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Director independence: Going beyond misaligned incentives to resource dependence

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Abstract
Board director independence is critical to achieving and maintaining control to address the agency theory–based issue of interest misalignment between the principal (the organization) and the executives (agent). However, theoretical and empirical research and strategic risk considerations have brought into question the role or relevance that director independence plays in these control task and agency theory domains. We ask, using a quantitative survey method, whether board activity–based applications of independence may be associated with the service task of the board, namely its resource dependence mission. Our findings suggest that the resource dependence duty of the board may be positively associated with some autonomous activities, and yet other activities might be driven primarily by normative practices. Based on this, we suggest that a theoretical scope beyond and greater than agency theory may be needed when reassessing the role of director independence.

JEL Classification: **M1, O3**

Keywords
Agency theory, black box, board of directors, corporate governance, dynamic capabilities, independence, non-executive director, resource dependence

1. Introduction

How and to what purposes do non-executive directors[1] (NEDs) exercise their independence? On the control side of the board service and control tasks framework (Forbes and Milliken, 1999), researchers and practitioners, in addressing this question, have focused considerable attention on the connection between independence and agency theory (Jensen and Meckling, 1976). Instead, on

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the service task side, we investigate the relationship between independence and resource dependence theory (Hillman et al., 2009; Pfeffer and Salancik, 1978).

In the control perspective, the mainstream corporate governance agency theory literature provides that independence of the board is important, if not necessary, for the board's ability to protect and promote the interests of the organization from diverging interests of managers. Independence, which is structurally signaled by a board that is led by and at least partially composed of NEDs, supports the board's effectiveness in incentive setting, monitoring and oversight activities (Fama and Jensen, 1983) that align managerial actions with the organization's interests. However, ambiguous or contradictory empirical results of agency theory–focused studies have brought into question the importance of agency theory and the function of independence in that theoretical context. That, along with changing perceptions about NED capabilities (Anderson et al., 2007; Carpenter and Westphal, 2001; Carter and Lorsch, 2004; Hill and Davis, 2017; Linck et al., 2009; Mace, 1972), and the potential for overlap in the duties, activities, and issues faced by the NEDs, have led scholars to advocate a pluralistic theoretical perspective in studying boards and an opening up of the boardroom "black box" to investigate director activities (Daily et al., 2003; Dalton et al., 2003; Finkelstein and Mooney, 2003; Lawrence, 1997; Leblanc and Schwartz, 2007).

To facilitate the investigation of NED activity, we use a dynamic capability perspective to provide a strategic risk context where resource dependence is potentially applicable. Dynamic capability is an organization's ability to ensure continued survival and prosperity in face of a dynamic business environment from which novel challenges emerge (Helfat and Winter, 2011; Teece, 2007). Dynamic capabilities provide a frame for opening "board activities and contributions" knowledge, using our key parameters, measured at the NED level.

Our investigation makes several contributions. First, we add to the literature that responds to the call to open up the boardroom black box and go beyond the convenience of board structure/demography techniques. We gathered quantitative data of self-reported NED activity that was sufficient for statistical inference relating director activity to perceptual motivators which have corporate governance theory underpinnings. Second, we add to the understanding of director independence. Our investigation finds informal and formal activities, such as information gathering or engaging in discussion, that are exercised "autonomously" of the executives. These activities, we suggest, may also support institutional activities of the board and contribute to reducing the cognitive biases, filters and limitations of the executives (as well as the executive hubris) that can affect the information and decision making quality of the board. Third, in examining perceptual motivators for such activities, our investigation supports calls for multi-theoretical approaches to boards. In particular, it finds that independence may have a broader relevance. While the traditional view considers independence to be control task related to mitigate agency theory–based problems, independence may also have service task purposes. Finally, in a resource provision setting, the investigation supports the idea that institutions do not necessarily limit board duties as NED self-perceived ability (self-efficacy) may in some instances increase their activity intensity or scope. Self-efficacy is a necessary inclusion in this study because CEO/Executives are known to potentially have hubris, and hence because activity and strategic decisions may be driven by what one believes is important, and also confidence in how well one can perform the task/activity.

Section 2 of this article describes the conceptual origins and applications of director independence in the corporate board research space and then moves to a discussion of the theoretical developments, empirical findings, and strategic risk context (dynamic capabilities) that lead to an examination of independence beyond the agency theory scope (Eddey and Casey, 1989). Section 3 develops hypotheses set around self-efficacy, resource dependence, and independence. Sections 4 and 5 describe the research method and empirical results, respectively. Section 6 discusses the theoretical and practical implications of the results and Section 7 is the conclusion.

2. Literature review and background theories

2.1. Concepts and implementation of NED independence in corporate governance

Independence is strongly associated with the board's control task. Anglo-American NEDs are expected to be independent—unbeholden to the special interests, politics, and biases of actors who conduct day-to-day operations with or within the organization—and thus capable of acting and exercising judgment as they objectively see fit to further the organization's interests (Demb and Neubauer, 1992). In theory and practice, independence is indirectly indicated or assessed structurally by the NEDs' detachment from the organization (Carter and Lorsch, 2004; Demb and Neubauer, 1992; Hillman and Dalziel, 2003) such as their non-involvement in day-to-day operations and non-employee status (Fama and Jensen, 1983). However, such detachment may limit the NEDs' time and opportunity to acquire deep knowledge and understanding of the organization and the business environment that surrounds it (Carter and Lorsch, 2004). Varying assessments of this limitation have influenced theory development on how NEDs carry out their role.

