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Board diversity, audit committee characteristics and audit quality: The moderating role of control-ownership wedge

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Abstract: This study illustrates how control-ownership wedge impacts the monitoring role of the corporate board through the quality of audit services in Turkey. Turkey has made essential amendments in the field of external audit in order to enhance the quality of the financial report and integrate its own capital market with that of the EU. It would be of interest to examine the influence of these changes on clients' demand for high quality audit. The agency theory is integrated with the resource dependence theory to show that boards possess distinct incentives and ability to demand high quality audit to monitor management activities. Logistic regression and feasible generalized least squares (FGLS) were used for regression estimations. The results indicate that board demographics, cognitive and structural diversity of board of directors, audit committee characteristics and audit quality are complementary and control-ownership wedge weakens the relationship between them which is an unfavorable outcome for minority shareholders. Thus, this study proposes that regulators should increase law enforcement to enhance good corporate governance in Turkey to accommodate the unique features of wedge firms and provide a protected environment for minority shareholders.

JEL Classifications: M48, M42, M41

Keywords: Audit quality, board diversity, audit committee, control-ownership wedge, Turkey

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1. Introduction

Board composition represents an important factor of corporate governance, particularly in the market characterised with weak quality audit service (Dahya, Dimitrov, & McConnell, 2008). The agency theory (Jensen & Meckling, 1976) and resource dependence theory (Pfeffer & Salancik, 1978) have been used as theoretical justification for "business cases" beyond board diversity, in terms of service and control tasks of boards (Forbes, & Milliken, 2016). Walt & Ingley (2003) report that the corporate board is a group of individuals who possess heterogeneous capabilities pooled together to conduct monitoring and advisory tasks in firms. Previous studies have differentiated between board demographics and structural and cognitive diversity (Ben-Amar, Francoeur, Hafsi, & Labelle, 2013; Cheng, Chan, & Leung, 2010). The impact of demographics (e.g., female directors and directors' age) and cognitive diversity (e.g., interlocking directorships and level of education) are correlated with board tasks and board structural diversity (e.g., board size, board independence and board of directors' meeting). While the audit committee characteristics (e.g., audit committee size, audit committee independence, and audit committee meeting) are associated with control tasks.

The concentration of this paper is on the board's monitoring tasks. Nevertheless, our model contains indicators conventionally utilized for measuring resource richness since we believe that resource richness contributes to enhancing the board's monitoring function. The most significant question is whether or not the monitoring function of the board of directors is equally important for all firms, independent of their ownership structures. Based on strategic governance and institutional analysis, corporate governance effectiveness relies on the alignment of environmental and interdependent organizational characteristics (Desender, Aguilera, Crespi, & García-Cestona, 2013). Only in a specific combination, corporate governance is an effective interrelated system; consequently, this leads to various patterns of corporate governance (Adams & Ferreira, 2009). In this regard, the effectiveness of monitoring depends on a set of governance mechanisms instead of on a single one. Therefore, studies investigating a sole mechanism of corporate governance often oversee the broader connection between different corporate governance practices and neglect their substitutive and complementary impact on various firm outcomes. Shareholders, particularly the minority shareholders, face difficulties in supervising their agent. They rely on different corporate governance mechanisms; for example, external auditors, to monitor the management (Watts & Zimmerman, 1990) and direct shareholders' supervision and board control (Adams, Hermalin, & Weisbach, 2008). This study addresses the issue of the extent to which the corporate board entrusts the external auditors to practice their monitoring function to alleviate Type II Agency Problems and create a protected environment for minority shareholders with the influence of wedge. Wedge is defined as a divergence between control rights (voting rights that allow the majority shareholders to choose board members) and cash flow rights (shareholders' rights to claim dividends). It has been utilized in Turkey as a method to increase majority shareholders' interests at the expense of minority shareholders. Consequently, this improves the conflict of interests between majority shareholders and minority shareholders, and usually, the conflicts are resolved in the interests of majority shareholders (Che-Ahmad & Mustafa, 2017).

Board monitoring effectiveness not only depends on its incentives to oversee management's actions but also on its abilities to do so (Hillman & Dalziel, 2003; Tuggle, Sirmon, Reutzel, & Bierman, 2010). The same applies in understanding shareholders' ability to monitor management directly, which is equivalent to the magnitude of shareholders' ownership (incentives) and abilities (Kaplan & Minton, 1994).

This study recommends the control of ownership structure of firms when it comes to the evaluation of the effectiveness of corporate governance. The board of directors and audit committee are considered as essential corporate governance mechanisms (DeFond & Zhang, 2014). This study proposes that a robust board of directors and audit committee can ensure high audit quality because of external monitoring mechanisms that can enhance the monitoring role of the board of directors and audit committee to protect the minority shareholders from the effect of wedge. The reason for the emphasis on quality audit is because the external independent auditor is an important factor for enhancing the protection of minority shareholders' rights and investors' wealth. The external auditor plays a significant role in confirming that all shareholders are treated equally and in attesting that the financial statement indicates the client's real financial status (DeFond & Zhang, 2014). The audit committee members have a greater tendency to appoint Big4 audit firms than non-Big4 audit firms. Audit committee members believe that Big4 audit firms are more likely to report any material misstatements that are discovered during the audit work (Knapp, 1991).

In developed countries, several studies have addressed corporate governance mechanisms, audit quality and financial reporting quality (Cassell, Giroux, Myers, & Omer., 2012; Chow & Rice, 1982; Cohen, Krishnamoorthy, & Wright., 2002; Hogan, 1997; Hudaib & Cooke, 2005). However, only a few studies have been conducted in developing countries. In the context of Turkey, only one study by Ararat, Aksu, & Tansel Cetin (2015) has examined the effect of wedge in terms of firms' financial performance. The authors document that board monitoring intensity mediates the relationship between board diversity and firm performance, and wedge moderates the relationship between board diversity and board monitoring intensity. Therefore, to the best of the researchers' knowledge, this study addresses the gap in the literature by providing additional evidence on corporate governance mechanisms through the integration of the board of directors and audit committee to strengthen the audit quality, and in turn, protect the minority shareholders, particularly in an environment of wedge. This is in line with the OECD's (2004) statement that, *"controlling shareholders, which may be individuals, family holdings, bloc alliances, or other corporations acting through a holding company or cross-shareholdings, can significantly influence corporate behaviour"* (p. 14). Based on the inconsistency of the findings of previous studies about the relationship between interlocking directorships, board size, board independence, board of directors' meeting, audit committee size and audit quality, this study proposes the moderating role of wedge in the relationship between board diversity and audit committee and audit quality. The same opinion is documented by Desender et al. (2013) that the effectiveness of corporate governance mechanisms to conduct a mentoring role is highly contingent on the ownership structure.

2. Theoretical framework and hypothesis

Only in a particular combination is corporate governance as an interrelated system effective; consequently, this can lead to various patterns of corporate governance (Aguilera, Filatotchev, Gospel, & Jackson, 2008). Therefore, in order to examine the impact of ownership structures on the strategic behaviour of the board of directors, this study proposes that the board's behaviour towards the use of external audit to conduct their monitoring role is contingent on the presence of control-ownership wedge.

The theoretical background of this study is derived from the combination of two theories, namely the agency theory and resource dependence theory. Furthermore, this study seeks to extend the traditional view of the agency theory by focusing on how wedge not only influences the board's incentive to conduct its monitoring role, but also the board's ability to conduct its monitoring role. The board's incentives to carry out its monitoring role effectively are drawn from the agency theory, as confirmed by agency theorists; while the directors' ability to conduct their monitoring role is a function of the resource dependence perspective or board capital (Hillman & Dalziel, 2003). Furthermore, the directors' monitoring role is constrained by the incentives and abilities of various types of shareholders to oversee management directly (instead of depending on the board). This study infers that the ownership structure plays a significant role in the monitoring function of the board of directors, as the combination of both leads to various degrees of involvement with external audit.

