Audit committee versus other governance mechanisms and the effect of investment opportunities: evidence from Palestine

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Abstract

Purpose – *This paper aims to explore how the presence of an audit committee is associated with other corporate governance mechanisms, i.e. board structure, ownership structure and quality of external audit. The present study evaluated whether the presence of the audit committee complements or substitutes other governance mechanisms in Palestinian companies. Moreover, the effect of investment opportunities on the relationship between the formation of the audit committee and the quality of the auditor was addressed.*

Design/methodology/approach – *The association between the formation of the audit committee and other governance variables was modelled as a binary logistic model. The sample comprising 44 firms listed on Palestine exchange for the period between 2013 and 2017, amounting to 220 firm-year observations.*

Findings – *Based on the investigation, the results have indicated that board independence, the distinction between the chairman and chief executive officer function, ownership concentration and audit quality enhance the chance of audit committee formation, implying complementary effect. Contrastingly, board size and board ownership serve as a substitute to audit committee formation. It has also been found that investment opportunities act as an effective moderating factor that strengthens the relationship between audit quality and the formation of the audit committee.*

Originality/value – *The study provides valuable insight into the interaction between multiple corporate governance mechanisms within the economy of Palestine where the external uncertainty is high and investment opportunities are constrained by the decisions of the occupying authority. The findings may help regulators and policymakers in Palestine alongside those of other countries with similar environmental features to revise and update their corporate governance codes to ensure that the best control can be achieved, subsequently attracting more foreign and domestic investments.*

Keywords *Audit committee, Palestine, Corporate governance, Investment opportunities, Substitution versus complementary effects*

Paper type *Research paper*

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1. Introduction

Corporate governance is the bundle of rules and measures, which outlines the responsibilities of a firm's management and provides assurance that the best interests of shareholders are pursued. Corporate governance has been a prominent material of investigation following the numerous events of financial scandal across the globe, which implied how weak governance can lead management to exploit the shareholders (Naser *et al.*, 2013). Consequently, corporate governance regulations and codes have been introduced by many countries to diminish the agency problem and simultaneously preserve the shareholders' rights. A corporate governance system incorporates different internal and external mechanisms that are interconnected in achieving the goal of monitoring management. Although existing literature has shown how each mechanism manages the

Received 23 June 2019
Revised 5 November 2019
Accepted 13 February 2020

agency problem, the degree of control that each mechanism adds to the overall firm governance has not been extensively addressed in light of the other mechanisms applied. This gap suggests that further investigation should be directed to study how each mechanism interacts with and affects the work of other mechanisms used in the governance system of the firm. Hence, governance mechanisms should not be examined individually, rather, they should be considered as a group that provides a certain level of control (Ward *et al.*, 2009). It is believed that the interaction of different governance mechanisms in a certain economy is crucial in determining the most advantageous mix of mechanisms that provides the highest level of control over management with the lowest cost possible in that economy (Aguilera and Crespi-Cladera, 2012). Past research has also revealed that different governance mechanisms can either function as complements or substitutes to each other (Hassan *et al.*, 2017). When a mechanism acts as a substitute, an increase in the first mechanism will replace part of the control provided by the second mechanism without increasing the overall level of control exerted by the whole governance system (Ward *et al.*, 2009). Contrastingly, when a mechanism functions as a compliment, an increase in the first mechanism will also increase the control exerted by the second mechanism, and consequently, lead to a higher level of overall control. Therefore, it can be deduced that the governance system is a continuum with weak governance on one end and strong governance on the other; the addition of more monitoring mechanisms increases the strength of the governance system (Hassan *et al.*, 2017).

The audit committee is a vital internal governance technique, which provides assistance to the board of directors in supervising the system of financial reporting and facilitating the external audit function. Hence, it can be argued that besides reducing the agency costs, the implementation of an audit committee can diminish the information gap between management and owners (Sharma *et al.*, 2009). It should be highlighted that the way in which the audit committee impacts other governance mechanisms has not been thoroughly addressed in past research, especially in developing countries and particularly countries with unstable political and economic environments such as Palestine (Hassan and Hijazi, 2015; Hassan *et al.*, 2017). Also, while there have been limited studies (Hassan and Hijazi, 2015) that evaluated the factors of the voluntary establishment of the audit committee in Palestine, no empirical research has examined the interaction between the voluntary creation of audit committee and other governance mechanisms, as well as the effect of investment opportunities on this interaction. Accordingly, the current paper intends to examine the association between the existence of an audit committee and other corporate governance instruments, namely, board structure, ownership structure and quality of external audit. This paper will investigate whether the audit committee works as a complement or as a substitute in relation to other governance mechanisms in Palestinian companies. In contrast to prior literature, this study also evaluates the effect of an investment opportunity on the establishment of an audit committee and the substitution/complementary role of audit committee *vis-à-vis* audit quality mechanisms.