2.2. Multiple theoretical approaches exist

In managerial hegemony theory ("managerialism"), the NEDs' ability to develop relevant knowledge of the organization's business is low compared to the executives' to the extent that the NEDs are ineffective and impotent. As such, the power balance heavily favors the executives. NEDs, though nominally and structurally appearing to be independent, are institutional figureheads as they serve at the CEO's leisure and rubber stamp the CEO's initiatives perhaps after asking a few questions (Drucker, 1986; Mace, 1972; Meyer and Rowan, 1977). Apart from major crises such as CEO scandals, the CEO controls the activities of the directors and the agenda and discussion of board meetings and strongly influences their decision making (Lorsch and MacIver, 1989; Mace, 1971, 1972). The NEDs, in general, operate with little initiative and autonomy from management. Given the power of managers, the NEDs may not be able to protect the organization's interests should those diverge from that of the managers. Managerialist presumptions (low NED ability and independence) were institutionalized in many board practices (Mace, 1971).

Stewardship theory assumes that the managers' and organization's interests align (Donaldson and Davis, 1991). Stewardship theory, in its early development, was consistent with managerialism and recommended that high corporate performance would be supported by the empowerment of senior management through a CEO-led board in which the NEDs were a minority (Donaldson and Davis, 1991: 52). As with managerialism, NED independence was primarily nominal and the NEDs would provide corporate counsel when executives deemed fit.

Agency theory, perhaps the primary theoretical perspective of research on the board's control task (Pugliese et al., 2009), suggests that NED independence is important in addressing misalignments between the managers' and the organization's interests, in particular when knowledge asymmetries exist between executives and NEDs (Jensen and Meckling, 1976). In contrast to managerialism, agency theory supposes that the NEDs have knowledge and capabilities to the extent that, within a limited scope of activities, they can and need to be independent and thus are able to exert control that can protect and advance the organization's interests. The NEDs' independence, combined with their presence and leadership of the board (Fama and Jensen, 1983), enables the board to effectively monitor management (Eisenhardt, 1989), align executives' interests with the goals of the organization through setting and awarding incentive (outcome-based) compensation (Jensen and Meckling, 1976), and ratify important decisions (Fama and Jensen, 1983).

Some empirical studies have been supportive of stewardship theory thus bringing into question the importance of independence in an agency perspective. They have found that executives may

want to be seen as good professionals running an organization (Hill, 1995; Roberts et al., 2005), that recognition and respect, personal achievement, job satisfaction, and beating competitors matters more to CEOs than incentive pay (Hendry, 2012), and inconsistent association between financial incentives (equity ownership) and organization performance (Dalton et al., 2003). As such, since NEDs will likely be a significant part of Anglo-American boards in the future (Sun, 2019), an investigation into alternate (non-control or non-agency related) ways that NEDs may apply their independence is warranted.

Recent research suggests that NEDs may be more capable and more active than predicted by managerialism (and early stewardship theory) or agency theory. Anderson et al. (2007)'s survey of NEDs of Anglo-American organizations reported boards becoming a strategic collaborative partner to management, with NEDs increasing their assertiveness and their knowledge of their organizations (Ravina and Sapienza, 2010) in the wake of corporate reform at the beginning of the 21st century. Furthermore, in younger entrepreneurial organizations, Kor and Misangy (2008) found that when the top management's collective level of industry experience is low, the NEDs' collective level is high, suggesting that NEDs may be able to compensate for managerial deficiencies. This may indicate a potential for a NED service task role greater than that envisioned in agency theory or managerialism.

2.3. NEDs' activities and contributions: service and control

The line between service and control is blurred. Hillman and Dalziel (2003) warn that examining one board function or task at a time to the exclusion of others may give an incomplete understanding of boards. Boards may deal with a variety of phenomena simultaneously, such as agency and stewardship of the executives, depending upon the issues—potentially overlapping—at hand (Donaldson and Davis, 1991; Hillman and Dalziel, 2003; Roberts et al., 2005; Sundaramurthy and Lewis, 2003). Therefore, boards may be engaging and allocating their efforts simultaneously in control and service tasks across multiple issues. Structurally, Hillman and Dalziel (2003) argue that there is a resource dependence-agency theory connection in which relevant human capital (experience and expertise) may make NEDs better at both providing resources (service) and monitoring (control). On the activity side, Roberts et al. (2005) suggest an agency-stewardship-resource dependence intertwining. They found that NEDs of British organizations may exercise independence by proactively engaging executives in discourse that addresses control objectives through challenging and asking executives to "account for" (Roberts et al., 2005: S19) their actions and decisions, while simultaneously treating them as a stewards and addressing service (resource provision) objectives through providing advice, counsel and alternate views, and participating in joint sensemaking. Hendry (2002) theorizes that executives, though well meaning, can be incompetent and NEDs (assuming they are well informed) can use agency theory–based activities (e.g. incentives and decision control) to guide the executives to choose and carry out courses of action that are best for the organization. We discuss later, that, in managing strategic uncertainty, organization competence and resource needs can be significant and complicated by human limitations and psychological factors not tied to diverging interests, but potentially partially mitigated by directors exercising their independence.

