

IS OWNERSHIP STRUCTURE EFFECTIVE IN TAKING RISKS OF BANKS? THE CASE OF TURKEY

M. Oğuz KÖKSAL¹

Şenol BABUŞCU²

Adalet HAZAR³

Citation/©: Köksal, M. O., Babuscu, Ş., and Hazar, A. (2020). Is ownership structure effective in taking risks of banks? the case of Turkey. *Hitit University Journal of Social Sciences Institute*, 13(2), 385-407. doi: 10.17218/hititsosbil.773170

Abstract: In this study, the relationship between the capital ownership and risk taking tendency of banks is analysed. The data of multi-branch deposit banks from the banks operating during the analysis period were included in the study. The data of each bank for the end of 2008-2017 are taken into consideration. A total of 2800 variables consisting of 14 different variables belonging to 20 deposit banks covering 10 years were used in the analysis. From the 20 banks taken into account in the analysis; 3 are public, 11 are domestic private and 6 are foreign banks with private capital. One of the most striking points in the study is that the derivative financial instruments / equity variable included in the analysis as an independent variable and 3 risk indicators are in a meaningful relationship. In the framework of the data obtained from the analysis, there was no effect of capital ownership and capital concentration on the risk taking tendency of the banks in the Turkish Banking Sector.

Keywords: Risk Taking, Ownership Structure, Consantration, Banking, Deposit Banks.

Bankaların Risk Üstlenmelerinde Ortaklık Yapısının Etkisi Var mı? Türkiye Örneği

Atıf/©: Köksal, M. O., Babuscu, Ş., ve Hazar, A. (2020). Bankaların risk üstlenmelerinde ortaklık yapısının etkisi var mı? Türkiye örneği. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 13(2), 385-407. doi: 10.17218/hititsosbil.773170

Özet: Bu çalışmada, sermaye sahipliği ile bankaların risk alma eğilimi arasındaki ilişki incelenmiştir. Analiz döneminde faaliyet gösteren bankalardan çok şubeli mevduat bankalarının verileri çalışmaya alınmıştır. Her bankanın 2008-2017 sonu verileri dikkate alınmaktadır. Analizde, 10 yılı kapsayan 20 mevduat bankasına ait 14 farklı değişkenden oluşan toplam 2800 değişken kullanılmıştır. Analizde dikkate alınan 20 bankadan; 3'ü kamu, 11'i yerli özel ve 6'sı özel sermayeli yabancı bankalardır. Çalışmadaki en çarpıcı noktalardan biri, bağımsız bir değişken olarak analize dahil edilen türev finansal araçlar / özkaynak değişkeninin ve 3 risk göstergesinin anlamlı bir ilişki içinde olmasıdır. Analizden elde edilen veriler çerçevesinde, sermaye sahipliği ve sermaye yoğunluğunun Türk Bankacılık Sektöründeki bankaların risk alma eğilimi üzerinde bir etkisi olmamıştır.

Anahtar Kelimeler: Risk Üstlenme, Ortaklık Yapısı, Konsantrasyon, Bankacılık, Mevduat Bankaları

Makale Geliş Tarihi: 24.7.2020

Makale Kabul Tarihi: 20.12.2020

¹ Dr., Bankacı, Öğretmen, mokoksal@gmail.com , http://orcid.org/0000-0002-0037-7671

² Doç. Dr., Başkent Üniversitesi Ticari Bilimler Fakültesi Finans ve Bankacılık Bölümü, babuscu@baskent.edu.tr, http://orcid.org/0000-0003-2870-6358

³ Sorumlu Yazar. Prof. Dr., Başkent Üniversitesi Ticari Bilimler Fakültesi Finans ve Bankacılık Bölümü ahazar@baskent.edu.tr , http://orcid.org/0000-0002-1483-8360

1. INTRODUCTION

In this study, it is discussed whether there is a relationship between the ownership structure of banks and the tendency to take risks. When looking at the ownership structure of banks, both the public, domestic and foreign private distinctions are taken into consideration and the concentration in the ownership structure is prioritized.

In various studies, the bank ownership structure and the risk assumption were analyzed. However, it is seen that the number of studies analyzing this issue with the concentration in the shareholder structure is more limited. On the other hand, agency problems has been tried to be different in this study. One of the main points of the agency problem in multi-partner companies is related to risk assumption.

The theory of agency is a theory based on issues such as the flow of information and the control of the motivation of the parties as a result of cooperation (Aren, 2004). The agency theory extended the risk sharing literature as a proxy problem (UK Essays, 2013).

Banks are the cornerstone of a country's financial system, especially in the developing countries where capital markets are underdeveloped.

The relationship between ownership structure, firm performance and risk taking has become one of the key issue in banking. The finance literature abounds with attempts to quantify and explain risk taking behavior at banks. Identifying the link between managerial risk preferences and share ownership is a complex task.

The objective of this paper is to contribute the current literature regarding how ownership structure affects bank risk taking.

The literature on this matter provides us with several testable hypotheses as well as empirical evidence from different countries. However, there is no study on bank ownership and risk taking for the Turkish banking sector in the last period. The results obtained in the studies for different countries or country groups are guiding.

2. LITERATURE REVIEW

Empirically, Saunders et al. (1990) were one of the first to test the relationship between banks' ownership structure and their risk-taking incentives. They find a positive relationship between managerial stock ownership and risk taking. Moreover, they find that banks controlled by shareholders take more risk than banks controlled by managers.

Barry et al., (2011) find that ownership structure is significant in explaining risk differences but mainly for privately owned banks. A higher equity stake of either individuals/families or banking institutions is associated with a decrease in asset risk and default risk. For publicly held banks, changes in ownership structure do not affect risk taking. Market forces seem to align the risk-taking behavior of publicly held banks, such that ownership structure is no longer a determinant in explaining risk differences. However, higher stakes of banking institutions in publicly held banks are associated with lower credit and default risk. (Barry et al., 2011)

Because of greater separation of ownership and control, firms with publicly held equity face different agency problems than privately owned firms. Indeed, in publicly held banks, ownership is more likely to be dispersed among a large number of shareholders. This implies that the separation between shareholders and managers is more effective for publicly held banks than for privately owned banks (Barry et al., 2011). Such separation between shareholders and managers can increase information asymmetry and therefore create divergence in incentives (Jensen and

Meckling, 1976). For publicly traded banks, market forces can influence risk-taking incentives. On the one hand, the market is expected to monitor or influence banks' risk behavior, and therefore the impact of ownership changes on risk cannot be assessed without considering incentives driven by financial markets in terms of discipline (Bliss and Flannery, 2002).

Another issue in the literature involves comparing the performance of state-owned banks with that of their private counterparts. Agency costs within government bureaucracy can result in weak managerial incentives and misallocation of resources. According to prior research, state-owned banks have poorer loan quality and higher default risk than privately owned banks (Berger et al., 2005; Iannotta et al., 2007). Iannotta et al. (2007) find that government-owned banks have poorer loan quality and higher default risk. In addition, some research has shown that foreign-owned banks exhibit better performance than other banks, particularly in developing countries (Claessens et al., 2001; Bonin et al., 2005; Micco et al., 2007).

Dong et al., (2014) classify the Chinese commercial banks into three categories based on the types of controlling shareholder, and find that banks controlled by the government tend to take more risks than those controlled by state-owned enterprises or private investors. This is attributed to the severe political intervention and weak incentives to follow prudent bank management practices for banks controlled by the governments. They also find that the results are more pronounced among banks with concentrated ownership presumably because the large controlling power helps to enhance the monitoring of the management and promotes prudent operating procedures. Also, their study finds evidence that listing banks on the stock market could enhance their governance procedures and reduce the level of risk-taking.

Both theoretical and empirical studies in the literature suggest that the performance and risk-taking behavior of organizations depend on the identity of the controlling shareholders (John et al., 2008). In terms of state ownership, political interference usually comes at the expense of corporate profitability because of politicians' deliberate policy of transferring resources to their supporters. This suggests that state-owned banks might be seen as vehicles for raising capital to finance projects with high social returns, but possibly high-risk and low-profit returns, or to provide finance to favoured groups such as state-owned enterprises (Clarke et al., 2005).