There are several justifications in relation to the significance of analysing the nature of the interconnection between the existence of audit committee and other corporate governance tools in Palestine. This country proves to be a good choice for investigating distinctive reasons for audit committee formation as its establishment is arbitrary – apart from banks. Moreover, the ownership structure in the Palestinian business environment is based on concentrated ownership by family investors. Differences in the ownership structure between countries have caused discrepancies in the nature of conflicts between management and shareholders, resulting in variations of the corporate governance systems (Hassan and Hijazi, 2015). Palestine also suffers from economic and political instability, weak law enforcement and inefficient fiscal and monetary policies to operate and monitor the economic activities. Though Palestine possesses a certain degree of autonomy in handling interior daily aspects of Palestinians' life since 1994, most resources including lands, water, power and even radio waves are still subjected to the occupation control. Foreign trade also depends on the permissions given by the occupying authorities. Movement of people or goods is particularly difficult between the two parts of Palestine i.e. Gaza and the West Bank. Additionally, business and investment activities are directly or indirectly controlled by the occupying authorities. In such an unstable economy, companies are more susceptible to agency problems and asymmetric information (Allen, 2005). It can be said that firms operating in such environments are subject to higher control problems. Hence, the investigation of whether the establishment of audit committee complements or substitutes other governance mechanisms in such circumstances will enrich the corporate governance literature. Furthermore, investment opportunities for any firm in this environment need to depend on the policies enforced by the occupying authorities instead of the market forces alone. Some firms may have more investment opportunities in the form of permissions related to the use of land, water, power or foreign trade facilitation. It has also been argued that firms with high investment opportunities have higher control problems (Tsui *et al.*, 2001). Accordingly, this research contributes to the literature by investigating whether investment opportunities affect the decision to establish an audit committee and whether they influence the substitution or complementary relationship with other governance mechanisms in a tightly controlled and restricted economy. The research findings may also assist regulators and policymakers in Palestine, alongside those of other countries with similar environmental features to revise and update their corporate governance codes to ensure that the best investment environment can be achieved apart from attracting more foreign and domestic funds.

In terms of the structure of this paper, the current introduction section will be followed by the description of the research background in Section 2. Next, the methodology used in this study will be elaborated in Section 3. Meanwhile, Section 4 outlines the findings of the study, which is, finally, followed by the conclusions in Section 5.

2. Study background

Based on the existing literature, two possible standpoints can be presented to describe the relationship between agency costs and the different governance techniques devised to reduce the exploitation of the owners by management. First, it is suggested that complementary effects can be projected by different governance mechanisms (Schmidt and Spindler, 2004; Hoskisson *et al.*, 2009). This perspective specifies that internal monitoring (e.g. board and shareholder control), external monitoring (e.g. the market for corporate control) and management compensation policies collaborate to diminish the potential managerial opportunism. The agency costs will be reduced as a result of the good governance mechanisms implementation. The logic underpinning this standpoint is that the whole governance system aims at alleviating the agency problem and the limited amount of control exercised by any governance mechanism. Consequently, the addition of one mechanism provides the opportunity for another mechanism to address different aspects of the agency problem (Ward *et al.*, 2009). It can be understood that the addition of one mechanism enhances the function of another; the two mechanisms become complements. For example, without the existence of an audit committee, the board is liable for overseeing the management reporting process in addition to ensuring that the reports are of high quality. The establishment of an audit committee will shift the task of monitoring the reporting process away from the board, enabling the focus to be given to other aspects of management monitoring. The second standpoint asserts that different governance mechanisms are substitutes for each other, and it is also costly to apply all of them. Hence, it is suggested that a mechanism should not be added unless it includes more control benefits than the costs (Fernandez and Arrondo, 2005). This stance also highlights that the purpose of the governance system is to lessen the agency problem; when one mechanism is strong enough in achieving this purpose, the need for another mechanism is reduced and vice versa. It is further implied that the two mechanisms are substitutes as the addition of one mechanism will only replace part of the work performed by another mechanism without affecting the overall control (Ward *et al.*, 2009; Naser *et al.*, 2013). For example, when the firm has a low-quality audit firm, blockholders will be forced to increase the effort in monitoring the management. In contrast, a high-quality audit committee that conducts the necessary monitoring can replace the blockholders' efforts. Several important corporate governance mechanisms i.e. audit committee, board structure, ownership structure and quality of the external audit, in addition to the role of investment opportunities are elaborated more thoroughly in the following sections.

2.1 Audit committee

The audit committee has been extensively investigated as a corporate governance tool, especially in terms of its effect in mitigating asymmetric information between shareholders and managers, as well as in enhancing financial reporting (Hassan and Hijazi, 2015). The voluntary creation of audit committees has also been widely studied in relation to the motivation, which prompts companies to adopt this mechanism as a part of their corporate governance system (Pincus *et al.*, 1989; Bradbury, 1990; Deli and Gillan, 2000; Carson, 2002; Piot, 2004; Chau and Leung, 2006; Firth *et al.*, 2007). Firm characteristics including firm size, leverage, board structure, the board size, board independence and ownership structure are among the factors that have been identified as having an influence on the establishment of an audit committee. Despite these findings, there has been limited research with mixed results in analysing the connection between the voluntary creation of an audit committee and other governance mechanisms. For the complementary effects, prior research has discovered that audit committee is linked to a better-performing internal control system (Krishnan, 2005), higher ownership dispersion, proportion of outside directors (Abdel-Meguid *et al.*, 2014; Chen *et al.*, 2009; Firth and Rui, 2007; Hassan *et al.*, 2017), chairman independence (Chen *et al.*, 2009) and larger board size (Abdel-Meguid *et al.*, 2014; Chen *et al.*, 2009; Hassan *et al.*, 2017). In the same study that found some complementary effects, Firth and Rui (2007) discovered that firms with audit committees use less quality external auditors consistent with the substitution effect. Nonetheless, it is evident that not many studies have found the substitution effect of other corporate governance mechanisms for the audit committee. In the context of Middle Eastern countries, only Abdel-Meguid *et al.* (2014) and Hassan *et al.* (2017) have investigated the complementary and substitutive interconnection between the audit committee and other governance tools in Egypt and UAE, respectively. It can further be deduced that the understanding of the substitution and complementary effects of corporate governance mechanisms is still lacking, particularly in a country with tight military control and a restricted economy. The mixed findings with regard to the factors that can complement or substitute the audit committee may suggest other factor(s) that can affect the relationship.