In the investigation of independence, quantitative corporate governance research has heavily relied on the black box empirical method of board demography and structure–based inputs and organization performance outputs. However, positive association of organization performance with board composition and leadership structures supportive of independence (e.g. NEDs leading or having a majority on the board) has not been consistent (Dalton et al., 1998; Fogel and Geier, 2007; Weir and Laing, 2001). Given director competence, competing motivations, and institutional

forces, traditional structural indicators of director independence may not be closely associated with whether the directors act or think in a manner independent (or autonomous) from management. Although boardroom access may be difficult, researchers have called for direct investigations of the board as knowledge of director activity and the "inner workings of boards" is important (Daily et al., 2003; Dalton et al., 2003; Finkelstein and Mooney, 2003; Hermalin and Weisbach, 2003: 20; Lawrence, 1997; Leblanc and Schwartz, 2007; Pettigrew, 1992) to yield "theoretical progress" (Roberts et al., 2005: S8) and disentangle "predictions offered by multiple theoretical perspectives" (Forbes and Milliken, 1999: 492). We have used the dynamic capability lens to assess and consider those director activities and inner board workings.

An organization's dynamic capability—a combination of its abilities to (1) sense threats and opportunities emerging from the environment, (2) seize the threats and opportunities (develop and modify strategy in a timely, relevant manner), and (3) transform the organization appropriately to carry out the strategies (Barreto, 2010; Teece, 2007)—may address the organization's capacity to maintain "congruence" with the business environment and its emergent changes (Teece et al., 1997: 15) and thus positively impact the organization's long-term survival. Dynamic capability may influence common but significant organization initiatives (e.g. major innovation (O'Connor, 2008), new product development (Pavlou and El Sawy, 2011), ambidexterity (O'Reilly and Tushman, 2008), research and development, and mergers and acquisitions (Helfat et al., 2007).

The business environment's emergent changes can be challenging and a source of strategic or "deep" uncertainty (Knightian risk; Teece et al., 2016: 25) as such changes may have characteristics novel to the organization, such as in the COVID-19 pandemic. Unfamiliar changes may be difficult to sense and shape or the changes may require the development and execution of novel strategies which require innovating new abilities or resource configurations (e.g. new products, services, organization structures or processes; Teece, 2007; Teece et al., 1997).

Agency theory is the dominant theoretical perspective in research and legal practice and practice institutions of corporate governance. However, agency theory and the role that director's independence plays in it may be insufficient in dealing with these issues of strategic risk as there may be knowledge and resource needs in addition to problems of misaligned interests of the executives. Agency theory addresses motivating the executive to attempt to determine (and execute) the proper strategy with the assumption that once motivated, (s)he will find such strategy and be able to obtain or develop the appropriate resources. However, in dynamic capability, figuring out the strategy is a central issue and notwithstanding interests being aligned, success is dependent on resources and capabilities the organization does not currently have.

In contrast to the managerialist presumption of NEDs having low abilities relevant to the organization, resource dependence theory ("RDT"; Pfeffer, 1972) proposes that a board with a relevantly diverse NED membership may provide an organization with considerable "human" capital (experience, expertise, and reputation) and "relational capital" (Hillman and Dalziel, 2003: 383; Hillman et al., 2009). Director biographies, such as those listed in organization websites or annual reports, often show that directors have extensive backgrounds with top executive team experience (Anderson et al., 2007) and significant personal and professional networks. NEDs' aggregate combined experience, knowledge, and networks may exceed or significantly complement that of the CEO or the top management team in breadth and amount (Hillman and Dalziel, 2003; Pfeffer and Salancik, 1978).

RDT research has not focused on how NED independence may affect the NEDs' resource contribution efforts. Where managerialist tendencies are still ingrained, NEDs might only act and bring new ideas or gather additional information to overcome organization deficiencies when the executives realize it is necessary and then only in ways and areas that the executives indicate. Where agency theory practices are institutionalized, it might be generally accepted for NEDs to

only gather information that is sufficient for setting incentives and ratifying proposals with the purposes of encouraging effort and preventing executives from designing and executing self-dealing strategies, rather than for the purpose of ensuring that the strategies are congruent to the business environment. This might leave the organization vulnerable to the cognitive and psychological limitations of the executives.

3. Hypothesis development

Empirical research is consistent with the notion that NEDs may be constrained (or perceive themselves to be constrained) in how and what they do despite being at the apex of the corporation. While NEDs engage in sensemaking and strategy development (McNulty and Pettigrew, 1999; Stiles, 2001), Pye's (2002) study of British boards found that executives primarily lead in such activities. Scholars also have found that CEO power relative to the board is negatively associated with board activity level and strategy involvement (Anderson et al., 2007; Hendry et al., 2010; Pettigrew and McNulty, 1995).

Concern with maintaining a working relationship with the executives may be a significant driver of these limitations. NEDs may limit their activities due to concerns of appearing meddlesome and overstepping into established norms of management's "turf" and thereby causing resentment by management (Carter and Lorsch, 2004; Rindova, 1999; Roberts et al., 2005) that may be further exacerbated by managers' hubris and narcissism. NEDs may be reluctant to act autonomously and without prior executive approval, or to pursue issues outside of the boardroom (Pettigrew and McNulty, 1995), as managers might perceive such activities as a sign of NED distrust and lack of confidence. Signaling continuing confidence in management and thereby preserving a working relationship with a CEO (Lorsch, 2012: 23; Roberts et al., 2005) may require NEDs to refrain from autonomous activities despite laws, regulations, and professional certification requirements that promote board independence.

While we expect the frequency and intensity of NEDs acting autonomously to not be high given the pressures from executives, from a rational perspective, we expect that NEDs that prioritize provision of resources (and knowledge) will try to engage in autonomous activity more frequently and over a wider activity range.