An extensive body of literature has investigated the clients' incentives and abilities in terms of audit quality. Very few studies have reported that auditor's characteristics, for instance, industry specialist auditor or Big4 and non-Big4 auditors, drive clients' demand for a strong external monitoring mechanism. In addition, many studies have reported that the

agency cost illustrates clients' tendency to hire a strong external auditor (DeFond & Zhang, 2014). The client's demand for audit quality is based on misalignment of interests between agent and principal. This means that firms which suffer severe agency conflicts are more likely to be involved with high quality assurance. Therefore, agency conflict is considered as a real incentive that encourages clients to hire a strong external auditor. It is important to investigate the extent to which agency conflicts drive clients to demand for high audit quality.

Therefore, this study, in the first instance, examines the relationship between board diversity and audit committee characteristics and audit quality. Second, this study investigates the moderating role of control-ownership wedge on the relationship between board diversity and audit committee characteristics and audit quality.

2.1. Female directors

Based on the resource dependence theory, different attributes of the board of directors could demonstrate the variance in firms' demand for audit quality. Ararat, Aksu, & Tansel Cetin (2010) find female directors are more likely to employ Big4 auditors in order to enhance the quality of financial reports and protect their reputational capital. To enhance client's internal control system, female directors understand better the difference in audit services provided by Big4 and non-Big4 auditors (Mustafa, Che-Ahmad, & Chandren, 2017). Consequently, this can improve accounting information system efficiency (Simunic, 1980) and reduce information asymmetry generated as a result of conflicts of interests between majority and minority shareholders (Darmadi, 2012). Thus, this study proposes that female directors enhance clients' tendency to hire high quality auditors as follows.

H1: There is a positive relationship between female directors and audit quality.

2.2. Directors' age

Studies by Pfeffer (1973) and Pfeffer & Salancik (1978) have shown that directors' knowledge and experience are considered as crucial factors to enhance the board's monitoring role. Directors' demographic characteristics, such as tenure and age, have been used as indicators to measure managers' knowledge (Zander, 1982). Cheng & Leung (2012) document a significantly positive relationship between directors' age and clients' demand for high audit quality. This is because older directors are more involved in maximising shareholders' wealth and are more risk-averse (Ararat, Aksu, & Tansel Cetin, 2010, 2015). It has been evinced that older directors with more knowledge and experience are more inclined to fulfil their responsibility toward shareholders; therefore, this indicates that older directors possess a strong incentive to hire extensive and expensive audit services. Hence, the hypothesis is:

H2: There is a positive relationship between directors' age and audit quality.

2.3. Interlocking directorships

The resource dependence theory proposes that directors with multiple directorships via interlocking directorships create vast networking with the external environment. This

enhances firms' capability to overcome uncertainties and environmental contingences (Pfeffer & Salancik, 1978). Hunton & Ros (2008) suggest that directors serving in multiple directorships possess strong incentives to hire high quality audit. They find that directors who serve in more than one directorship are less likely to agree with auditor restatement recommendation for the prior years when compared to directors serving in a single directorship, and this is due to a negative influence on their reputational capital. On the other hand, Courtney & Jubb (2005) find a significantly negative relationship between interlocking directorships and clients' demand for high audit quality. This is because of a robust relationship between auditor-auditee and audit tenure, on the grounds that interlocking directorships between firms enhances firms' tendency to select the same auditor. This issue incentivises interlocking firms to remain with the same auditor for a long time (audit tenure). Based on this, this study proposes:

H3: There is relationship between interlocking directorship and audit quality.

2.4. Directors' level of education

According to the resource dependence theory, firms directed by directors with a strong education background in finance are more likely to demand high quality audit services in order to enhance the board's monitoring role (Hillman & Dalziel, 2003). This is because directors with advanced financial and accounting qualifications have a strong ability to understand and manage financial reporting issues; they also have strong incentives to minimize earnings management and enhance the quality of earnings (Mustafa, Che-Ahmad, & Chandren, 2017).

More evidence indicates that organizations recruiting board members with strong financial qualifications are more likely to monitor management's manipulation activities (Agrawal & Chadha, 2005). Empirical evidence from Turkey by Ararat, Aksu, & Tansel Cetin (2010, 2015) has suggested a significantly positive relationship between the board's diversity attributes index and board monitoring intensity. This shows that board diversity improves the board's monitoring intensity and effectiveness. The authors create an index consisting of different board of directors' observable attributes, such as gender and age; and non-observable attributes, such as education level and nationality, as indicators for beliefs, skills, competencies and values. They examine the influence of board diversity proxied by gender, nationality, independence, age, and education level on the board's monitoring intensity proxied by the number of board meetings, number of board committees, external auditor and financial reporting quality of the firm on disclosure intensity. They find that board diversity, particularly the directors' level of education, has a significantly positive relationship with board monitoring intensity, such as audit quality.

Hence, this study hypothesizes that:

H4: There is a positive relationship between directors' level of education and audit quality.

2.5. Board size

According to the agency theory, a large board size increases the board's dominance and leads to difficulty in making useful decisions (Jensen, 1993). This negatively impacts on shareholders' interests. The agency theory proposes that there is a negative relationship between board size and audit quality. This is because large board size complicates the

coordination and communication process among board members. On the other hand, the resource dependence theory proposes that there is a positive relationship between board size and audit quality. This is because additional external directors provide more resources to the board of directors and this enhances the board's monitoring abilities. As mentioned, a large board of directors provides extra resources and greater networking with the external environment (Pfeffer & Salancik, 1978).

Studies by Makni, Kolsi, & Affes (2012) and Karaibrahimoglu (2013) have reported that there is a significantly positive relationship between board size and audit quality. This is based on the fact that the external auditor plays a crucial role in reducing information asymmetry and enhancing the firms' internal control system. On the other hand, Goodstein, Gautam, & Boeker (1994) document that a small-sized board of directors of between four and six members could enhance the firms' ability to make strategic decisions. Abbott, Parker, & Peters (2004) demonstrate that firms with small boards of directors have more effective communication, and this decreases the likelihood of misunderstanding between directors and the incidence of errors.

Thus, it is hypothesized that:

H5: There is a relationship between board size and audit quality.

2.6. Board independence

Previous studies have documented that external directors have a significant role to play to improve the board's monitoring role and mitigate agency conflicts arising as a result of separation between agent and principal (Fama & Jensen, 1983). The resource dependence theory proposes that independent directors provide an external avenue for enhancing firm performance. Pfeffer (1972) documents that independent directors possess strong knowledge, experience and better understanding of complex environments, and these enhance the board's ability to conduct its monitoring role. Kang (2014) and Gana & Lajmi (2011) argue that there is a positive relationship between the number of independent directors and family firms' demand to hire industry specialist auditors. This is because family firms have more incentives to signal the quality of financial reports for the users. Therefore, family firms are more likely to demand extensive and expensive audit services compared to non-family firms with a lower proportion of non-executive directors.

On the other hand, studies by Lee, Mande, & Ortman (2004), Gajevszky (2014) and Shan (2014) have documented a negative relationship between an independent board of directors and frequency of auditor resignation. This is because board independence has a crucial role in mitigating the negative impacts inherent in auditor resignation.

Therefore, the hypothesis is:

H6: There is a relationship between board independence and audit quality.

2.7. Board of directors' meeting

Previous studies have documented that board meeting is one of the significant characteristics of the board of directors in enhancing the board's effectiveness (Anderson,

Mansi, & Reeb, 2004). An effective board can play a more efficient monitoring role and in improving internal control (Klein, 2002b). This can mitigate agency conflicts between managers and shareholders on the grounds that managers possess strong motivation to maximise their interests rather than shareholders' interests in the presence of a weak internal monitoring role (Fama & Jensen, 1983). Based on the resource dependence theory, boards that meet diligently get more time to review all the necessary actions of the management and solve problems on time (Pearce & Zahra, 1992; Pfeffer & Salancik, 1978). Board meetings can enhance the board's function of fulfilling responsibilities towards the shareholders. Hence, active boards of directors are more likely to demand high audit quality.