2.2 Board structure

Board of directors is a crucial mechanism, that is specifically chosen by shareholders for monitoring the management and ensuring that it works towards attaining the shareholders' goals (Fama and Jensen, 1983; Kroll *et al.*, 2008; Belkhir, 2009). The effectiveness in supervising the management team and reducing the principal-agent problem is influenced by the features of the board of directors itself. Karamanou and Vafeas (2005) have claimed that those features include board size, board independence and chief executive officer (CEO) duality.

It has been argued that members of large boards have a higher tendency to experiencing conflicts with each other. This case suggests that smaller boards are characterised with the benefits of higher efficiency in communication and the ability to better coordinate the activities of the board, which will consequently enhance the decision making process (Jensen, 1993; Yermack, 1996; Cheng, 2008). These advantages will further result in the capacity to achieve effective monitoring of the management without having to form audit committees (Bushman *et al.*, 2004; Piot, 2004). In addition, an audit committee can only be established when there are enough members on board (Bradbury, 1990). The cases of a positive relationship between board size and the establishment of the audit committee have been found in Australia (Chen *et al.*, 2009), Palestine (Hassan and Hijazi, 2015), Egypt (Abdel-Meguid *et al.*, 2014) and Indonesia (Suryanto *et al.*, 2017). These empirical findings suggest that a complementary role exists between board size and the voluntary formation of an audit committee.

Board independence has also been a prominent topic of corporate governance research across the world. Previous studies have found that a greater ratio of independent members on board is linked to lower levels of conflicts between owners and management, and consequently, results in better corporate performance (Andres *et al.*, 2005; Prentice and Spence, 2007; Chau and Gray, 2010). Nonetheless, the asymmetric information between executive members and independent members onboard limits the role of the latter, preventing independent directors from fulfilling their responsibilities towards shareholders. This situation may serve as an incentive for independent directors to reduce this information asymmetry by establishing an audit committee (Abdel-Meguid *et al.*, 2014; Chen *et al.*, 2009; Firth and Rui, 2007; Zhou *et al.*, 2018). These findings further denote that the audit committee complements board independence.

A situation called CEO duality is said to occur when the positions of CEO and board chairperson are occupied by the same individual. It has been asserted that the performance of the board in overseeing management is diminished by CEO duality as it expands the CEO’s control and increases the management’s dominance (Fama and Jensen, 1983; Messier, 2000; Westphal and Zajac, 1998). CEO duality impairs the function of the board and its control over the management, resulting in poorer corporate performance as the management can better pursue their interests (Habib and Hossain, 2012). The high level of dominance caused by the appointment of the same individual as CEO and board chairperson will also decrease the chance of audit committee formation (Abdel-Meguid *et al.*, 2014; Chen *et al.*, 2009). Hence, these findings imply a complementary interaction between the presence of an audit committee and the division between the CEO and board chairperson roles.

2.3 Ownership structure

Ownership structure plays a significant role in the degree of control exercised by the corporate governance system (Li, 1995). In relation to the complementary or substitution effects, ownership structure can be characterised based on its concentration level or the board ownership.

Investors with high ownership in a company are typically more encouraged to monitor the actions and decisions taken by the management, prevent fraud, and ensure that the shareholders’ interests are safeguarded. Moreover, those investors usually have a higher level of skills, knowledge and resources that they can pledge to protect their large investments (Aljifri and Moustafa, 2007; Ping and Wing, 2011; Pound, 1988). Therefore, firms that have highly concentrated ownerships are more prone to applying mechanisms such as audit committee formation to strengthen the corporate governance system by which companies with disbursed ownerships would not apply (Feldmann and Schwarzkopf, 2003). Consistent with the research findings from Firth and Rui (2007) and Dewayanto *et al.* (2017), a complementary association between the concentration of ownership and the presence of an audit committee is proposed.

Besides ownership concentration, directors’ ownership affects the function of corporate governance structure in a company. Directors’ ownership can align the interest of directors to the shareholders, including the minority shareholders. However, when the board’s ownership increases, the owner-directors tend to form a base of power with the company management. It can be argued that the higher the board ownership, the lower the motivation that the board has to force the management to provide high-quality information and use mechanisms such as the formation of the audit committee that ensure effective decision-making. This power will create conflict through managerial entrenchment between the management and external shareholders (Akhtaruddin and Haron, 2010). Thus, board ownership is predicted to have a substitutive association with the formation of an audit committee (Chen *et al.*, 2009; Abdel-Meguid *et al.*, 2014).