Hypothesis 1. The NEDs' perception of the importance of their duty to provide resources to the organization is associated with NED autonomous activity.

3.1. NED self-efficacy

Self-efficacy is defined as how much a person or team judges their ability to perform tasks and accomplish effective outcomes (Bandura, 1982: 122, 144; Gibson, 1999; Lindsley et al., 1995: 648). From this perspective (Bandura, 1982: 122), NEDs believing themselves to have high levels of abilities increase their confidence and assertiveness (Anderson et al., 2007) in contributing to their organizations' decisions and strategies and may do so more intensively and on a wider set of tasks and topics. Such self-efficacy could also be expected to lead to higher levels of challenge, for example of independent NEDs to each other, the CEO, and other executives. Self-efficacy has been positively associated with prior performance-based measures of actual ability (Phillips and Gully, 1997; Thomas and Mathieu, 1994), higher goal setting (Phillips and Gully, 1997), job autonomy, proactivity, and role expansion for the purposes of fulfilling additional necessary duties (Crant, 2000; Parker, 2000), persistence and effort, and ultimately, higher performance (Earley, 1993; Gibson, 1999; Stajkovic and Luthans, 1998). Higher levels of self-efficacy may lead to higher levels of proactive behaviors, for example in suggesting new strategies, and hence dynamism of the organization.

For NEDs, self-efficacy may have two antecedent relationships to NED resource dependence relevant activity. Role breadth self-efficacy (RBSE)—the main effect—is the level of confidence the NED feels in "carrying out a broader and more proactive role" that exceeds the original role's requirements and tasks. RBSE has been associated with job autonomy (Parker, 1998: 835, 2000: 450). Higher self-perception of ability may have an RBSE effect which may increase the likelihood of NEDs performing a broader set of activities that may include resource provision–related activities (Hypothesis 2a-1). This is because the self-view of one's expertise can be related to its breadth as well as its depth of expertise that combines with the confidence factor.

Higher self-perception of ability may have an ordinary self-efficacy task-specific effect (Brockner, 1988) where higher self-perceived ability will, through the confidence that it provides to the NED, increase the likelihood and extent to which already required NED activities are performed. In this instance, self-perceived ability would positively moderate the task activities required for resource provision duties (Hypothesis 2b-1).

However, some theorists and empirical results suggest that self-efficacy may have a negative association to effort, activity, or resource allocation. "Self-doubt about one's performance efficacy" may encourage greater efforts to prepare or to acquire necessary capabilities (Bandura and Locke, 2003: 96). High self-efficacy has been negatively associated with time spent practicing a newly learned task (Mann and Eland, 2005) and with resource allocation (e.g. planned and actual study time; Vancouver and Kendall, 2006). Based on finding an inverted U association between collective (group) self-efficacy and performance outcomes, Tasa and Whyte (2005) argued that group efficacy motivates complacency which, at high levels of self-efficacy, may be a dominant factor. Similarly, Kukla (1972) proposed that effort intensity is negatively associated with high levels of perceived ability (efficacy) because less effort is believed to be required. In terms of motivation, high self-efficacy is associated with the belief that one requires less resources (e.g. time or effort) to achieve a goal since (s)he believes his or her own actions to be more effective and efficient (Bandura and Locke, 2003; Carver and Scheier, 1998).

NEDs may already have a high level of confidence in their abilities (as often they too have executive leadership positions in other organizations). NEDs may believe they can accomplish their strategic management tasks with less time and effort and thus redirect their freed-up resources to their other competing tasks. Therefore, for the NEDs, self-efficacy may have a negative effect in the hypothesized relationships (Hypotheses 2a-2 and 2b-2).

Hypothesis 2a-1. The NEDs' self-efficacy level is positively associated with NED autonomous activity.

Hypothesis 2a-2. The NED's self-efficacy level is negatively associated with NED autonomous activity.

Hypothesis 2b-1. The NEDs' self-efficacy level positively moderates the relationship between the NEDs' perception of their duty to provide resources and NED autonomous activity.

Hypothesis 2b-2. The NEDs' self-efficacy level negatively moderates the relationship between the NEDs' perception of their duty to provide resources and NED autonomous activity.

4. Methods

4.1. Data

We executed, in 2014, an online survey of NEDs from organizations headquartered in Anglo-American countries.[2] This country selection was based on the shared institutional and cultural origins, similarities in corporate aspects such as board structures, customs and duties and laws. The

Table 1. Organization characteristics.

Country	Size (full-time employees)	Ownership	Industry
Australia: 37 (34)	Small (1–99): 30 (29)	Non-profit: 20 (20)	Computer System Design: 3 (3)
Ireland: 1 (1)	Small-Med (100–999): 12 (10)	Publicly Traded: 17 (16)	Financial & Insurance Services: 4 (4)
New Zealand: 4 (4)	Medium (1000–9999): 12 (12)	Government: 12 (10)	Health Care & Social Assistance: 19 (17)
South Africa: 1 (1)	Large (10,000+): 2 (2)	Private: 8 (8)	Information Media & Telecom: 2 (2)
United Kingdom: 3 (1)	Unknown: 6 (1)	Unknown: 5 (0)	Manufacturing: 4 (3)
USA: 10 (10)			Mining: 3 (3)
Unknown: 6 (1)			Oil and Gas Exploration and Production: 2 (2)
			Pharmaceutical/Biotech/MedTech: 4 (4)
			Other: 16 (16)
			Unknown: 5 (0)

Size Classification: US Census band.
Number of respondents that completed the entire survey is in parentheses.

surveyed organizations varied by type (profit, non-profit, and public) and the unit of analysis was the board. A single respondent reporting "on behalf of [an] entire board" has been an accepted practice in leading journals given the difficulty in obtaining director activity data (Minichilli et al., 2009, 2012: 201; Hill and Davis, 2017; Pearce and Zahra, 1991; Zahra, 1996; Zahra et al., 2000).

