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Factors of audit committee independence: An empirical study from an emerging economy

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Abstract: This study aims to examine the factors affecting the independence of audit committees (ACs) in the nonfinancial sector of Bangladesh. It is a quantitative study on 109 Dhaka Stock Exchange (DSE) listed nonfinancial firms from the year 2013 to 2017 producing 502 firm-year observations. Pooled OLS, random effect, Logit, Tobit, and lag model regressions are the statistical tools applied to test the hypotheses of this study. Empirical results show that large corporate boards and more independent directors on corporate boards provide more independence to the audit committees while large audit committees lag behind regarding independence. It is also found that audit committees enjoy more independence in firms having more institutional ownership but less independence in firms having more insiders' ownership. The regulation plays an important role by commanding the size and independence of boards which in turn significantly affect audit committee

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PUBLIC INTEREST STATEMENT

In this study, the literature on the factors of audit committee independence is enhanced from the context of an emerging economy, marked with significantly weak institutional framework and poor investor protection. The independence of audit committee is voluntary above minimum requirement level, required by guidelines, and some factors/forces are responsible for ensuring more independence beyond that level. This study provides insights on the factors that allow the audit committee to be more independent while some restrict - despite having some loopholes and minimum requirement level in the governance for ensuring audit committee independence. From the findings of this study, countries enjoying legal and environmental settings similar to Bangladesh might be benefited to identify themselves as the determinants of audit committee independence.

independence. Further regulatory reforms may, therefore, be considered to ensure more independence of corporate audit committees.

Subjects: Accounting; Corporate Governance & Business Ethics

Keywords: Corporate governance; corporate board; audit committee; independence; ownership

1. Introduction

Investor protection and the integrity and efficiency of securities markets are highly dependent on Financial Reporting Quality [FRQ] (Véron, 2020). Researchers often cite large-scale corporate scandals in the USA at the beginning of the twenty-first century (e.g., Enron, WorldCom, etc.) to shed light on the argument (Al-Sayani et al., 2020). However, financial failures have taken place across developed and developing economies and will continue to do so in near future if financial supervision especially in the area of financial reporting remains ineffective (Véron, 2020; Zeranski & Sancak, 2020). Especially, the failure of Wirecard, a Munich-based German payments and financial services company in 2020 has sparked renewed interest in the effectiveness of financial reporting supervision of especially technology-based firms around the world (Zeranski & Sancak, 2020).

An effective corporate governance (CG) system can play a vital role in increasing FRQ in the form of reporting higher quality earnings (Asogwa et al., 2019) and also in the form of higher quality corporate disclosures (Al-Sayani et al., 2020). Moreover, Wakaisuka-Isingoma et al. (2016) argued that CG ensures a balance between social and economic and individual and communal goals, aligns the interests of individuals, corporations, and society and encourages efficient use of resources, accountability, and the use of power and stewardship at the same time. CG consists of components like external control mechanisms (e.g., market for corporate control or takeovers), internal control mechanisms (e.g., the presence of large shareholders) (Demsetz & Lehn, 1985), contracting (e.g., properly designed incentive schemes, external audit, etc.) (Jensen & Murphy, 1990), monitoring by board (Zahra & Pearce, 1989) and so on. CG bodies and researchers around the world have placed high emphasis on the activities of the board of directors (BOD) as a whole, and those of the AC, a sub-committee of the BOD, in particular for better CG (Rainsbury et al., 2008; Tušeka, 2015).

An AC is supposed to monitor the financial reporting and auditing process to thwart the fraudulent activities of accountants and managers and improve the quality of financial reports (Menon & Williams, 1994). Of late, empirical evidence have unfolded the strong role this committee can play as a subcommittee of the board entrusted with the responsibility of overseeing the quality of internal control, accounting and financial reporting system, and the firm`s compliance with relevant laws, rules, and regulations (see Abbott et al., 2000; Al-Sayani et al., 2020; Be´dard et al., 2004; Carcello & Neal, 2000; Poretti et al., 2018; Sharma & Kuang, 2014). The existing literature regarding effectiveness of ACs suggests that AC effectiveness in providing quality financial reporting and increasing investor confidence in financial reporting and markets depends on the composition of the ACs (Sabia & Goodfellow, 2005). AC characteristics, e.g., independence and expertise are especially important in monitoring the financial reporting and auditing processes (Be´dard et al., 2004). As ACs play an oversight role, independence of audit committee members is considered to be an important prerequisite for its effectiveness. For example, Al-Sayani et al. (2020) found that AC independence is associated with higher FRQ in the form of lower levels of impression management. Klein (2002a) found that board and AC independence is associated with lower earnings management.

Should ACs therefore be composed of only independent directors (IDs)? The extant literature in this regard has produced mixed findings. Some studies showed evidence in favor of fully independent ACs (Abbott et al., 2000; Be´dard et al., 2004; Beasley, 1996), while others opposed the view

(Klein, 2002a). The existing regulation in some contexts (e.g., in the USA) currently in force regarding AC composition is consistent with full independence of the ACs (Klein, 2002b; Rainsbury et al., 2008). Some countries, on the contrary, require majority of the members to be IDs (Rainsbury et al., 2008). The current Corporate Governance Code 2018 (CGC 2018), issued by Bangladesh Securities and Exchange Commission (BSEC), requires that ACs of listed companies will consist of at least three members who must all be non-executive directors (NEDs) except for the chairperson of the board (including at least one ID[1]) (Bala, 2018). Previously ACs of the listed companies were allowed to be composed of at least three members (including at least one ID) with no further restriction in its maiden corporate governance regulation issued in 2006 and later revised in 2012 (Bala, 2018; Bhuiyan et al., 2008). So, from the evolution of CG regulation regarding ACs, it seems that the corporate sector in Bangladesh is approaching towards fully independent ACs. Moreover, The CG regulation in Bangladesh also implicitly allowed and still allows some flexibility in deciding about the proportion of IDs in ACs because at least one-fifth of the total number of directors in the BOD of a firm must be IDs from which to choose one or more independent members for ACs (Bala, 2018).

The above background raises a number of empirical questions. First, how much flexibility should the regulators allow the company boards in forming ACs with different combinations of inside and independent outside directors based on the firm's requirements? Second, do boards customize AC independence according to the firm's needs for monitoring managers (i.e. reduction of agency costs which ACs are meant to do in the first place) (Jensen & Meckling, 1976; Menon & Williams, 1994)? To put it differently, does AC independence have any relation with factors/variables that urge the reduction/increase of shareholder and stakeholder agency problem (demand factors)? Is it tailored based on factors that indicate available pool of monitoring resources (supply factors)?

These questions have been answered in the previous AC literature by the identification of the economic determinants of the difference in AC independence (Adhikary & Mitra, 2016; Al-Najjar, 2011; García-Sánchez et al., 2012; Klein, 1998, 2002b; Ruiz-Barbadillo et al., 2007). This paper strives to answer these questions in the context of listed non-financial companies of Bangladesh, a unique agency relationship setting (A. Rashid, 2015).

