtained for the research question are shown in Table 6. According to the Annova test results, while Model 1, one of the regression models, is statistically significant, Model 2 and Model 3 are not. Beta values were given for the independent variables and control variables.

Herfindahl Index variable was added first to the model in hierarchical regression analysing. Herfindahl Index alone explains % 52,7 of the change on bank performance (ROA).

Table 7 Diversification Degree ROE Regression Analysis Results

Dependent Variable: ROA	**Model 1**		**Model 2**		**Model 3**	
	Sig	Beta	Sig	Beta	Sig	Beta
Herfindahl Index	0,000	-0,466	0,013	-0,382	0,247	-0,308
Loan Amount			0,068	-0,274	0,088	-0,264
Loan Number					0,735	-0,091
Model R^2	,217		,286		,288	
ΔR^2			0,069		0,002	
Model F	10,551		7,393		4,850	

Dependent Variable: ROE

The hierarchical regression analysing results obtained for the reserach question were given in Table 7 for the other performance measure ROE. According to the Annova test results, while the regression models Model 1(Sig=0,001) and Model 2 (Sig=0,01), are statistically significant, Model 3 is not. Beta values were given for the independent variables and control variables. Beta values were given for the independent variables and control variables.

Herfindahl Index variable was added first to the model in hierarchical regression analysing. Herfindahl Index alone explains % 21,7 of the change on bank performance (ROA). The variable "credit amount" was added to the model secondly and R^2 and % 6,9 change was realized. In this way, it was seen that the variables, herfindahl index and credit amount, explain % 28,6 of change on bank performance.

5. Conclusion

This paper examines the importance of credit diversification on banks performance. The study is executed on 40 banks' data and these datas are provided from Banking Regulation and Supervision Agency (BRSA), The Banks Association of Turkey (BAT) and Istanbul Stock Exchange (ISE) between the time period of 2007 and 2011. Our main finding confirms whether a geographical diversification produces, in terms of performance, negative effect for a sample of Turkish banks in the period 2007-2011.

The performance of a bank concerns other firms and sectors in the economy. Focusing or diversifying credit portfolios influence the risk level that banks take on. Losses in one sector or location can be compensated from the gain obtained from other sector or location etc. On the other hand, if the diversification level increases, it leads to rising of costs that are undertaken and diversification may not be associated with higher returns in every circumstances. It is important to make strategic decisions for a bank, in cases of risk and return preferences.

Results of the studies provided from E.U. banks and U.S. contradict to each other in terms of diversification. Furthermore there are certain differences like credit periods between E.U. and Turkish banks. Henceforth diversification of credit portfolio applications may differ from region to region.

For further studies, it can be studied on consumer credits, locational credit diversification, agency theory applications on credit diversification by using different diversification measures for Turkey or other countries. Additionaly, emerging and developped countries can be compared in the basis of credit diversification.

References

Acharya, V., Hasan, I., Saunders, A. (2002). Should banks be diversified? Evidence from individual bank loan portfolios. Bank for International Settlements, BIS Working Papers No 118.

Arora, S. and Kaur, S. (2009). Internal determinants for diversification in banks in India an empirical analysis. International Research Journal of Finance and Economics. 24, 177-185.

Bandyopadhyay, A. (2010). Understanding the Effect of Concentration Risk in the Banks' Credit Portfolio: Indian Cases. NIBM working Paper July.

Banking Regulation and Supervision Agency, (2012). Turkish Banking Sector Non-Consolidated Main Indicators. Press Release: Number 2012/19.

Banking Regulation and Supervision Agency, (2011). Financial Markets Report, Issue 24.

Bebczuk, R. and Galindo, A. 2008. Financial crisis and sectoral diversification of Argentine banks, 1999-2004. Applied Financial Economics, 18, 199-211.

Berry-Stölzle, T.R., Liebenberg, A.P., Ruhland, J.S. and Sommer, D.W. (2011). Determinants of corporate diversification: Evidence from the property-liability insurance industry. The Journal of Risk and Insurance, 79(2), 381-413.

Böve, R., Düllmann, K. and Pfingsten, A. (2010). Do specialization benefits outweigh concentration risks in credit portfolios of German banks? Deutsche Bundesbank, Discussion Paper Series 2: Banking and Financial Studies No 10/2010.

Buch, C.M., Driscoll J.C. and Ostergaard C. (2010). Cross-border diversification in bank asset portfolios. International Finance, 13(1), 79-108.