One of the significant duties of the board of directors is to meet frequently, as by doing so, they get more time to review in detail essential issues related to the organization (Ronen & Yaari, 2008). Meeting frequency is considered as a key indicator of the board's intensity to accomplish board activities (Vafeas, 1999). In addition, meeting frequency reflects the extent to which the directors of the board fulfil their responsibilities.

Abbott & Parker (2000), Chen & Zhou (2007) and Gana & Lajmi (2011) document that there is a positive relationship between the board of directors' meeting frequency and audit quality, in terms of brand name of auditors. In contrast, Shan (2014) finds that audit quality is not influenced by the number of board of directors' meeting. This is because state ownership has a strong influence on firms' strategic decisions. Furthermore, concentrated ownership or state ownership has a robust influence in minimizing the effectiveness of the role of the internal mechanisms of corporate governance, such as the board of directors and audit committee.

Therefore, the hypothesis is:

H7: There is a relationship between the board of directors' meeting frequency and audit quality.

2.8. Audit committee size

Previous studies have suggested that agency conflicts arise as a result of deviation between management and ownership, which may encourage managers to maximise their interests rather than shareholders' interests (Jensen & Meckling, 1976). Top management teams may be encouraged to expropriate shareholders' interests due to the lack of effective control procedures (Fama & Jensen, 1983). Hence, audit committee efficiency and effectiveness may mitigate this conflict (Klein, 2002a). Hsu & Petchsakulwong (2010) suggest that large audit committees may provide a strong monitoring function, although large audit committees may face coordination problems among directors. Large boards of directors are more complicated than small boards of directors (Dalton, Daily, Johnson, & Ellstrand, 1999). Based on the resource dependence theory, large audit committees provide various skills and experiences to the board of directors and this might enhance the decision-making process (Pfeffer, 1972).

Hence, the hypothesis is:

H8: There is a relationship between audit committee size and audit quality.

2.9. Audit committee independence

Audit committee independence plays significant role in developing the board monitoring function and reducing agency conflicts between owners and managers (Fama, 1980; Fama & Jensen, 1983); while resource dependency theory suggests that independent directors afford an external channel to improve board performance and effectiveness in the board monitoring role. Pfeffer (1972) finds that external directors have more ability to grasp complex environments and possess robust knowledge and experience to support their monitoring function.

In order to protect directors' reputation capital and avoid litigation risk as a result of financial reporting misstatements, audit committees possess strong incentives to hire high audit quality. A study by Archambeault & DeZoort (2001) reports that audit committee independence is positively related to audit quality. This means that the audit committees comprising of a high number of independent directors are less likely to frequently change their auditor. In the same vein, study by Abbott & Parker (2002) finds that independent audit committee members have a significant positive influence on the clients' demand for high audit quality assurance. This leads to protecting the directors' reputational capital and avoiding the litigation risk as a result of financial reporting misstatement. Therefore, they conclude that a high number of independent directors enhances the monitoring role and influence on the financial reporting process and quality.

Beasley (1996) documents that a high number of independent directors inside the audit committee reduce management opportunities to manipulate financial statements and conduct financial fraud activities; and this enhances the quality of the financial reports and improves the credibility and reliability of financial and accounting information free from misstatements. Similarly, study by Lee et al. (2004) finds that independent audit committees are more likely to demand high auditor quality with high reputation. This indicates that there is a significant positive relationship between the independent board of directors and clients' demand for high audit quality.

Conversely, study by Chen & Zhou (2007) reports that there is no relationship between independent directors and industry specialised auditors. This is because a large audit committee size and independent directors with a low level of activity undermine the efficiency and effectiveness of the audit committee in overseeing the management activities. Cottell & Rankin (1988) demonstrate that firms voluntarily possessing audit committees are less likely to demand high audit quality or be involved in the process of auditor change. This is because firms' recruitment of high levels of independent members leads to a reduced incentive to change firm auditors "that issue recent going-concern opinion".

The same argue is advanced by Ho, Hock, & Kueng (2017) that there is insignificant relationship between corporate governance in term of audit committee (e.g. audit committee size, independence, meeting and expertise) and audit quality in term of audit fees pre and post-2007 Code's periods in Malaysia. The study results exhibit that there is an insignificant influence of audit committee effectiveness on audit fees in pre and post-2007 Code periods. Also, it proposes that corporate governance framework in term of audit committee has limitation in its governance role on audit process. Based on agency theory and resource dependency theory propositions, independent directors are more likely to protect their reputational capital and provide external channels to enhance the

effectiveness of the board monitoring function via engagement with high audit quality. It predicts that a higher number of independent directors working in the audit committee positively influence firms' demand for audit quality.

Therefore, the hypothesis is:

H9: There is a positive relationship between audit committee independence and audit quality.

2.10. Audit committee meeting

Previous studies have documented that audit committee meeting is one of the significant characteristics of the audit committee that can enhance the audit committee's effectiveness (Anderson et al., 2004). Klein (2002b) claims that an effective audit committee can boost its monitoring role and develop internal controls. This can minimize agency conflicts between agent and principal. This is because top managers have strong incentives to maximize their interests at the expense of shareholders' interests in the absence of a strong monitoring role (Fama & Jensen, 1983). The resource dependence theory suggests that active an audit committee has enough time to evaluate management's activities. Audit committee meetings improve the board's role in fulfilling its contractual responsibilities to shareholders (Pearce & Zahra, 1992; Pfeffer & Salancik, 1978). Therefore, an audit committee that demonstrates high levels of activity is more likely to hire high quality external auditors.

Therefore, the hypothesis is:

H10: There is a positive relationship between audit committee meeting and audit quality.

2.11. Wedge

Ownership structures (e.g., dispersed and concentrated ownerships) have a substitution or complementary influence on board composition in monitoring management activities via engagement with external monitoring mechanisms, such as audit quality (Desender et al., 2013). The agency and resource dependence theories have been used to illustrate the board's incentives and ability to oversee management's actions and reduce agency conflicts between majority shareholders and minority shareholders. Board incentives and the ability to monitor management's activities, in terms of hiring high quality auditors, is the two-fold alignment of interests and entrenchment effects. According to the aspect of alignment of interests, the board of directors and audit committee have strong incentives to hire high-quality auditors on the grounds that controlling shareholders have strong incentives to enhance the contracting terms with other parties. Whereas, based on the negative entrenchment effects, the board of directors possesses weak incentives to demand high audit quality in order to avoid realizing any material misstatement in the financial reports and decrease the inherent litigation risk. This is because controlling shareholders tends to jeopardize minority shareholders' wealth. In summary, the relationship between board composition and audit quality is moderated by the ownership structure, whether this is concentrated ownership or diffused ownership.

Therefore, based on the aforementioned, this study's hypotheses are:

H11: There is a negative relationship between wedge and audit quality.

H12: Wedge moderates the relationship between board diversity and audit quality.

H12a: Wedge moderates the relationship between female directors and audit quality.

H12b: Wedge moderates the relationship between directors' age and audit quality.

H12c: Wedge moderates the relationship between interlocking directors and audit quality.

H12d: Wedge moderates the relationship between directors' level of education and audit quality.

H12e: Wedge moderates the relationship between board size and audit quality.

H12f: Wedge moderates the relationship between board independence and audit quality.

H12g: Wedge moderates the relationship between board of directors' meeting and audit quality.

H13: Wedge moderates the relationship between audit committee characteristics and audit quality.

H13a: Wedge moderates the relationship between audit committee size and audit quality.

H13b: Wedge moderates the relationship between audit committee independence and audit quality.