In the context of Bangladesh, there is some evidence in the previous literature regarding the impact of AC characteristics (size, independence and diligence) and the effectiveness of ACs. Rahman et al. (2019) found that AC size helps improve the profitability of firms. However, evidence regarding economic determinants of AC independence is scarce. Adhikary and Mitra (2016) investigated the determinants of AC independence in the financial sector of Bangladesh. This study attempts to fill the gap in the existing audit committee literature by investigating the factors of AC independence in the listed nonfinancial companies. We tested our hypothesized expectations regarding the impact of AC size, board size, board independence, director ownership, institutional ownership, firm profitability, and firm size on AC independence using sample data of 109 DSE listed non-financial firms during the period from 2013 to 2017. During this period, the Corporate Governance Guidelines (CGG) 2012 was applicable which allowed the firms to form ACs with at least one independent directors, i.e. choosing other members (2 or more) were at the discretion of the board. There was variation in AC composition across companies and we expect that it has resulted from various underlying economic factors of the firm. We have employed pooled OLS, random effect, Logit, Tobit, and lag model regressions.

This paper makes a number of unique contributions to the extant literature. First, for the first time we have investigated the connection between firm characteristics and AC independence in a large sample of nonfinancial companies listed in the DSE of Bangladesh.

Second, unlike previous studies examining the determinants of AC independence, we categorize the different factors into supply and demand factors following the classification of Rainsbury et al. (2008) in a similar paper which investigates the firm characteristics influencing the voluntary

establishment of ACs meeting "best practice" membership guidelines in the context of New Zealand. We believe that the classification is logical and thus improves our understanding of the determinants of AC independence. Although, ACs are mandatory for listed firms in Bangladesh, the classification is still relevant because AC independence above a required minimum level is voluntary.

Our findings suggest that large corporate boards and more IDs on corporate boards provide more independence to the ACs while larger audit committees had lower independence. It is also found that ACs enjoy more independence in firms having more institutional ownership but less independence in firms having more directors' ownership. In other words, we found evidence of influence of both supply and demand factors in Bangladesh.

The rest of the paper is organized as follows. Section two provides further contextual background. Section three provides a theoretical literature review. Section four reviews empirical literature and develops our hypotheses. Section five describes our research methodology including sample selection, data collection and empirical research model. Section six presents the results including descriptive statistics, correlation estimates, multiple regression results, and the results of additional analysis to portray the robustness of our results. Section seven concludes the paper with some avenues for further research on the relevant issue.

2. Background

AC independence is defined in different ways in listing requirements and best practice guidelines (Rainsbury et al., 2008). Generally, the boards are composed of three types of members: insiders, outsiders and affiliates (Klein, 1998). Insiders are currently employed executives of the company. Affiliates are past employees, family members of executive officers (including the CEO), or ones who have significant transactions and/or business relationships with the company. Outsiders, on the contrary, have no such relationships as mentioned above, i.e., they have no affiliation with the firm beyond board membership.

So, among nonexecutive members of the board, there may be some affiliated directors who cannot be said independent. CG regulations and guidelines in many countries, therefore, require additional characteristics, beyond mere current employment status, among nonexecutive directors to ensure their independence. For example, the United Kingdom's Higgs Report 2003 suggests that a nonexecutive director is independent if s/he is not a former employee or has not had any other material connection with the company within the previous 5 years (mentioned in A. Rashid, 2015). Specifically, the CG regulation of Bangladesh (BSEC 2018) requires that nonexecutive directors are independent if they can satisfy ten criteria, e.g., holding no or less than 1 percent shares of the company, not having been an executive of the company in immediately preceding 2 (two) financial years, etc. (Bala, 2018).

Bangladesh, a South Asian country, has achieved impressive economic growth rates in recent times (Ferdous, 2018; Ferdous et al., 2014). Bangladesh's real GDP growth increased to 7.9 percent in 2018 and it has become one of the fastest growing economies in South Asia (IFC, 2020). Moreover, it has experienced significant social and human development and is on track to graduation from the United Nation's (UN's) Least Developed Countries (LDC) list by 2024 (IFC, 2020). However, weak governance has gloomed the picture (Ferdous, 2018; Ferdous et al., 2014). There is widespread and ever-increasing income inequality in the country (Ferdous, 2018; Ferdous et al., 2014). The country has seen a series of spectacular corporate failures and crises in recent times (e.g., Hallmark, Bismillah Group, Oriental Bank, Modern Food, BASIC Bank, International Leasing and Finance Services, etc.) and the list is elongating (Ferdous, 2018).

Like many other emerging economies, Bangladesh has adopted, through CG regulation, the Anglo-American shareholder model of CG which is not entirely suitable for it given the economic, legal and corporate environment of the country (Rwegasira, 2000; Siddiqui, 2010; Uddin et al., 2008). The Anglo-American CG model is based on agency based notions of market efficiency and is

more appropriate where company shares are generally owned by dispersed owners and therefore, the managers are relatively free from close scrutiny and control. The corporate environment in Bangladesh is, like many other emerging economies, characterized by high ownership concentration, poor enforcement and monitoring of regulations, lack of shareholder activism, reluctance of the corporate sector to raise funds through the capital markets, and availability of bank financing (Siddiqui, 2010). Moreover, there is widespread dominance of family firms in the country and that of family owners on the board and in the management (A. Rashid, 2018).

Uddin et al. (2008) argued that these family owners often tend to weaken the rules and regulations for accountability. Specifically, the idea of IDs has been mainly imported from the Anglo-American context where the ownership is dispersed and markets are more efficient (A. Rashid, 2018). Moreover, the extent of actual board and AC independence is likely to be compromised as the IDs are proposed and contracted by inside board members with whom the so-called IDs may have relationships (A. Rashid, 2018; Ruiz-Barbadillo et al., 2007). So, questions regarding the effectiveness of such directors in the context of Bangladesh are raised very often, particularly by empirical literature (e.g., Akter et al., 2020; Meah, 2019; A. Rashid, 2018).

However, some previous studies also find positive outcomes of Anglo-American CG model (CG quality, board and AC characteristics) in terms of increased FRQ, reduced agency costs, better capital structure, higher productivity, etc. (e.g., Haque et al., 2011; Hasan & Rahman, 2020; Muktadir-Al-Mukit & Keyamoni, 2019; A. Rashid, 2015, 2016; M. H. U. Rashid et al., 2020; Razzaque et al., 2020).

A. Rashid (2015) argued that board IDs reduce agency cost as measured by "asset utilization ratio". Therefore, it is argued that there is some overall support for agency theory and Anglo-American orthodoxy which promotes outside IDs as good monitors (A. Rashid, 2015). Haque et al. (2011) report an inverse relationship between CG quality and total as well as long-term debt ratios which support the agency theory prediction that better corporate governance will reduce agency costs and improve investor confidence. Consequently, the ability of a firm to gain access to equity finance will be enhanced, reducing dependence on debt finance in turn.

Therefore, on the backdrop of above contextual arguments in favor and against agency based perspective and market-based Anglo-American CG model (including independent outside directors), it seems to be logical that we investigate whether there are any economic factors of AC independence in Bangladesh and also whether agency based theoretical perspective is a suitable lens in this respect.