2.4 Quality of external audit

The effectiveness of corporate governance within a firm is in part determined by the quality of external auditors, especially those from the established international firms. Auditors from international audit firms typically have more relevant expertise compared to those from local firms. As part of best corporate governance practices, the auditors may encourage clients to form an audit committee to enhance the control and monitoring in the firms (Turley and Zaman, 2004). Furthermore, because of the high concern for their reputation and high work standards, international firm auditors tend to engage with clients with strong internal control and monitoring mechanisms to preserve this reputation and ensure that the auditors' independence will not be compromised (DeAngelo, 1981; Palmrose, 1988). As part of internal governance mechanisms, the audit committee is one of the practices that can help maintain external auditor independence (Klein, 2002; Zaman *et al.*, 2011). This complementary effect has been supported by the empirical studies conducted by Goodwin-Stewart and Kent (2006) and Knechel and Willekens (2006) whereby a positive association between the presence of audit committee and audit fees, as a proxy for audit quality, was discovered. Pincus *et al.* (1989) have also discovered that the voluntary adoption of the audit committee is more likely to occur when auditing of the company is conducted by Big Eight auditors. A complementary relationship between the audit committee and audit quality in Turkey has been found by Mustafa *et al.* (2018). Another research has revealed that Hong Kong companies that are not audited by an auditor from large firms are more inclined to have audit committees (Firth and Rui, 2007), implying the presence of a substitutive relationship. Moreover, the formation of the audit committee is linked with the reduction of the overall company risk and agency problems, lessening the effort needed from an external auditor, as well as the quality of the external audit (Krishnan and Visvanathan, 2009; Beasley *et al.*, 2009). Therefore, the complementary versus substitution effect between the formation of an audit committee and large audit firms should be investigated by considering other contextual factors that can possibly affect the relationship.

2.5 Investment opportunities

The research findings of Esqueda and O'Connor (2020) suggest that firms improve corporate governance to reduce agency costs and increase value. The investigation of the relationship between corporate governance and performance should incorporate other contextual factors such as investment opportunities that a firm has (Hutchinson and Gul, 2004). According to Myers (1977), the value of the firm is the sum of the value of assets in place and the value of future investment opportunities and investment opportunities largely depend on the discretion of management, hence, it may create additional control problems (Gaver and Gaver, 1993). Investors in firms with high growth opportunities are more concerned with the reliability of accounting reports, as the information contained in these reports is necessary for the firms' valuation (Piot, 2001) and the audit committee may be effective in enhancing the quality of accounting reports (Ghafran, 2013). Firms with high investment opportunities also have higher control problems and audit risk (Tsui *et al.*, 2001). Moreover, the external uncertainty negatively affects the valuation of investment opportunities (Lensink *et al.*, 2005), hence, firms need to increase control measures on management to improve the investors' confidence in case of high investment opportunities. Finance literature normally suggests control mechanisms that are costly or not readily available including takeovers and debt issuance. Because of the weak contribution of these controlling mechanisms in Palestinian small economy, monitoring problems arise as the investment opportunities must be regulated by other means. Lai (2009) has claimed that growth firms demand higher quality auditors as a readily available means of control. It should be highlighted that the audit committee is another means for controlling the management discretion (Ghafran, 2013). Therefore, two conjectures are proposed as follows:

1. first, firms with high investment opportunities are more likely to establish an audit committee compared to firms with low investment opportunities; and
2. second, if the audit quality and existence of audit committee are complements, as predicted previously, the establishment of an audit committee is more likely to happen among firms with high investment opportunities that are audited by high-quality auditors.

Another argument that supports these conjectures depends on the audit fees. It is argued that firms with higher investment opportunities have a higher audit risk (Tsui *et al.*, 2001). These risks require more tests, and consequently, quality auditors will require higher fees (Tsui *et al.*, 2001). The existence of an audit committee may further reduce the risks of audit (Ghafran, 2013), hence, reducing the audit fees. Therefore, it is expected that firms with high investment opportunities and audited by a quality auditor are more likely to establish an audit committee. The complementary effect between the existence of an audit committee and the audit quality is stronger for firms with high investment opportunities.

In sum, the economic and political instability, weak law enforcement, inefficient fiscal and monetary policies to operate and monitor the economic activities and the direct or indirect restrictions on investment environment by the occupying authorities made the investment opportunities of firms in Palestine unique and deserve to be investigated in terms of the influence on the choice of control mechanisms.

3. Methodology

3.1 Data

The data of the current paper were gathered manually, using the annual reports of Palestinian corporations listed in Palestine Exchange (PEX) between 2013 and 2017. The total number of corporations listed in PEX was 48 firms (Palestine Exchange, 2018). A balanced panel of 44 firms for each year was used because of the missing data for four firms. Sectors include manufacturing (13 firms), financial (13 firms), services (9 firms) and investment (9 firms). Overall, observations of 220 firm-year records were eventually used in this study.

3.2 Variables measurement

The dependent, the independent and the control variables measurements are displayed in Table I. The dependent variable, i.e. the existence of an audit committee, is fitted as a dummy variable. The corporate governance techniques, namely, auditor type, board independence, board size, CEO duality, ownership concentration and board ownership are the independent variables. The investment opportunities variable is used as an independent variable in one model and as a moderator variable in another model. Following Gaver and Gaver (1993), this research uses the ratio of market to book value of assets as a proxy for investment opportunities. Particularly, a dummy variable, that is equal to 1 if the market to book ratio is higher than 1, 0 otherwise is used. Control variables that could affect