State-owned banks find it difficult to resist such harmful government interference, whereas private banks are more able to oppose it, and typically employ more sensible prudential lending policies and/or profit-maximizing strategies as a consequence (Shirley & Nellis, 1991).

These theoretical inferences have been supported by some empirical evidence. For example, government-owned banks and large state ownerships are associated with lower efficiency, inferior long-term performance, greater risk-taking, and less prudent lending behaviors. However, there are also some contradictory results. State-controlled banks have also been found to be associated with less risk in Russia (Fungáčová & Solanko, 2009) and higher efficiency in Turkey (Isik & Hassan, 2002). Altunbas et al., (2001) find little evidence that private banks are more efficient than state-owned ones in Germany. In another study for Germany, the authors find that privately owned banks more efficient than their mutual and public-sector counterparts in the German banking market. All three bank ownership types (private commercial banks, public savings banks and mutual cooperative banks) benefit from widespread economies of scale. Inefficiency measures indicate that public and mutual banks have slight cost and profit advantages over their private sector competitors (Altunbas et al., 2001).

In cross country analyses, Caprio and Martinez-Peria (2000) find evidence that a greater extent of state ownership of banks is associated with a higher likelihood of banking crises in developing countries during the period 1980–1995.

Iannotta et al.,(2007) find three main results about ownership structure, risk and performance. First, after controlling for bank characteristics, country and time effects, mutual banks and government-owned banks exhibit a lower profitability than privately owned banks, in spite of their lower costs. Second, public sector banks have poorer loan quality and higher insolvency risk than other types of banks while mutual banks have better loan quality and lower asset risk than both private and public sector banks. Finally, while ownership concentration does not significantly affect a bank's profitability, a higher ownership concentration is associated with better loan quality, lower asset risk and lower insolvency risk. These differences, along with differences in asset composition and funding mix, indicate a different financial intermediation model for the different ownership forms.

Iannotta et al. (2013) have tested impact of government ownership on bank risk in Europe in one of their studies. They use cross-country data on a sample of large European banks to evaluate the impact of government ownership on bank risk. They distinguish between default risk and operating risk. They report two main results. First, government-owned banks have lower default risk but higher operating risk than private banks, indicating the presence of governmental protection that induces higher risk taking. Second, government-owned banks' operating risk and governmental protection tend to increase in election years. These results are consistent with the idea that government-owned banks' pursue political goals and have important policy implications for recently nationalized European banks.

Mixed empirical evidence is also documented in some other studies in the literature. Concentrated ownership has been found to be associated with higher risks (Laeven & Levine, 2009), higher insolvency risk and greater return volatility (Haw et al., 2010). In contrast, ownership concentration has been found to be associated with a lower level of risk-taking in Spanish commercial banks (Garcia-Marco & Robles-Fernández, 2008), better loan quality, lower asset risk and a lower insolvency risk and a lower non-performing loans ratio and better capital adequacy ratio (Shehzad, de Haan, & Scholtens, 2010).

These differences may partially be attributed to the different settings which embed different institutional features from the various countries and regulatory regimes.

In some studies of foreign ownership of banks support the argument that foreign banks bring benefits to the domestic banking sector by bringing in technology and expertise in risk management. They also increase competition, thereby forcing domestic banks to increase efficiency. It has also been argued, however, that the intensified competition could induce weak domestic banks to take more risks (Angkinand and Wihlborg, 2010). Laeven (1999), investigated a panel of Asian banks and found that foreign-owned banks take more risk than state-owned, company-owned and family-owned banks.

Results of another study suggest that managerial shareholdings do influence bank total and specific risk. Franchise value appears to be an important determinant of bank risk-taking: banks with high franchise values are less likely to take risk than banks with low franchise value. In contrast, outside blockholders have, at best, limited influences on bank risk taking (Anderson and Fraser, 2000).

In another study, Laeven and Levine (2006) find that large owners with substantial cash flow rights increase bank risk taking, but this relationship depends on management structure, investor protection laws, and bank regulations. Besides the interactions between ownership structure and national policies, traditional agency theory emphasizes that tensions between stockholders and managers will influence risk taking (Jensen and Meckling, 1976). If managers have accumulated bank-specific human capital and enjoy private benefits of control, they will tend to seek a lower level of risk than stockholders without those skills and privileges (Demsetz and Lehn, 1985). From this perspective, a shareholder that is also a senior manager will have less of an appetite for risk than a shareholder with no managerial responsibilities. Similarly, Saunders et al. (1990) stress that managers holding bank equity will have greater incentives to increase risk than managers with no equity.

Another study by Garcia-Marco and Robles-Fernandez (2008) examines risk behavior in Spanish commercial banks and Spanish savings banks, which share the same market but show important differences related to their legal configuration and ownership structure.

Their findings reveal major differences in the patterns and determinants of risk-taking behavior, linked to both legal configuration and size. In general, they find Spanish commercial banks more risk-inclined than Spanish savings banks. In this paper, they have found that the degree of shareholder concentration in commercial banks has a negative impact on the level of risk-taking. Shareholders of the Spanish commercial banks' in their sample are apparently reluctant to take on excessive risk, even when protected by deposit insurance. In the case of saving banks, they do not find that the control of the bank by public administrations causes any effect on risk-taking.

Srairi (2013) have studied ownership structure and risk-taking behavior in conventional and Islamic banks in the Middle East and North Africa region. The result shows a negative association between ownership concentration and risk. He also find that different categories of shareholders have different risk attitudes. Family-owned banks have incentives to take less risk. State-owned banks display higher risk and have significantly greater proportions of non-performing loans than other banks. By comparing conventional and Islamic banks, the empirical findings show that private Islamic banks are as stable as private conventional banks. However, Islamic banks have a lower exposure to credit risk than conventional banks.

In this case, his results indicate that ownership structure is not a determinant factor in explaining risk differences between conventional and Islamic banks.

Yang Liu et al. (2019) examined the effects of bank ownership structure and ownership concentration on credit risk in their study. Using panel data on a sample of 88 Chinese commercial banks with 1194 observations over a period of 2003-2018, this study employs system generalised method of moments regression to examine the impact of bank ownership structure and ownership concentration on credit risk. The results show that ownership type exert positive and significant impact on credit risk. However, their results indicate that ownership concentration in the hands of government has negative and significant effect on credit risk while private ownership concentration positively impacts on credit risk. They suggest that concentration of ownership in government hands reduces risk.

3. DATA AND VARIABLES

2.1. Data

From the data used in the study:

Capital Adequacy Ratio, Non-performing Loan / Equity, Non-performing Loan / Total Loan, Bank Size, Total Credits / Total Deposits, Liquid Assets, Income / Expense data, N(on+off) Balance-sheet Position / Equity were obtained from the Banks Association of Turkey webpage statistical reports section.

Non-performing Loans / Equity, Asset Diversity, Derivative Financial Instruments / Equity data have been calculated by us from the financial statements of banks. At the same time, the shares of the largest first, second and third shareholders in the capital of the Bank and the capital belonging to the public, domestic private capital or foreign private capital are obtained from each bank's annual audit reports, annual reports and notifications made to the Public Disclosure Platform.

The data of each bank for the end of 2008-2017 are taken into consideration. The data of multi-branch deposit banks from the banks operating during the analysis period were included in the study. Single branch banks, newly opened banks and development and investment banks were excluded from the analysis. In this context, a total of 2800 variables consisting of 14 different variables belonging to 20 deposit banks covering 10 years were used in the analysis.

From the 20 banks taken into account in the analysis; 3 are public, 11 are domestic private and 6 are foreign banks with private capital. As of the end of 2017, the total sector share of the banks within the scope of the analysis was 91,89%.

2.2. Defining Variables

From the variables included in the study;

- those representing the risk as a dependent variable,
- those that affect the risk as an independent variable,
- the ownership status of the bank's capital as a dummy variable has been taken into consideration.