To create constructs for the variables, we developed new survey items primarily from interviews of Australian and US NEDs and focus groups of Australian NEDs in 2012–2013 where we asked directors to comment on director duties and activities they felt would be relevant for a dynamically capable organization (see Hom et al., 2019: Appendix 1). We created items to measure NEDs' perceptions of their group and individual activities and of the importance of their duties to provide resources, create upside, and prevent downside/loss. The NEDs' self-efficacy construct was composed of perceived ability items adapted from Mayer and Davis (1999: 136). Academic colleagues and board directors were consulted in the development and evaluation of preliminary survey versions. With the Australian Institute of Company Directors, we conducted a pilot survey which resulted in the deletion or redesign of some items.

Of those that completed the entire survey, 63% of the organizations were Australian, with health care and social assistance being the most represented industry (31%) and non-profit (37%) and publicly traded organizations (29%) being the most common ownership types. See Table 1.

4.2. Variable constructs and factor analysis

The item selection procedure for the variable constructs utilized exploratory factor analysis ("EFA") with varimax rotation because the sample size was too small for the structural equation modeling of confirmatory factor analysis ($N \geqslant 100$ (Gorsuch, 1983; Kline, 1979: 40). The values of the variables were the means of the variables' component items' values. Tables 2 to 4 present the EFA results for the items that comprise the variables.

4.2.1. Independent variables. For the NED's self-efficacy (nedABILITY), three items from the Mayer and Davis (1999: 136) item-averaged Likert-type scale of trust in the ability of another

Table 2. Exploratory factor analysis of NED self-efficacy (nedABILITY) ($N = 54$).

Item			Factor loading	Communality
nedABILITY01 How capable is the NED Part of the Board in performing its job (mission/duties)? (1 = Very incapable, 2 = Somewhat Incapable, 3 = Neither capable nor incapable, 4 = Somewhat Capable, 5 = Very capable)			0.63	0.40
To what extent do you (dis)agree that the NED Part of the Board? (1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree)				
. . . has the necessary skills, resources, and abilities? (nedABILITY02)			**0.75**	0.57
. . . is known to be successful at the things it tries to do (nedABILTY03)			**0.87**	0.76
Cronbach's α (**boldface** items) (Cronbach, 1951)			0.68	
Kaiser–Meyer–Olkin ("KMO") Measure Sampling Adequacy (Hair et al., 2009)		0.532		
Bartlett's Test of Sphericity (Hair et al., 2009)	Approx. Chi-Square	23.910		
	Deg. of freedom	3		
	Significance	<0.01		

NED: non-executive directors; KMO: Kaiser–Meyer–Olkin.

(individual or group) were adopted for the survey based on the face validity of the items. Two items were selected through EFA (Cronbach's, 1951 $\alpha = 0.690$, $N = 55$; see Table 2).

Items that measured the NEDs' perception of the importance of various NED duties were based on interviews and focus groups of US and Australian NEDs (see Hom et al., 2019: Appendix 1), prior research (see, e.g. Brooks et al., 2009; Demb and Neubauer, 1992; Fama and Jensen, 1983; Hillman and Dalziel, 2003; Pfeffer and Salancik, 1978) and statutory and common law (see, e.g. Sarbanes-Oxley Act of 2002, 15 U.S.C. § 7201 et seq. (2002); Stone v. Ritter, 911 A.2d 362, Holland, 2006). EFA resulted in three variables. See Table 3. The NEDs' perception of the importance of their duty to provide resources to the organization ("resDUTY") was a two-item construct (DUTY11, 13; $\alpha = 0.787$, $N = 54$). resDUTY was composed of the importance of providing external resources and providing operational assistance. Given these items, resDUTY represented the importance of the board's duty to provide a connection to external resources and to provide resources and expertise from itself (human capital). resDUTY approximates RDT elements.

The other two duty variables served as controls. These were based on the common shareholder–stakeholder interests of maximizing return (upside) while minimizing risk (downside). The importance of their duty to prevent or reduce losses (not necessarily created by strategic risk; "downDUTY") was a three-item construct (DUTY2–4; $\alpha = 0.754$, $N = 54$). Included within this construct were managing compliance issues and minimizing conflicts of interest items. Therefore, this variable had within-organization oriented issues commonly associated with agency theory. We found it unexpected, however, that items related to executive compensation design (DUTY5 and DUTY11) did not strongly load. This may be because they are highly institutionalized duties. Nevertheless, they correlate with downDUTY ($r = 0.428$ ($p < 0.001$) and ($r = 0.442$ ($p < 0.001$), respectively) and may be indirectly represented in downDUTY.

The importance of the board's duty to create opportunities for positive return (based on the organization's interaction with the environment; "upDUTY") was a three-item construct

Table 3. Exploratory factor analysis of the board duty items ($N = 54$).