3. Theoretical literature review

According to agency theory, separation of ownership and control creates information asymmetry between shareholders (principal) and managers (agent) leading to managers' misappropriation of shareholders` wealth by way of their opportunistic behavior (Jensen & Meckling, 1976). In order to monitor managers and reduce such information gap, corporate governance system, involving a number of control mechanisms, as part of check and balance, has been evolving since long ago (A. Rashid, 2015). This includes monitoring by board as well. Worldwide, boards function under a committee structure where committees represent a mechanism for firms to structure their boards in a way to make effective use of directors' (especially non-executive directors') limited time (Cotter & Silvester, 2003).

The AC, a sub-committee of the board, has been regarded as an effective tool that can reduce information asymmetry and improve financial reporting provided that the committee has sufficient independence and expertise/competencies (Klein, 2002b). ACs with more independent outside directors tend to be more effective (Menon & Williams, 1994) and those lacking sufficient freedom tend to underperform (Carcello & Neal, 2000; Klein, 2002b). However, to what extent the board should be given flexibility in forming ACs with a mix of inside and independent outside directors is

an important empirical question, the answer of which the regulators must be well informed about. The extent of discretion to be allowed depends on what will serve the best interests of the stakeholders of the firm. The very preliminary step towards the answer is to assess whether economic factors explain the variation in AC independence. For example, Beasley and Salterio (2001) report that whether BODs of companies will strengthen ACs, by including more IDs in the ACs than the minimum number as required by legislation, depends on the incentives and resources (demand and supply) they have.

As Ruiz-Barbadillo et al. (2007, p. 313) reported, agency based theoretical framework has been widely used by researchers exploring the determinants of audit committee independence. Relevant agency theoretical arguments depend on the proposition of positivist agency theory that information systems curb opportunistic actions of managers, i.e., reduce agency costs (Eisenhardt, 1989; Ruiz-Barbadillo et al., 2007). An AC is a part of the financial reporting process of a firm.

Agency theory-based studies adopted this view that AC independence is meant for more effective supervision of managerial actions in terms of the financial reporting process (Adhikary & Mitra, 2016; Al-Najjar, 2011; Beasley & Salterio, 2001; Cotter & Silvester, 2003; Deli & Gillan, 2000; Klein, 1998, 2002b; Piot, 2004; Rainsbury et al., 2008). Therefore, the higher the agency costs between different parties of a firm, the higher the need for monitoring and the more AC independence (Klein, 1998, 2002b). Klein (1998, 2002b) therefore developed hypotheses from this viewpoint of demand for monitoring and reported that AC independence depends on management's and shareholders' demand for monitoring (growth opportunities, creditors, consecutive losses, CEO on compensation committee and presence of alternative monitoring mechanisms, e.g., firm size, outside director shareholding, and large non-inside shareholder on the AC).

Deli and Gillan (2000) adopted the view that independent ACs reinforce the independence of the firm's external auditor and the objectivity of the internal auditing department. They, therefore, guarantee the accuracy of accounting numbers which is used in contracting (Deli & Gillan, 2000). They hypothesized that firms are more probable to have independent ACs when agency costs, driven by underlying nature of the firm and its contracting environment, raise the demand for accounting certification (Deli & Gillan, 2000).

Another perspective, which some other studies extended, is complementary to the above view. That is called managerial dominance hypothesis and states that dominant managers (including the Chief Executive Officers (CEOs)), who want not to be monitored, will deteriorate the AC's ability to do so by subverting CG quality especially AC independence (Klein, 1998; Ruiz-Barbadillo et al., 2007).

Many other studies, e.g., Al-Najjar (2011) in the UK, Cotter and Silvester (2003) in Australia, Piot (2004) in France, Ruiz-Barbadillo et al. (2007) in Spain, Beasley and Salterio (2001) in Canada, Deli and Gillan (2000) in the USA explored AC independence and adopted mainly agency theory as the theoretical lens.

Klein (1998) also proposed litigation risk needs perspective along with monitoring needs and CEO (managerial) dominance perspectives. As AC is the board's vehicle for scrutiny of the financial reporting process, the board of a firm facing high litigation risk may want to form a more independent AC as an evidence of its endeavor to perform its legal obligations of monitoring (Eichenseher & Shields, 1985). Some other studies referred to mitigation of social and political costs as demand factor while developing hypotheses in terms of AC independence and size of firms (Piot, 2004).

Rainsbury et al. (2008), a similar study which investigates the firm characteristics influencing the voluntary establishment of ACs meeting "best practice" membership guidelines regarding AC

composition (i.e. all non-executive directors, a majority of independent directors, and a member who is a financial expert) in the context of New Zealand, classified those into supply and demand characteristics. Although most of the previous studies, exploring the determinants of AC independence, didn't group variables in demand and supply factors of AC independence, most of them adopted either supply or demand perspectives in developing hypotheses (Klein, 1998; Piot, 2004).

Supply factors are the board attributes as the board is directly responsible for the formation of the AC and consists of the pool of members from which AC members are drawn (Klein, 1998; Rainsbury et al., 2008; Ruiz-Barbadillo et al., 2007). On the other hand, demand characteristics are the ones which may indirectly cause the formation of more/less independent ACs, e.g., the need for strong monitoring, level of litigation risk, etc.

4. Empirical literature review & hypothesis development

Our study examines various factors, hypothesized and identified in previous AC independence literature, in the context of nonfinancial firms of Bangladesh. These factors are grouped in demand and supply factors as described above. Related hypothesis development follows.

4.1. Demand factors

4.1.1. Audit committee size

The larger the size of the audit committee, the higher the board`s commitment of resources to the improvement of financial reporting quality (Raghunandan & Rama, 2007) and the higher the firm performance as audit committee size is positively related to profitability (Rahman et al., 2019). Independent outside directors can be expected to be the best delegates of shareholders because they are not typically aligned to management (Ruiz-Barbadillo et al., 2007) and are expected to make costly investments in monitoring the financial reporting process to build and protect their reputation as effective decision control experts (Fama & Jensen, 1983b) and to avoid legal liability (Abbott et al., 2004). So, it is more likely that a board committed to better financial reporting will include more outside directors to prevent the AC from being an instrument of management. Raghunandan and Rama (2007) argued that AC size is positively associated with AC diligence.

The relationship between AC independence and AC size has not been explored in previous literature in the context of Bangladesh except in Adhikary and Mitra (2016) who found that AC independence is negatively associated with AC size. When firms appoint independent directors in ACs in numbers so as to just fulfill the fixed minimum requirement set by regulators instead of proportionately increasing AC independence with AC size, then proportional AC independence will decrease as AC size increases. Then AC independence will be negatively associated with AC size. So, our hypothesis is:

H1. Audit committee size is significantly related to audit committee independence.

4.1.2. Insider ownership

When the board members (including executive ones) own a large chunk of company shares, then they will have incentives and resources that will make and help them improve the monitoring systems of the firm as a way to increase firm value (alignment effect) (Jensen & Meckling, 1976). Therefore, directors` shareholdings act as a monitoring device itself as Jensen and Meckling (1976) argued. Higher director ownership will then place increased demand for monitoring managers and as a result seek for more AC independence if alternative monitoring mechanisms complement one another (Klein, 1998).

