

How Does Transparency Affect Bank Risk and Performance? Evidence from Turkey*

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Abstract

Purpose: The main objective of this study is to investigate the effect of transparency on the performance of banks, which are among the most important units of the financial sector.

Methodology: The Generalized Method of Moments (GMM) analysis was applied using the annual data from 22 deposit banks operating in Turkey. Four models related to profitability, credit risk, deposits, and stock returns were established by calculating a transparency score derived on the basis of 106 criteria for each year and for each bank.

Findings: According to the GMM results, it was observed that transparency, credit risk, and profitability were negatively correlated, while stock returns had a positive relationship.

Research limitations: There are not enough public-traded banks, especially in the stock returns section. Although this research has the largest sample size among the studies conducted to date, all banks in Turkey could not be included in its scope.

Value: The analysis reveals the importance of reporting and sharing information from banks. Banks should set a transparency criterion, and a transparency score should be established using the researched criterion.

Keywords: transparency, bank risk, financial performance, GMM.

JEL: G21, G32, G34, O161

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Jak przejrzystość wpływa na ryzyko i wyniki banku? Dane z Turcji

Streszczenie

Cel: głównym celem opracowania jest zbadanie wpływu przejrzystości na wyniki banków, które należą do najważniejszych jednostek sektora finansowego.

Metodologia: do analizy z wykorzystaniem uogólnionej metody momentów (*Generalized Method of Moments, GMM*) wykorzystano dane roczne z 22 banków depozytowych działających w Turcji. Opracowano cztery modele związane z rentownością, ryzykiem kredytowym, depozytami i stopami zwrotu z akcji. Dokonano tego poprzez obliczenie wyniku oceny przejrzystości uzyskanego na podstawie 106 kryteriów dla każdego roku i dla każdego banku.

Wyniki: zgodnie z wynikami GMM zaobserwowano, że przejrzystość, ryzyko kredytowe i rentowność były ze sobą ujemnie skorelowane, podczas gdy stopy zwrotu z akcji wykazały związek pozytywny.

Ograniczenia badawcze: liczba banków notowanych na giełdzie, zwłaszcza w sekcji stóp zwrotu z akcji, jest niewystarczająca. Chociaż badana próba była największa spośród prób wykorzystanych w dotychczasowych badaniach, nie było możliwości objęcia jej zakresem wszystkich banków działających w Turcji.

Wartość: analiza wykazuje znaczenie raportowania i udostępniania informacji z banków. Banki powinny określić kryterium przejrzystości, a wynik oceny przejrzystości należy ustalić z wykorzystaniem badanego kryterium.

Słowa kluczowe: przejrzystość, ryzyko bankowe, wyniki finansowe, GMM.

1. Introduction

The importance of banks to the world economy is undeniable. Especially in developing countries, bank shares in the financial system rank very high. For example, Turkey's banking sector share in the entire financial sector, which is the sample for this study, is 88% (CBRT, 2019).

The superiority of banks in financial life implies that changes in the performance of banks can affect the economies of countries and the world as well as influence the social well-being of people. Regardless of a bank's size, correct management of the bank is an issue that concerns not only bank shareholders but all stakeholders. Bank management needs to be timely, accurate, transparent, and ultimately auditable in its disclosures. Mismanagement caused by the self-interested behavior of managers or dominant shareholders is troubling; huge risks are taken and a lack of transparency leads to the realization that corporate governance is required.

Banks are dependent on international institutions, such as the Organisation for Economic Co-operation and Development (OECD) and the Basel Committee, for corporate governance. In practice, banks are far more concerned with implementing the Basel rules than the OECD principles, which are based on specific requirements from a majority of regulatory authorities. However, other financial institutions rely heavily on OECD principles for their industries (Tosuni, 2013).

In recent years, owing to the emergence of scandals in companies such as Enron, Worldcom, and Parmalat, financial and corporate governance regulations and practices have been reviewed in many countries, and audits and standards have been expanded to ensure more accurate accountability in these businesses. In addition to the company scandals, the Asian financial crisis, the events in Russia, and the subprime mortgage crisis that started in the United States and spread all over the world have increased the importance of transparency (Lahrech et al., 2014). In particular, the COVID-19 pandemic has further increased the importance of transparency. The banking crisis experienced in Turkey in 2001 and the US mortgage crisis in 2008 revealed a lack of transparency in many banks; once again, this demonstrated that financial information must be timely, accurate, complete, reliable, and understandable so that the decisions made by the parties and stakeholders regarding the bank are sound. This understanding of good bank management can be ensured when effective corporate governance practices are applied in these enterprises.