Table I Variables and measurement

Construct	*Variable*	*Symbol*	*Measurement*
Dependent variable	Audit committee existence	*AC*	Dummy variable takes 1 if an audit committee exists, 0 otherwise
Quality of external auditor	Auditor type	*AT*	Dummy variable takes 1 if the auditor is of a Big Four, 0 otherwise
Board structure	Board independence	*BIND*	Percentage of independent board members to the total number sitting on the board
	Board size	*BS*	Number of members on the board
	CEO duality	*CEOD*	Dummy variable takes 1 if the CEO is also the chairperson, 0 otherwise
Ownership structure	Ownership concentration	*OWC*	Percentage of shares owned by shareholders who own more than 1%
	Board ownership	*BOW*	Percentage of shares owned by board members
Moderator variable	Investment opportunities	*INVESTMENT OPPORTUNITIES*	Dummy variable takes 1 if the market to book ratio of assets is larger than 1, 0 otherwise Market to book ratio of assets = (total assets + market value of equity-book value of equity)/total assets, where Market value of equity = number of outstanding shares × price per share
Control variables	Financial leverage	*FL*	Total liabilities divided by total assets
	Financial performance	*FP*	ROA = net income/total assets
	Firm size	*LOGTA*	Natural logarithm of total assets

the corporate governance structure of the firm including firm size, leverage and profitability are also included in the study and will be discussed shortly.

Control variables refer to factors that could affect the role of governance tools. Considering these variables when investigating the interaction between different corporate governance mechanisms should purify the intended relationships. Literature has indicated a positive association between corporate governance used and firm size (Boone *et al.*, 2007; Guest, 2009). This direct relationship can be traced to the circumstance where larger firms require more external capital than small firms. Accordingly, corporate governance mechanisms are required by large firms to boost the confidence of external investors that their money will be secure (Hassan and Hijazi, 2015). Moreover, because of the higher exposure to information asymmetry, large firms have a higher level of conflicts between their owners and managers (Jensen, 1986). This situation causes more corporate governance mechanisms including audit committees to be used by large firms to decrease the level of conflict of interests (Adams, 1997).

Akin to shareholders, debt-holders also provide their funds to the company for investment. Therefore, the relationship between debt-holders and managers is another important aspect of the principal-agent relationship. Even though managers may concentrate their effort towards achieving the interests of principals, conflicts of interest will still arise because of the existence of debt-holders within the firm. When the amount of debt-holders' investment multiplies, there is an increased need for a higher level of control within the firm. The increasing amount of debt-holders' investment, which is represented by leverage causes a higher need for additional governance mechanisms, including audit committee establishment (Pincus *et al.*, 1989; Collier, 1993).

Finally, a positive relationship between the firm's profitability and the governance practices of the firm, including the audit committee formation, has been revealed by researchers (Silveira *et al.*, 2007). This positive relationship occurs as profitable firms have more incentive to be transparent than less profitable firms, resulting in a higher level of corporate governance. Moreover, highly profitable firms have a higher motivation to remain profitable compared to firms with less profitability (Oyeler *et al.*, 2003). On the other hand, it has been contended that highly profitable companies have a lower need for external financing as more funds are generated internally. This condition causes highly profitable firms to apply a lower level of corporate governance as they do not need to attract external investors' funds as much as the less profitable firms (Black *et al.*, 2006). This contradiction in the expected relationship between profitability and governance measures will be solved empirically.

3.3 Estimation methods

The relationship between the presence of an audit committee and the remaining governance variables was modelled as a binary logistic model, as there were only two possible outcomes in the dependent variable. Specifically, the dependent variable is the odds of establishing an audit committee. All panel data were pooled together and standard errors used were robust and clustered in years to overcome possible problems of heteroscedasticity, autocorrelation and correlation with each other. Model 1 took the following specification:

$$\begin{aligned} AC_{it} = {} & \beta_0 + \beta_1 BS_{it} + \beta_2 BIND_{it} + \beta_3 CEOD_{it} + \beta_4 OWC_{it} + \beta_5 BOW_{it} \\ & + \beta_6 AT_{it} + \beta_7 FL_{it} + \beta_8 FP_{it} + \beta_9 LOGTA_{it} + \varepsilon_{it} \ldots. \qquad \text{(Model 1)} \end{aligned}$$

Where variables' symbols are outlined in Table I, *i* and *t* are firm and year subscripts, β's are the model coefficients and ε_{it} is the error term for firm *i* in year *t*.

To investigate the effect of investment opportunities on the establishment of an audit committee, Model 2 of this study includes the investment opportunities as an additional variable to Model 1. If investment opportunities are positively related to the establishment of an audit committee, the proposed hypothesis is supported.

$$\begin{aligned} AC_{it} = {} & \beta_0 + \beta_1 BS_{it} + \beta_2 BIND_{it} + \beta_3 CEOD_{it} + \beta_4 OWC_{it} + \beta_5 BOW_{it} + \beta_6 AT_{it} + \beta_7 FL_{it} \\ & + \beta_8 FP_{it} + \beta_9 LOGTA_{it} + \beta_{10} \text{INVESTMENT OPPORTUNITIES}_{it} + \varepsilon_{it} \ldots \qquad \text{(Model 2)} \end{aligned}$$

Finally, to investigate the moderating effect of investment opportunities on the relationship between audit quality and the establishment of an audit committee, a Model 3 that includes an interaction term between investment opportunities variable and audit quality variable is estimated. If the interaction term is positive, then high investment opportunities firms that hire high-quality audit also have high possibility to establish an audit committee, consistent with the hypothesised relationship.

$$\begin{aligned} AC_{it} = {} & \beta_0 + \beta_1 BS_{it} + \beta_2 BIND_{it} + \beta_3 CEOD_{it} + \beta_4 OWC_{it} + \beta_5 BOW_{it} + \beta_6 AT_{it} + \beta_7 FL_{it} \\ & + \beta_8 FP_{it} + \beta_9 LOGTA_{it} + \beta_{10} \text{INVESTMENT OPPORTUNITIES}_{it} \\ & + \beta_{11} \text{INVESTMENT OPPORTUNITIES}_{it} * AT_{it} + \varepsilon_{it} \ldots \qquad \text{(Model 3)} \end{aligned}$$