The dependent and independent variables are described in detail below. In the determination of the ownership status of the capital, if more than 50% of the bank's capital belongs to the state, public bank (1) information, if more than 50% of the bank's capital belongs to the domestic capital, domestic private bank (2) information, if more than 50% of the bank's capital belongs to foreign capital, foreign private bank (3) information is included as dummy variable in the analysis.

2.2.1. Dependent Variables

There are some variables that are accepted as the most important risk indicator of banks. Similar risk indicators are generally taken into account in the studies on the riskiness of banks. One of the most important of these variables is the capital adequacy ratio (CAR). Because most of the risks assumed by the bank are taken into account in the calculation of the ratio, it is also related to the level of equity.

As another risk indicator, N (on + off) Balance-sheet Position / Equity ratio representing exchange rate risk was used in the analysis. Because it is not possible to see the full effect of exchange rate risk in the calculation of risk within the scope of capital adequacy. Therefore, in order to ensure the complementarity of risk indicators, the relevant ratio regarding the position was included in the study.

This ratio is a data not found in other similar studies. On the other hand in some studies, non-performing loans / equity ratio, which is used as a risk indicator, has been considered as a

dependent variable in this study. The technical bankruptcy of banks is possible in two cases. One of them is the failure of banks to fulfill their obligations on time and the other is that the loss is more than the equity. In the second case, there is negative equity. Another risk indicator is the non-performing loan / total loan ratio. It is one of the most important ratios showing the overall success of the banks in lending. This ratio is the most significant data which is also considered as an indicator of asset quality in financial analysis.

2.2.2. Independent Variables

There are several studies on the relationship between size and risk assumption in firms. In this context, the size of the bank is one of the independent variables. This data was used in numerical analysis in dollars. In order to represent diversification as one of the basic assumptions of risk management, asset diversification is considered as another independent variable. The asset diversification was calculated with the following formula for each bank based on the studies conducted by Laeven and Levine (2007):

$$1 - \left| \frac{\text{Net Loans} - \text{Other Income Assets}}{\text{Total Income Assets}} \right| \quad (1)$$

Since the main task of the banks is to mediate the transfer of funds, the relationship between credit and deposit is one of the independent variables. The liquidity level of banks also includes a risk. In this context, the liquidity level is another independent variable. The ratio of liquidity level calculated by demand assets / total assets of each bank is included in the study. Another independent variable is the income / expense ratio. The Bank's interest and non-interest expenses were calculated by dividing the bank's interest and non-interest incomes. This ratio is calculated by dividing the bank's interest and non-interest expenses by the bank's interest and non-interest income. Another independent data used in this study is derivative financial instruments / equity ratio. This ratio is a data not found in other similar studies. The data regarding the shareholding structure, which includes the basic point of view of this study, is calculated by taking into account the shares of the three largest shareholders of each bank in the total capital and taken into consideration in the analysis. In this context, the shares of the 1st, 2nd and 3rd shareholders with the largest share are among the independent variables.

3. Method and Analysis

The basic hypothesis in the study is that:

H₀: Large shareholder shares have no effect on risk taking.

H₁: Large shareholder shares have an impact on risk taking.

The model used in the study is as follows:

$$Y_i = \alpha_0 + \beta_1 \text{Banksize}_{it} + \beta_2 \text{Cost}_{it} + \beta_{\alpha 3} \text{Asset}_{it} + \beta_4 \text{Loans}_{it} + \beta_5 \text{Liquid}_{it} + \beta_6 \text{Largest}_{it} + \beta_7 \text{Second}_{it} + \beta_8 \text{Third}_{it} + \sum \delta_k \text{Largest}_{it}^k + \sum \delta_k \text{Second}_{it}^k + \sum \delta_k \text{Third}_{it}^k + \epsilon_i$$

Largest_{it}, Second_{it} ve Third_{it}= Continuous data

+ $\sum \delta_k \text{Largest}_{it}^k$, $\sum \delta_k \text{Second}_{it}^k$, $\sum \delta_k \text{Third}_{it}^k$ = Shadow categorical data.

3.1. Descriptive Statistics

The descriptive statistics of all data used in the study are given in the table below

Table 1. Descriptive statistics

	N	Mean	Std. Deviation	Median	Minimum	Maximum	Kurtosis	Skewness
CAR	200	16.53	3.2	15.76	12.57	34.49	9.56	2.54
NPL / Equity	200	21.76	11.03	20.49	2.46	62.84	0.04	0.64
NPL / Loans	200	3.92	2.01	3.55	0.78	12.44	3.13	1.36
Bank size \$ N(on+off) Balance-sheet Position / Equity	200	35106.29	37466.73	16415.12	429.72	143690.07	-0.69	0.85
Cost to Income	200	75.65	9.85	75.09	58.65	118.94	2.22	0.96
Asset Diversity	200	62.66	15.49	61.51	25.26	98.41	-0.33	0.24
Loans / Deposits	200	102.98	22.77	104.05	36.76	227.16	5.02	0.55
Liquid Assets Derivative / Equity	200	27.54	9.18	25.98	8.59	73.15	5.65	1.68
Largest Shareholders	200	660.34	654.12	428.79	0.1	3522.16	3.94	1.79
Second Shareholders	200	69.06	22.69	69.99	25.77	100	-1.36	0.1
Third Shareholders	200	22.14	16.27	25.18	0	50	-1.22	-0.09
	200	7.69	9.88	2.7	0	32.04	-0.42	1

3.2. Method

Before the analysis of the panel data, the data to be used in the analysis were checked for stationary and unit root tests were performed.

$H_0 : \delta \geq 0$ The unit has root / serial is not stationary.

$H_1 : \delta < 0$ There is no unit root / serial is stationary.

For each non-stationary data to be used in the analysis, it was stabilized by taking the differences at the required levels and thus the appropriate data were obtained to the analysis.

As a result of the unit root test which is one of the prerequisites for panel data analysis, it was concluded that the panel data was stationary as a result of both ADF and PP tests ($p < 0.05$).

3.3. Analysis and Findings

There are two approaches to estimating the panel data model: fixed effects and random effects. The fixed effects approach is based on various assumptions on the fixed term, slope coefficients and error term (Ugurlu). In this study, the effect of time and units is analyzed by assuming that the fixed term is fixed over time but it can change for each unit and the fixed term is fixed between the units but it can change over time. In this context, the results of fixed effect model (GMM) for each dependent variable were examined.

In both models, it is assumed that the differences between units or times are due to differences between fixed terms (Greene, 2003, s. 287). Therefore, it is assumed that the variable coefficients do not change between units or times. In addition, in order to investigate the effect of the group in this study, the fixed term is assumed to be fixed over time but it is assumed that it can change for each unit. In order to investigate the effect of time, it is assumed that the fixed term is fixed for the units and variable over time.

In order to determine whether there is any difference between the units in the fixed effects model, a group significance test should be performed. The following F statistic is obtained under the null hypothesis that the fixed term is the same among the units (Greene, 2003, s. 289).

$$F_{(N-1, NT-N-K)} = \frac{(R_{LSDV}^2 - R_{Pooled}^2)/(N-1)}{(1 - R_{LSDV}^2)/(NT-N-K)} \quad (2)$$

In the F statistics of No: 2;

R_{LSDV}^2 : The coefficient of determination of the LSDV model

R_{Pooled}^2 : The coefficient of determination obtained from the estimation of panel data by EKK

T, the observation value of each unit,

N, the number of units (groups) and

K, the number of descriptive variable

shows. If the obtained F statistic is greater than the table value, the null hypothesis will be rejected. In this case, it will be accepted that there is a group effect, in other words there is a difference between the units.

The same test statistic is used to determine whether there is a difference in time. However, in this case, the LSDV model is used where the fixed term changes with time and the null hypothesis is expressed as that the fixed term does not change over time.