Corporate governance practices are based on four basic principles: transparency, accountability, equality, and responsibility. Transparency is considered the most important factor among these four principles. Then, the research questions arise here: does the transparency level of deposit banks have an effect on bank performance?; If there is such an effect, is it valid for Turkey?; If there is any effect, can the S&P method developed to measure this effect be used for Turkey?; What will this effect be like if the S&P method is used?

The principle of transparency means that the information contained in the financial statements and footnotes is timely and reliable. By applying this principle, enterprises will be able to provide adequate, accurate, and timely information about their financial performance and financial position to stakeholders and the public (Fung, 2014).

To ensure effective public disclosure, legal and administrative pressure on enterprises through laws and regulatory authorities will not be sufficient. Business entities need to see that voluntary public disclosure can be the most effective way to attract longer-term and lasting capital, rather than through legal obligation. The way to attract capital in a more long-term and consistent manner is through instilling the necessary confidence in the banks for domestic and foreign investors (Mortaş & Şamil, 2020). While the linkage between bank regulations and bank public disclosures is crucial, bank transparency is also important for the banking industry (Duru et al., 2020).

The development of financial markets is possible in light of vigorous and strong supply of and demand for securities. The balance of supply and demand, the immediate delivery of all information on economic, political, and social developments that determine the price of securities, the market's high liquidity, and low transaction costs are all factors that reflect an effective market structure. On the other hand, parties involved in financial

markets want to feel confident. The precondition for the development of these markets is that investors do not have a suspicion of being deceived (Temizel & Coşkun, 2010). The most important factor that will eliminate the suspicion of being deceived is the transparency of companies.

There are four main reasons for focusing on the Turkish banking sector. First, Turkey is considered an emerging market and a developing country. It is stated that, due to their extraordinary economic growth, developing countries have become a key focus for both individual and institutional investors and international companies (Millar et al., 2005). Despite positive economic growth figures, compared to developed countries, insufficient corporate transparency caused by the lack of information practices, corporate governance rules, and implementation processes seems to be particularly prevalent in emerging economies. This fact has also been demonstrated in studies (Pattnaik et al., 2013; Belal et al., 2013). The fact that the majority of firms in these countries are family businesses and the pressure created by globalization in these countries are important factors (Pattnaik et al., 2013). These countries tried to liberalize their markets without having proper economic and legal institutions, hence such as an adequate degree of disclosure and corporate governance transparency is required (Millar et al., 2005).

Corporate governance in general and transparency in particular can be deemed critical factors for improving efficiency and growth by attracting investors to such a country. In their investment decisions, investors can be confident about companies that have a high level of these factors (Kara et al., 2015). Furthermore, emerging countries need foreign investors to reduce current account deficits. One of the most important safeguards for foreign investors is the sound implementation of corporate governance in line with international standards (Özsöz et al., 2014).

Second, corporate governance in general and transparency in particular are important for banks given the important role of Turkish banks in the financial sector. In addition to the transparency dimension, in the Turkish economy, banks are also vital to financial stability, since the financial system has been growing significantly faster than GDP since 2008. While the Turkish banking sector's total asset to GDP ratio was 0.87 in 2010, this ratio increased to 1.05 in 2016 (Kör et al., 2021). Rapid changes brought about by globalization, deregulation, and technological advances increase risks in the Turkish banking systems. Unlike other companies, most of the funds used by banks to conduct their businesses belong to their creditors and particularly to their depositors. Linked to this situation is the fact that the failure of a Turkish bank affects not only its stakeholders but may have a systemic impact on the stability of other banks (Khalid & Hanif, 2005). In addition, banks are the main sources of finance for real sector firms. The ratio of domestic credit provided by the financial sector (percentage of GDP) used to express this function is around 80%. This rate is much

higher than other developing country figures (WB, 2021). Again, the failure of a Turkish bank affects not only its stakeholders but may have a systemic impact on the real sector firms as well.

The third reason is the main motivation for Turkey to be selected as a sample in this study. The relationship between the level of corporate transparency in a country and the cost of investment and foreign capital inflow has been revealed. In other words, studies have shown that a decrease in the level of transparency both increases investment costs and decreases foreign capital inflows (Millar et al., 2005). However, the situation is different in Turkey. It would not be wrong to say that Borsa İstanbul (BIST) is dominated by foreign institutional investors. In the period of 2014–2019, the average foreign share ratio was 67%. In other words, more than 50% of BIST 100 consists of foreign investors (Atik, 2020). Despite being in the developing country class in terms of transparency, Turkey attracts the attention of most investors in the world with its high-return opportunities.

