

Business strategy typologies: do the board of commissioners and audit committee concern about prospector-type strategies?

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Abstract

Purpose – The study aims to provide new evidence on the relationship between the board of commissioners (BOCs) and audit committee (AC) as a primary corporate governance structure toward business strategy typologies.

Design/methodology/approach – The authors use logistic regression analyses with a sample of industrial companies listed on the Indonesia Stock Exchange from 2012–2018. Data of the BOC and AC are hand-collected from the annual reports and analyzed using the content analysis.

Findings – The study finds evidence that the effectiveness of the BOC is more likely to have a positive association with the prospector strategies. The authors also find that the AC's effectiveness is more likely to associate negatively with prospector strategies. As the board monitoring system, the findings appear to disclose that the BOC and ACs following the prospector strategies are more likely to focus on achieving the entity's strategy than monitoring financial reporting and internal control functions compared with the defender strategies.

Practical implications – The results have significant practical implications to help explain that despite the corporate governance mechanisms that are likely to exist, prospectors are still likely to have weaker internal control and less likely to remediate material weaknesses (MWs) than defenders due to their specific business strategy related attributes.

Originality/value – The study extends the studies on the corporate governance mechanism using the BOC and the AC's roles in business strategy setting from the strategic management literature using Miles and Snow's (1978; 2003) framework.

Keywords Audit committee, Business strategy, Board of commissioners, Defenders, Prospectors

Paper type Research paper

1. Introduction

We investigate the association of the board of commissioners (BOC) and the audit committee (AC) as a primary corporate governance mechanism with business strategy. The management control system literature concludes that a firm's business strategy should be a major component in designing an internal control system (Bentley-Goode *et al.*, 2017). The literature also predicted that prospectors are more likely to have weaker internal control than defenders, e.g. Miles and Snow (1978; 2003, hereafter MS). Bentley-Goode *et al.* (2017) found empirical evidence consistent with the above theory that firms with prospector typologies tend to have weaker internal control than firms with defender typologies. In addition, Bentley-Goode *et al.* (2017) found further evidence that prospectors were more likely to have weaker remediation of material weaknesses (MWs) than defenders.



That empirical evidence challenges the corporate governance mechanism in the firms that follows their business strategy typologies because corporate governance in management strategy implementation is crucial, especially for firms that follow prospector-type business strategies. Adequate supervision is required for management to remediate MWs in internal control following their business strategy typologies (Doyle *et al.*, 2007). These supervisions are the main tasks of the BOC and AC because “both the board and the AC hold a fiduciary duty to oversee and monitor the firm’s internal controls and assume an important monitoring role in the remediation of MWs” (Bentley-Goode *et al.*, 2017, p. 53). They continued that “unless those charged with governance can effectively pressure management to remediate MWs, the firm may not take corrective action or do so in a timely manner” (p. 53). Others found that more independent boards, a higher proportion of ACs with financial expertise and more significant ACs promptly remediate MWs (Chen *et al.*, 2017b; Carcello *et al.*, 2011; Goh, 2009). However, those previous studies did not explicitly differentiate the roles of boards and ACs in remediating MWs in the context of business strategy typologies.

Specifically, the above findings in developed countries may differ from those conducted in developing countries. For example, using the path analysis method and data of 198 firm-year observations from public listed companies in Indonesia in 2008–2010, Ghofar and Islam (2015) found that business strategy typology is positively associated with the corporate governance construct. Furthermore, they suggest that prospectors have relatively stronger corporate governance than defenders, considering the attributes of prospectors with diverse and complex operating systems, focusing more on innovation and riskier investments. This stronger corporate governance is needed to provide certainty and maintain investors’ confidence in prospector-type strategies. Do the BOC and ACs play important roles in the supervisory function in the prospector-type firms, including the remediation of MWs is the research question to be answered. This paper attempts to fill the literature gap by investigating the supervisory and advisory roles of BOC and ACs toward the business strategy typologies.

We test our hypothesis using the purposive sampling method from all manufacturing companies listed on the Indonesia Stock Exchange from 2012 to 2018 and get 665 firm-year observations. We follow previous research in constructing a composite score of business strategy typology using six attributes (e.g. Chen *et al.*, 2017a; Higgins *et al.*, 2015) and follow Hermawan (2011) in constructing the score of BOC and AC as our primary variables. Using logistic regression analysis, we discover a positive relationship between the BOC and firms that employ prospector strategies and find a negative relationship between the AC and firms that employ prospector strategies. These results suggest that the board monitoring structure through the BOC and ACs in the prospectors is more likely to focus on implementing business strategies rather than monitoring managers’ activities than the defenders. We further perform two-stage logistic regression estimation procedures to address the potential endogeneity problems in our main tests related to the business strategy typologies on the corporate governance mechanism through the BOC and AC. Our results found no endogeneity indication that could affect our main result tests.