If the individual effects are not related to the explanatory variables in the model and the fixed terms of the units are randomly distributed according to the units, then the structuring of the model should be adjusted accordingly (Greene, 2003, s. 293). In randomly effective models, variations occurring depending on the sections and / or time are included as a component of the error term in the model. The reason for this is that the loss of degree of freedom encountered in fixed-effect models is eliminated in random effective models (Baltagi, 2001, s. 15). In this study, one-way random effects model was used.

As a result of the test performed for the capital adequacy ratio (CAR), it was found that the fixed effect regression was not suitable and therefore the random effect regression would be appropriate.

In order to see the effect of independent variables on the CAR dependent variable generally, a collective panel data analysis was performed considering all data. The results of the analysis show the power of the independent variables to explain the dependent variable.

Table 2. The power of independent variables to explain the CAR dependent variable without fixed or random panel data

R-squared	0.462457	Mean dependent var	16.52600
Adjusted R-squared	0.439942	S.D. dependent var	3.202123
S.E. of regression	2.396374	Akaike info criterion	4.629747
Sum squared resid	1096.838	Schwarz criterion	4.778171
Log likelihood	-453.9747	Hannan-Quinn criter.	4.689812
Durbin-Watson stat	1.218327		

The power of independent variables within the scope of analysis to explain the CAR dependent variable is $R^2 = 46.24\%$.

The Hausman test was carried out in the next step to determine whether the effects of the independent variables needed to establish the model are either random or fixed.

Because, in the panel data analysis, fixed effect model, random effect model and parameters used to see individual effects will be estimated. First, it is necessary to decide which of these two models (fixed effect, random effect) is statistically valid. For this, Hausman test was applied. In the Hausman test, the absence hypothesis is established as a random effect model, and the alternative hypothesis is established as a fixed effect model. In the Hausman test, the random effect model for the absence hypothesis, and the fixed effect model for the alternative hypothesis should be used.

Table 3. Panel data analysis between CAR and independent variables-Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Hausman Test	10.74	9	0.2939

From the result of the test, the value of the Prob. (significance level) and the table value (α) were compared. In our study; since the Prob. = 0.2939 > 0.050, the H_0 hypothesis is acceptable.

So there is a random effect. In this case, it is necessary to estimate the model with a random effect. At this stage of the analysis, without discrimination according to the banks, interaction has been examined holistically. All data were taken into consideration and the random effects of independent variables were obtained for the CAR dependent variable. Random effect estimation results are given below.

Table 4. Random-effect panel data analysis between CAR and independent variables (Holistic)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	28.18374	6.046032	4.661527	0.0000
Banksize	0.005783	0.001349	4.288187	0.0000
Cost/Income	-0.050254	0.023498	-2.138672	0.0337
Assetdiv	-0.044358	0.014372	-3.086306	0.0023
Loans/Dep.	-0.049153	0.008748	-5.618572	0.0000
Liquid	0.156690	0.025049	6.255399	0.0000
Deriv./Eq	0.030764	0.017756	1.732632	0.0848
Largest	-0.043606	0.058473	-0.745739	0.4567
Second	-0.061992	0.059694	-1.038496	0.3004
Third	-0.054910	0.068714	-0.799112	0.4252
Weighted Statistics				
R-squared	0.426438	Mean dependent var		8.081806
Adjusted R-squared	0.399269	S.D. dependent var		2.672672
S.E. of regression	2.071503	Sum squared resid		815.3135
F-statistic	15.69592	Durbin-Watson stat		1.266388
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.481748	Mean dependent var		16.52600
Sum squared resid	1057.476	Durbin-Watson stat		0.976385

According to the results of the holistic data analysis, the coefficients and statistical significance of the independent variables on the CAR dependent variable are seen. In fact, when the table above is examined; the variables Banksize, Assetdiv, Loans / Dep., Liquid are statistically significant in holistic panel analysis. It is concluded that the concentration in capital ownership has no effect on CAR variable. The explanation power of the obtained model is 42.64%.

In the next step, it is analyzed whether capital ownership has an effect on CAR variable. This relationship was analyzed with Anova - one way variance analysis which was used to compare 3 and more groups and the following results are achieved.

Table 5. Relationship between CAR and ownership structure

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	p
					Lower Bound	Upper Bound			
Gov.Cont.	30	15.48	2.32	0.42	14.61	16.35	13.08	23.22	
Prv. Dom.Cont.	95	16.74	3.91	0.40	15.94	17.54	12.78	34.49	0.14
Prv. For.Cont.	72	16.72	2.37	0.28	16.16	17.28	12.57	25.99	7
Total	197	16.54	3.22	0.23	16.09	16.99	12.57	34.49	

According to the results of the analysis, it is observed that capital ownership does not have a statistically significant difference in terms of CAR variable.

As a result of the test performed for the non-performing loans / equity (NPL/Equity) ratio, it was determined that fixed-effect regression was not appropriate and therefore random-effect regression would be appropriate.

In order to see the overall effect of independent variables on the NPL / Equity dependent variable, a collective panel data analysis was performed considering all data. The results of the analysis show the power of the independent variables to explain the dependent variable.

Table 6. The power of independent variables to explain the NPL / Equity dependent variable without the fixed or random panel data

R-squared	0.212892	Mean dependent var	21.76150
Adjusted R-squared	0.179924	S.D. dependent var	11.02995
S.E. of regression	9.988510	Akaike info criterion	7.484704
Sum squared resid	19056.13	Schwarz criterion	7.633128
Log likelihood	-739.4704	Hannan-Quinn criter.	7.544769
Durbin-Watson stat	0.535816		

The power of independent variables within the scope of analysis to explain the NPL/Equity dependent variable is $R^2 = 21.28\%$.

The Hausman test was applied in the next step to determine whether the effects of the independent variables required to establish the model are random or not.

Table 7. Panel data analysis between independent variables and NPL / Equity-Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Hausman Test	10.87	9	0.2846

From the result of the test, the value of the Prob. (significance level) and the Table value (α) were compared. In our study; since the Prob. = 0.2846 > 0.050, H_0 hypothesis can be accepted. So there is a random effect, can be called. In this case, it is necessary to estimate the model with a random effect. At this stage of the analysis, without discrimination according to the banks, interaction has been examined holistically. All data were taken into consideration and random effects of independent variables were obtained for the NPL / Equity dependent variable. Fixed effect estimation results are given below.

Table 8. Random-effect panel data analysis between independent variables and NPL / Equity (Holistic)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.88898	18.97243	0.679353	0.4977
Banksize	-0.016327	0.004506	-3.623230	0.0004
Cost/Income	0.099300	0.080359	1.235702	0.2181
Assetdiv	-0.040823	0.044899	-0.909218	0.3644
Loans/Dep.	-0.044659	0.027144	-1.645244	0.1016
Liquid	0.051849	0.079759	0.650065	0.5164
Deriv./Eq	-0.079403	0.053520	-1.483612	0.1396
Largest	0.109505	0.181234	0.604219	0.5464
Second	0.065932	0.188496	0.349777	0.7269
Third	-0.076197	0.220252	-0.345954	0.7298
Weighted Statistics				
R-squared	0.094785	Mean dependent var		4.944793
Adjusted R-squared	0.051907	S.D. dependent var		6.341090
S.E. of regression	6.174325	Sum squared resid		7243.235
F-statistic	2.210547	Durbin-Watson stat		1.179845
Prob(F-statistic)	0.023033			
Unweighted Statistics				
R-squared	0.122616	Mean dependent var		21.76150
Sum squared resid	21241.74	Durbin-Watson stat		0.402316

According to the results of the holistic data analysis, coefficients and statistical significance of the independent variables on the NPL / Equity dependent variable are seen in the panel data. In fact, when the table above is analyzed, only, Banksize variable is statistically significant in the panel analysis. Description power of the model is 9.48 %.

At the next stage, it is analyzed whether capital ownership has an effect on the NPL / Equity variable. This relationship was analyzed with Anova - one way variance analysis which was used for 3 and more groups comparison and the following results were reached.