The fourth reason for focusing on Turkey is a gap in the literature related to transparency in this country's banking sector. As transparency in the banking sector is still developing, the current body of literature on transparency is extremely sparse compared to industrially developed countries with advanced transparency. In Turkish literature, there are many studies related to transparency. Most of these are focused on the effect of corporate governance on firm performance. In other words, there is a limited number of studies relating directly to transparency. A few of these test the effect of transparency on firm performance. Most of the studies on the effect of transparency are generally related to nonfinancial firms (Gör et al., 2016; Ercan & Sığrı, 2018; Levent, 2018).

Moreover, Turkey experienced a banking crisis in 2000–2001, one of the reasons for which was the lack of bank transparency (Rosengren, 1999; Altıntaş, 2004). After the 2001 financial crisis, with the establishment of independence of the Central Bank and comprehensive regulation of the financial sector, capital accounts were fully liberalized (Yay & Tastan, 2009). Serious changes have been made in the Banking Law. All authority regarding the supervision and regulation of the banking sector was taken from the Undersecretariat of Treasury and the Central Bank and transferred to the newly established Banking Regulation and Supervision Agency (BRSA).

In this respect, this study will be focused on the Turkish banking sector not making the same mistakes again. The presence of transparency in banks is an indication that corporate governance processes also take place in those institutions. In this sense, it is evaluated that transparency will have a positive effect on the performance of institutions. We hope that this study will contribute to both the literature and the operation of regulation institutions as well.

After this introduction section, the paper is completed with the second section consisting of theory and literature, the third section explaining variables and methodology, the fourth section with analysis findings, and a final section with conclusion and recommendations.

2. Theory and Literature

In theory, for better corporate governance, endogenous growth, elimination of asymmetric information, and an efficient market hypothesis are required. Transparency practices in companies ensure that all these elements work properly. The endogenous growth of companies indicates technological development, the efficient use of financial markets, the correct and impeccable operation of financial transactions in companies, and as a result, the financial development of companies (Mugaloğlu & Erdağ, 2013).

Firms that maintain financial development and use their resources efficiently provide corporate governance by reducing asymmetric information. Asymmetric information affects the decisions of market players, and the way it affects markets causes stock prices to deviate from their core values. Asymmetric information allows borrowers to manipulate transactions because they know more about the investment projects they want to undertake (Mishkin, 1991). Transparency, on the other hand, allows the reduction of the possibility of both asymmetric information and manipulation.

Transparency, which is one of the four basic principles of corporate governance in general (responsibility, transparency, accountability, and justice/equality), is a very important feature that distinguishes corporate management from traditional management. In the traditional management approach, the principle of transparency is not given much importance in company management. Company management only discloses desired company information to the public. However, in the corporate governance approach, company owners and managers have to carry out company activities in a transparent manner (Aktan, 2013). As for corporate governance, company management is based on activating rules and practices that will ensure fairness and responsibility in the relations between shareholders and stakeholders (Witherell, 2002). Regulations regarding corporate governance in the banking sector have become the common denominator of the entire banking sector in the world. The basic documents explained by the Basel Committee on the subject also allow the establishment of corporate governance. Transparency is an important step toward determining the responsibilities of the board of directors and establishing the bank's corporate values in this direction.

According to the efficient market hypothesis, in a competitive and transparent environment where market barriers are removed, rational investors can use all information available in the market when making

investment decisions (Friedman, 1953). Transparency removes the obstacles to sharing this information, and in the long run, it causes knowledgeable and rational investors to invest in the market and to trust the good functioning of financial markets, seasoned securities, and efficient price formation.

When the literature was scanned, the literature on firm transparency studies such as Ercan and Sıgır (2018), Levent (2018), Lang et al. (2012), and Chi (2009) appeared as examples. Besides, it is seen that banks are used as a sample in Kim et al. (2020), Akhigbe et al. (2017), König et al. (2014), Allenspach (2009). The relationship of transparency with existing and potential investors, regulatory authorities, banking crises, banking sector performance, competition, and all other relevant stakeholders was investigated in some relevant literature. In this case, Chen et al. (2020), Kim et al. (2020), Cordella et al. (2018), Bashir et al. (2017), Akhigbe et al. (2017), Andrievskaya and Semenova (2016), König et al. (2014), Ratnovski (2013), Nier (2005) serve as examples. In view of the importance of transparency and the need to explore this topic, the relationship between the transparency scores of 22 deposit banks operating in Turkey and the financial performance, risks, and stock returns of banks was tested in this study.