Collectively, our research has practical and theoretical implications because it helps better understand why firms that follow prospector strategies in the management literature are more likely to receive material weakness opinions (MWOs) and less likely to have material weakness remediation than firms that follow defender strategies in the perspective of the corporate governance mechanism. For example, despite the ACs in prospector-type firms being more likely to have a substantial role in overseeing management to remediate MWs, their effectiveness is subsumed in the BOC’s effectiveness compared to the defenders (e.g. Hermawan, 2011; Kusumawati and Hermawan, 2013).

Our study contributes to some points. First, few studies link the corporate governance mechanisms or board monitoring effectiveness with the companies’ organizational stability

and complexity that characterize their business strategies typologies (Bentley *et al.*, 2013, p. 78). Gani and Jermias (2006) found an indirect relationship between board independence and business strategy typologies that affect company performance. Our study found this link directly between the board monitoring effectiveness through the BOC and the ACs and their supervisory and advising function to implement these business strategy typologies, particularly in the prospector-type firms. Second, Carcello *et al.* (2011) assert that prior research did not investigate the relationship between the characteristics and process of corporate governance within the firm's strategic focus because the firm's strategic focus may affect the related governance characteristics and process. Thus, our research examines and provides evidence regarding the need for further study from Carcello *et al.* (2011) in the business strategy typology setting. Third, our study uses a theoretical framework of MS's business strategy typology, which is comprehensive and has been tested repeatedly in previous studies, and the data are available to the public using archival data as cited in, e.g. Higgins *et al.* (2015), Chen *et al.* (2017a) and Bentley-Goode *et al.* (2017). Fourth, using the data from Indonesia's public listed firms, our study documents the direct link between corporate governance mechanisms through the BOC and ACs as the main structure of corporate governance and business strategy typology using the MS framework.

The remainder of this paper is organized into related literature and hypotheses development, method, results and discussion, and conclusions.

2. Literature review and hypothesis development

2.1 Business strategy

The management literature documented firms compete in their respective industries using business strategy typologies (Bentley *et al.*, 2013). One of the well-known typologies of business strategy is the business strategy typology of MS, as cited in Higgins *et al.* (2015, p. 676). MS divides the typology of business strategy into three viable types in the same industry by adopting different patterns in the market for products, processes, technology and organizational structures to remain competitive in the market. These typologies are prospectors, analyzers and defenders. In the prospector strategies, MS explains that the attributes of these companies are more focused on innovation and change and have a broad product domain with a flexible organizational structure to achieve better coordination. To enter new markets and respond quickly to the market changes, prospectors allocate a relatively larger budget than defenders in their research and development (R&D) costs, as well as marketing costs (Chen *et al.*, 2017a). In addition, prospectors have diverse and complex operating systems and decentralized control systems, e.g. MS.

In contrast, firms with defender strategies focus more on cost efficiency and lean product domains. Defender typologies have stable organizational structures to maintain certainty as to the basis of competition. Firms following defender typologies prioritize investing in technology to increase efficiency and have a centralized control structure to increase efficient production and distribution (Chen *et al.*, 2017a; Bentley-Goode *et al.*, 2017).

Analyzer typologies are in the range between prospectors and defenders with the combined characteristics of the two typologies. Management literature agrees that prospectors, defenders and analyzers are observable business strategy forms and tend to have equal performance and exist in all types of industries, e.g. MS and Chen *et al.* (2017a). Therefore, our study includes analyzers as our sample in this empirical analysis but focuses on prospectors and defenders.

2.2 Board of commissioners, audit committee and business strategy

Agency theory concludes that there may be a conflict of interests between the agent and the principal (Jensen and Meckling, 1976). BOC and ACs, as the main structure of corporate

governance, can reduce agency costs if they function properly. The costs incurred for the principal due to material weakness opinion from the auditor, weak remediation of MWs from internal control and under (over) investments can be avoided to increase trust for external stakeholders.