If this does not happen, i.e., alternative monitoring mechanisms are substitutable, further monitoring mechanism in the form of higher AC independence does not need to be placed (Klein, 1998).

On the other hand, monitoring effectiveness of higher managerial ownership has been questioned due to the possibility of management entrenchment (Kole, 1995; Morck et al., 1988). As higher managerial ownership can provide managers dominance over the board they could exploit it to initiate actions that are beneficial to themselves but detrimental to the remaining minority shareholders (Ruiz-Barbadillo et al., 2007). This also could lead to lower number of independent directors on the ACs.

Majority of the earlier studies reported a negative relationship in this case (e.g., Beasley & Salterio, 2001; Deli & Gillan, 2000; Piot, 2004; Ruiz-Barbadillo et al., 2007). While Al-Najjar (2011) found positive association in the UK and some other found insignificant association (Adhikary & Mitra, 2016; Cotter & Silvester, 2003; Rainsbury et al., 2008). A. Rashid (2016) found that insider ownership exhibits alignment effect at low and high ownership levels while entrenchment effect at medium ownership level. Therefore, in this study, we don't hypothesize about the direction of the relationship. So, our hypothesis in this case is:

H2. Insider ownership is significantly related to audit committee independence.

4.1.3. Institutional ownership

Large institutional owners have the incentives and resources, due to their concentrated shareholding, to monitor managers' performance by improving the monitoring mechanisms of a firm with a view to increase value of/return on their investment (Agrawal & Knoeber, 1996). Klein (1998) argued that AC independence may be substituted by alternative monitoring mechanisms, e.g., large outside block-holders in the board, institutional ownership, etc. This is based on the argument that governance mechanisms may sometimes be substitutable (Agrawal & Knoeber, 1996). Consequently, when stronger corporate governance mechanisms are already in place, the need for an independent and active AC may be diminished (Klein, 1998). This argument implies a negative association between institutional ownership and AC independence. Klein (1998) provides some empirical evidence in favor of this argument.

However, the opposite can also be true. It can also be plausible and has been argued by many studies that monitoring mechanisms are sometimes complements (Agrawal & Knoeber, 1996). So, large institutional owners can call for higher emphasis on strong monitoring that may result in higher AC independence. This implies a possible positive association between institutional ownership and AC independence. V. Sharma et al. (2009) found positive relationship in the context of Newzealand where ACs are not regulated. So, our hypothesis in alternative form is:

H3. Institutional ownership is significantly related to audit committee independence.

4.1.4. Firm size

Larger firms generally have stronger and well-developed internal control systems (Klein, 2002a; O'Reilly et al., 1998). Then larger firms will require less alternative monitoring, e.g., higher AC independence if alternative monitoring mechanisms are substitutable (Klein, 2002b). Consistent with this argument, Klein (2002b) and Al-Najjar (2011) found negative association between firm size and AC independence.

On the other hand, firm size represents shareholder agency costs (Fama & Jensen, 1983b, 1983a; Raghunandan & Rama, 2007). Larger firms, therefore, need more stringent internal monitoring mechanisms, e.g., more independent ACs (Deli & Gillan, 2000). There are other reasons to expect a positive association beyond agency based arguments. Monitoring devices are costly to establish (Rainsbury et al., 2008) and larger firms derive higher benefits from an efficient monitoring device because of economies of scale, social and political costs,

more need to inoculate themselves against lawsuits,[2] higher regulatory exposure, etc. (Deli & Gillan, 2000). Deli and Gillan (2000) found a positive association in this conjecture. So, our hypothesis is:

H4. Firm size is significantly related to audit committee independence.

4.1.5. Financial performance

Although many previous studies explored the relationship between firm`s previous periods` losses and AC independence, dearth of knowledge exists regarding the connection between profitability and AC composition. Klein (2002b) argued that companies with repeated losses have less value relevant financial statements and face less scrutiny of the financial system and a lower demand for AC independence. Consequently, there is negative association between loss propensity of business and AC independence (Klein, 2002b). Although, some authors found no significant association between losses and AC independence (Al-Najjar, 2011; Ruiz-Barbadillo et al., 2007), a complementary argument can be made from this argument. If losses have negative impact on AC independence, firm profitability may have positive impact on the same due to the same reason as raised above.

In addition, Adhikary and Mitra (2016) argued that management may misstate profit figures to harvest personal gains. Al-Najjar (2011) similarly argued that the higher the free cash flow (FCF) of a firm, the higher the firm needs an independent AC to curb managers` expropriation of firm`s wealth for private benefits.

So, there will be a need for more independent ACs to curb such malpractice. So, firm`s profitability will be positively associated with AC independence.

However, it is also plausible that better firm performance may bring managers in the good book of the board resulting in less independent AC. Moreover, boards of firms with more sound financial health may be dominated by management, by way of their contribution to and/or special expertise regarding the firm, who may install ACs with less independence. Similarly better firm performance indicates lower agency costs and vice versa (Hermalin & Weisbach, 1988). Agency costs indicate the necessity of monitoring by the implementation of costly contracts, compensation plans and monitoring schemes (Klein, 1998).

Adhikary and Mitra (2016) found insignificant association in this conjecture regarding listed financial firms of Bangladesh. So, our hypothesis is:

H5. Financial Performance is significantly related to audit committee independence.

4.1.6. Growth opportunities

Firms, growing rapidly, undergo more intricacies and uncertainties. These firms, as Fama and Jensen (1983b) argued, are highly in need of directors with direct knowledge about their operations and investment horizons (Klein, 2002b). Inside and affiliated directors and their companies can give expertise in manifold dimensions to deal with such complexities and uncertainties associated with growth opportunities. High growth firms may, therefore, have more insiders on their leadership and less independent ACs in turn. Moreover, high growth firms demand less accounting certification because their accounting numbers are less likely to be used in contracting due to their poor quality (Deli & Gillan, 2000). Such poor quality is caused by the fact that accounting numbers do not reflect the underlying assets of the firms as they are comprised of assets which are not readily observable along with assets-in-place (Watts & Zimmerman, 1986, 1990). In addition, these firms are faced with higher pressures to maintain high growth rates and management may accomplish that by engaging in fraudulent practices to maintain the

appearance of high growth (Deli & Gillan, 2000). Deli and Gillan (2000) and Klein (2002b) empirically showed that rapidly growing firms` managers and shareholders want less independent boards and less independent ACs in turn.

Unlike the argument of Klein (2002b), Karim et al. (2020) found no significant association between growth opportunities and board independence in the banking sector of Bangladesh. However, Adhikary and Mitra (2016) found negative relationship in the financial industry of Bangladesh regarding AC independence and firm growth opportunities. Nevertheless, we refrain from predicting the direction of the relationship because nonfinancial companies often differ from their financial counterparts because of differences in regulation and competitive characteristics. So, our hypothesis is:

H6. Growth Opportunities is significantly related to audit committee independence.

4.2. Supply factors

As the board directly controls AC membership and is dependent on the ability of the AC in monitoring management`s financial reporting process, its specific characteristics can be expected to explain differences in AC independence (Beasley & Salterio, 2001). Board composition (independence), size and the segregation of the board chairperson and chief executive officer (CEO)/ president position, etc., are important board characteristics found to be important determinants of AC independence (Beasley & Salterio, 2001; Klein, 2002b).