According to our investigation, it was seen that there is one study which identifies the effect of transparency on the banking sector, namely Doğan et al. (2015). It is seen that this study is different in terms of both large sample and methodology. While Doğan et al. (2015) used 10 banks and classic panel data, this study used 22 banks and the Generalized Method of Moments (GMM) methodology. Moreover, in this paper, we found the opportunity to study Non-Performing Loans (NPL), Deposits/Liabilities Ratio (D/L), and Stock Returns (SR) as differences.

Some articles from the literature are compiled in Table 1:

Table 1
Literature Summary

Authors	Period	Method	Conclusion
Nier (2005)	1994–2004	Regression analysis	There is a positive relationship between transparency and bank stability.
Adeyemi (2011)	1994–2003	Survey	Lack of transparency caused the banking sector's great failures.
Semenova (2012)	1990–2003	Panel data	An increase in transparency may not be effective in enhancing market discipline.
Lahrech et al. (2014)	2006–2010	Mathematical model	Increasing transparency would prevent Islamic banks from overshadowing their profit distribution practices.
Doğan et al. (2015)	2005–2013	Panel data	Transparency has a negative and statistically significant effect on market-based performance

Table 1 – continued

Authors	Period	Method	Conclusion
Andrevieskaya and Semenova (2016)	1998–2010	Panel data	Countries with higher levels of bank transparency have lower levels of bank concentration.
Akhigbe et al. (2017)	1996–2014	Regression analysis	Transparency has a positive effect on financial performance.
Bashir et al. (2017)	2000–2014	GMM dynamic panel	High banking transparency reduces non-performing loans.
Levent (2018)	2010–2014	Panel data	No statistically significant relationship was found between transparency and Tobin's Q and asset profitability.
Srairi (2019)	2013–2016	Regression analysis	Transparency is negatively associated with various bank risk measures.
Kim et al. (2020)	1995–2015	Regression analysis	Low bank transparency is related to high risk in the market.

Source: This compilation was prepared by the authors of this article.

3. Data and Methodology

3.1. Data

After asking research questions, we investigate the effect of the transparency score of banks on bank performance and risk. In this study, both accounting and market-based financial performance indicators were used as dependent variables. Correct and timely disclosure of all material matters related to the company, including ownership and management of the company, such as financial status statistics, performance statistics, etc., is necessary and important in terms of demonstrating the transparency of the banking sector's data. In this context, we used four variables as dependent variables, namely non-performing loans, return on assets, stock return, and deposit level, for bank performance and risk measurements. Transparency and the banks' financial statement information are taken from each bank's web pages, the Public Disclosure Platform, and the Banks Association of Turkey. The yield data of public banks were also obtained from Borsa Istanbul. The whole sample of our study comprises yearly information from 22 deposit banks from 2011 to 2019, but only the yearly data from 16 public banks were used for the model in which the stock market return is the dependent variable. Public banks represent banks whose shares are traded on the stock exchange. Regarding the data term, we have chosen the 2011–2019 period to avoid two critical time spans, the years 2008–2009 related to the global financial crisis and the recent period of political uncertainty in Turkey that has adversely affected the stability of

the banking system. Another significance of this period is the regulations regarding transparency in the Turkish Commercial Law, which was amended at the beginning of 2011.

According to the BRSA Turkish Banking Sector Main Indicators December 2019 Report, there are 34 deposit banks in Turkey with a total asset size of 4.491 billion Turkish liras (BRSA, 2020). Following this report, 22 deposit banks included in the sample of our study correspond to a ratio of 65%. In addition, our sample represents 88% of the banking sector with 3.960 billion Turkish liras.¹ Deposit banks in Turkey are subject to common legislation and accounting standards on transparency.

The basic documents and principles explained by the Basel Committee on the subject help the data to be created in a correct and healthy way. The degree of transparency shows that the data of banks are also published following these principles. To measure the degree of transparency of these banks, we derived a transparency score using 106 items as independent variables. For this study, the transparency and public disclosure index methodology developed by Standard & Poor's (S&P), a standard used for research in various countries whose reliability has been tested, was preferred. The public disclosure and transparency index developed by S&P is one of the most frequently used indices in the literature, such as Aksu and Köseadağ (2006), Levent (2018), Grassa (2018), and Srairi (2019).

Although S&P is a commercial institution, the main reason why this index is preferred by researchers is that it broadly covers the framework of transparency, including shareholders, board of directors, and financial transparency. At the same time, and unlike other rating agencies, sharing the questionnaire form with the public enabled the form to be developed.