H13c: Wedge moderates the relationship between audit committee meeting and audit quality.

3. Population and sampling

In order to examine the developed hypotheses, nonfinancial Turkish listed firms are used as the study's population for which all the data are available. This study excludes financial firms and banks because they are governed by different corporate governance regulations (Zulkarnain Muhamad, 2009). The sample used in this study covers five years from 2011 to 2015. The data involves nine main sectors. Audit quality (Big4 and industry specialist auditor), corporate governance (board diversity, audit committee and wedge) and control variables data are hand-collected from the annual reports. The initial sample comprises 411 firms, including banks and financial institutions. Table 1 displays the procedures used to identify the final sample of firms.

TABLE 1. PROCEDURES OF SAMPLE SELECTION

FIRMS LISTED IN BORSA ISTANBUL WEBPAGE IN 2015	411
- Less: financial institution and holding	142
- Less: firms with missing corporate governance information	15
- Less: firms with missing directors profiles	70
- Less: firms with missing interlocking directors information	38
Final sample observations	146

Source: Own calculations based on data.

TABLE 2. DATA COMPOSITION

INDUSTRIES	NO. OF FIRMS
Food, beverage and tobacco	18
Textile, wearing apparel and leather	12
Paper and paper products, printing and publishing	10
Chemicals, petroleum rubber and plastic products	27
Non-metallic mineral products	15
Fabricated metal products, machinery and equipment	25
Information technology	14
Construction and public work	10
Wholesale and retail trade, hotels and restaurant	15
TOTAL	146

Source: Public Disclosure Platform (PDP), www.kap.gov.tr.

The study excludes 123 (15 + 70 + 38) firms from the sample due to missing information and relevant data concerning the study variables. The final sample of this study consists of 146 firms listed on the Borsa Istanbul (BIST). The final sample comprises 86 wedge firms and the remaining 60 are non-wedge firms. BIST consists of nine two-digit industries with more than 10 observation firms. The large representation of firms listed on BIST is explained in Table 2 for the nine industries. In order to find out the value of SPECLST_MS, this study follows the study of Jones, Krishnan, & Melendrez (2008) to exclude industries comprising less than 10 firms from the initial sample of the study.

4. Regression model

To address the research objective of this study, Model 1 investigates the relationship between board diversity, audit committee characteristics, wedge and the other control variables and audit quality. This study's hypotheses are examined using the following model.

$$\begin{aligned}
 AUD_{it} = & \beta_0 + \beta_1 FEMD_{it} + \beta_2 AGE_{it} + \beta_3 INTD_{it} + \beta_4 EDUC_{it} + \beta_5 BSIZE_{it} + \\
 & \beta_6 BINDE_{it} + \beta_7 BMEET_{it} + \beta_8 CSIZE_{it} + \beta_9 CINDE_{it} + \beta_{10} CMEET_{it} + \beta_{11} WEDGE_{it} + \\
 & \beta_{12} FSIZE_{it} + \beta_{13} LEVE_{it} + \beta_{14} FAGE_{it} + \varepsilon_{it}
 \end{aligned} \quad (1)$$

Model 2 examines the moderating role of wedge in the relationship between board diversity, audit committee characteristics and control variables and audit quality. The equation of the regression is as follows:

$$\begin{aligned}
 AUD_{it} = & \beta_0 + \beta_1 FEMD_{it} + \beta_2 AGE_{it} + \beta_3 INTD_{it} + \beta_4 EDUC_{it} + \beta_5 BSIZE_{it} + \\
 & \beta_6 BINDE_{it} + \beta_7 BMEET_{it} + \beta_8 CSIZE_{it} + \beta_9 CINDE_{it} + \beta_{10} CMEET_{it} + \beta_{11} WEDGE_{it} + \\
 & \beta_{12} WEDGE * FEMD_{it} + \beta_{13} WEDGE * AGE_{it} + \beta_{14} WEDGE * INTD_{it} + \beta_{15} WEDGE * EDUC_{it} + \\
 & \beta_{16} WEDGE * BSIZE_{it} + \beta_{17} WEDGE * BINDE_{it} + \beta_{18} WEDGE * BMEET_{it} + \beta_{19} WEDGE * CSIZE_{it} + \\
 & \beta_{20} WEDGE * CINDE_{it} + \beta_{21} WEDGE * CMEET_{it} + \beta_{22} FSIZE_{it} + \beta_{23} LEVE_{it} + \beta_{24} FAGE_{it} + \varepsilon_{it}
 \end{aligned} \quad (2)$$

4.1. Dependent variable

The dependent variable in this study is measured by two proxies, i.e., auditor size (Big4) and industry specialist auditor (SPECLST_MS).

Auditor size

Big4 is used as a proxy in this study to measure audit quality. This study proposes a dichotomous variable to measure auditor size coded 1 if the client hires Big4 auditor, otherwise, 0 (DeAngelo, 1981).

Industry specialist auditor

Industry specialist auditor (SPECLST_MS) of audit firm is measured as the market share of audit firms in percentage and calculated as the proportion of sales of clients audited to the sum of total sales of all firms in a specific industry (Velury, Reisch, & O'reilly, 2003). SPECLST_MS is defined as the proportion of sales received by the individual auditor relative to the total sales received by all auditors in that particular industry (Velury et al., 2003). First, the market share of each audit firm, in terms of sales, is calculated for each industry separately. Then, the calculated market share of the audit firms is divided by total sales of firms in a specific industry, to compute an industry specialist index. This measurement is computed as follows:

$$\text{SPECLST_MS}_{ik} = \frac{\sum_{j=1}^{J_{ikt}} \text{SALES}_{ijkt}}{\sum_{i=1}^{I_k} \sum_{j=1}^{J_{ikt}} \text{SALES}_{ijkt}}$$

Where, i = an index of the auditors ($i=n$); j = an index of clients; K = an index of the industries; I_k = the number of auditors in industry k for year t ; J_{ikt} = the number of clients audited by auditor i in industry k for year t ; SALES_{ijkt} = the audit fees for auditor i 's client j for year t .

4.2. Independent variables

Female directors

This study uses a dichotomous variable to measure the board's gender diversity (FEMD). It is equal to 1 in case there is at least one female director on the board of directors, otherwise, 0.

Directors' age

The measurement of the directors' age is based on the study conducted by Ararat, Aksu, & Tansel Cetin (2015); they classify age of directors into five categories in the context of Turkey. The first category includes directors aged between 25-35 years (AGE1); the

second category includes directors aged between 36-45 years (AGE2); the third category comprises directors aged between 46-55 years (AGE3); the fourth category consists of directors aged between 56-65 years (AGE4); and the last category includes directors more than 65 years (AGE5). This study uses the proportion of directors in each age category to the total number of board of directors.

Interlocking directorships

This study follows Stearns & Mizruchi (1986) to measure interlocking directorships (INTD) as the number of interlocking directorships of the board of directors.

Directors' level of education

This study measures education level (EDUC) of the board of directors as the proportion of directors with masters and doctoral degrees to total number of board of directors.

Board size

Board size (BSIZE) represents the total number of directors on the board of directors as mentioned in the annual reports at the end of the year.

Board independence

Board independent (BINDE) is the number of independent directors on the board of directors (Hayes, Mehran, & Schaefer, 2005).

Board of directors' meeting

Board meeting (BMEET) is measured using total number of meetings held by the board throughout the accounting year.

Audit committee size

Audit committee size (CSIZE) is measured by total number of audit committee members at the end of each year (Karaibrahimoğlu, 2013; Yang & Krishnan, 2005).

Audit committee independence

Audit committee independence (CINDE) is measured as the proportion of independent directors to total number of independent directors of the audit committee.

Audit committee meeting

Audit committee meeting (CMEET) is measured as the number of meetings held during an accounting year.

Wedge

Wedge is measured using a binary measurement which is equal to 1, in case firm issues dual class shares, otherwise, it is equal to 0 (Yurtoglu, 2003).