4. Results and discussions

4.1 Descriptive statistics and bivariate correlations

The pooled descriptive indicators of the variables in the present research are illustrated in Table II. Based on the data below, 65 per cent of companies within the sample have audit committees. During the investigation period, the average board consisted of almost nine members and 92 per cent of board members are independent in appearance. In addition, the percentage of companies where the seats of CEO and board chairperson were run by the same person is 18 per cent. Moreover, the average board ownership is 57 per cent and

Table II Descriptive statistics					
Variable	*Observations*	*Mean*	*SD*	*Min*	*Max*
AC	220	0.65	0.48	0	1
AT	220	0.76	0.43	0	1
BInd	220	0.92	0.16	0	1
BS	220	8.82	2.14	5	15
CEOD	220	0.18	0.39	0	1
OWC	220	0.67	0.21	0.11	0.77
BOW	220	0.57	0.24	0.04	0.77
FL	220	0.43	0.27	0.01	1.91
FP	220	0.04	0.21	−0.62	2.86
LogTA	220	17.62	1.79	14.01	22.31
Investment opportunities	220	0.46	0.50	0	1

an average of 67 per cent of the shares of companies were owned by large shareholders. It can be deduced that the ownership of Palestinian corporations is concentrated, mostly in the hands of the board with few corporations owned by a small group of investors, leaving only a minor fraction for the public. Furthermore, 76 per cent of listed corporations have a Big Four external auditor and only 46 per cent have a positive value of investment opportunities.

The correlation matrix for both dependent and independent variables of the current paper is illustrated in Table III. Based on the findings, all independent variables had a bivariate positive effect on the presence of the audit committee, except for CEO duality, which had a negative effect meaning that firms with the dual role of CEO and chairperson are less inclined to establish an audit committee. Moreover, the correlations among independent variables were not high, except for the correlation between ownership concentration and board ownership (84 per cent) and the correlation between investment opportunities and its interaction with audit quality (80 per cent). Nonetheless, Asteriou and Hall (2007) have asserted that correlations of less than 0.9 do not cause a critical multicollinearity issue in regression analysis. To further diagnose any multicollinearity effect, a variance inflation

Table III Correlation matrix							
Variable	*AC*	*AT*	*BInde*	*BS*	*CEOD*	*OWC*	*BOW*
AC	1.00						
AT	0.37	1.00					
BInde	0.30	0.01	1.00				
BS	0.05	0.33	0.06	1.00			
CEOD	−0.14	−0.15	−0.28	−0.04	1.00		
OWC	0.07	0.16	0.01	−0.16	−0.52	1.00	
BOW	0.04	0.31	−0.04	−0.11	−0.42	0.84	1.00
FL	0.24	0.06	−0.02	0.20	0.14	−0.06	−0.17
FP	0.02	−0.01	0.06	0.09	−0.02	−0.03	0.00
LogTA	0.42	0.40	0.21	0.47	0.18	−0.30	−0.22
Investment opportunities	0.17	0.02	0.08	−0.18	0.04	0.03	0.10
AT × investment opportunities	0.35	0.41	0.05	0.03	0.07	−0.01	0.07

	FL	*FP*	*LogTA*	Investment opportunities	AT × investment opportunities
FL	1.00				
FP	−0.10	1.00			
LogTA	0.44	0.15	1.00		
Investment opportunities	0.02	0.02	0.09	1.00	
AT × investment Opportunities	0.08	−0.03	0.28	0.80	1.00

factor (VIF) is estimated for each independent variable in the regression and the results confirm the absence of critical multicollinearity in the three models. Results of VIF for Model 3 are presented in the notes of Table IV.

4.2 Logistic models estimation

The outcomes of the logistic models, which examined the interaction between the voluntary establishment of an audit committee and alternative corporate governance techniques are portrayed in Table IV. The models had a good fit of 36, 38 and 41 per cent, respectively, based on the Pseudo R^2. According to McFadden (1977), values between 0.2 and 0.4 of this Pseudo R^2 measurement represent an excellent fit.

Table IV illustrates that all variables in Model 1 had a significant impact on the voluntary adoption of the audit committee in the companies listed in the PEX between 2013 and 2017. Board independence had a significant positive influence on the formation of an audit committee in the context of Palestine. This relationship proposes that companies whose boards have a high portion of independent directors have a higher tendency to concentrate on the employment of good corporate governance techniques including the audit committee formation. This finding is also conforming with other empirical studies, which have found that the formation of the audit committee is more reasonable to take place in more independent boards (Firth and Rui, 2007; Chen *et al.*, 2009; Abdel-Meguid *et al.*, 2014). This significant positive linkage supports the hypothesis that the presence of an audit committee complements the responsibility of independent directors on board and that these two mechanisms enhance each other's function in controlling management and reducing agency costs. The complementarity between the formation of an audit committee and the board of directors is supported by the significant negative link found between audit committee formation and the CEO duality as depicted in Table IV, Model 1. This association also implies that the appointment of separate people for the jobs of CEO and board chairperson increases the chance of audit committee formation. It should be highlighted that this documented relationship correlates with that of previous findings documented by Chen *et al.* (2009) and Abdel-Meguid *et al.* (2014).