4.2.1. Board size

As the AC is only a subset of the full board, the directors that compose the board are the only supply of directors available to staff the AC (Klein, 2002b). As board size increases the firm`s ability to hire more independent non-executive directors also increases (Beasley & Salterio, 2001; Collier, 1993). In Bangladesh, the CG regulation requires that the boards consist of one-fifth of independent directors (Bala, 2018; Bhuiyan et al., 2008) which indicates that there is a high probability of increase in the supply of independent directors if board size is larger. Moreover, Beasley (1996) reports that the likelihood of financial fraud increases as board size increases thereby indicating the need for increased monitoring with larger boards. Also if this argument is true, larger boards can lead to higher AC independence to avoid litigations resulting from fraudulent financial reporting (Eichenseher & Shields, 1985). Large boards result from larger firm size which is one of the factors of ex-ante litigation risk (Klein, 1998). Therefore the larger pool of outside directors in large boards may lead to higher AC independence due to higher supply of outside directors and need for monitoring. Therefore, many studies argued that large boards tend to employ more non-executive directors in the AC (Al-Najjar, 2011; Beasley & Salterio, 2001; Klein, 2002b).

On the other hand, although larger boards enjoy the benefits of diverse skills and backgrounds, they function less effectively because they face higher free rider problems (Adhikary & Mitra, 2016). Also larger boards' decision-making quality plummets due to less coordination and information processing skills in larger groups, slower decision making (Goodstein et al., 1994; Guest, 2009; Yermack, 1996), increased likelihood of omission of responsibilities, lack of cohesion (Lipton & Lorsch, 1992). As a result, Jensen (1993) argued that large boards are easier for management to control.

Extant literature also suggests that, the effectiveness of boards in constraining agency problem in emerging countries is generally low (Al-Najjar, 2013). Although, some prior research on Bangladeshi firms (e.g., Meah & Chaudhory, 2019) argued that corporate board size tends to play a positive impact on firm value which may occur due to boards' resource provision role in emerging countries (Ntim et al., 2015). Thus firms with larger boards are more likely to have less

AC independence and vice versa because of higher managerial dominance. So, larger board as a less effective tool will have less independent ACs. So, our hypothesis is not conclusive about the direction.

H7. Board size is significantly related to audit committee independence.

4.2.2. Board independence

Extant research suggests that boards should be composed of more outside directors than inside directors to be effective monitors of management (Daily & Dalton, 1994). Independent directors are better delegates of shareholders because they are not aligned with management and have incentives to accomplish their supervisory responsibilities to maintain and build up their reputation as monitors (Menon & Williams, 1994; Ruiz-Barbadillo et al., 2007). Beasley and Salterio (2001), Klein (2002b), and Menon and Williams (1994) argued that the larger the number of IDs on the board, the more it is likely that the AC has more independence due to the increased supply of IDs for inclusion. Many other studies also reported similar evidence (Adhikary & Mitra, 2016; Collier, 1993; Cotter & Silvester, 2003; Menon & Williams, 1994; Ruiz-Barbadillo et al., 2007). Rainsbury et al. (2008) also found that firms with a higher proportion of independent directors on their boards are more likely to form audit committees that meet best practice membership guidelines.

However, other board committees, e.g., nomination committee, executive remuneration committee (Nomination and Remuneration Committee (NRC) under CGC 2018 in Bangladesh) also compete for independent directors (Klein, 2002b). This may weaken the argument for possible positive relationship mentioned above. So, our hypothesis is:

H8. Board independence is significantly related to audit committee independence.

5. Research design

5.1. Sample selection

Hand collected secondary data on DSE listed 109 non-financial firms, during the time period from 2013 to 2017, is analyzed in this study. As there is no complete and readily available dataset and a lack of availability of annual reports, of many of the nonfinancial firms listed in the DSE, from sources accessible to public, this study, although based on full population, takes up 109 of all nonfinancial firms. First, due to lack of funding, this study collects information from only the sample firm's respective websites and other public sources, e.g., Lanka Bangla Financial Portal, etc. Second, incorporation/listing of some new firms to the stock exchange, in the later years of the study period, is another reason for not being able to collect the information about earlier years for those firms. Therefore, we included only the firms in the sample for which the full set of data of at least three years (during our study period) is available. For these 109 firms, we could not manage any information (neither annual report nor audited financial statements) for twenty firm years while found only audited financial statements (precluding us from collecting the corporate

Table 1. Sample selection

Description	Number of firm year observations
Listed nonfinancial firm-years on the DSE from 2013 to 2017 (109 firms* 5 years)	545
Less: Missing annual reports	(20)
Less: Missing corporate governance data	(23)
Final sample	502

governance-related information) for another twenty-three firm years. The above-mentioned breakdown is reported in Table 1.

5.2. Empirical research model

A multivariate regression model is used in this study to explore the factors of audit committee independence in Bangladesh. The model which is regressed is as follows:

$$ACIND = \beta_0 + \beta_1 ACSIZE + \beta_2 BDSIZE + \beta_3 BDIND + \beta_4 DTOWN + \beta_5 INSOWN + \beta_6 Size + \beta_7 EPS + \beta_8 Growth + \epsilon \quad (1)$$

Moreover, consistent with Al-Dhamari et al. (2018), this study employs an alternative measure of the dependent variable—audit committee independence, which is a dummy variable. They argued for a composite measure, an index, of an effective audit committee in order to be stronger enough to play its role as a proxy of corporate governance. They used four representatives of effective audit committee to make the composite measure: independence, expertise, meeting frequencies, and tenure of audit committee members. In this measure, audit committee independence is included as a binary variable taking a value of 1 if the percentage of audit committee independence is higher than that of sample median—otherwise taking a value 0 for a particular firm year.

Table 2. Description of the variables used in the research model

Variables	Acronym	Full Name	Measurement
Dependent variables	ACIND	Audit committee independence	Number of total independent members on the audit committee divided by total number of audit committee members
	ACINDUMMY	Audit committee independence dummy	Score 1 for firm years having ACIND above sample median and 0 otherwise
Independent variables	ACSIZE	Audit committee size	Natural logarithm of total number of audit committee members
	BDSIZE	Corporate board size	Natural logarithm of total number of directors on corporate board
	BDIND	Corporate board independence	Number of independent directors on corporate board divided by total directors on corporate board
	DTOWN	Insider ownership	Percentage of shares held by the directors and/or managers
	INSOWN	Institutional ownership	Percentage of shares held by the institutions
	SIZE	Firm size	Natural logarithm form of firm total assets
	EPS	Earnings per share	Net income after taxes divided by total number of outstanding shares
	GROWTH	Sales growth	Current period sales less previous period sales divided by previous period sales

Source: Authors' contribution

A single measure of audit committee independence may lead to biased results; thus this study develops the following regression model using another proxy for audit committee independence.

$$ACINDUMMY = \beta_0 + \beta_1 ACSIZE + \beta_2 BDSIZE + \beta_3 BDIND + \beta_4 DTOWN + \beta_5 INSOWN + \beta_6 SIZE + \beta_7 EPS + \beta_8 GROWTH + \epsilon \quad (2)$$