Studies abroad on the role of boards and ACs concerning financial reporting quality are widely conducted (e.g. Menon and Williams, 1994; Abbott *et al.*, 2004; Abbott *et al.*, 2000; Lin and Hwang, 2010; Lin *et al.*, 2006; Carcello *et al.*, 2011; Klein, 2002). For example, a meta-analysis study conducted by Lin and Hwang (2010) concluded that corporate governance mechanisms through the board and the AC are negatively associated with financial reporting misreporting through discretionary accruals, restatements and financial reporting statements frauds. Previous studies used proxies for the boards, such as the independence of the board and its expertise, independence of the AC, size, expertise and the number of meetings for ACs (e.g. Ghofar and Islam, 2015; Ditta and Setiawan, 2019; Lin and Hwang, 2010).

In Indonesia, the corporate governance structure adopts a two-tier system on the board structure in a company, i.e. the BOC and the board of directors (Ditta and Setiawan, 2019; Hermawan, 2011). The board of directors is the executive who represents the agent, while the ACs assist the BOC and monitor the board of directors. Financial Services Authority (FSA) of Indonesia regulates the corporate governance mechanism by issuing FSA Regulation (Peraturan Otoritas Jasa Keuangan, POJK), such as the POJK No. 33/2014 concerning “The Directors and Boards of Commissioners of Public Companies” and POJK No. 55/2015 regulates “The formation and guidelines for the audit committee’s work.”

Studies of corporate governance mechanisms through the BOC and ACs are widely conducted in Indonesia, and the findings are still mixed (e.g. Ditta and Setiawan, 2019; Agustia, 2013; Dwiharyadi, 2017; Hermawan, 2011; Kusumawati and Hermawan, 2013; Amertha *et al.*, 2014; Gumanti and Prasetiawati, 2011). Prior studies suggested that a corporate governance mechanism through the boards, ACs and external auditors should be able to prevent irregularities arising from the implementation of business strategies, particularly in the prospector typologies (Chen *et al.*, 2017a; Bentley-Goode *et al.*, 2017; Doyle *et al.*, 2007; Goh, 2009; Johnstone *et al.*, 2011). In addition, researchers found evidence of a positive relationship between the role of the boards and AC on material weakness remediation carried out on a timely basis (e.g. Chen *et al.*, 2017b; Carcello *et al.*, 2011; Goh, 2009). One of the arguments is that board independence will complement the fundamental responsibilities of management in designing and implementing an internal control system, including remediation of MWs (Chen *et al.*, 2017b). However, those studies do not answer the research question of whether the board independence has a positive association with the remediation of MWs related to a particular business strategy typology, i.e. the underlying determinant of the internal control system (Chen *et al.*, 2017a).

This study aims to capture the links between corporate governance mechanisms through the effectiveness of the BOC and AC with business strategy using MS’s organizational typology. Gani and Jermias (2006) found that board independence will be more positive for the performance of companies using business strategies with cost leadership or defender typologies compared to strategies with the innovation or prospector typologies. Their findings indicated that the board of directors who are more independent from management tend to carry out management-monitoring activities with tight cost control on the defender strategies than prospector strategies, thereby preventing managers from opportunistic behavior and improving their operating performance. However, they suggest that board independence should not neglect strategic management and relational roles, considering that the boards of commissioners from outside the company have more ability and experience in dealing with external activities that can reduce uncertainty in strategy formulation and implementation.

The mechanism of corporate governance through the BOC and AC toward management is thus still a research question, especially in business strategy settings with a prospector typology where material weakness and remediation in internal control are weaker than the defender typology (Doyle *et al.*, 2007; Carcello *et al.*, 2011; Bentley-Goode *et al.*, 2017). In sum, there is a lack of extant empirical support for the relationship between the effectiveness of corporate governance mechanisms through the BOC and the AC with the typology of business strategy. Accordingly, this study expresses the hypothesis in the form of the null hypotheses:

- H1. The effectiveness of the BOC is similar likely related to the prospector and defender strategies
- H2. The effectiveness of ACs is similar likely related to the prospector and defender strategies.

3. Method

3.1 Data and empirical model

The study uses the purposive sampling method and takes the sample from companies listed on the Indonesia Stock Exchange in the manufacturing industry from 2012 to 2018. Financial data are collected from audited financial statements, while the BOC and AC data are hand-collected from the annual reports and analyzed using content analysis. Table 1 (available online at: https://docs.google.com/document/d/1PkWbf89K3RxWB7cATsJgNzhKG2DaaLR_6qOxFBggA0/edit?usp=sharing), Panel A reports the sample selection.