Item			Factor loadings			Communality
			downDUTY	upDUTY	resDUTY	Extraction
DUTY01 Select/replace key executives other than the MD/CEO			–0.10	–0.10	0.52	0.59	0.64
DUTY02 Minimize conflicts of interest			**0.78**	–0.05	–0.08	0.16	0.64
DUTY03 Monitor potential downside events (risks)			**0.71**	0.28	0.01	0.00	0.58
DUTY04 Manage compliance issues			**0.82**	0.04	0.01	0.00	0.67
DUTY05 Ensure executive compensation is in line with longer term interests of the organization (and stakeholders)			0.54	0.34	0.08	0.09	0.42
DUTY06 Preserve organization value (assets)			0.19	0.12	–0.13	0.75	0.63
DUTY07 Manage the risk associated with key strategic investments			0.23	0.55	0.21	0.55	0.71
DUTY08 Actively participate in the creation of strategy			0.23	**0.85**	–0.10	0.09	0.79
DUTY09 Ensure the strategy is carried out			0.27	**0.85**	0.07	–0.20	0.84
DUTY10 Increase the organization's value/create new value			–0.24	**0.70**	0.10	0.26	0.62
DUTY11 Provide access to external resources (incl. fund raising)			–0.17	0.27	**0.86**	0.02	0.83
DUTY12 Manage relations with key stakeholders			0.35	–0.02	0.53	–0.26	0.47
DUTY13 Provide operational assistance—direct involvement with operations			0.09	–0.04	**0.86**	0.10	0.76
DUTY14 Ensure that the MD/CEO prioritizes the organization's interests over his/her own			0.57	–0.01	0.42	0.05	0.50
Cronbach's α (**boldface** items)			0.75	0.74	0.79		
KMO Measure Sampling Adequacy		0.708					
Bartlett's Test of Sphericity	Approx. chi-square	246.896					
	Deg. of freedom	91					
	Significance	<0.01					

KMO: Kaiser-Meyer–Olkin.
How important are these duties to your board? (1 = unimportant, 2 = of little importance, 3 = moderately important, 4 = important, 5 = very important).
downDUTY = duty to prevent downside risks; upDUTY = duty to create upside potential; resDUTY = duty to provide resources.

Table 4. Exploratory factor analysis of AUTONOMOUS ACTIVITIES carried out by the NEDs ($N = 54$).

Item	Factor loadings						Communality
	AUTO1	AUTO2	AUTO3	AUTO4	AUTO5	AUTO6	Extractions
How often are the following activities carried out by any of the NEDs? (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very often)							
IND01 Review management reports	0.06	0.04	–0.01	–0.10	–0.06	**0.91**	0.84
IND02 Review quarterly and annual reports before filing (outside of audit committee)	0.16	0.15	–0.05	0.09	0.05	**0.88**	0.83
IND03 Engage in informal discussion (outside of meetings) with each other	**0.76**	0.07	0.02	0.04	–0.01	–0.01	0.59
IND05 Initiate informal discussion with MD/CEO or other top executives	**0.83**	0.13	0.07	–0.08	0.12	0.15	0.76
IND06 Bring issues and/or strategies to MD/CEO or other top executives	**0.85**	0.08	0.12	0.04	0.09	0.08	0.76
IND08 Attend trade shows and conferences	–0.26	0.47	0.20	–0.23	0.42	–0.01	0.56
IND10 Interact with the organization's clients without prior executive management approval to do so	0.03	**0.77**	0.03	–0.28	0.01	–0.01	0.67
IND12 Interact with non-Top Management employees without prior executive management approval to do so	0.05	**0.84**	0.11	–0.18	–0.04	0.06	0.75
IND14 Interact with the organization's suppliers without prior executive management approval to do so	0.10	**0.84**	–0.05	–0.14	0.20	0.05	0.77
IND16 Interact with key stakeholders and/or large investors without prior executive management approval to do so	0.28	**0.75**	0.19	0.10	–0.08	0.16	0.72
How often are the following activities carried out by the NEDs as a group? (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very often)							
GRP01 Use outcomes to measure the performance of the MD/CEO or other top executives	0.03	–0.19	0.05	**0.89**	0.13	–0.08	0.86
GRP02 Use process milestones to assess the performance of the MD/CEO or other top executives	–0.01	–0.10	0.16	**0.88**	0.19	–0.01	0.84
GRP03 Assess MD/CEO or other top executives against a structured plan (strategy)	0.02	–0.28	0.00	**0.84**	0.32	0.06	0.88

(Continued)

Table 4. (Continued)

Item	Factor loadings						Communality
	AUTO1	AUTO2	AUTO3	AUTO4	AUTO5	AUTO6	Extractions
GRP04 Decide upon the proposals of the MD/CEO or other top executives	–0.08	–0.24	0.38	0.33	0.41	0.18	0.52
GRP05 Create courses of action	0.31	–0.17	0.37	0.13	0.62	0.04	0.67
GRP06 Plan scenarios	0.17	0.03	–0.14	0.17	**0.76**	–0.27	0.72
GRP07 Create strategic vision (top down)	0.18	0.01	0.37	0.09	**0.75**	0.09	0.76
GRP08 Use portfolio management techniques	0.12	0.20	0.15	0.04	**0.76**	0.10	0.67
GRP09 Discuss MD/CEO related issues without the MD/CEO present	0.14	0.08	**0.86**	0.16	0.14	–0.02	0.81
GRP10 Discuss non-MD/CEO-related issues without the MD/CEO present (e.g., strategy)	0.07	0.28	**0.83**	–0.01	0.18	–0.09	.81
GRP11 Utilize outside consultants	–0.20	0.12	–0.05	0.17	**0.75**	–0.02	0.65
GRP12 Develop situation specific performance measures	–0.12	–0.08	0.13	0.23	**0.75**	0.12	0.63
GRP13 Review service/product development efforts to ensure that they are in line with what customers want (or need)	0.30	0.05	0.08	0.09	0.58	–0.32	0.55
Cronbach's α (**boldface** items) (Parentheses reflect alpha when all responses used)	0.80	0.83 ($N = 51$)	0.80	0.91	0.84 ($N = 53$)	0.84	
KMO Measure of Sampling Adequacy	0.598						
Bartlett's Test of Sphericity							
Approx. Chi-Square	660.853						
Deg. of freedom	253						
Significance	>0.01						

KMO: Kaiser–Meyer–Olkin.