4.3. Control variables

Firm size

Firm size (FSIZE) is measured by total assets. Total assets comprise current assets and non-current assets. The amount of total assets is transformed into natural logarithm of total assets (Chien, Chen, & Wu, 2008).

Leverage

Leverage (LEVE) is defined as short and long-term debts divided by the total amount of assets (Abbott & Parker, 2000).

Firm age

Firm age (FAGE) is measured as the number of years since the firm has been in operation.

5. Results and discussion

Table 3 lists Big4 and SPECLST_MS as measures of audit quality, followed by corporate governance variables and the control variables. A dichotomous measurement (Big4 and non-Big4) is used as one of the audit quality measurements in this study. The sample firms audited by Big4 are 419 firm-year observations, while non-big4 comprises 305 firm-year observations. The average number of firms engaged with Big4 audit firms is 0.527 and the average value of SPECLST_MS is 0.167 for the full sample. The average number of female directors is 0.734. The average age for the full sample period is 52.428. The mean value is consistent with previous studies (e.g., Ararat, Aksu, & Tansel Cetin, 2015). The average number of directors involved in interlocking directorships (INTD) is 3.875. The mean of directors with post-graduate education (e.g., Master's and PhD) of this study sample is 2.303. The mean of board of directors' size (BSIZE) for BIST is 6.783 ~7. This shows that Turkish listed firms have an average of seven directors (2-15 directors) having interlocking directorships. This reflects a small BSIZE compared to US firms with BSIZE of 12.48 with 6-39 directors; and an average of 8.01 for UK firms with BSIZE of 3-24 directors (Peasnell, Pope, & Young, 2005).

The mean proportion of independent directors (BINDE) is 1.812. Turkey firms employ a low number of independent directors to the corporate board compared to US and UK firms (58% & 43%), respectively (Klein, 2002a; Peasnell et al., 2005).

Table 3 shows the average number of board meetings (BMEET) is 24.211 and it ranges from a minimum of three to a maximum of 146 board meetings. The mean value is consistent with previous studies in the context of Turkey (e.g., Ararat, Aksu, & Tansel Cetin, 2015) which document a mean value of BMEET as about 28.05, with a minimum of three and a maximum of 132 board meetings. The result indicates that Turkish listed firms have an average of 2.045 (~ 2) members in the audit committee. The mean of CINDE is 1.661 and the average number of CMEET is 4.393. The *t*-test is utilized to determine the significant variances of the continuous variables between both groups of Big4 and non-Big4 audit firms. The distribution differences for the mean of continuous

variables for both groups illustrate that INTD, EDUC, BSIZE, BINDE, CSIZE, FSIZE, LEVE and FAGE are statistically significant at the 1% level. The average age means and CINDE for Big4 audit firms compared to non-Big4 audit firms show a statistically significant difference at the 5% level of significance. Descriptive statistics and univariate test results for binary variables (e.g., WEDGE) and the divergence in proportion are identified in Table 4.

TABLE 3. DESCRIPTIVE STATISTICS FOR THE VARIABLES OF THE STUDY

VARIABLES	MEAN	MIN	MAX	STD.DEV	BIG4 FIRMS N= 419		NON-BIG4 FIRMS N= 305		BIG4 FIRMS Vs. NON-BIG4 FIRMS	
					Mean	Std. Dev	Mean	Std. Dev	t-stat	P-value
1.SPECLST_MS	0.167	0	0.98	0.23	-	-	-	-	-	-
2.Big4	0.527	0	1.00	0.50	-	-	-	-	-	-
3.FEMD	0.73	0	4.00	0.80	0.78	0.76	0.68	0.85	-1.61	0.11
4.AGE1	-	-	-	-	-	-	-	-	-	-
5.AGE2	-	-	-	-	-	-	-	-	-	-
6.AGE3	-	-	-	-	-	-	-	-	-	-
7.AGE4	-	-	-	-	-	-	-	-	-	-
8.AGE5	-	-	-	-	-	-	-	-	-	-
9.INTD	3.875	0	12.00	2.67	4.81	2.68	2.84	2.25	10.6	0.00
10.EDUC	2.303	0	8.00	1.85	3.06	1.80	1.46	1.51	12.8	0.00
11.BSIZE	6.783	2	15.00	2.13	7.51	2.35	5.97	1.48	10.4	0.00
12.BINDE	1.812	0	5.00	0.91	1.92	0.91	1.69	0.90	-3.44	0.00
13.BMEET	24.21	3	146.0	13.28	24.0	15.2	24.3	10.6	0.29	0.77
14.CSIZE	2.045	1	5.00	0.27	2.08	0.35	2.01	0.12	-3.47	0.00
15.CINDE	1.661	0	3.00	0.76	1.72	0.71	1.59	0.81	-2.28	0.02
16.CMEET	4.393	0	7.00	1.27	4.37	1.03	4.42	1.49	0.61	0.54
17.WEDGE	-	-	-	-	-	-	-	-	-	-
18.FSIZE*	1.904	1.43	2.61	1.78	2.03	1.60	1.88	1.68	1.16	0.00
19.LEVE	0.482	0	1.71	0.28	0.52	0.30	0.43	0.24	4.42	0.00
20.FAGE**	33.82	1	80.00	15.86	37.6	16.0	29.5	14.5	7.12	0.00
21.AAGE***	52.42	35.4	68.00	5.58	52.8	5.34	51.9	5.82	2.06	0.04

Source: Author's compilation.

TABLE 4. DESCRIPTIVE STATISTICS (FREQUENCY) AND UNIVARIATE TEST RESULTS FOR DUMMY VARIABLES FOR WEDGE AND AUDIT QUALITY

	Non-WEDGE	WEDGE	TOTAL
Non-Big4	94	248	342
Big4	211	171	382
Total	305	418	724
Pearson chi2(1) = 56.9964 Pr = 0.000			

The result of the Chi-square test for the distribution differences between WEDGE and non-WEDGE firms shows that Big4 and non-Big4 selections are statistically significant at 1% ($\chi^2 = 56.9964$; $p = 0.000$). The results explain that auditor selection in the environment of Turkey is driven by the presence of WEDGE. The number of clients that hire non-Big4 auditor and Big4 auditor is about 94 and 211, respectively, for non-WEDGE firms. Firms practicing the WEDGE and hiring non-Big4 auditor make 248 firms and WEDGE firms that hire Big4 auditor make 171 firms. It is, therefore, evident that WEDGE firms display higher frequency with regards to engaging non-big4 audit firms. The Chi-square test shows that WEDGE is a significant determinant of client's demand for high audit quality. Controlling shareholders might get strong incentives to expropriate minority shareholders' wealth as a consequence of their negative entrenchment effect (Desender et al., 2013).