To avoid outliers' data, we perform winsorization procedures to all continuous data using mean $\pm$ two standard deviation (Accock, 2008). We conduct our data analysis using Stata Statistical/Data Analysis version 14.2. We use a logistic regression model to test the following hypotheses: H1 and H2.

$$\begin{aligned} \text{STRATEGY}_{i,t} = & \alpha_0 + \alpha_1 \text{BOC_EFFECTIVENESS}_{i,t} + \alpha_2 \text{AC_EFFECTIVENESS}_{i,t} \\ & + \alpha_3 \text{BIG}_4 + \alpha_4 \text{FIRMASSETS}_{i,t} + \alpha_5 \text{LEVERAGE}_{i,t} + \alpha_6 \text{LOSS}_{i,t} \\ & + \alpha_7 \text{OCF}_{i,t} + \alpha_8 \text{GROWTH}_{i,t} + \alpha_9 \text{BM}_{i,t} + \alpha_{10} \text{ROA}_{i,t} + \alpha_{11} \text{DROA}_{i,t} \\ & + \alpha_{12} \text{AGE}_{i,t} + \delta_j \text{YEAR} + \varphi_k \text{INDUSTRY} + e_{i,t} \end{aligned} \quad (1)$$

The dependent variable, STRATEGY, is an indicator variable, equals one if a company follows a business strategy with a prospector strategy and 0 if otherwise. The variables of interest in this study are the effectiveness of BOC (BOC_EFFECTIVENESS) and AC effectiveness (AC_EFFECTIVENESS). Appendix A (available online at: <https://docs.google.com/document/d/1XlqRIOW6xJ3agWyL5Wy8Aiggyq23fuyaH8hVbYnb0QE/edit?usp=sharing>) reports all variable definitions.

3.2 Measurement of business strategy

The measurement of business strategy follows the previous studies (e.g. Higgins *et al.*, 2015; Bentley *et al.*, 2013; Chen *et al.*, 2017a) and uses six attributes to construct a composite score STRATEGY variable: a. the ratio of R&D to total sales; b. the ratio of employees (EMP) to sales; c. historical sales growth rate; d. the ratio SG&A expense to total sales; e. the standard deviation of total employees (EMP) and f. ratio of property, plant and equipment (PPE) to total assets. All attributes are calculated using a three-year rolling average in total. Next, each attribute is ranked based on the distribution quintile within each firm year. We assign a score of 5 if the firms are in the highest quintile and assign a score of 1 if the firms are in the lowest quintile. To capture that prospectors exhibit lower capital intensity than defenders, the last attribute, i.e. the ratio of PPE to total assets, is reversed score. The scores are then added up to arrive at the composite score for

each firm. The prospector strategy has the highest spectrum score at 30, while the defender strategy has the lowest score of 6. Following the previous studies (e.g. Bentley *et al.*, 2013), firms with prospector strategies have a composite score within the range of 24–30, analyzes score within 13–23 and defenders score within 6–12. Thus, STRATEGY is an indicator variable equal to 1 if the STRATEGY score is within the range of 24 and 30, indicating that a company follows prospector strategy, 0 if otherwise.

3.3 Measurement of corporate governance mechanism

This study uses a measurement of corporate governance mechanism by using a score that can fully capture the BOC and AC's functions and responsibilities as regulated in the FSA Regulation (POJK). Following Hermawan (2011), this study calculates the score of the BOC using 17 questions, including the issues of independence, activities, size and competence of the BOC. Please see the detail of the questions for the BOC in Appendix B (available online at: https://docs.google.com/document/d/1_JMdeDUfoTshFc7xgvpv9Taz8Yq83lz5S6bMheZGtTGc/edit?usp=sharing).

The study uses content analysis to answer each question using the information from the firms' annual reports. Each question in the list has an answer, whether good, fair or poor; if the answer is good, we give a score of three; fair with a score of two and poor or no information with a score of one. All scores from the questions are then added up to determine the score of the BOC (BOC_SCORE). Finally, the score for each firm is scaled by 34 (i.e. 17×2 (fair)) to determine the effectiveness of BOC (BOC_EFFECTIVENESS).

Following Hermawan (2011), this study measures the AC's role using 11 questions, including the AC's expertise and competence, the activities of the AC and the size of the AC. Please see the detail of the question for AC in Hermawan (2011) in Appendix B. Like measuring the BOC scores, each question in the list answers whether it is good, fair or poor. The next step is to add all the question scores from the AC's role to get each AC's score (AC_SCORE). Finally, the score for each company is scaled by 22, that is 11 times the value of 2 (fair), to determine the AC's effectiveness (AC_EFFECTIVENESS).