Table 9. Relationship between NPL / Equity and ownership structure

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	p
					Lower Bound	Upper Bound			
Gov.Cont.	30	19.86	8.50	1.55	16.69	23.04	6.35	33.34	
Prv. Dom.Cont.	95	18.74	10.27	1.05	16.65	20.83	2.46	44.32	0.001
Prv. For.Cont.	72	26.56	11.32	1.33	23.90	29.22	7.02	62.84	
Total	197	21.77	11.01	0.78	20.22	23.32	2.46	62.84	

According to the results of the analysis, it is seen that capital ownership does not have a statistically significant difference in terms of NPL / Equity dependent variable.

In order to see the overall effect of the independent variables on the NPL / Loan dependent variable, a collective panel data analysis was performed considering all data. The results of the analysis are given in the table below.

Table 10. The explanation power the NPL/loan dependent variable of independent variables without fixed or random panel data

R-squared	0.156365	Mean dependent var	3.914000
Adjusted R-squared	0.121029	S.D. dependent var	2.008901
S.E. of regression	1.883413	Akaike info criterion	4.148005
Sum squared resid	677.5240	Schwarz criterion	4.296429
Log likelihood	-405.8005	Hannan-Quinn criter.	4.208070
Durbin-Watson stat	0.758243		

The explanation power the NPL/loan dependent variable of the independent variables in the analysis is $R^2=15.64\%$.

In order to establish the model, Hausman test was applied in the next step about whether the effects of the independent variables were random or not.

Table 11. Panel data analysis between independent variables and NPL / LOAN-Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	16.063	9	0.00656

From the result of the test, the value of the Probe. (significance level) and the table value (α) were compared. In our study; since the Prob. = 0.00656 < 0.050, the H0 hypothesis can be rejected.

It can be said that it has a fixed effect. In this case it is necessary to estimate the model with a fixed effect. At this stage of the analysis, without discrimination according to the banks, interaction has been examined holistically. All data were taken into consideration and fixed effects of independent variables were obtained for the NPL / Loan dependent variable. Fixed effect estimation results are given below.

Table 12. Randomized panel data analysis between NPL / Loan and independent variables (Holistic)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Variable	6.945914	3.987447	1.741945	0.0833
C	-0.000666	0.001001	-0.665615	0.5066
Banksize	-0.029250	0.017586	-1.663241	0.0981
Cost/Income	-0.007285	0.009502	-0.766650	0.4443
Assetdiv	-0.041572	0.005703	-7.289502	0.0000
Loans/Dep.	0.037918	0.016988	2.232085	0.0269
Liquid	-0.010318	0.011148	-0.925559	0.3560
Deriv./Eq	0.028396	0.038045	0.746381	0.4565
Largest	0.039847	0.040238	0.990293	0.3234
Second	0.011257	0.047577	0.236600	0.8133

Effects Specification

Cross-section fixed (dummy variables)			
R-squared	0.654194	Mean dependent var	3.914000
Adjusted R-squared	0.597571	S.D. dependent var	2.008901
S.E. of regression	1.274392	Akaike info criterion	3.456162
Sum squared resid	277.7168	Schwarz criterion	3.934418
Log likelihood	-316.6162	Hannan-Quinn criter.	3.649705
F-statistic	11.55348	Durbin-Watson stat	1.451059
Prob(F-statistic)	0.000000		

According to the results of the holistic data analysis, coefficients and statistical significance of the independent variables on the NPL / Loan dependent variable in the panel data are seen. In fact,

when the table above is examined, the variable Assetdiv and Loans / Dep. is statistically significant in the panel analysis. The explanation power of the obtained model is 65.42%.

In the next stage, it is analyzed whether capital ownership has an impact on the NPL / LOAN dependent variable. This relationship was analyzed with Anova - one way variance analysis which was used to compare 3 and more groups and the following results are achieved.

Table 13. Relationship between NPL / Loan and ownership structure

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	p
					Lower Bound	Upper Bound			
Gov.Cont.	30	3.29	1.25	0.23	2.82	3.75	1.21	6.13	0.147
Prv. Dom. Cont.	95	3.51	1.62	0.17	3.18	3.84	0.79	8.20	
Prv. For.Cont.	72	4.71	2.45	0.29	4.14	5.29	0.78	12.44	
Total	197	3.92	2.01	0.14	3.63	4.20	0.78	12.44	

According to the results of the analysis, it is observed that capital ownership does not have a statistically significant difference in terms of NPL / Loan variable.

In order to see the overall effect of the independent variables on the N(on+off) Balance-sheet Position / dependent variable, a batch panel data analysis was performed considering all the data. The analysis results show the power of independent variables to explain the dependent variable.

Table 14. The explanation power the N(on+off) Balance-sheet Position / Equity dependent variable of independent variables without fixed or random panel data

R-squared	0.964000	Mean dependent var	0.041500
Adjusted R-squared	1.000000	S.D. dependent var	8.697388
S.E. of regression	1.34E-15	Akaike info criterion	-65.61592
Sum squared resid	3.41E-28	Schwarz criterion	-65.46750
Log likelihood	6570.592	Hannan-Quinn criter.	-65.55585
Durbin-Watson stat	1.240961		

According to the panel data estimation results obtained from the combined data; some independent variables have a significant effect on the N(on+off) Balance-sheet Position / Equity dependent variable ($p < 0.05$). The explanatory power of the variables is $R^2 = 96.4\%$.

The power of independent variables within the scope of analysis to explain the N(on+off) Balance-sheet Position / dependent variable is $R^2 = 96.4\%$.

The Hausman test was carried out in the next step to determine whether the effects of the independent variables needed to establish the model are either random or fixed.

Because with the fixed effect and random effect models used to see individual effects in panel data analysis, the parameters will be estimated. First, it is necessary to decide which of these two models (fixed effect, random effect) is statistically valid. For this, Hausman test was applied. The Hausman test is set to absence hypothesis "random effect model" should be used and the alternative hypothesis is "fixed effect model" should be used.

Table 15. Panel data analysis between independent variables and N(on+off) Balance-sheet Position / Equity -Hausman Test

Test Summary	χ^2	s.d	Prob.
Hausman Test	10084.316522	9	0.0001

Prob. (Significance level) value and Table value (α) were compared from the output obtained from the test. In our study; H_0 hypothesis can be rejected since Prob.= 0.0001 <0.050.

So it can be said that there are fixed effect. In this case, it is necessary to estimate the model with fixed effect. In the first stage, the interaction was examined in a holistic manner without discrimination according to the banks. Considering all the data together, fixed effects of independent variables were obtained for N(on+off)Balance-sheet Position / Equity. Fixed effect estimation results are given below.

Table 16. Fixed panel data analysis between N(on+off) Balance-sheet Position / Equity and independent variables (Holistic)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.93E-15	7.14E-15	-1.250939	0.0127
Banksiz	0.000000	1.79E-18	0.000000	1.0000
Cost/Income	-1.17E-17	3.15E-17	-0.372983	0.7096
Assetdiv	-2.12E-17	1.70E-17	-1.249382	0.0132
Loans/Dep.	5.31E-18	1.02E-17	0.520781	0.6032
Liquid	2.32E-17	3.04E-17	0.763626	0.4461
Deriv./Eq	1.000000	1.99E-17	5.01E+16	0.0001
Largest	1.01E-16	6.81E-17	1.482733	0.1400
Second	9.20E-17	7.20E-17	1.277282	0.2032
Third	1.24E-16	8.51E-17	1.453999	0.1478
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.995400	Mean dependent var		0.041500
Adjusted R-squared	1.000000	S.D. dependent var		8.697388
S.E. of regression	2.28E-15	Akaike info criterion		-64.45755
Sum squared resid	8.89E-28	Schwarz criterion		-63.97930
Log likelihood	6474.755	Hannan-Quinn criter.		-64.26401
F-statistic	1.03E+32	Durbin-Watson stat		1.497445
Prob(F-statistic)	0.000000			

According to the results of the holistic data analysis, the coefficients and statistical significance of the independent variables in the panel data are seen on the N(on + off) Balance-sheet Position / Equity dependent variable. Indeed, when the above table is examined; The variables Assetdiv and Deriv./EQ were statistically significant on the basis of individual and non-periodic banks in panel analysis.