5.3. Applied econometric methods

Pooled Ordinary Least Square (OLS) regression model is the applied primary econometric method in this study to investigate the determinants of AC independence. Our second regression model, having binary variable as an alternative measure of AC independence, is estimated using Logit model. Ariff et al. (2007) noted two reasons for the application of Logistic analysis in a model: one is the dichotomous nature of the dependent variable and another is the mixture of categorical and continuous independent variables as predictors. They argued that these complex scenarios violate the normality assumption which is a prerequisite for OLS regression. Logistic analysis suits the Equation 2 as the dependent variable is a dummy variable. To keep the results of this study consistent, lag model regression, random effect regression and Tobit regression (using upper value limit) are also estimated. We found that random effect regression is suitable for this investigation after performing Hausman test. The primary cross-sectional model with year dummy and serial correlation consideration is also regressed to check the robustness of the findings. Variance Inflation Factor (VIF) is also calculated to ensure that multicollinearity problem doesn't exist in the regression model. This study burgeons the extent of the robustness of its findings through the application of System GMM Method. All types of regressions are run considering robust standard error adjustment to curb heteroskedasticity as test reveals its existence.

6. Empirical results and discussion

6.1. Descriptive statistics

Table 3 presents the summary statistics of the dependent and independent variables of this study. This table contains the variable names, number of data points, mean, standard deviation, minimum and maximum values. The variables titled ACIND, BDIND, DTOWN, INSOWN and Growth are presented in percentage form while those named ACSIZE, BDSIZE, SIZE, and EPS are presented in their actual forms. The table indicates that on average 37.48 percent or a little more than one-third of the AC members are IDs. This proportion is higher than the regulation required during the study period. This is consistent with the findings of IFC (2020) which reported that the average proportion of IDs sitting on the ACs across different sectors is 42 percent. On average every board consists of more than seven members and each AC consists of more than three members. Minimum AC size is two which implies noncompliance with the revised corporate governance guidelines issued in 2012

Table 3. Descriptive statistics

Variable	Sample	Mean	Std. Dev.	Min	Max
ACIND (%)	502	37.48	13.88	0	100
ACSIZE	502	3.3904	0.6214	2	6
BDSIZE	502	7.3088	2.0923	4	19
BDIND (%)	502	24.53	9.05	0	66.67
DTOWN (%)	502	35.98	21.92	0	95.44
INSOWN (%)	502	15.04	14.14	0	78.89
Size (BDT in Millions)	502	8815	16,830	72	145,930
EPS	502	6.6182	15.8145	−48.14	130.5
Growth (%)	502	8.88	40.47	−100	4.15

Source: Authors' contribution (All variables are defined in Table 2)

(Bala, 2018). Average board independence is 24.53 percent which is less than average AC independence. This lower board and AC independence indicate that low board independence might have caused AC independence to be lower as well. This argument is consistent with Ruiz-Barbadillo et al. (2007) who argued that same structure of inside and independent directors determines the board`s will to control management and consequently the effectiveness of the subcommittees to achieve this end. Hence, it is suggested that the proportion of independent non-executive directors on the board should be more than 50 percent to install effective monitoring mechanisms including a highly independent AC (Raghunandan & Rama, 2007). The nonfinancial companies of Bangladesh lag behind in this respect.

Directors own a sizeable proportion (on average 35.98 percent) of total voting/common shares in the companies. Similarly, average institutional ownership is 15.04 percent. We can expect a significant impact on our dependent variable because such large block-holders have resources and incentives to monitor management activities. Average firm size is BDT (Bangladeshi Taka) 8815 million. The EPS has a mean of BDT 6.6182 which is almost three times higher than that (BDT 2.43) found by Adhikary and Mitra (2016) in a similar study involving Bangladeshi financial companies. Growth occurred by 8.88 percent, on average, in annual sales of the firms.

6.2. Correlation matrix

Table 4 presents the results of Pearson correlation analysis among the variables of this study. The results of this bivariate analysis suggest that ACIND is negatively associated with ACSIZE, DTOWN, EPS and GROWTH. On the other hand, ACIND has positive association with BDIND and INSOWN. The bivariate association between ACIND and BDSIZE, and SIZE is not significant.

We also observe that there is also significant correlation among some other independent variables. The significant correlation between SIZE and BDSIZE implies that larger firms need larger boards for monitoring. The correlation between BDIND and ACIND is a bit stronger among others indicating that AC independence depends on the supply of IDs. The sizeable correlation coefficient between DTOWN and EPS indicates that higher managerial ownership leads to poorer earnings that are available to common shareholders, i.e., higher agency costs. To show whether there is multicollinearity bias in our results, Table 4 includes the Variance Inflation Factors (VIFs) of each predictor variable and also the mean VIF. As the results show, the VIFs for the independent variables as well as the mean VIF range from 1.02 to 1.33 (less than 10). So, we can say that there is no multicollinearity among our independent variables (Gujarati, 2003).

6.3. Regression results—determinants of audit committee independence

Table 5 contains the results of multiple regression analysis of Equation 1 (involving proportion of IDs in the ACs as the measure of AC independence), using Pooled OLS, Random Effect, Lag, and Tobit Models as indicated by the column headings. Along with the intercept and the coefficients of the independent variables, the table also reports mean VIF and VIFs for the individual predictor variables, R-squared, F statistic, Wald Chi-squared statistic, Log-likelihood ratio and number of firm-year observations (N). The F-statistics for pooled OLS and lag models are significant. The Wald Chi-Squared test statistic is also significant for Random Effect model. These statistics indicate that overall our explanatory variables are significant, i.e., they add strength to our model.

The statistically significant and negative coefficients, across all methods, on ACSIZE indicate a negative relationship between AC size and AC independence. This finding is consistent with the view that proportional AC independence decreases as AC size increases. This finding is consistent with Adhikary and Mitra (2016) in the same country context involving only financial companies. Al-Najjar (2011) also found negative association (although insignificant) between these two variables in the context of the UK. Consistent with Adhikary and Mitra (2016) and IFC (2020), we have found that most of the firms in Bangladesh have one or two IDs in the ACs, as our examination of the frequency distribution of non-executive directors in the ACs reveals. Also the negative bivariate

Table 4. Pearson`s correlation matrix

	ACIND	ACSIZE	BDSIZE	BDIND	DTOWN	INSOWN	SIZE	EPS	GROWTH
ACIND	1								
ACSIZE	−0.2074***	1							
BDSIZE	0.0021	0.2501***	1						
BDIND	0.4377***	−0.0725*	−0.2046***	1					
DTOWN	−0.0739*	−0.0876**	0.0057	0.1166***	1				
INSOWN	0.0919**	−0.0735*	0.2368***	−0.1877***	−0.2911***	1			
SIZE	0.0086	0.1005**	0.3226***	−0.1394***	−0.2483***	0.1495***	1		
EPS	−0.0762*	0.1437***	0.1381***	0.0276	−0.3280***	0.0337	0.2649***	1	
GROWTH	−0.1066***	0.0220	0.1081***	−0.0833*	0.0237	0.0214	0.0647	0.0431	1