Some variables could affect the business strategy (STRATEGY), including the company characteristics. These control variables are profitability (ROA and DROA), market-to-book ratio (MB), operating cash flows (OCF), company size (FIRMASSETS), company growth rate (GROWTH), leverage level (LEVERAGE) and the age of the company (AGE). Prospectors tend to have sporadic growth rates and lower profitability because they depend on product and market developments, compared to defenders with more stable growth and profitability patterns (Bentley *et al.*, 2013; MS); therefore, ROA, DROA and GROWTH were predicted negatively on business strategies with a prospector typology (Chen *et al.*, 2017a). Prospectors are more likely to have a smaller firm size (FIRMASSETS and BM), lower leverage (LEVERAGE) and lower operating cash flows (OCF), as well as younger age (AGE), compared to the defender typology (e.g. Bentley *et al.*, 2013; Chen *et al.*, 2017a). Prospectors tend to experience losses and experience financial distress (LOSS) (Chen *et al.*, 2017a). This study predicts that the variables of FIRMASSETS, BM, LEVERAGE, OCF and AGE negatively associate with STRATEGY. In addition, companies with prospector typology tend to be audited by the Big Four (BIG4) (Chen *et al.*, 2017a; Herusetya, 2020). Finally, year dummies (YEAR) and industry dummies (INDUSTRY) are included to eliminate the fixed effects of years and industries (Petersen, 2009).

4. Results and discussion

4.1 Descriptive statistics and correlations

Table 1, Panel B reports the descriptive statistics with 665 firm-year total observations. In Table 1, using a full sample ($N = 665$), the means of BOC_SCORE and AC_SCORE are 40.603

and 27.917, respectively. These means indicate that the BOC and the AC average score from the total question items are above the fair value, i.e. 34 (17×2) and 22 (11×2), respectively. Furthermore, these scores are consistent with the BOC's effectiveness (BOC_EFFECTIVENESS) and AC effectiveness (AC_EFFECTIVENESS), with a mean above 1, i.e. 1.097 and 1.269. Table 1, Panel B also exhibits the mean and median of BOC_EFFECTIVENESS and AC_EFFECTIVENESS for the sub-sample of prospectors ($N = 47$) and defenders ($N = 45$), respectively. Table 1 (available online at: https://docs.google.com/document/d/1PkWbf89K3RxWB7cATSjgNzhKG2DaaLR_6qOxFBbggA0/edit?usp=sharing)

Total assets (FIRMASSETS) for the full sample have an average total asset of IDR (Rupiah) 8,670 bn, and companies with prospector and defender strategies have a sample with an average total asset of IDR 4,469 bn and IDR 3,434 bn, respectively. GROWTH for the entire sample has a mean of 0.187, while the mean for the prospectors and defenders is 0.160 and 0.093, respectively. Table 1, Panel C also exhibits the variables used in the computation strategy (STRATEGY) using a whole sample and sub-sample. Table 1, Panel D also shows the descriptive statistics for all variables in Model 2 as further analysis. Table 2 (available online at: <https://docs.google.com/document/d/1c7zTfHI8TA1iXC2iPo-GzelH2HIBkPUBe73AN55b7hU/edit?usp=sharing>) reports the correlations among variables used in the regression. The results note that AC_EFFECTIVENESS negatively correlates with STRATEGY (-0.07) at the 0.10 significance level, while BOC_EFFECTIVENESS is not significantly different from zero with STRATEGY. Other control variables, i.e. BIG4 (-0.09), FIRMASSETS (-0.10), and OCF, negatively correlated with STRATEGY is significant at 0.05 or less. There are no multicollinearity problems in these correlations.

4.2 Hypothesis testing results of H1

Table 3 (available online at: <https://docs.google.com/document/d/1S2DGFwNLSWk9J82QoB6e3F82WrrtrJbb3i4skf55yHc/edit?usp=sharing>), Panel A and B report the single tests of BOC_EFFECTIVENESS and AC_EFFECTIVENESS, while Panel C reports the joint test results of H1 and H2. From Panel A and B, respectively, we obtain that the coefficients of BOC_EFFECTIVENESS and AC_EFFECTIVENESS are not significantly different from zero. Table 3, Panel C shows the hypothesis testing H1 and H2 and is the main concern in Model 1. The logistic regression model in Panel C has a Wald χ^2 of 33.1, $p < 0.001$ and a pseudo R^2 of 0.083 or 8.30%. The BOC_EFFECTIVENESS coefficient is 3.326, positive and significant at 0.10 (z -test = 1.90, $p = 0.057$).