(DUTY8–10; $\alpha = 0.743$, $N = 54$). Two items covered creating organization value and creating strategy. upDUTY did include the item of ensuring strategy is carried out which may have an agency theory relevance.

4.2.2. Dependent variables. The interviews and meetings with experts and NEDs also gave rise to the items for NED activities potentially relevant to dynamic capability. Participants suggested that some relevant activities might be performed by individual directors (or small informal groups) and others by formal groups of directors (e.g. formal board or board subcommittee meetings). For the EFA, we selected activities that, on their face, appeared as if they could be done without the approval, initiation, or presence of management. For example, activities which were defined as needing the executives' approval (e.g. to meet with organization's clients/ customers or supplies) or were initiated by the executives' (engaging in discussion when asked by the top executives) were excluded. EFA yielded six autonomous activity constructs (Likert-type based) with three group activities and three individual or informal group activities (see Table 4).

- AUTO01: NED initiated informal or individual discussion (sensemaking) activities between themselves or between themselves and management (three items (INDIV03, 05, and 06), $\alpha = 0.804$, $N = 54$). In initiating discussion with management, NEDs may have more control of the discussion agenda.
- AUTO02: NED initiated contact with non-top management members of the organization or relevant outside parties (customer/clients, suppliers, stakeholders) without prior approval from the executives (four items (INDIV10, 12, 14, 16), $\alpha = 0.832$, $N = 51$).
- AUTO03: NED group discussions without the CEO present (including CEO-related issues; two items (GROUP09, 10), $\alpha = 0.795$, $N = 54$).
- AUTO04: NED group activities relevant to assessing the executives' performance (three items (GROUP01, 02, and 03), $\alpha = 0.913$, $N = 54$).
- AUTO05: NED group discussions related to strategy planning (GROUP06, 07, 08, 11, and 12), $\alpha = 0.837$, $N = 53$). We caution that these activities could include the executives as they did not specifically exclude or include management. However, compared to prior managerialist processes where strategies were primarily created by and brought to the board by the CEO (Mace, 1971, 1972) NED involvement in strategy creation may reflect an increase of activity and a lessening of passivity.
- AUTO06: NED oversight of management through reviewing management's reports (two items (IND01 and 02), $\alpha = 0.842$, $N = 54$). These reviewing / monitoring activities are nominally activities in which the NEDs are institutionally expected, even required by law in some jurisdictions, to exercise their independence.

5. Results

The descriptive statistics and bivariate (Pearson) two-tailed correlations of the variables are in Table 5. Several of the dependent variables had significant ($p \leq 0.05$) correlations with the independent variables.

5.1. Variables

5.1.1. Independent variables. On average, the respondents viewed their board's duty to provide resources somewhat important (resDUTY: $\mu = 3.02$) and themselves as capable (nedABILITY: $\mu = 4.093$). They also viewed their board's duty to minimize losses (downDUTY) and to create

Table 5. Pearson correlation coefficients (listwise, two-tailed, with *p* values in parentheses; $N = 54$).

		Mean	St. Dev	2	3	4	5	6	7	8	9	10
1.	resDUTY	3.02	1.01	0.05 (0.70)	–0.02 (0.88)	0.13 (0.35)	0.41** (0.00)	0.40** (0.00)	0.20 (0.14)	0.01 (0.92)	0.28* (0.04)	0.03 (0.84)
2.	nedABILITY	4.09	0.58	—	0.08 (0.58)	0.07 (0.61)	0.08 (0.58)	–0.01 (0.96)	0.02 (0.86)	0.01 (0.94)	0.37** (0.01)	–0.08 (0.56)
3.	downDUTY	4.01	0.76		—	0.15 (0.27)	–0.10 (0.49)	–0.15 (0.28)	0.06 (0.66)	0.39** (0.00)	0.41** (0.00)	0.05 (0.70)
4.	upDUTY	4.40	0.54			—	0.24 (0.08)	–0.16 (0.25)	0.23 (0.09)	0.24 (0.08)	0.46** (0.00)	0.14 (0.33)
5.	AUTO1	3.83	0.71				—	0.26 (0.06)	0.18 (0.19)	0.01 (0.96)	0.15 (0.28)	0.13 (0.33)
6.	AUTO2	1.91	0.85					—	0.23 (0.09)	–0.31* (0.02)	0.08 (0.54)	0.05 (0.75)
7.	AUTO3	2.95	0.97						—	0.16 (0.24)	0.34* (0.01)	0.01 (0.95)
8.	AUTO4	3.78	0.76							—	0.39** (0.00)	–0.00 (0.98)
9.	AUTO5	3.09	0.74								—	–0.02 (0.91)
10.	AUTO6	4.26	0.81									—

*$p \leq 0.05$; **$p \leq 0.01$.

opportunities for positive return (upDUTY) as important ($\mu = 4.01$ and $\mu = 4.40$, respectively).