Source: Authors' contribution (All variables are defined in Table 2)

***, **, and * indicate significance at the level of 1, 5 and 10 percent, respectively

Table 5. Regression Results—Determinants of Audit Committee Independence (ACIND)

	Pooled OLS	Random Effect	Lag Model	Tobit Model	VIF
Independent variable	Coefficients	Coefficients	Coefficients	Coefficients	
ACSIZE	−0.1601***	−0.1601***	−0.1556***	−0.0801***	1.12
	(0.0296)	(0.0324)	(0.0356)	(0.0224)	
BDSIZE	0.0765***	0.0765***	0.0676***	0.0465***	1.33
	(0.0193)	(0.0227)	(0.0224)	(0.0177)	
BDIND	0.7551***	0.7551***	0.6446***	0.6541***	1.09
	(0.1055)	(0.0607)	(0.1239)	(0.0607)	
DTOWN	−0.0010***	−0.0010***	−0.0010***	−0.0140***	1.33
	(0.0003)	(0.0003)	(0.0003)	(0.0014)	
INSOWN	0.0009**	0.0009**	0.0008*	0.0012**	1.23
	(0.0004)	(0.0004)	(0.0005)	(0.0006)	
SIZE	0.0038	0.0038	0.0038	0.0044	1.24
	(0.0039)	(0.0040)	(0.0047)	(0.0032)	
EPS	−0.0013***	−0.0013***	−0.0015***	−0.0017***	1.21
	(0.0003)	(0.0004)	(0.0003)	(0.0006)	
GROWTH	−0.0248***	−0.0248*	−0.0167*	−0.0214*	1.02
	(0.0099)	(0.0131)	(0.0133)	(0.0101)	
Constant	0.2367***	0.2367***	0.2801***	0.2813***	
	(0.0465)	(0.0591)	(0.0585)	(0.0471)	
R^2	0.2957	0.2957	0.2330		
F-statistic	13.65***		8.77***		
Wald chi^2		207.03***			
Log-likelihood ratio				310***	
Mean VIF					1.20
N	502	502	393	502	

Source: Authors' contribution (All variables are defined in Table 2)

***, **, and * indicate significance at the level of 1, 5 and 10 percent, respectively. The numbers in parentheses are standard errors of the coefficients.

association between ACSIZE and ACIND indicates (see Table 4) that the number of IDs remains fixed (consequently ACIND decreases) as the ACSIZE increases.

Crucially, the coefficient on BDSIZE remains positive and significant across all estimation techniques. AC independence is, therefore, positively associated with the size of the board which indicates that AC independence also increases as board size goes up. Our result is consistent with previous studies relating to Bangladesh and other emerging and western contexts including Klein (2002b), Al-Najjar (2011), Beasley and Salterio (2001), Rainsbury et al. (2008), and Adhikary and Mitra (2016). This result supports the supply-based view of AC independence (Rainsbury et al., 2008). In other words, firms with larger boards are more likely to create more independent ACs.

Table 5 also reports a significant positive coefficient on BDIND. The positive relationship between BDIND and ACIND indicates that the larger the pool/supply of IDs on the board, the easier it will be for the board to form a more independent AC (Klein, 2002b). This finding is also consistent with the supply perspective (Rainsbury et al., 2008) that argues that firms with larger supply of independent board members are more likely to have more independent ACs. Our finding corroborates the

results of previous studies in different contexts including financial sector of Bangladesh (Beasley & Salterio, 2001; Cotter & Silvester, 2003; Deli & Gillan, 2000; Klein, 1998, 2002b; Menon & Williams, 1994; Piot, 2004; Rainsbury et al., 2008; Ruiz-Barbadillo et al., 2007).

We have found a significant negative association between director ownership and AC independence (as indicated by significant negative coefficient on DTOWN). This indicates that increased director ownership is detrimental to AC freedom. This finding is consistent with some previous studies (Beasley & Salterio, 2001; Deli & Gillan, 2000; Piot, 2004; Ruiz-Barbadillo et al., 2007). This supports the demand-based argument that high level of management/insider ownership can increase management dominance over the board (Ruiz-Barbadillo et al., 2007) and hinder the monitoring of remaining shareholders` interests. As our descriptive statistics in Table 3 indicate, majority of the directors in our sample firms are insiders (around 100%—24.53% or 75.47%). Moreover, according to current and previous corporate governance regulations in Bangladesh, IDs can hold less than one percent shares of the total paid up capital of the firm (BSEC, 2012, 2018). So, inside directors' ownership must be collectively higher than that of outsiders leading to increased managerial dominance.

On the other hand, Table 5 reports significant positive coefficients on INSTOWN and hence positive relationship between institutional shareholding and our dependent variable. It signifies that large institutional owners can reinforce AC independence. Our result is consistent with the idea of complementarity of monitoring mechanisms, e.g., Agrawal and Knoeber (1996) who found the market for corporate control to be positively associated with institutional shareholding as well as large blockholding. In our case this indicates that large institutional owners may insist that the ACs be composed fully or largely of outside directors.

Our multivariate analysis has found no significant relationship between firm size (SIZE) and AC independence (ACIND). This implies that the differences in AC independence cannot be explained by the variation in firm size in Bangladesh. In other words, the freedom of ACs does not sufficiently vary across firms of different sizes. Cotter and Silvester (2003) in Australia and Piot (2004) in France also reported insignificant results in this conjecture. The fact that some other variables included in our model which are highly correlated with firm size can be one reason for such results.

The relationship between firm performance (EPS) and AC independence (ACIND) is negative (as the coefficient on EPS is negative. As firm performance boosts up, AC independence gets lower. This result is supportive of the view that good financial performance is indicative of lower shareholder agency costs (Hermalin & Weisbach, 1988) and necessitates less monitoring of management actions by way of, e.g., highly independent ACs. It is also consistent with the management dominance hypothesis that says that management of firms that are more profitable is dominant on the boards due to their contribution to the firm or amicable relationships with shareholders and boards.

The coefficient on growth opportunities (GROWTH) indicates that there is a significant negative relationship between the firms` growth and AC independence. This delineates that new and rapidly growing firms adopt less independent ACs because rapidly growing firms rely more on executive directors to form the board for their expertise to handle complexities and uncertainties. This result is consistent with many previous studies in different contexts (e.g., Adhikary & Mitra, 2016; Deli & Gillan, 2000; Klein, 2002b). So, ACs in rapidly growing firms are less independent because these firms tend to have more inside directors on their boards who will place friendly faces in the ACs, as argued under managerial dominance hypothesis by (Ruiz-Barbadillo et al., 2007). Also growth companies tend to have little demand for accounting certification (Deli & Gillan, 2000) due to their avoidance of contracts based on accounting numbers owing to their poor quality because they poorly reflect underlying economic reality of these firms (Skinner, 1993; Smith & Watts, 1992).