The results of this test find evidence of a higher likelihood of the effectiveness of the BOC (BOC_EFFECTIVENESS) associated with the prospector strategy (STRATEGY). This BOC's effectiveness represents the BOC's independence, BOC activity, expertise, competence and board size. Our findings align with Gani and Jermias's (2006) suggestions that the board of commissioner independence should focus on strategic management and relational roles, even though the BOC did the management-monitoring activities. Furthermore, they argued that "outside directors who gain greater knowledge and experience of external affairs can more viably reduce the uncertainties surrounding the formulation and implementation of the strategy" (p. 311). In addition, firms that follow prospector strategies are more challenging to maintain adequate internal control considering that the internal control structure is decentralized and flexible following a prospector business strategy. On the other hand, firms that follow defender strategies have centralized and inflexible internal control structures to achieve cost efficiency (MS). The findings indicate the BOC's involvement in encouraging prospectors to focus on innovation and discovering new products and markets that characterize prospectors. Finally, our results support the argument of Carcello *et al.* (2011) that the BOC's characteristics and its effectiveness might be different depending on their business strategy typology.

In sum, these findings confirm that firms that follow prospector strategies tend to receive MWOs and are less likely to remediate MWs at the entity level than the defenders. Prospectors tend to have unstable internal controls and are more often make modifications to the internal control system according to the market's changing needs than defenders (e.g. [Simons, 1987](#)). Due to the need for frequent changes in internal control, management tends to be more reluctant to correct deficiencies and internal control processes. This study argues that the BOC who are more active and focus on companies with the prospector typology settings are less likely to pay attention to the supervisory responsibilities toward material weakness remediations in internal control than defender typology.

4.3 Hypothesis testing results of H2

In Table 3, Panel C the AC_EFFECTIVENESS coefficient is -2.250 , negative and significant at 0.05 (z -test = -1.99 , $p = 0.046$). This study finds strong evidence that the AC effectiveness (AC_EFFECTIVENESS) through the expertise and competence of the AC, the activity of the AC and the size of the AC are more likely to have negatively related to the prospector strategies than defender strategies. This finding is in line with previous studies that found the association between the quality of the AC and the quality of financial reporting and internal control ([Goh, 2009](#); [Carcello and Neal, 2000](#)).

This study suggests that AC effectiveness in the prospectors negates the increased likelihood of internal control weaknesses when they are likely to exist and remediate material weakness according to their supervisory function compared to defenders. When significant deficiencies are found and the necessary control modifications are needed following complex coordinations in the prospectors, the AC teams will review accounting procedures and internal control and communicate immediately with internal and external auditors. Previous studies have supported that an influential AC strongly influences management, allowing for timely internal control remediation ([Goh, 2009](#); [Chen et al., 2017a](#); [Johnstone et al., 2011](#)). However, the role of the AC mentioned above is highly dependent on the role of the BOC because the AC is part of the organ that supports the effective implementation of the BOC's duties as described in POJK No. 33/2014 and POJK No. 34/2014.

4.4 Further analyses

We perform further analyses to determine the effect of each component of the BOC and ACs. The effectiveness of the BOC has components of the independence of the BOC, the activity of the BOC, the size of the BOC and the competence of the BOC; while the AC has components of the expertise and competence of the AC, the activity of the AC and the size of the AC. Please refer to [Hermawan \(2011\)](#) for detailed questions. All of these components are tested using a regression model (Model 2) as follows:

$$\begin{aligned} \text{STRATEGY}_{i,t} = & \beta_0 + \beta_1 \text{BOC_IND}_{i,t} + \beta_2 \text{BOC_ACTS}_{i,t} + \beta_3 \text{BOC_SIZE}_{i,t} \\ & + \beta_4 \text{BOC_COMP}_{i,t} + \beta_5 \text{AC_ACTS}_{i,t} + \beta_6 \text{AC_SIZE}_{i,t} \\ & + \beta_7 \text{AC_COMP}_{i,t} + \beta_8 \text{BIG4}_{i,t} + \beta_9 \text{FIRMASSETS}_{i,t} \\ & + \beta_{10} \text{LEVERAGE}_{i,t} + \beta_{11} \text{LOSS}_{i,t} + \beta_{12} \text{OCF}_{i,t} + \beta_{13} \text{GROWTH}_{i,t} \\ & + \beta_{14} \text{BM}_{i,t} + \beta_{15} \text{ROA}_{i,t} + \beta_{16} \text{DROA}_{i,t} + \beta_{17} \text{AGE}_{i,t} + \delta_j \text{YEAR} \\ & + \varphi_k \text{INDUSTRY} + e_{i,t} \end{aligned} \quad (2)$$