Table 17. Relationship between N(on+off) Balance-sheet Position / Equity and ownership structure

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	p
					Lower Bound	Upper Bound			
Gov.Cont.	30	1.0033	3.61286	.65961	-.3457	2.3524	-4.20	10.70	0.588
Prv. Dom. Cont.	95	.3495	11.58780	1.18888	-2.0111	2.7100	-13.10	100.50	
Prv. For. Cont.	72	-.7528	5.26252	.62019	-1.9894	.4839	-17.50	11.80	
Total	197	.0462	8.76246	.62430	-1.1850	1.2774	-17.50	100.50	

According to the results of the analysis, it is observed that capital ownership does not have a statistically significant difference in terms of N(on+off) Balance-sheet Position / Equity variable.

4. CONCLUSION AND DISCUSSION

It is possible to summarize the results of this study as follows.

Table 14. Relationship between dependent and independent variables

Dependent variable	Effective variables	Description power of the model	Effect of capital ownership	Effect of capital concentration
CAR	Banksize*** Loans/Dep. ** Liquid*	42.6	no	no
NPL/Equity	Banksize***	9.48	no	no
NPL/Loans	Loans/Dep.**	65.42	no	no
N(on+off) Balance-sheet Position / Equity	Assetdiv* Deriv./Eq*	99.45	no	no

*Affecting a single dependent variable **Affecting 2 dependent variable *** Affecting 3 dependent variable

N(on+off)Balance-sheet Position / Equity, which is considered as a risk indicator, is the data with the highest explanatory power by the independent variables included in the analysis. NPL / Loans is the second dependent variable with the highest explanatory power by independent variables.

One of the most striking points in the study is that the Banksize variable included in the analysis as an independent variable and 3 risk indicators are in a meaningful relationship. In addition to this variable, Loans/Dep. variables have a significant effect on 2 dependent variables.

In the framework of the data obtained from the analysis, there was no effect of capital ownership and capital concentration on the risk taking tendency of the banks in the Turkish Banking Sector.

In the light of the findings of the study, it is seen that the shareholding structure of the banks has no effect on risk taking, but the following conclusions have been reached:

- Banks will be able to manage foreign exchange risk at the highest level if they manage 6 independent variables within the scope of this study effectively.
- In the second stage, effective management of these independent variables will also lead to a significant reduction in credit risk.

On the other hand, the following results were also obtained:

- The effect of the relevant independent variables on the improvement and maintenance of capital adequacy is relative,
- Regarding the negative impact of non-performing loans on equity, the effect of independent variables within the scope of the study is negligible.

In the literature, there are different findings about the effects of ownership concentration and ownership structure on risk taking. In fact, it is expected that the tendency to take risk in the banks owned by the public sector is high. In the literature, it is seen that the opposite results have been reached. In this study, it is concluded that there is no relationship between the ownership structure of the public and the risk taking tendency. While the expectation between the level of concentration in the bank ownership structure and the tendency to take a risk was the same way, it was concluded that there was no relationship in this study.

In terms of the Turkish banking sector, it is thought that one of the most important factors in obtaining these results is that the legislation related to the sector contains very strict rules and that the audit is performed by a single institution. Because there have been two major financial crises in Turkey in November 2000 and February 2001. In 2001, the supervisory authority (Banking Regulation and Supervision Agency - BRSA) started its activities. On the other hand, a new banking law was enacted in 2015 following the crises, especially considering the legislation of developed countries. BRSA has prepared and implemented secondary regulations in a short time.

The legal regulations governing the Turkish Banking Sector contain strict rules and serious sanctions. The supervisory authority has been working very effectively since its establishment. In this context, it is thought that the concentration of ownership and ownership structure do not affect the risk taking tendency in Turkish banks.

REFERENCES

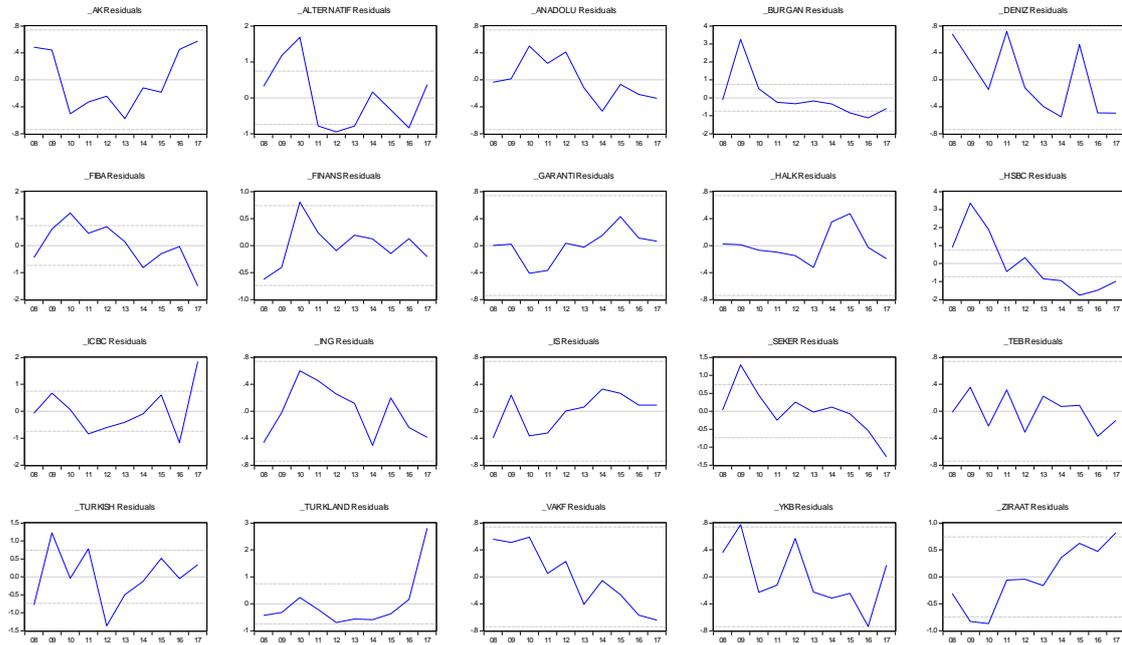
- Aghion, P., Tirole, J. (1997). Formal and real authority in organizations. *Journal of Political Economy*, 55, 1–27. doi: <https://doi.org/10.1086/262063>
- Altunbas, Y., Evans L., and Molyneux, P. (2001). Bank ownership and efficiency. *Journal of Money, Credit and Banking*, 33(4), 926-954. Retrieved from: <https://www.jstor.org/stable/2673929?seq=1>
- Altunbas, Y., Gardener, E. P.M., Molyneux, P., and Moore, B. (2001). Efficiency in European banking. *European Economic Review*, 45(10), 1931–1955. doi.org/10.1016/S0014-2921(00)00091-X
- Anderson, R. C., and Fraser, D. R.(2000), Corporate control, bank risk taking, and the health of the banking industry. *Journal of Banking & Finance*, 24, 1383-1398. doi.org/10.1016/S0378-4266(99)00088-6
- Angkinand, A., and Wihlborg,C. (2010). Deposit insurance coverage, ownership, and banks' risk-taking in emerging markets. *Journal of International Money and Finance*, 29, 252–274. doi.org/10.1016/j.jimonfin.2009.08.001
- Barry,T.A., Lepetit,L., and Tarazi,A. (2011). Ownership structure and risk in publicly held and privately owned banks. *Journal of Banking & Finance*, 35, 1327-1340. doi.org/10.1016/j.jbankfin.2010.10.004
- Berger, A., Clarke, G., Cill, R., Klapper, L., and Udell, G. (2005). Corporate governance and bank performance: a joint analysis of the static, selection, and dynamic effects of domestic, foreign, and state ownership. *Journal of Banking and Finance*, 29, 2179–2221. doi.org/10.1596/1813-9450-3632
- Bliss, R., and Flannery, M. (2002). Market discipline in the governance of US bank holding companies: monitoring vs. influencing. *European Finance Review*, 6(3), 361– 396. <https://doi.org/10.1023/A:1022021430852>
- Bonin, J.P., Hasan, I., and Wachtel, P. (2005). Bank performance, efficiency and ownership in transition countries. *Journal of Banking and Finance*, 29, 31–54. doi.org/10.1016/j.jbankfin.2004.06.015