Table IV Logistic model results

Dependent variable: AC	*Model 1*	*Model 2*	*Model 3*
AT	1.926 (4.800)***	2.146 (4.480)***	0.770 (1.860)*
Investment opportunities	–	0.992 (2.500)**	−1.012 (−2.630)**
AT × investment opportunities	–	–	2.735 (4.250)***
BInd	5.862 (2.940)***	4.865 (2.470)**	4.881 (2.220)**
BOW	−4.601 (−8.060)***	−6.030 (−5.240)***	−4.618 (−4.640)***
BS	−0.411 (−6.350)***	−0.383 (−6.690)***	−0.429 (−7.270)***
CEOD	−0.933 (−3.250)***	−1.193 (−2.300)**	−1.632 (−2.280)**
FL	1.207 (2.850)***	1.303 (3.050)***	1.240 (2.250)**
FP	−0.669 (−2.090)**	−0.671 (−1.860)*	−0.500 (−1.470)
LogTA	0.937 (9.450)***	0.965 (7.890)***	1.028 (7.400)***
OWC	5.291 (3.130)***	6.426 (3.280)***	5.489 (2.980)***
_cons	−19.884 (−15.050)***	−20.182 (−11.720)***	−19.891 (−15.020)***
Pseudo R^2	0.357	0.378	0.407
Number of obs	220	220	220

Notes: ***, **, * represent significance at the 1%, 5%, and 10%, respectively; All standard errors are robust and clustered in years; VIF for each variable in Model 3 is as follows:

Variable	VIF	Variable	VIF	Variable	VIF
AT	2.81	*BOW*	4.42	*FP*	1.09
Investment opportunities	5.14	*BS*	1.48	*LogTA*	2.42
AT × investment opportunities	5.97	*CEOD*	1.72	*OWC*	4.56
BInd	1.27	*FL*	1.49		

A significant negative connection was discovered between the size of the board and voluntary establishment of an audit committee, suggesting that the increase in a number of directors on the board reduces the chance of audit committee being formed. It must be noted that this particular finding contradicts the results of previous literature where it was found that large boards had higher tendency to promote the audit committees formation (Bradbury, 1990; Piot, 2004; Chen *et al*., 2009; Abdel-Meguid *et al*., 2014; Hassan and Hijazi, 2015). Nevertheless, this result may imply that large boards have more knowledge, experience and resources, which, therefore, enhance their effectiveness without the need for audit committees (Akhtaruddin *et al*., 2009; Hussainey and Wang, 2010). This finding also supports the theory of substitution in which the level of control added by one corporate governance tool is reduced by the presence of another tool (Ward *et al*., 2009). In other words, the function of a large board substitutes the need for the audit committee, which contradicts the hypothesised relationship.

In terms of the ownership structure variables, Model 1 discovered a significant positive correlation between the voluntary formation of an audit committee and the ownership concentration, indicated by the proportion of the largest shareholders' shares. This finding conforms to the argument that investors who own large percentages in a company have high motivation to oversee managers and establish mechanisms that can increase the control over them (Pound, 1988; Aljifri and Moustafa, 2007; Ping and Wing, 2011). It also confirms a previous finding in which companies with concentrated ownership tend to adopt audit committees (Firth and Rui, 2007). Furthermore, this relationship supports the hypothesised theory of complements between the two variables suggesting that the establishment of an audit committee improves the monitoring function of large shareholders. In contrast, it has been found that the association between the establishment of an audit committee and board ownership was significant and negative. The argument of managerial entrenchment is, thus, supported, implying that the increase in board ownership lessens the motivation of the board to control the management and establish an audit committee as both board and management constitute a power base together (Akhtaruddin and Haron, 2010). Therefore, these findings demonstrate that board ownership and audit committee formation substitute one another as hypothesised.

Furthermore, the auditor type was significantly and positively associated with the voluntary formation of an audit committee. This significant positive association suggests that companies that have a contract with a Big Four auditor have a higher inclination to create audit committees. It should be reiterated that international auditors are more experienced than they can provide recommendation of the best governance practices to their clients and, they also tend to associate themselves with customers who are more likely to sustain the auditor independence through activities such as the audit committee formation (Klein, 2002; Turley and Zaman, 2004). Also, this result is consistent with that of Knechel and Willekens (2006) and Goodwin-Stewart and Kent (2006) but contradicts the negative connection discovered by Firth and Rui (2007) in their research. This relationship proposes that the audit committee complements the quality of the external audit, therefore, supporting the complementary theory.

Two of the control variables had a significant positive connection with the audit committee formation, namely, firm size and financial leverage, implying that larger, as well as more levered companies, are more likely to form audit committees. This finding correlates with the conclusions of previous research where it is noted that big firms tend to use a higher degree of corporate governance because of the greater exposure to information asymmetry and more need to increase the public's confidence to facilitate accessing external funds (Jensen, 1986; Adams, 1997; Hassan and Hijazi, 2015). Furthermore, the formation of an audit committee was more probable to occur when the debt percentage in the firm increases. It has been reported by Pincus *et al*. (1989) and Collier (1993) that when the amount of debt increases the company tends to use a higher level of governance to protect debtholders' rights. As the third control variable, the firm's profitability had a significant negative linkage with the likelihood of voluntary formation of an audit committee. This negative association denotes that highly profitable Palestinian firms have a tendency to use a lower degree of voluntary corporate governance may be because of the lower need for attracting external funds as they generate their needs internally.