TABLE 5. THE CORRELATION MATRIX OF THE VARIABLES OF THE STUDY

PART 1 OF THE TABLE 5										
VARIABLES	1	2	3	4	5	6	7	8	9	10
1.SPECLST_MS	1									
2.Big4	0.45	1								
3.FEMD	0.17	0.11	1							
4.AGE1	-0.15	-0.11	0.11	1						
5.AGE2	-0.04	0.07	-0.04	-0.03	1					
6.AGE3	0.11	0.16	-0.08	-0.17	0.32	1				
7.AGE4	0.14	0.04	0.08	-0.18	-0.43	-0.09	1			
8.AGE5	0.18	0.23	0.07	-0.13	-0.3	-0.05	0.17	1		
9.INTD	0.20	0.3	0.15	-0.06	-0.15	0.17	0.22	0.29	1	
10.EDUC	0.29	0.43	0.16	-0.09	-0.12	-0.19	0.27	0.39	0.29	1
11.BSIZE	0.20	0.36	0.07	-0.07	-0.19	0.43	0.46	0.48	0.41	0.12
12.BINDE	-0.06	-0.05	0.01	-0.04	0.06	0.07	0.01	-0.03	-0.12	0.07
13.BMEET	0.05	-0.01	0.12	-0.02	-0.07	-0.01	0.02	-0.09	0.06	0.03
14.CSIZE	0.23	0.12	0.01	-0.02	-0.04	0.2	0.09	-0.05	0.05	0.01
15.CINDE	-0.04	0.06	-0.06	-0.04	0.01	-0.08	0.1	0.13	0.08	0.07
16.CMEET	-0.07	-0.02	0.02	0.02	0.02	-0.01	0.11	0.08	-0.02	-0.05
17.WEDGE	-0.21	-0.28	0.02	0.17	-0.1	0.02	0.03	-0.1	-0.07	-0.08
18.FSIZE*	0.34	0.39	0.09	-0.18	-0.13	0.2	0.18	0.3	0.27	0.14
19.LEVE	-0.02	0.16	-0.05	-0.07	0.01	0.09	-0.09	0.1	0.01	0.04
20.FAGE**	0.27	0.25	0.07	-0.11	-0.04	0.05	0.11	0.15	0.06	0.09

PART 2 OF THE TABLE 5										
VARIABLES	11	12	13	14	15	16	17	18	19	20
11.BSIZE	1									
12.BINDE	-0.08	1								
13.BMEET	-0.16	-0.04	1							
14.CSIZE	0.18	0.01	-0.03	1						
15.CINDE	0.15	0.63	-0.01	-0.15	1					
16.CMEET	0.17	0.04	-0.02	-0.08	0.04	1				
17.WEDGE	-0.02	-0.01	0.06	-0.01	0.06	-0.1	1			
18.FSIZE*	0.4	-0.03	0.07	0.2	0.07	0.05	-0.22	1		
19.LEVE	0.05	0.02	-0.03	0.06	0.03	-0.04	-0.13	0.24	1	
20.FAGE**	0.2	0.04	0.09	0.08	0.11	0.01	-0.15	0.1	-0.06	1

Controlling shareholders possess adequate incentives and ability to monitor management directly instead of depending on external monitoring and hold them accountable for activities not aligned with their interests (Bohinc & Bainbridge, 2001). This means that there is a significant relationship between WEDGE and audit quality. The result is consistent with other studies (Chien et al., 2008; Fan & Wong, 2002), in the context of Taiwan and East Asia, respectively. Also, this study's finding is aligned to the Turkish situation (Ararat, Aksu, & Tansel Cetin, 2015).

TABLE 6. RESULTS OF THE REGRESSION ANALYSIS

ITEMS	BIG4		BIG4		SPECLEST_MS		SPECLEST_MS	
	MODEL 1		MODEL 2		MODEL 1		MODEL 2	
	Coefficient	St. errors	Coefficient	St. errors	Coefficient	St. errors	Coefficient	St. errors
FEMD	-0.090	0.104	-0.131	0.109	0.059***	0.015	0.097	0.066
AGE1	-0.025	0.157	0.024	0.170	-0.025*	0.013	-0.022	0.013
AGE2	0.662***	0.129	0.729***	0.133	-0.001	0.009	0.005	0.009
AGE3	0.263**	0.109	0.273	0.113	0.001	0.008	0.001	0.008
AGE4	0.019	0.140	0.023	0.143	-0.008	0.064	-0.008	0.065
AGE5	0.360**	0.122	0.403**	0.128	0.016*	0.008	0.017*	0.009
INTD	0.177***	0.047	0.176***	0.048	0.007*	0.003	0.009**	0.003
EDUC	0.539***	0.118	0.554***	0.124	0.199**	0.058	0.133**	0.064
BSIZE	-1.097***	0.293	-1.200***	0.320	-0.022	0.021	-0.015	0.021
BINDE	-0.452**	0.172	-0.364**	0.172	-0.086	0.076	-0.012	0.078
BMEET	0.002	0.007	0.003	0.007	0.009	0.012	0.005	0.012
CSIZE	0.938*	0.449	0.840	0.677	0.160***	0.030	0.118***	0.030
CINDE	0.610*	0.358	0.495	0.379	-0.010	0.028	-0.040	0.028
CMEET	-0.242**	0.073	-0.190*	0.098	-0.018**	0.006	-0.014*	0.007
WEDGE	-0.821***	0.200	-0.885***	0.209	-0.059***	0.016	-0.050**	0.016
FEMD*WEDGE	-	-	0.132	0.109	-	-	0.006	0.008
AGE1*WEDGE	-	-	-0.429**	0.194	-	-	-0.003	0.013
AGE2*WEDGE	-	-	-0.670**	0.220	-	-	-0.028	0.018
AGE3*WEDGE	-	-	-0.647**	0.243	-	-	-0.019	0.020
AGE4*WEDGE	-	-	-0.416*	0.229	-	-	-0.007	0.019
AGE5*WEDGE	-	-	-0.348**	0.174	-	-	-0.029*	0.014
INTD*WEDGE	-	-	-0.191*	0.099	-	-	-0.002	0.008
EDUC*WEDGE	-	-	0.348**	0.132	-	-	-0.008	0.009
BSIZE*WEDGE	-	-	-0.207*	0.109	-	-	0.007	0.009
BINDE*WEDGE	-	-	-0.432**	0.148	-	-	-0.019**	0.009
BMEET*WEDGE	-	-	-0.074	0.103	-	-	-0.009	0.008
CSIZE*WEDGE	-	-	-0.160	0.136	-	-	-0.037***	0.008
CINDE*WEDGE	-	-	0.398**	0.154	-	-	0.015*	0.008
CMEET*WEDGE	-	-	0.143	0.105	-	-	0.005	0.009
FSIZE	0.392***	0.071	0.418***	0.096	0.028***	0.004	0.031***	0.005
LEVE	0.921**	0.386	0.811**	0.364	-0.065**	0.028	-0.058**	0.028
FAGE	0.661***	0.166	0.662***	0.181	0.053***	0.012	0.050***	0.012
R ²	0.3359		0.3635		Wald chi2	264.81	309.24	
Prob > chi ²	0.000		0.000		0.000		0.000	

Notes: * - significant at 10%, ** - significant at 5%, and *** - significant at 1%.

The average firm size (FSIZE) measured by total assets of the firms in this study sample is 1,904 Turkish Lira (TL) (\$5,277 at \$1= 3.608) with a minimum value of 1.433 and a maximum value of 2.608. The mean ratio of total debt to total assets (LEVE) of the firms in the sample is 0.481. The mean level of firm age (FAGE) is 33.825 with a minimum and

maximum value of 1 and 80, respectively. This range is very close to the study conducted by Gacar (2016) in the context of Turkey that reports a mean value of 39.910, standard variation of 15.211, a minimum of 0.60 and a maximum of 81.00. The correlation coefficient between audit quality and the variables displays the expected sign, excluding CMEET for audit quality indicators, for instance, Big4 and SPECLST_MS and BMEET for Big4 audit firms for which the coefficient is negative and close to zero.

As with previous studies, the highest correlation coefficient is for firm size. Further, FEMD, AGE3, AGE4, AGE5, INTD, EDUC, BSIZE, CSIZE, FSIZE, and FAGE have positive correlation with both Big4 and SPECLST_MS. On the other hand, AGE1, BINDE, CMEET and WEDGE possess negative correlation with both Big4 and SPECLST_MS. Variables exhibiting conflicting results are AGE2, BMEET, CINDE and LEVE for both indicators. Table 5 shows that there are no correlation coefficient values above 0.90; this reveals that there is no sign of potential multicollinearity (Hair, Anderson, Babin, & Black, 2010).