- Caprio, G., and Martinez-Peria, M.S. (2000). *Avoiding disaster: policies to reduce the risk of banking crises*. Egyptian Center for Economic Studies (ECES). Working Paper 47. Publication Number: ECESWP47-E Retrieved from: http://www.eces.org.eg/cms/NewsUploads/Pdf/2019_1_7-22_22_38SSS.pdf
- Claessens, S., Demircuc-Kunt, A., and Huizinga, H. (2001). How does foreign entry affect the domestic banking market?, *Journal of Banking and Finance*, 25, 891–911. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2894623
- Clarke, G. R. G., Cull, R., and Shirley, M. M. (2005). Bank privatization in developing countries: A summary of lessons and findings. *Journal of Banking & Finance*, 29, 1905–1930. doi.org/10.1016/j.jbankfin.2005.03.006
- Demsetz, H. and Lehn, K. (1985), The Structure of Corporate Ownership: Causes and Consequences. *Journal of Political Economy*, 93, 1155-1177. doi.org/10.1086/261354
- Dong, Y., Meng, C., Michael Firth, M., and Wenxuan Hou, W. (2014). Ownership structure and risk-taking: comparative evidence from private and state-controlled banks in China. *International Review of Financial Analysis*, 36, 120-130. doi.org/10.1016/j.irfa.2014.03.009
- Erginbay, U. (2015). Panel Veri Ekonometrisi Üzerine Genel Bir Bakış. doi:10.13140/RG.2.1.4966.1920
- Fungacova, Z., and Solanko, L. (2008). Risk taking by Russian banks: Do location, ownership and size matter?. *BOFIT Working Paper No. 21/2008*. Retrieved from: <https://cyberleninka.ru/article/n/risk-taking-by-russian-banks-do-location-ownership-and-size-matter>
- Garcia-Marco, T., and Robles-Fernández, M.D. (2008). Risk-taking behavior and ownership in the banking industry: The Spanish evidence. *Journal of Economics and Business*, 60(4), 332–354. doi.org/10.1016/j.jeconbus.2007.04.008
- Greene, W. H. (2003). *Econometric Analysis*, 5th Ed., New York: Prentice Hall.
- Haw, I. M., Ho, S. M., Hu, B., and Wu, D. (2010). Concentrated control, institutions, and banking sector: An international study. *Journal of Banking & Finance*, 34, 485–497. doi.org/10.1016/j.jbankfin.2009.08.013
- Iannotta, G., Nocera, G., and Sironi, A. (2007). Ownership structure, risk and performance in the European banking industry. *Journal of Banking and Finance*, 31, 2127–2149. doi.org/10.1016/j.jbankfin.2006.07.013
- Iannotta, G., Nocera, G., and Sironi, A. (2013). The impact of government ownership on bank risk. *Journal of Financial Intermediation*, 22, 152-176. doi.org/10.1016/j.jfi.2012.11.002
- Isik, I., and Hassan, M. K. (2002). Cost and profit efficiency of the Turkish banking industry: An empirical investigation. *The Financial Review*, 37(2), 257–279. doi.org/10.1111/1540-6288.00014
- Jensen, M.C., and Meckling, W.H., (1976). Theory of the firm: managerial behavior, agency cost and ownership structure. *Journal of Financial Economics*, 3, 305–360. Retrieved from: https://link.springer.com/chapter/10.1007/978-94-009-9257-3_8

-
- John, K., Litov, L., and Yeung, B. (2008). Corporate governance and risk-taking. *Journal of Finance*, 63, 1679–1728. doi.org/10.1111/j.1540-6261.2008.01372.x
- Kennedy, P. (2006). *Ekonometri Klavuzu*, (çev. Muzaffer Sarımeşeli ve Şenay Açıkgöz). Ankara: Gazi Yayınevi.
- Kwan, H.K. (2004). Risk and return of publicly held versus privately owned banks. *Economic Policy Review*, 10, 97–107. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=787884
- Laeven,L., (1999), Risk and efficiency in East Asian banks. *World Bank Discussion Paper*, No:2255. doi.org/10.1596/1813-9450-2255
- Laeven,L., and Levine,R.(2006). Corporate governance, regulation, and bank risk taking, *Working Paper*, 1-56. Retrieved from: https://www.researchgate.net/profile/Ross_Levine/publication/267566498_Corporate_Governance_Regulation_and_Bank_Risk_Taking/links/5523c95b0cf2b351d9c336a9/Corporate-Governance-Regulation-and-Bank-Risk-Taking.pdf
- Laeven, L., and Levine, R. (2009). Bank governance, regulation, and risk taking. *Journal of Financial Economics*, 93, 259–275. doi.org/10.1016/j.jfineco.2008.09.003
- Liu,Y., Brahma,S., and Boateng, A. (2019). Impact of Ownership Structure and Ownership Concentration on Credit Risk of Chinese Commercial Banks. *International Journal of Managerial Finance*, 2(16), 253-272. doi.org/10.1108/IJMF-03-2019-0094
- Micco, A., Ugo, P., and Monica, Y. (2007). Bank ownership and performance: Does politics matter? *Journal of Banking and Finance*, 31, 219–241. doi.org/10.1016/j.jbankfin.2006.02.007
- Nichols, D., Wahlen, J., and Wieland, M. (2009). Publicly-traded versus privately-held: implications for conditional conservatism in bank accounting. *Review of Accounting Studies*, 14, 88–122. Retrieved from: <https://link.springer.com/article/10.1007/s11142-008-9082-3>
- Pazarlıoğlu, M. V., and Özlem K. G. (2007). Telekomünikasyon Yatırımları ve Ekonomik Büyüme. *Finans Politik ve Ekonomik Yorumlar*, 44(508), 35-43. Retrieved from: http://www.ekonomikyorumlar.com.tr/files/articles/152820004080_4.pdf
- Saunders, A., Strock, E., and Travlos, N. (1990). Ownership structure, deregulation, and bank risk taking. *Journal of Finance*, 45 (2), 643–654. doi.org/10.1111/j.1540-6261.1990.tb03709.x
- Shehzad, C. T., de Haan, J., and Scholtens, B. (2010). The impact of bank ownership concentration on impaired loans and capital adequacy. *Journal of Banking & Finance*, 34(2), 399–408. doi.org/10.1016/j.jbankfin.2009.08.007
- Shirley, M., and Nellis, J. (1991). Public enterprise reform: The lessons of experience. *World Bank discussion papers*, No. WDP 119. Retrieved from: <http://documents1.worldbank.org/curated/en/156711468779074142/pdf/multi-page.pdf>
- Shleifer, A., and Vishny, R. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94, 461–488. doi.org/10.1086/261385
-

- Shleifer, A., and Vishny, R.W. (1997). A survey of corporate governance. *Journal of Finance*, 52, 737–783. Retrieved from: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1540-6261.1997.tb04820.x>
- Srairi,S. (2013). Ownership structure and risk-taking behavior in conventional and islamic banks: evidence for mena countries. *Borsa Istanbul Review*, 13, 115-127. doi.org/10.1016/j.bir.2013.10.010
- Swamy, P. A. V. B. and Arora, S. S. (1972). The Exact Finite Sample Properties of the Esitmator of Coefficients in the Error Components Regression Model, *Econometrica*, 40(2), 261- 275. doi: 10.2307/1909405

Appendix 1: Unit Root Tests (Analysis of Residues)