Models 2 and 3 produced qualitatively equivalent results as Model 1 with respect to the previous variables and explanations go in similar ways except that profitability becomes insignificant in Model 3 and auditor type becomes only marginally significant. The introduced variable of investment opportunities in Model 2 has the expected positive effect on the odds of audit committee formation. Therefore, firms with high investment opportunities are more inclined towards strengthening control by establishing an audit committee. This result is consistent with the proposition that investors in firms with high growth opportunities are in need to increase control measures on management for many reasons. First, to increase the confidence of investors in the reliability of accounting reports, as the information provided in these reports is necessary for the valuation of these firms (Piot, 2001) and audit committee plays a role in enhancing the quality of accounting reports (Ghafran, 2013). Second, firms with high investment opportunities have higher control problems and audit risk (Tsui *et al.*, 2001) and need to strengthen control measures. Third, the external uncertainty negatively affects the valuation of investment opportunities (Lensink *et al.*, 2005), hence, firms tend to reinforce control mechanisms to increase the confidence of investors and to offset the negative effect of external uncertainty.

In Model 3, the moderating effect is obvious. The positive and highly significant effect of the interaction term indicates that firms audited by a quality auditor and have high investment opportunities are the ones that established audit committees. Introducing this variable increases the strength of the positive effect of auditor type *per se* while investment opportunities variable becomes negative. These results are understood as follows. Firms that have investment opportunities and hire quality auditors at the same time are rationally inclined to establish an audit committee to strengthen control. These firms perceived the risks associated with investment opportunities and behave accordingly. Firms that hire quality auditors but are short of investment opportunities are marginal in the probability of establishing an audit committee. These firms seem to be in a low need for additional control. Finally, firms that have high investment opportunities but did not hire a quality auditor are also in a lower probability to establish an audit committee. These firms that decline control of external quality audit and internal audit committee though they have high investment opportunities are unexpected by the proposed theory. The explanation may include entrenched management that exploits opportunities for private benefits, hence, prefer less control. The conclusions of this research are illustrated in Table V.

5. Conclusion

The different types of governance mechanisms aim to diminish the agency problem between principals and agents. Whether governance mechanisms are complementing or substituting each other is a debate. The current study has expanded the discussion of the existing literature concerning the interaction between different corporate governance techniques by examining whether the existence of the audit committee complements or substitutes other corporate governance instruments in companies listed on PEX between 2013 and 2017. The data were manually gathered from the annual reports of the companies contained in the sample. Later, logistic regression analyses were implemented to model the interconnection between the existence of an audit committee and other corporate governance mechanisms including board size, board independence, board ownership, CEO duality, ownership concentration and auditor type.

Table V Summary of expected and actual relationships

Variable	Expected relationship	Explanation	Actual relationship	Conclusion
Board size	+	Complementary	–	Substitution effect is supported
Board independence	+	Complementary	+	supported
CEO duality (reverse of separation)	–	Complementary	–	supported
Ownership concentration	+	Complementary	+	supported
Board ownership	–	Substitution	–	supported
External auditor	+	Complementary	+	supported
Investment opportunities	+		+	supported
Interaction between investment opportunities and audit quality	+	Strengthening the complementary effect	+	supported
Leverage	+		+	supported
Performance	+/–		–	supported
Size	+		+	supported

The outcomes have revealed that the adoption of an audit committee is more likely to occur when board independence enhanced; therefore, it can be deduced that the audit committee and board independence function as complements. Moreover, audit committee formation complemented the distinction between the roles of board chairman and CEO, represented by the negative link between audit committee formation and CEO duality. Quite the opposite, board size was found to act as a substitute to the audit committee as these two variables were significantly negatively correlated. As for the element of ownership structure, the results depicted that ownership concentration complemented the work of the audit committee, while board ownership functioned as a substitute. The quality of external audit was significantly positively linked to audit committee formation and the two variables served as complements. The result also shows that investment opportunities strengthen the complementary effect of the audit committee and audit quality.

The significance of the current paper relies on the fundamentals of the interaction between different corporate governance mechanisms in Palestine that has a distinctive background of economic, legislation and political instability. While confirming prior literature in developed economies, the research findings could be used as a basis for companies to promote their governance systems and for regulators to perform relevant modifications in strengthening the current governance regulations. One important perspective arises from this paper is that levels of investment opportunities could impose situations whereby firms demand more complimentary control mechanisms. In this study, it is proven that the effective complementary effect is among the audit committee and audit quality factors. From a theoretical perspective, it should be understood that corporate governance mechanisms are unique for each firm, it can be complementary or substitutable and the effect is contextually based on the needs of the firms. In this study, a new explanation from the finance literature including firms' investment opportunities that become a context that created the demand for more governance control to agency relationships. This study is believed to contribute to the literature from this end.

The formation of an audit committee rather than the effectiveness of the audit committee as a dependent variable has been a major constraint of the current study. This shortcoming is mitigated as the formation of an audit committee is arbitrary and not compulsory by regulations in Palestine. Nonetheless, it is acknowledged that an effective achievement of the committees' goals is not totally guaranteed by the formation of an audit committee (Kalbers and Fogarty, 1998). Also, as a result of the small number of companies listed on the PEX, there was only a small sample size used for the purpose of this research.

Consequently, the study outcome must be considered with caution. Overcoming these drawbacks is a venue for forthcoming research to further assess the association among corporate governance instruments and the effect of investment opportunities in Palestine and in other countries to validate the current outcomes.

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