The 106 data points are unweighted to reduce subjectivity. In many papers, these techniques have considered unweighted scores as the norm for annual report studies (Grassa, 2018; Levent, 2018; Srairi, 2019; Azrak et al., 2020).

The transparency score is based on the information provided in the bank's annual reports. It was searched, regardless of whether all 106 transparency criteria existed in the research form, in the activity reports, footnotes, and corporate governance compliance reports. More specifically, the approach to scoring items is dichotomous in that an item is scored 1 if disclosed and 0 if it is not. In other words, 1 point was given to the bank for the information regarding each criterion explained in the information evaluation form, and 0 was given if the information on this issue was not disclosed. This calculation constituted the most time-consuming part of the study. Data for all 106 items that make up the transparency score were directly and manually extracted from the annual reports for the period 2011–2019 for each bank. The transparency score is measured by searching the deposit bank's annual reports for the information on 106 possible items, broadly divided into the following three subcategories. The higher the score

obtained by a bank, the more transparent its annual report disclosures. These are:

- (1) Ownership structure and investor relationships (32 items)
- (2) Financial transparency and disclosures (37 items) and
- (3) Structure and processes of the board of directors and management (37 items).

The score for each deposit bank for each year j is calculated as follows:

$$SCORE_{j,t} = \frac{\sum_{i,t}^N X_{i,j}}{N} \quad (1)$$

where N is the total number of items expected to be disclosed for a bank, N is equal to 106.

In addition to the transparency score (1), we include in our model a set of bank characteristics that could explain variation in bank performance and risk. At the bank level, this study explores bank age, bank leverage, and bank assets as potential determinants of bank performance and risk.

3.2. Variables

All variables are summarized in Table 2:

Table 2
Variable Description

Full name	Symbol	Variable description	References
Transparency level	TRS	This index is calculated through a content analysis based on three dimensions (106 items) extracted from the annual reports of each bank	Aksu and Köseadağ (2006); Levent (2018)
Non-performing loans	NPL	The ratio of non-performing loans to total loans	Adeyemi (2011); Lahrech et al. (2014); Andrievskaya and Semenova (2016); Bashir et al. (2017); Srairi (2019)
Return on assets	ROA	The ratio of profitability to total assets	Nier (2005); Adeyemi (2011); Lahrech et al. (2014); Doğan et al. (2015); Akhigbe et al. (2017); Bashir et al. (2017)
Stock return	SR	$SR = -1/(P_t - 1)$	Dasgupta et al. (2010); Mendonça et al. (2012); Du et al. (2016); Park and Ha (2020)

Table 2 – continued

Full name	Symbol	Variable description	References
Deposit amount	DEP	The ratio of deposits to total liabilities	Akhigbe et al. (2017); Grassa (2018); Kim et al. (2020)
Age	AGE	Bank age	Grassa (2018); Valipour Pasha and Ahmadian (2019); Mortas and Samil (2020);
Bank leverage	LEV	The ratio of total debts to total assets	Grassa (2018); Srairi (2020); Azrak et al. (2020)
Bank asset	AS	Total bank assets	Costello et al. (2019); Srairi (2019); Azrak et al. (2020)

One of the aims of the study is to measure bank risks or examine their interaction with transparency. There are many types of risks in the banking sector, especially credit risk, operational risk, and liquidity risk. However, the most important of these in terms of impact is credit risk. One of the biggest credit risks that banks take is unpaid and non-performing loans. For this purpose, the ratio of non-performing loans to total loans (NPL) is included in the analysis. The advantage of this indicator is that it is a direct measure of bank solvency, and it is difficult for the bank management to manipulate this ratio (Srairi, 2019). The high rate of the NPL ratio directly reveals the credit risk and is a leading indicator regarding the main source of a bank's instability.

One of the variables used to measure bank performance is the ratio of profitability to total assets (ROA). Profit efficiency measures the effectiveness of each bank in generating profit, comparing it with the best achievable performance of all institutions in the sample; that is, it compares banks at the limit of best practice. The best banks are the ones that can make the highest profit and obtain the highest profit rate as shown from their balance sheets. Also, a high ROA level means lower volatility and shows that the risks of these banks are fewer (Arzak et al., 2020). Furthermore, Nier (2005) noted that more profitable banks have a lower risk of crisis.