Table 4 (available online at: <https://docs.google.com/document/d/1fzHVzM7ctRIPGIFrswErcnxd6O1Yc2lkMM7gdd-NQP0/edit?usp=sharing>) presents the results of these further analyses from Model 2. These results provide some evidence supporting our main results that

there is a positive and negative relationship between the components of the BOC (BOC_IND, BOC_COMP) and the AC (AC_SIZE) towards the prospector-type strategies, respectively.

We further investigate the interaction between the effectiveness of the BOC and the ACs using the interaction variable because “Very little of the extant governance literature examines the interactions, including the effects thereof, among the board of directors and its committees, particularly the primary board oversight committees (audit, compensation, and nominating/governance)” (Carcello *et al.*, 2011, p. 22). The test results (untabulated) show an interaction between the BOC and the AC. These results provide additional information that the BOC plays a more prominent role in the governance structure in the prospector strategy setting, with the ultimate result is on the decisive role of the BOC. Consistent with Hermawan’s (2011), our findings suggest that the role of the AC is highly dependent on the effectiveness of the BOC because the AC has the function of helping the BOC and is an integral part of the BOC.

4.5 Endogeneity test

This study addresses a potential endogeneity problem in the main test because the corporate governance mechanism as an internal monitoring system of a firm relies on a business strategy typology. There is a causal relationship between competitive strategy, organizational design complexity and internal control structure as per contingency theory (Otley, 1980; Jermias and Gani, 2004; Chenhall and Langfield-Smith, 1988). This theory argues that the control system of a company must be established to support the implementation of the company’s strategy to improve the firm’s performance (Donaldson, 2001; Ghofar and Islam, 2015; Hernawati, 2020; Gani and Jermias, 2006). In other words, the corporate governance structure as a control system must be aligned to a certain type of corporate strategy, whether it is prospector-type or defender-type strategy. We employ a two-stage logistic regression approach to control for endogeneity. In the first stage regressions, we got the predicted value of BOC (PRED_BOC_EFFECT) and the predicted value of AC (PRED_AC_EFFECT), respectively, which is then be used in the second stage regression. The estimation model in the first stage is as follows:

$$\begin{aligned} \text{BOC_EFFECTIVENESS}_{i,t} = & \alpha_0 + \alpha_1 \text{ABSDAC}_{i,t} + \alpha_2 \text{MAO}_{i,t} + \alpha_3 \text{QUICK}_{i,t} \\ & + \alpha_4 \text{LOWROA}_{i,t} + \alpha_5 \text{BIG4} + \alpha_6 \text{FIRMASSETS}_{i,t} \\ & + \alpha_7 \text{LEVERAGE}_{i,t} + \alpha_8 \text{LOSS}_{i,t} + \alpha_9 \text{OCF}_{i,t} \\ & + \alpha_{10} \text{GROWTH}_{i,t} + \alpha_{11} \text{BM}_{i,t} + \alpha_{12} \text{ROA}_{i,t} + \alpha_{13} \text{DROA}_{i,t} \\ & + \alpha_{14} \text{AGE}_{i,t} + \delta_j \text{YEAR} + \varphi_k \text{INDUSTRY} + e_{i,t} \end{aligned} \quad (3)$$

$$\begin{aligned} \text{AC_EFFECTIVENESS}_{i,t} = & \alpha_0 + \alpha_1 \text{ABSDAC}_{i,t} + \alpha_2 \text{MAO}_{i,t} + \alpha_3 \text{QUICK}_{i,t} + \alpha_4 \text{LOWROA}_{i,t} \\ & + \alpha_5 \text{BIG4} + \alpha_6 \text{FIRMASSETS}_{i,t} + \alpha_7 \text{LEVERAGE}_{i,t} + \alpha_8 \text{LOSS}_{i,t} \\ & + \alpha_9 \text{OCF}_{i,t} + \alpha_{10} \text{GROWTH}_{i,t} + \alpha_{11} \text{BM}_{i,t} + \alpha_{12} \text{ROA}_{i,t} \\ & + \alpha_{13} \text{DROA}_{i,t} + \alpha_{14} \text{AGE}_{i,t} + \delta_j \text{YEAR} + \varphi_k \text{INDUSTRY} + e_{i,t} \end{aligned} \quad (4)$$