Table 6. Regression Results—Determinants of Audit Committee Independence (ACINDUMMY)

	Logit Model	Lagged Logit Model
Independent variable	Coefficients	Coefficients
ACSIZE	−0.1101***	−0.1706***
	(0.0286)	(0.0416)
BDSIZE	0.0365***	0.0426***
	(0.0293)	(0.0314)
BDIND	0.7551***	0.4425***
	(0.1055)	(0.1149)
DTOWN	−0.0110**	−0.0170***
	(0.0013)	(0.0011)
INSOWN	0.00020***	0.00014**
	(0.0008)	(0.0006)
SIZE	0.0048	0.0040
	(0.0039)	(0.0041)
EPS	−0.0021***	−0.0015***
	(0.0013)	(0.0004)
GROWTH	−0.0218***	−0.0197
	(0.0091)	(0.0103)
Constant	0.3327***	0.2909***
	(0.0625)	(0.0515)
Log-likelihood ratio	295***	245***
N	502	393

Source: Authors' contribution (All variables are defined in Table 2)

***, **, and * indicate significance at the level of 1, 5 and 10 percent, respectively. The numbers in parentheses are standard errors of the coefficients.

6.4. Additional analysis

We have estimated Equation 2 which uses an alternative measure of AC independence (ACINDUMMY) to check robustness of our results of Equation 1. Table 6 delineates the results of equation 2 using Logit and Lagged Logit Models as indicated by column titles. The coefficients on the independent variables indicate that our results are robust to alternative measurement of AC independence.

Table 7 presents the results of multivariate regression of Equation 1 using year dummy and serial correlation to show the robustness of our results. The pooled OLS regression results considering year dummy are same as the results of pooled OLS regression without considering year dummy presented in Table 5. This means that the impact of the independent variables of our study on the dependent variable remains constant over time. In other words, the relationships between our independent variables and AC independence (i.e., the coefficients) remain unchanged over our study period.

The regression results under the column titled Serial Correlation indicate that even after controlling for autocorrelation our results regarding the economic determinants of AC independence are sufficiently robust as the results are similar to those reported under random effect model in Table 5.

To further explore the robustness of the findings to endogeneity bias, System GMM estimation is also applied in both Equations 1 and 2. This analysis spots higher p-value of Sargan J-statistic as an indication of better GMM results. The application of this additional analysis also reveals the results

Table 7. Robustness checks

	Year Dummy	Serial Correlation
Independent variable	Coefficients	Coefficients
ACSIZE	−0.1575***	−0.1601***
	(0.0298)	(0.0500)
BDSIZE	0.0749***	0.0765**
	(0.0194)	(0.0365)
BDIND	0.6709***	0.7551***
	(0.1076)	(0.2175)
DTOWN	−0.0010***	−0.0010*
	(0.0003)	(0.0006)
INSOWN	0.009**	0.0009
	(0.0004)	(0.0006)
SIZE	0.0041	0.0038
	(0.0039)	(0.0076)
EPS	−0.0013***	−0.0013***
	(0.0003)	(0.0004)
GROWTH	−0.0251***	−0.0248*
	(0.0102)	(0.0129)
Constant	0.2370***	0.2367***
	(0.0471)	(0.0903)
R^2	0.2984	0.2957
F-statistics	9.02***	4.22***
N	502	502
Year dummy	Yes	

Source: Authors' contribution (All variables are defined in Table 2)

***, **, and * indicate significance at the level of 1, 5 and 10 percent, respectively. The numbers in parentheses are standard errors of the coefficients.

(not tabulated but available on request) similar to those reported in both Tables 5 and 6 thus confirm the consistency of our findings.

7. Summary and conclusion

The paper analyses the relationship between board characteristics (supply factors), ownership, and some other firm characteristics (demand factors) and the degree of AC independence (ACIND). We have found that economic factors can explain the variation in the AC independence in Bangladeshi listed nonfinancial companies. The studied firms are predominantly locked in the minimum requirement of the regulator and are reluctant to voluntarily give more freedom to ACs. This is indicated by the negative association between AC independence and AC size, i.e., more insider directors are added as AC size needs to be enlarged. Negative association has also been documented in terms of directors` ownership, firm profitability, and growth opportunities. This result supports managerial dominance hypothesis which indicates that higher insider/management ownership, higher firm profitability/performance, larger and more rapid growth can create paths for insiders to dominate over boards` decision and lead to less independent ACs. On the other hand, higher institutional shareholding leads to more independence of ACs, i.e., large institutional shareholders complement monitoring by demanding a more independent AC. More importantly, we have also found positive relationship between AC independence and board size and board independence level. This supports the view that the ACs get more IDs when supply of outside directors is higher. Our regression coefficient for firm size is insignificant. Firm size does not explain the variance in AC independence. Our result is robust to an alternative measure of AC independence and a wide range of alternative

estimation techniques. Overall we have found that both supply and demand factors explain differences in AC independence across firms.

We believe that the most recent regulation of the BSEC, which has mandated forming ACs with only non-executive directors (Bala, 2018), is an appropriate policy initiative given the current gap in the AC independence due to flexible regulation and should be strictly enforced. The previous regulations requiring at least one independent director in ACs have failed to ensure voluntary improvement in AC composition to enable it to act as an effective monitoring mechanism. However, the latest regulation requires at least one independent director in the AC along with other nonexecutive directors. This keeps the door for some affiliated non-executive directors[3] open to serve in the ACs which is a gray area in AC independence. Regulators in Bangladesh should provide clear and specific guidance regarding the independence and qualification requirements (similar to those for IDs) for these directors to be included in ACs. This will hopefully boost AC independence in Bangladesh.

However, this study has limitations. The first and highly classical one stems from the fact that AC independence cannot be measured directly (Ruiz-Barbadillo et al., 2007). There is widespread and growing skepticism regarding the degree of real independence of so-called IDs. Second, there may exist a nonlinear relationship in our model which future research in this area should focus on. We think that further research should answer the following questions. Is the relationship between AC independence and the various economic factors linear? Or does the relationship fit better to non-linear models? Further research should also be conducted to test the effectiveness of the new corporate governance regulation (CGC 2018) by comparing the current scenario with the new picture after the enactment of the new regulation. Further research should also focus on the role of affiliated directors along with other inside and outside directors in CG and overall AC effectiveness in Bangladesh.

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Notes
1. An ID is identified differently by different authorities and committees. We refer here to one specifically defined in the corporate governance guidelines (CGG—issued in 2006 and 2012)/code (CGC—issued in 2018) in Bangladesh. They need to be NED along with fulfilling some other conditions regarding e.g., affiliation, shareholding in the firm, expertise, experience, etc.) i.e. all IDs are NEDs, but all NEDs are not IDs. For current detailed definition please refer to the Corporate Governance Code (CGC) 2018 (Notification No. BSEC/CMRRCD/2,006,158/207/Admin/80). When we refer to Independent/Independent Outside/Non-executive Director or AC independence in the context of Bangladesh in this paper, we refer to such director or its proportion in the AC.
2. (Klein, 1998) argued that when larger firms are more likely to be sued for misstated or fraudulent financial statements as shareholders maybe more apt to do so. Then larger firms may try to inoculate themselves against lawsuits by adopting stronger monitoring mechanisms, such as greater audit committee independence.
3. Non-executive directors are those who have some other affiliation with the firm, such as being a relative of management/executive directors, a former employee, a supplier or customer of the firm, or a consultant or legal adviser (Joshi & Wakil, 2004).

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