Another dependent variable is the ratio of total deposits to total liabilities (DEP). The question of whether to provide depositors with more information about bank performance is at the heart of the debate about bank transparency (Chen et al., 2020). As the deposit is a low-cost source of funds, it is expected to increase profit efficiency (Akhigbe et al., 2017). In addition, the DEP variable was included in the analysis to take into account the possibility that some banks' business models may be more uncertain than others and that these banks' perceptions of future events may be included in provisioning decisions (Kim et al., 2020). Determining

whether depositors have any relationship with bank transparency will be an interesting result of this study.

One of the most important and different features of this study is that stock return rates are included. Emphasizing that improved firm transparency is positively associated with stock returns, Dasgupta et al. (2010) stated that when future events actually occur, fewer “surprises” are encountered, which will have a lower impact on stock prices and result in higher returns. In addition, the authors stated that firm transparency causes an increase in stock returns by determining that some firm-specific features do not change over time, such as management quality. Regarding earnings transparency, Park and Ha (2020) noted that stock returns can reflect changes in the firm’s economic value, assuming that the information disclosed is fully reflected in the stock price. Transparency prevents asymmetrical information sharing and eliminates any obstacles to the sharing of accurate information, causing financial markets to function well in the long term, creating efficient price formation for firms, and encouraging knowledgeable and rational investors to invest in the market and gain profitable stock returns.

Several bank characteristics are also included as control variables in the study model, which may explain the change in banks’ risks. At the bank level, bank age (AGE), leverage ratio (LEV), and bank assets (AS) are included in the research as potential predictors of bank risk. Older banks, more experienced than younger banks, tend to offer a wide range of services to their customers. The asset variable was added to the model as a control variable so that the bank sizes do not affect the analysis. Older banks generally have easier access to capital markets and are more skilled in risk management thanks to their experience.

LEV, another variable included in the study, provides information about the financial structure of the bank and whether it is operating efficiently. Banks that operate more efficiently, according to Srairi (2019), make higher profits. Moreover, according to the Modigliani–Miller theorem, for a given asset risk, the greater the LEV of banks, the higher the volatility of equity returns (Azrak et al., 2020).

Total AS is an important variable for controlling the growth and development strategy of banks (Srairi, 2019). Conglomerate banks, whose AS are growing faster, may become less efficient as they grow. Akhigbe et al. (2017) stated that AS growth is generally associated with credit quality problems. Another determination made by the authors is that AS have a positive and significant relationship with profit efficiency. Therefore, total AS are included in the study to explain the change in bank risks.

3.3. Methodology

In the light of the results of the literature review, it was concluded that it would be correct to use panel data estimation techniques in the analysis. There are many advantages of using panel data. First, panel data have more

degrees of freedom and sample variation than time series or cross-sectional data. Second, the panel contains special effects in the data, both firm and time, which can be random or fixed. However, the dynamic nature of the panel data allows us to examine in detail the process of adjusting companies according to their leverage targeting levels.

The reason for using this technique is that it is applied in first-order autoregressive processes with a large number of cross-sectional data and a small-time dimension (Bowsher, 2002). It is expected that the econometric model will also have a dynamic structure since it is taken into account that the model that is the subject of the estimation is a dynamic model. Dynamic panel data models, unlike static panel data models, are models that contain delayed variables or variables. Dynamic panel data models can be examined under two groups: panel data models with distributed delay and autoregressive panel data models. In autoregressive panel data models, the lagged values of the dependent variable are included as independent variables. In distributed lag panel data models, the lagged values of the independent variables are included in the model as independent variables. In distributed lag panel data models, the problem of multicollinearity between the lagged values of the independent variable is frequently encountered. In general, when dynamic models are mentioned, autoregressive models come to mind first (İskenderoğlu et al, 2012; Tatoğlu, 2012; Güriş, 2005).

Generalized Method of Moments (GMM) was used as a panel method in the study. In this study, endogeneity between variables eliminates the possibility of obtaining reliable results. Integrity in corporate governance and risk and performance relationships are important. Therefore, it would be appropriate to use the GMM method, which eliminates the endogeneity problem. Dynamic panel methods can be used more efficiently when the time dimension is smaller than the size of the firm or country ($n > t$), the dependent variable is dynamic and is affected by past situations, there is a linear function relationship, and the independent variables are not completely external (Alper et al., 2016; Roodman, 2009).