Busch, R. and Kick, T. (2009). Income Diversification in the German banking Industry. Deutsche Bundesbank, Discussion Paper Series 2: Banking and Financial Studies No 09/2009.

Cabiles, N.A.S. (2012). Credit Risk Management through Securitization: Effect on Loan Portfolio Choice. Fifth PhD Conference in Economics 2012. Athens.

Chiorazzo, V., Milani, C. and Salvini, F. 2008. Income diversification and bank performance: Evidence from Italian banks. Journal of Financial Services Research, 33, 181-203.

Cotugno, M. and Stefanelli, V. (2012). Geographical and product diversification during instability financial period: Good or bad for banks? International Research Journal of Finance and Economics, 85, 87-100.

David, C. and Dionne C. (2005). Banks' Loan Portfolio Diversification. Gothenburg, Master's and Bachelor's Thesis: Handelshögskolan Vid Göteborgs Universitet.

Deng S.(E.)and Elyasiani, E. (2008). Geographic diversification, bank holding company value, and risk. Journal of Money, Credit and Banking, 40(6), 1217-1238.

D'Souza, C. and Lai, A. (2003). Does Diversification Improve Bank Efficiency? The Evolving Financial System and Public Policy, Proceedings of a conference held by the Bank of Canada, Ottawa.

Fang, Y., Hasan, I. and Marton, K. (2011). Institutional development and its impact on the performance effect of bank diversification: Evidence from transition economies. Emerging Markets Finance & Trade, 47(4), 5-22.

Goetz, M. (2008). Quantitative Analysis Unit. Bank Diversification, Market Structure and Bank Risk Taking: Theory and Evidence from U.S. Commercial Banks. Boston: Working Paper No. QAU12-2, Federal Reserve Bank of Boston.

Gönenç, H. and Kılıçhan, B. (2004). Kredi portföyü çeşitlendirmesinin banka performansı üzerindeki etkileri. Bankacılar Dergisi, 49, 53-67.

Griffith-Jones, S., Segoviano, M. and Spratt, S. (2002). Basel II and Developing Countries: Diversification and Portfolio Effects. Brighton: Institute of Development Studies University of Sussex.

Higgins, E. and Mason, J. (2005). Deriving Credit Portfolio Diversification Properties from Large Asset-backed Security Pools. Working Papers: Financial Institutions Center at the Wharton Scholl.

Kamp, A., Pfingsten, A. and Porath, D. (2005). Do Banks Diversify Loan Portfolios? A Tentative Answer Based on Individual Bank Loan Portfolios. Deutsche Bundesbank, Discussion Paper Series 2: Banking and Financial Studies No 03/2005.

Morgan, D.P. and Samolyk, K. (2003). Geographic Diversification in Banking and Its Implications for Bank Portfolio Choice and Performance, the study was presented at the BIS Workshop "Banking and Financial Stability", 20-21 March 2003.

Sanya, S. and Wolfe, S. (2011). Can banks in emerging economies benefit from revenue diversification? Journal of Financial Services Research, 40, 79-101.

Schertler, A., Buch, C.M. and Westernhagen, N. (2006). Heterogeneity in lending and sectoral growth: Evidence from German bank-level data. International Economics & Economic Policy, 3(1), 43-72.

Stiroh, K.J. (2004a). Do community banks benefit from diversification? Journal of Financial Services Research, 25(2/3), 135-160.

Stiroh, K.J. (2004b). Diversification in banking: Is noninterest income the answer? Journal of Money, Credit, and Banking, 36(5), 853-882.

Stiroh, K.J. and Rumble, A. (2006). The dark side of diversification: The case of U.S. financial holding companies. Journal of Banking & Finance, 30(8), 2131–2161.

Tabak, B.M., Fazio, DM and Cajuerio, D.O. (2010). The Effects of Loan Portfolio Concentration on Brazilian Banks' Return and Risk. Banco Central Do Brazil, Working Papers No 215.

The Banks Association of Turkey (2008). Banking Law No.5411, Istanbul: Graphis Matbaa.

The Banks Association of Turkey (2009). The Financial System and Banking Sector in Turkey, Istanbul.

The Banks Association of Turkey (2012). Banks in Turkey 2011. Publication No:285, Istanbul.

Yiğit, İ. and Tür, Ş. (2012). Relationship between diversification strategy applications and organizational performance according to Herfindahl Index criteria. 8th International Strategic Management Conference, Barcelona. http://www.tmsf.org.tr/idari.hukuki.yapi.tr