Appendix 2: Definitions of Variables

Dependent variable	- Capital adequacy ratio (CAR)	Equity / Credit risk + Market risk + Operational risk
	- Non-performing loans / equity (NPL/EQ)	Non-performing loans / equity (NPL/EQ)
	- Non-performing loans / Total Loans (NPL/Loans)	Non-performing loans / Total Loans (NPL/Loans)
	N(on+off) Balance-sheet Position / Equity	N(on+off) Balance-sheet Position / Equity
Independent variable	- Bank size (US \$) (Banksize)	Total assets of bank / Total assets of banking sector
	- Cost-to income ratio (Cost/Income)	All costs / All revenues
	- Asset diversity (ASSETDIV)	$1 - \frac{\text{Net Loans} - \text{Other Income Assets}}{\text{Total Income Assets}}$
	- Total loans to total deposits (Loans/Dep.)	(Net Loans-Other Return Assets) / (Total Return Assets)
	- Liquid assets (Liquid)	Total loans/Total deposit
	- Derivative / equity (Deriv./EQ)	Liquid assets / Total assets
	- The percentage of shares owned by the top three shareholders	Total derivative contracts / Equity
	- Largest shareholder (Largest)	- Largest shareholders rate / total equity
	- Second shareholders (Second)	- Second shareholders rate / total equity
	- Third shareholders (Third)	- Third shareholders rate / total equity
Dummy	- Government control (↑ 50%) (Gov.Cont.)	Capital amount of the state / total equity
	- Private-foreign control (↑ 50%) (Prv.Dom.Cont.)	Foreign private equity / total equity
	- Private-domestic control (↑ 50%) (Prv. For.cont.)	Domestic private equity / total equity

GENİŞLETİLMİŞ ÖZET

Bu çalışmada, bankaların ortaklık yapısı ile risk alma eğilimi arasında bir ilişki olup olmadığı ele alınmaktadır. Bankaların ortaklık yapısına bakılırken, hem kamu, hem yerli özel sermayeli hem de yabancı özel sermayeli banka ayrımı dikkate alınmakta ve ortaklık yapısındaki yoğunlaşmaya öncelik verilmektedir. Bu çalışmanın amacı, bankaların ortaklık yapısının bankaların risk almalarını nasıl etkilediğine ilişkin mevcut literatüre katkıda bulunmaktır.

Çalışmaya dahil edilen her bankanın 2008-2017 sonu verileri dikkate alınmıştır. Çalışmada analiz döneminde faaliyet gösteren bankalardan çok şubeli mevduat bankalarının verileri esas alınmıştır. Tek şubeli bankalar, yeni açılan bankalar ile kalkınma ve yatırım bankaları analiz dışında tutulmuştur. Bu bağlamda analizde, 10 yıllık döneme ilişkin 20 mevduat bankasına ait 14 farklı değişkenden oluşan toplam 2800 değişken kullanılmıştır. Analizde dikkate alınan 20 bankadan 3'ü kamu, 11'i yerli özel ve 6'sı yabancı özel sermayeli bankadır. 2017 yıl sonu itibarıyla analiz kapsamındaki bankaların toplam sektör payı % 91,89'dur.

Çalışmadaki temel hipotezler şunlardır:

Ho: Büyük hissedarların risk alma üzerinde bir etkisi yoktur.

H1: Büyük hissedar paylarının risk almada etkisi vardır.

Çalışma kapsamındaki bankaların incelen döneme ilişkin finansal verilerinden bağımlı ve bağımsız değişken olarak analize dahil edilenler aşağıda yer almaktadır:

Bağımlı değişken	- Sermaye Yeterliliği Rasyosu (SYR)
	- Takipteki Krediler / Toplam Özkaynak
	- Takipteki Krediler / Toplam Krediler
	- Toplam Bilanço Pozisyonu / Toplam Özkaynak
Bağımsız değişken	- Banka Aktif Büyüklüğü (US \$)
	- Maliyet Gelir Rasyosu
	- Aktif Çeşitlendirmesi
	- Toplam Krediler / Toplam Mevduat
	- Likit Aktifler
	- Türev Ürünler / Özkaynak
	- İlk üç hissedarın sahip olduğu hisse oranı - En büyük hissedar - İkinci büyük hissedar - Üçüncü büyük hissedar
Kukla veri	- Kamunun Kontrolü (↑ 50%)
	- Yabancı Özel Sermayenin Kontrolü (↑ 50%)
	- Yerli Özel Sermayenin Kontrolü (↑ 50%)

Panel verileri analizinde önce, analizde kullanılacak verilerin durağan olup olmadığı kontrol edilmiş ve birim kök testleri yapılmıştır. Analizde kullanılacak durağan olmayan her veri için, gerekli seviyelerdeki farklar alınarak durağan hale getirilmiş ve böylece analize uygun veriler elde edilmiştir. Panel veri analizi için ön koşullardan biri olan birim kök testi sonucunda, panel verilerinin hem ADF hem de PP testleri sonucunda durağan olduğu sonucuna varılmıştır (p < 0.05). Bu çalışmanın sonuçlarını aşağıdaki gibi özetlemek mümkündür:

Risk göstergesi olarak kabul edilen bağımlı değişkenlerden N(on + off) Bilanço Pozisyonu / Özkaynaklar rasyosu, analize dahil edilen bağımsız değişkenler tarafından en yüksek açıklayıcı güce sahip olan veridir. Bağımlı değişkenler arasında yer alan Takipteki alacaklar / Krediler rasyosu ise bağımsız değişkenler tarafından en yüksek açıklayıcı güce sahip ikinci bağımlı değişkendir.

Çalışmadaki en çarpıcı noktalardan biri, analize bağımsız değişken olarak dahil edilen banka aktif büyüklüğü değişkeninin ve 3 risk göstergesinin anlamlı bir ilişki içinde olmasıdır. Bu değişkene ek olarak, Krediler / Mevduat değişkeninin 2 bağımlı değişken üzerinde önemli bir etkisi vardır.

Analizden elde edilen veriler çerçevesinde, sermaye sahipliği ve sermaye yoğunlaşmasının Türk Bankacılık Sektöründeki bankaların risk alma eğilimi üzerinde bir etkisi olmadığıdır. Türk bankaların ortaklık yapısının risk almaları üzerinde bir etkisinin olmadığı çalışmada ulaşılan sonuç olmakla birlikte, aşağıda yer alan önemli sonuçlara ulaşılmıştır:

- Bankalar bu çalışma kapsamında 6 bağımsız değişkeni etkin bir şekilde yönetmeleri durumunda kur riskini en üst düzeyde yönetebileceklerdir.

- İkinci aşamada, bu bağımsız değişkenlerin etkin yönetimi, kredi riskinde önemli bir azalmaya yol açacaktır.

Öte yandan bu sonuçlara ek olarak, aşağıdaki sonuçlar da elde edilmiştir:

- İlgili bağımsız değişkenlerin sermaye yeterliliğinin geliştirilmesi ve sürdürülmesi üzerindeki etkisi görecelidir,

- Takipteki kredilerin özkaynak üzerindeki olumsuz etkisi ile ilgili olarak bağımsız değişkenlerin çalışma kapsamındaki etkisi ihmal edilebilir düzeydedir.

Literatürde bankalarda ortaklık yapısının risk alma üzerindeki etkileri hakkında farklı bulgular bulunmakta ve zıt sonuçlara ulaşıldığı görülmektedir. Bu çalışmada ise ortaklık yapısı ile risk alma eğilimi arasında bir ilişki olmadığı sonucuna varılmıştır. Aynı şekilde banka sahiplik yapısındaki yoğunlaşma düzeyi ile risk alma eğilimi arasında aynı yönlü gelişim olacağı şeklinde beklenti olsa da, bu çalışmada bir ilişki olmadığı sonucuna varılmıştır. Türk bankacılık sektörü açısından bu sonuçların alınmasında en önemli faktörlerden birinin sektöre ilişkin mevzuatın çok katı kurallar içermesi ve denetimin tek bir kurum tarafından yapılmasının olduğu düşünülmektedir.