Next, this study discusses the multivariate analysis used to test the developed hypotheses. According to the findings reported in Table 6, board diversity, audit committee and control variables (for instance, firm size, leverage and firm age) explain 0.3359 and 264.81 of the total variance of the audit quality for both measurements (Big4 and SPECLST_MS, respectively) at the 1% level of significance in Model 1. The results of model 2 show that explanatory variables, WEGDE and control variables explain 0.3635 and 309.24 of the variance of the audit quality (Big4 and SPECLST_MS, respectively) at the 1% level of significance. The regression results in Model 1 show that board demographic diversity in terms of female directors has a significant influence on the demand of clients for a strong monitoring mechanism in terms of SPECLST_MS and an insignificant influence on the demand of clients for Big4 audit firms.

The results of directors' age imply for every increase in directors' age, they would be a rise in the Big4 and SPECLST_MS. This reflects that older directors are more likely to enhance the quality of financial reports; this result concurs with that documented by Ararat, Aksu, & Tansel Cetin (2010, 2015) and Cheng & Leung (2012). It is logical to propose that older directors are more experienced and prudent and they have strong incentives and abilities to select a strong external monitoring mechanism.

This study's results are in line with the agency-dependence propositions that board monitoring effectiveness is a function of board experience, knowledge and reputation (Pfeffer, 1973; Pfeffer & Salancik, 1978). Consistently, board demographic diversity measured by age and tenure is used as a proxy to measure directors' knowledge. This indicates that board demographic attributes, for instance, gender and age, enhance clients' incentive and ability to hire high quality auditor. The result supports Hypothesis 2. The slope of older directors on Big4 and SPECLST_MS is steep, whereas it is almost flat in the presence of WEDGE. Therefore, wedge weakens the relationship between board demographic diversity, in terms of directors' age and audit quality. The same argument has been provided by previous scholars that concentrated ownership has a negative impact on blocking board effectiveness with regards to board monitoring intensity (Cho & Wu, 2014). The result supports Hypothesis 12b.

The board's cognitive diversity is another kind of board diversity and it is measured using interlocking directorships and level of education. Interlocking directorships is another variable that has a significant influence on clients' ability to demand a strong monitoring mechanism. Board directors who work in more than one board have strong incentive to

acquire a strong external monitoring mechanism in order to protect their reputation. This is aligned with the propositions of the resource dependence theory that directors with multiple directorships widen their relationships with the external environment.

Consequently, this improves directors' cognitive characteristics that assist them to overcome environmental uncertainties (Pfeffer & Salancik, 1978; Thompson, 2011). Further, directors' cognitive attributes enhance clients' ability to hire high quality audit services. The findings support Hypothesis 3. The impact of cognitive diversity (in terms of INTD) on Big4 is weak, and on SPECLST_MS, becomes insignificant with the introduction of a moderating variable, for instance, WEGDE. The key idea is the monitoring function of board of directors is strongly related to ownership structure and the interaction between the two constructs leads to different patterns of auditor selection by firms. The results support Hypothesis 12c.

The finding shows that for every positive change in EDUC, there could be a corresponding positive change in audit quality for both measurements of audit quality, i.e., Big4 and SPECLST_MS. This argument is in tandem with that provided by Pfeffer & Salancik (1978) that the educational level of the board of directors can improve their skills with regards to management control and firms' strategic directions. Furthermore, board of directors' role is to provide the required resources to the firms, for instance, cognitive characteristics. The same argument is documented by Hillman & Dalziel (2003) that the most effective factors that improve clients' incentive to acquire a strong monitoring mechanism, are observable attributes (for instance, age and gender) and non-observable attributes (for instance, level of education). This result supports Hypothesis 4. The moderating effects of wedge on the relationship between directors' level of education and audit quality is positive and is supported by previous studies in the area of firm performance (e.g., Ararat, Aksu, & Tansel Cetin, 2015; Ararat, Orbay, & Yurtoglu, 2010). Even though the relationship is weakened due to the wedge, highly educated directors do encourage high audit quality. To the best of available literature, this study is the first to examine the interactive influence of WEDGE and EDUC on audit quality. Board directors with a high level of education have more capabilities for dealing with financial and accounting issues compared to less educated non-qualified directors. The result supports Hypothesis 12d.

The result provides support for Hypothesis 5, that firms with a big board of directors are less likely to hire high quality audit services. Therefore, Turkish firms should consider that big corporate boards sometimes decrease clients' incentive to acquire a strong external mechanism. Therefore, it is necessary to reduce the number of board directors to the acceptable level that can enhance board efficiency and effectiveness. The same argument is provided by Goodstein, Gautam, & Boeker (1994). The logical justification for the previous argument is a large board complicates the process of coordination and communication. Consistently, the agency theory proposes that a large board improves the issue of free-riding among the board directors. The influence of board size on audit quality is less powerful in the presence of WEDGE. This argument is aligned with that documented by Wu, Chen, & Lee (2016) that wedge has a negative impact on clients' incentive to demand high quality audit services. Desender et al. (2013) report that there is a substitution impact between internal corporate governance mechanisms and audit fees in the existence of high concentrated ownership. The result supports Hypothesis 12e.

BINDE has negative effects on clients' incentive to hire a strong external monitoring mechanism. This means BINDE has adverse impact on clients' incentive to hire high quality auditors. Thus, this result is a matter of concern for firms, as board freedom does

not encourage firms to acquire a strong monitoring mechanism., A study by Karaibrahimoglu (2013) in Turkey has documented that board independence has a significantly negative influence on clients' demand for audit quality due to the substitution impact between corporate governance mechanism and audit quality. Previous studies, such as Anderson, Francis, & Stokes (1994), Williamson (1983) and Yeoh & Jubb (2001) have provided support for this argument. This result supports hypothesis 4. The moderated impact displays adverse relationship between board independence and audit quality in terms of Big4 and SPECLST_MS. This illustrates that the moderating influence of wedge strengthens the negative relationship between board independence and Big4. This result has the support of past research by Wu, Chen, & Lee (2016) that concentrated ownership has a positively moderating influence on the relationship between corporate governance mechanisms and earnings management. However, the presence of a wedge does negatively influence BINDE in appointing a Big4 auditor in the Turkish environment. The presence of controlling shareholders reduces board of directors' independence (Shleifer & Vishny, 1997). To maximise their interests, controlling shareholders might select directors who are related to them rather than actual independent directors (Shivdasani & Yermack, 1999). The result supports Hypothesis 12f.

The results of Model 1 for both measurements of audit quality do not support Hypothesis 7, displaying that board meeting frequency does not influence high quality audit. The same argument is provided by Shan (2014) that the number of board meetings does not positively influence strategic decisions of the firms. This is because family firms with high concentrated ownership have a significantly negative influence in undermining the effectiveness of the board of directors. The result does not support Hypothesis 7. There is an unfavorable relationship between audit committee meeting and audit quality in terms of Big4 and SPECLST_MS in the presence of WEDGE. This indicates that the more the number of meetings of the audit committee, the less the likelihood of hiring a strong external monitoring mechanism. A previous study by Desender et al. (2013) has documented support for this argument that there is a substitution influence between corporate governance and ownership structures when it comes to monitoring function. This finding does not support Hypothesis 12g.

The result supports Hypothesis 8 that there is a relationship between audit committee size and audit quality in terms of Big4 and SPECLST_MS. Previous studies have provided support for this study's result as documented by Abbott & Parker (2000) and Chen & Zhou (2007). This is a reflection of the audit committee's effectiveness in improving clients' incentive to hire a strong external monitoring mechanism. Turkish firms have at minimum two directors on their boards of directors in order to fulfill the corporate governance requirements. This indicates that Turkish firms realize the effective role of internal corporate governance mechanisms, for instance, audit committee size, and this provides protection for investors, specifically, minority shareholders. The result displays that audit committee size has a negative influence on clients' demand for audit quality in terms of Big4 in the presence of WEDGE. The implication is that a wedge weakens the relationship between CSIZE and SPECLST_MS. This shows that a wedge has a negative impact on this relationship. Board directors who are audit committee members could have low incentives to depend on an audit in their monitoring role because lawsuits against directors are much less common as a result of weak institutional setting and legal environment in Turkey (Hacimahmutoglu, 2007; Yurtoglu, 2003). The finding partially supports Hypothesis 13a.