Since its introduction by Arellano and Bond (1991), the GMM method was further developed by Arellano and Bover (1995) and Blundell and Bond (1998). We have three reasons for adopting the GMM analysis. Firstly, the GMM technique controls for heterogeneity bias that deals with the confounding effect of inter-temporal dynamic behavior or unobserved individual heterogeneity. Secondly, in light of pooling unobserved individual heterogeneity over time dimension, the longitudinal approach provides additional information and a richer source of variation. As such, the degrees of freedom increase, and the efficiency of econometric estimators improve. Lastly, unlike cross-sectional data and time-series data, panel data could provide good estimates of aggregate dynamic behavior without the need for long time series (Lee et al., 2020). The argument for the GMM method being more successful than other methods is that it can explain models and

certain estimators with formulas without strong distribution assumptions (Greene, 2002). GMM becomes a more effective method as the sample size increases.

The stationarity and normality of the data were tested with the Jarque-Bera test before the analysis was started. The applied GMM model does not have a distribution regarding the stationarity of the data. Since the predictions made in GMM methods are tested with instrumental variables, these variables are expected to fully reflect the actual variables (overidentifying restrictions). For measurement purposes, it is necessary to perform the Sargan test. Sargan test results reveal whether the instrumental variables used for estimation are sufficient (İskenderoğlu et al., 2012).

4. Empirical Model and Results

4.1. Empirical Model

We applied the following model to four different forms with dependent variables:

$$OUT_{it} = \alpha OUT_{i,t-1} + \beta_1 TRS_{i,t} + \beta_2 AGE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 AS_{i,t} + \varepsilon_{it} \quad (2)$$

Here, OUT_{it} depends on variables such as NPL (Model 1), ROA (Model 2), SR (Model 3) and DEP (Model 4), $OUT_{i,t-1}$ – dependent variable with one period delay, $TRS_{i,t}$ – transparency score, $AGE_{i,t}$ – bank age, $LEV_{i,t}$ – leverage level, $AS_{i,t}$ – asset amount and finally ε_{it} – the error term.

4.2. Empirical Results

When the GMM results are examined (see Table 3), it is observed that the transparency variable has a negative and significant interaction with NPL and ROA and a positive and significant interaction with SR. It was observed that the transparency variable did not have a significant effect on the DEP variable.

Table 3
GMM Results for the Structure of Four Different Models*

	Model 1	Model 2	Model 3	Model 4
TRS	-0.03975*** 0.00325	-0.00492*** 0.00016	0.00550** 0.00258	-0.00115 0.00502
AGE	0.00476*** 0.00007	-0.00040*** 0.00009	-0.00007 0.00010	0.00116*** 0.00029
LEV	-4.50174*** 0.01818	-0.31965*** 0.00278	-0.61130*** 0.04609	0.05095 0.07446

Table 3 – continued

	Model 1	Model 2	Model 3	Model 4
AS	2.47E-10*** 1.61E-11	-1.99E-10*** 1.1E-11	1.02E-10** 5.02E-11	-6.14E-11 4.91E-11
NPL(-1)	0.85672*** 0.00048			
ROA(-1)		0.24336*** 0.00062		
SR(-1)			-0.24544*** 0.01444	
DEP(-1)				-0.06410 0.04947
Number of banks	22	22	16	22
Number of lags	1	1	1	1
Sargan st.	14.62076	19.70423	11.86481	14.27622
Sargan prob.	0.62278	0.28964	0.29421	0.28342
AR(1) st.	-0.98756	-1.15158	-1.41492	-0.81973
AR(1) prob.	0.32340	0.24950	0.15710	0.41240
AR(2) st.	-0.54569	0.75731	-1.01777	1.27961
AR(2) prob.	0.58530	0.44890	0.30880	0.20070

Note. * Transparency (TRS), bank age (AGE), leverage ratio (LEV), assets (AS), non-performing loans ratio (NPL), deposits/liabilities ratio (DEP), stock market returns (SR), return-on-assets (ROA).

The values opposite the variables show the coefficients. The values below the coefficients show standard errors (robust). The *** sign indicates 1% significance level and ** sign indicates 5% significance level.

Source: The calculations were made by the authors of this article.

AS, which expresses the bank size used as a control variable, is positive for NPL and SR. It has been found to have a negative effect on DEP and ROA. AGE, another control variable, is positive for NPL and DEP. It has been observed that it has a negative effect on ROA and SR and the last control variable, the LEV variable, has a negative effect on other dependent variables except for DEP.

Different results were obtained regarding the effect of transparency on bank performance indicators (such as stability, return, market value, and profitability). Chen et al. (2020), Akhigbe et al. (2017), Mendonça

et al. (2012), Adeyemi (2011), and Nier (2005) concluded that transparency affects bank performance indicators positively, while some studies such as Levent (2018) and Semenova (2012) could not find a statistically significant relationship. In some studies, the effect of transparency on performance indicators has been observed as negative. In this sense, our results regarding NPL are parallel to Bashir et al. (2017), and profitability results are in line with Buallay (2019) and Doğan et al. (2015).