We use several instrument and control variables in the first stage on Eq. (3) and Eq. (4). ABSDAC is absolute discretionary accrual, a proxy for earnings management accruals of Jones (1991), which is modified by Dechow *et al.* (1995) and used by Tucker and Zarowin (2006). We calculate discretionary accruals (DAC) using the following model:

$TACC_{it}/A_{it-1} = \alpha_0 + \alpha_i [1/A_{it-1}] + \beta_{1i} [\Delta REV_{it}/A_{it-1}] + \beta_{2i} [PPE_{it}/A_{it-1}] + \delta_1 ROA_{it} + \varepsilon_{it}$. We run the regression for each industry year and get the ABSDAC from the absolute value of the residual errors. MAO is a modified audit opinion, equals 1, if a firm receives all kinds of opinions other than the standard form of unmodified opinion, and 0 otherwise; QUICK is a quick ratio, i.e. current assets minus inventory divided by current liabilities; LOWROA is an indicator variable, equals 1 if ROA is less than 10% or negative, and 0 otherwise. Other variables are defined in Appendix A.

Table 5 (available online at: https://docs.google.com/document/d/1su7_tINxbIEv63wd1pcTiWwuOgr_poz57CoSPnW0jIw/edit?usp=sharing) reports the first and second stages of the regression tests. The results in the first stage are reported in Panels A and B, Table 5. Each model in the first stage has reasonably high pseudo R^2 and highly significant Wald χ^2 ($p < 0.001$). Panel A shows that BOC_EFFECTIVENESS is positively associated with MAO, FIRMASSETS, BM and negatively associated with QUICK, LOWROA, BIG4, GROWTH and AGE. Meanwhile, AC_EFFECTIVENESS (Panel B, Table 5) is positively associated with MAO, BM, ROA and AGE and negatively associated with ABSDAC, QUICK, LOSS and GROWTH.

Furthermore, Panel C, Table 5, reports that the model in the second stage has a high Wald χ^2 ($p < 0.001$) but a relatively lower pseudo R^2 than the first stage models. However, this suggests that predicted variables do not suffer from weak instrument variables. In the second stage (Panel C), the results show that both variables, PRED_BOC_EFFECT and PRED_AC_EFFECT, were not significant at the 0.10 level. Thus, we conclude that there is no endogeneity problem in the corporate governance mechanism through the BOC and AC that can affect the results of our main test above.

5. Conclusions

This study aims to investigate the association of the effectiveness of the BOC and the AC as the primary governance structure toward business strategy typologies. This study finds a positive association between the BOC and firms that follow prospector strategies. However, this study finds a negative association between the effectiveness of the ACs and firms that follow prospector strategies. Collectively, the results suggest that as the board monitoring system, the BOC and AC in prospector-type firms are more likely to focus on the implementation of business strategies rather than carrying out the function of monitoring control activities on managers compared to the defender strategies. On the other hand, ACs are more likely to have a substantial role in overseeing management to remediate MWs in prospector strategies.

Additional analyses using the components of BOC and ACs find some consistent evidence and support our main findings above. However, further testing finds an interaction between the BOC and the AC, indicating that the role of BOC in prospector strategies was more likely to have a more substantial role in carrying out their functions, which could affect the performance of the AC, compared to defender strategies. We also perform endogeneity tests using two-stage logistic regressions to address the potential endogeneity problem from the BOC and AC as our corporate governance structure toward the business strategy. Our results find no evidence of the endogeneity indication that affects our main results.

The conclusions of this study should be drawn as follows. First, this study provides an overview of the association between the corporate governance structure through the BOC and ACs with the typology of business strategy, i.e. a distinct construct of financial reporting quality and internal control. The findings of our study have significant implications to regulators and other stakeholders, including auditors and investors, to help more understanding that despite a corporate governance monitoring role through the BOC and AC is likely to exist, firms with prospector-type business strategies have a

higher likelihood in internal control weaknesses and are less likely to remediate MWs than defenders due to their attributes. Second, the findings of this study extend the previous studies concerning the BOC and AC as a primary corporate governance structure within the context of business strategy typologies in the strategic management literature. However, this study has a limitation due to the lack of empirical evidence from previous studies supporting this study's findings that underlies the direct relationship between corporate governance structure and business strategy. Further studies need to consider the limitations of this study.

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