The regression results in Model 1 demonstrate that audit committee independence has a positive influence on the demand of clients for a strong monitoring mechanism in term of Big4 audit firms and an insignificant influence on clients' tendency to hire SPECLST_MS. This indicates that audit committee independence positively influences the alignment of interests of owners and managers (Fama & Jensen, 1983). Previous studies by Archambeault & DeZoort (2001) and Abbott & Parker (2002) have documented support for this argument that there is a positive relationship between audit committee independence and high audit quality. The result of this study partially supports Hypothesis 9. Audit committee independence affects the use of Big4 auditors positively due to the moderating influence of the wedge. The wedge weakens the relationship between audit committee independence and Big4 auditors. This reflects that the more independent the audit committee, the greater the use of Big4 auditors. This result implies that a wedge together with audit committee independence encourages the selection of Big4 auditor. Abbott & Parker (2002), Archambeault & DeZoort (2001), Beasley (1996) and Lee et al. (2004) provide supporting evidence for this relationship. The relevant interpretation is that the independent audit committee plays a significant role in enhancing the incentives of clients to demand a robust external monitoring mechanism. The idea behind this is that independent directors are more likely to protect their reputational capital by hiring a high quality auditor and avoid litigation risks because of the reliability of financial information even with the existence of wedge. The result supports Hypothesis 13b.

This study results illustrate that audit committee meetings have an inverse relationship with Big4. This implies that audit committee meetings discourage Big4 and SPECLST_MS appointments, which shows an unfavourable relationship. The same argument is documented by Basiruddin (2011) which could be the outcome of different measurements used to measure the variables of interest. Desender et al. (2013) argue that there is a substitution influence between board attributes and concentrated ownership with regards to the monitoring function. Previous studies by Abbott & Parker (2000), Beasley, Carcello, Hermanson, & Lapides (2000) and Xie, Davidson, & Dadalt (2003) have not supported the assertion for this result fully. The result does not support Hypothesis 10.

The result of model 2 indicates that there is an insignificant relationship between audit committee meeting and audit quality in the presence of WEDGE. To the best of the researchers' knowledge, this study is the first to examine this relationship. Controlling shareholders have strong incentives because of WEDGE to expropriate minority shareholders' wealth, and this decreases firm value (Claessens, Djankov, Fan, & Lang, 2002). This negatively influences the reliability and credibility of accounting and financial information, particularly reported information, to the external investors. Further, this will mitigate corporate governance effectiveness to improve clients' incentive to select a strong monitoring mechanism. The result does not support Hypothesis 13c.

There is strong relationship between wedge and audit quality. A critical evaluation of the type of relationship between the two constructs is negative. This indicates that wedge negatively influences or undermines clients' incentives to hire a strong external monitoring mechanism. Previous empirical studies by Choi (2007) and Kim & Yi (2006) have supported this argument. Thus, WEDGE does not enhance clients' incentive to acquire a strong monitoring mechanism. Also, the legal environment and institutional setting have negative impact on clients' incentive in the existence of WEDGE (Type II Agency Problem). Therefore, clients are less likely to invest in monitoring function in the presence of weak minority protection and low litigation risks, particularly in the Turkish business environment. Turkey has almost all weak features of corporate governance, for instance,

family ownership, institutional setting and accounting standards (Ararat, Black, & Yurtoglu, 2014; Yurtoglu, 2003). This study follows Craswell, Francis, & Taylor's (1995) cut-off points (10% and 20%) of SPECLST_MS to conduct the robustness analysis (Model 3 and Model 4, respectively) Table 7.

TABLE 7. ROBUSTNESS RESULTS

VARIABLES	MODEL 3		MODEL 4	
FEMD	0.0993	(0.0972)	-0.0906	0.118
AGE1	-0.278	(0.179)	-0.742***	0.282
AGE2	0.507***	(0.113)	-0.0524	0.126
AGE3	0.141*	(0.0819)	0.138	0.114
AGE4	0.0771	(0.127)	-0.112	0.156
AGE5	0.403***	(0.105)	0.396***	0.127
INTD	0.911***	(0.203)	0.0707	0.0583
EDUC	0.0946	(0.894)	0.108	0.103
BSIZE	-0.741***	(0.250)	-0.0138	0.326
BINDE	0.0593	(0.177)	-0.0866	0.205
BMEET	0.000924	(0.00750)	0.00194	0.00906
CSIZE	1.432**	(0.635)	1.106**	0.513
CINDE	0.114	(0.381)	-0.275	0.486
CMEET	-0.400***	(0.0979)	-0.277*	0.148
WEDGE	-0.849***	(0.219)	-0.160	0.275
FEMD*WEDGE	-0.0709	(0.106)	0.0955	0.130
AGE1*WEDGE	-0.0154	(0.185)	-0.539**	0.215
AGE2*WEDGE	-0.318	(0.236)	-0.677**	0.275
AGE3*WEDGE	-0.235	(0.259)	-0.342	0.270
AGE4*WEDGE	-0.366	(0.247)	-0.488*	0.260
AGE5*WEDGE	-0.326*	0.193	-0.514**	0.207
INTD*WEDGE	-0.0270	0.102	-0.104	0.138
EDUC*WEDGE	0.370***	0.134	0.174	0.122
BSIZE*WEDGE	-0.105	0.119	0.0338	0.138
BINDE*WEDGE	-0.336**	0.156	-0.620***	0.194
BMEET*WEDGE	0.123	0.105	-0.106	0.119
CSIZE*WEDGE	-0.000546	0.126	-0.153	0.112
CINDE*WEDGE	0.512***	0.155	0.625***	0.189
CMEET*WEDGE	-0.0792	(0.117)	0.126	0.193
FSIZE	0.685***	0.0731	0.306***	0.0789
LEVE	-0.409	0.488	-0.300	0.411
FAGE	-0.123	0.158	0.979***	0.271
Constant	-15.29***	2.119	-13.13***	2.076
Observations	724		724	
R2	0.3331		0.2942	
Wald Chi2	-		-	
P value	0.000		0.000	
Number of companies	146		146	
Time period	5		5	

Note: Robust standard errors in parentheses. *** - $p < 0.01$, ** - $p < 0.05$, * - $p < 0.1$.

The results of both models are aligned with those of Model 2's SPECLST_MS, except for EDUC and BINDE. Further analysis is conducted by separating this study's sample to WEDGE and Non-WEDGE firms. The results illustrate that WEDGE weakens the

influence of educated and independent directors in enhancing clients' ability and incentive to demand high quality audit and the case is the reverse for non-WEDGE firms.

6. Conclusion

This study provides support for the argument that the effectiveness of board of directors is contingent on WEDGE in monitoring management activities. More specifically, this study concentrates on the monitoring role of the corporate board, measured by audit quality, and its relationship to board demographics, cognitive and structural diversity, audit committee characteristics and WEDGE. The results are similar to previous studies' results that board demographics, cognitive and structural diversity and audit committee characteristics reduce Type II Agency Problem through engagement with high quality audit services. It is also aligned with the proposals of the agency and resource dependence theories.

Also, this study validates that WEDGE weakens corporate boards' incentive and ability to demand high quality audit services, a result which will be unfavorable to minority shareholders. To sum up, this paper contributes to providing a general understanding about board behavior in engaging in monitoring function using external audit services. The board of directors' monitoring behavior is not only influenced by board demographics, cognitive and structural diversity and audit committee characteristics, but also by the presence of WEDGE. Further studies are needed to examine the influence of WEDGE on the relationship between the two constructs before and after the year of regulatory change in 2012.

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