The fact that the DEP factor cannot be statistically significantly associated with TRS can be explained by the phenomenon of deposit insurance in Turkey. By way of explanation, it is possible to say that depositors are not very interested in transparency of the bank when depositing their savings due to the deposit guarantee system. Our finding was evaluated similarly in studies by Chen et al. (2020).

It is possible to correlate the relationship between bank transparency and profitability with the risks taken by the bank. Specifically, banks are institutions that work with high risk or high leverage, and they can be a bit conservative in sharing these activities with the public. In the literature, the high transparency level of banks has been evaluated together with low risk (Kim et al., 2020; Srairi, 2019).

With regard to the relationship between return and transparency, there is evidence that transparency reduces excessive negative returns (Du et al., 2016).

5. Conclusion

Banks, whose hegemony has persisted in financial markets for years, have led countries to many banking crises as they are in the hands of managers who fail and take excessive risks using poor management practices. It is precisely at this point that the phenomenon of transparency begins to be researched and discussed in all financial aspects, especially by attracting the attention of scientists. Because of this attention, in this study, we investigate the effect of 106 transparency criteria developed by the S&P index on bank performance and risk, based on information provided by banks in their annual reports. The transparency and public disclosure indices were developed by examining the ownership structure and investor relations of banks, the levels of financial transparency and disclosures, and the structure and processes of the boards of directors. Using non-performing loans, profitability, deposits, and stock market returns as dependent variables, four models were designed. The GMM methodology was used for the data structure and study purpose.

According to the results of the study, a negative and significant interaction of transparency with non-performing loans and profitability and a positive and significant interaction with stock returns were observed.

Working with a high leverage ratio and high risk-taking is associated with increased profitability and may lead to reduced transparency. High risk-taking, a low degree of transparency, and an increase in non-performing loans, which are shown as the causes of banking crises in the literature, are reflected in the analysis results. We find that the transparency variable does not have a significant effect on the deposit variable. This is ultimately thought to be the effect of the deposit guarantee system from the point of view of depositors. The positive relationship between stock returns and transparency reveals that conscious investors use the information and reports published by banks when making investment decisions. This finding is consistent with the previously explained asymmetric information and efficient markets hypothesis in terms of the positive impact of increased transparency on markets and investors.

The results of the research should be evaluated under certain constraints. An important constraint is that there are not enough public-traded banks, especially in the stock returns section. Although this research has the largest sample size among the studies conducted to date, all banks in Turkey could not be included in its scope.

The research results highlight several important points. First, banks should set a transparency criterion, and a transparency score should be developed using this criterion. This action, which will eliminate many risks (corporate governance risk, operational risk, rate of return risk, etc.) in banks, will not only fulfill the bank's ethical responsibilities but also increase the reliability of these organizations, many of which have bad reputations for causing financial crises.

The analysis once again reveals the importance of reporting and sharing information from banks. Certainly, organizations that follow these processes carefully (such as the Public Disclosure Platform) will attract the attention of investors and develop certain higher standards by increasing their credibility in society and in their environment.

The results of the research indicate that it is necessary to open a parenthesis for Turkey. It turns out that Turkey needs to update existing regulations and standards to increase transparency in the banking sector. Banking-related policymakers in Turkey (such as the Banking Regulation and Supervision Agency) should work with organizations that set certain standards at the international level, such as the S&P with its own index, the International Finance Corporation, the European Investment Bank, the Inter-American Development Bank, the Asian Development Bank, and the International Fund for Agricultural Development. This is necessary and essential to develop cooperation and to put more clear transparency standards into place based on scientific data.

Finally, this study conducted on Turkish banks is also important for other financial institutions. It is necessary to create adequate risk-management processes in both public and non-public institutions. A systematic

transparency measurement process must be developed to ensure proper risk measurement. Considering that developing countries such as Turkey have a high need for foreign investors, the importance of this issue will become much better understood.

Today, transparency criteria are on the agenda in all areas of commerce, as they are in financial markets. This research must be repeated with different techniques and variables in different countries and with different organizations. The effectiveness of transparency criteria should be expanded and researched not only for banks but also for various public and private institutions.

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Endnotes

- * This study is based on the thesis by Meryem Şahan written at Gaziantep University.
- ** First Supervisor of Meryem Şahan's Thesis.
- *** Second Supervisor of Meryem Şahan's Thesis.
- ¹ Calculations were made by the authors.

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