5.1.2. Dependent variables. For the autonomous activity variables, sense/strategy making activities (AUTO01) were performed often ($\mu = 3.83$), whereas NED initiated contact with non-executive parties in and outside the organization activities (AUTO02) seldom took place ($\mu = 1.91$). NEDs holding group discussions without the CEO present (AUTO03) took place sometimes ($\mu = 2.95$) while NEDs assessing upper management's performance (AUTO04) happened somewhat often ($\mu = 3.78$). NEDs conducting group strategy planning (AUTO05) took place sometimes ($\mu = 3.09$) while NED reviewing management reports activities (AUTO06) took place fairly often ($\mu = 4.26$).

Using multivariate regression, we tested the hypotheses in four regression models for each autonomous activity dependent variable

$$AUTO_i = \alpha_i + \beta_{1i}\, resDUTY + \beta_{2i} nedABILITY \tag{1}$$

$$AUTO_i = \alpha_i + \beta_{1i} resDUTY + \beta_{2i} nedABILITY + \beta_{3i}\, upDUTY + \beta_{4i}\, downDUTY \tag{2}$$

$$AUTO_i = \alpha_i + \beta_{1i} resDUTY + \beta_{2i} nedABILITY + \beta_{5i} nedABILITY \times resDUTY \tag{3}$$

$$AUTO_i = \alpha_i + \beta_{1i}\, resDUTY + \beta_{2i} nedABILITY + \beta_{5i} nedABILITY \times resDUTY + \beta_{3i}\, upDUTY + \beta_{4i} downDUTY \tag{4}$$

Table 6. Regression analysis with main effects only and no controls (equation (1); standard errors are in parentheses; $N = 54$).

	AUTO1	AUTO2	AUTO3	AUTO4	AUTO5	AUTO6
Constant	2.70**	1.07	2.27*	3.70**	0.67	4.65**
	(0.68)	(0.82)	(1.00)	(0.80)	(0.69)	(0.86)
resDUTY	0.28**	0.33**	0.20	0.01	0.19*	0.03
	(0.09)	(0.11)	(0.13)	(0.11)	(0.09)	(0.11)
nedABILITY	0.07	–0.04	0.02	0.01	0.45**	–0.12
	(0.16)	(0.19)	(0.23)	(0.18)	(0.16)	(0.19)
nedABILITY × resDUTY	–	–	–	–	–	–
downDUTY	–	–	–	–	–	–
upDUTY	–	–	–	–	–	–
VIF	1.003	1.003	1.003	1.003	1.003	1.003
Adjusted R^2	0.13	0.12	0.00	–0.04	0.17	–0.03
$F(2,51)$	5.11**	4.73*	1.11	0.01	6.60**	0.20
(p value)	(0.01)	(0.01)	(0.34)	(0.99)	(0.00)	(0.82)

*$p \leq 0.05$; **$p \leq 0.01$.

$AUTO_i$ represents an autonomous activity variable. Equations (1) and (2) assume that nedABILITY and resDUTY have separate effects (with equation (2) introducing control variables). Equations (3) and (4) include the nedABILITY × resDUTY interaction term with equation (4) adding the control duties. Equations (3) and (4) test Hypothesis 2b.

5.2. Regression analysis

We tested Hypotheses 1 and 2a through equation (1) (main effects) and then added the control duties (equation (2)). For both equations, there were significant findings for AUTO01, AUTO02, and AUTO05 (see Tables 6 and 7). For these dependent variables, the overall significance (F-test) of the regression models was at the $p < 0.02$ level. The model for AUTO04 was only significant for equation (2) ($p = 0.034$) but only the variable downDUTY ($p = 0.007$) was significant. The equation (2) model for AUTO05 appeared to be the strongest with all predictor variables being significant.

The results for equations (1) and (2) regression models of AUTO01, AUTO02, and AUTO05 were consistent with Hypothesis 1. In these models, resDUTY was positively associated with those dependent variables at significance levels of $p < 0.05$. Support for Hypothesis 2a-1 was limited to AUTO05 where nedABILITY was significant and positively associated with AUTO05 in equations (1) and (2) at significance levels of $p < 0.01$. There was no significant support for Hypothesis 2a-2.

We then tested Hypothesis 2b through equation (3) (main effects and interaction (nedABILITY × resDUTY)) and then added the controls through equation (4). Equations (3) and (4) were significant only for AUTO03 at $p = 0.001$ and $p = 0.004$, respectively. All other regression models were not significant at the $p < 0.05$ level. For AUTO03 equations (3) and (4), the interaction term between nedABILITY × resDUTY was positively associated with AUTO03 with a significance of $p = 0.00$ in both equations (3) and (4)[3] (see Table 8).

Using equations (3) and (4), plots of the relationship between resDUTY and AUTO03 at two levels of nedABILITY where high nedABILITY was one standard deviation above the mean (nedABILITY^{high} = 4.676) and low nedABILITY was one standard deviation below (nedABILITY$_{low}$ = 3.509) showed a positive relationship between resDUTY and AUTO03 when nedABILITY was

Table 7. Regression analysis without interaction term (nedABILITY × resDUTY) but with additional duties as controls (equation (2); standard errors are in parentheses, $N = 54$).

	AUTO1	AUTO2	AUTO3	AUTO4	AUTO5	AUTO6
Constant	2.05*	2.72*	0.67	1.35	–2.45**	3.71**
	(1.00)	(1.20)	(1.48)	(1.09)	(0.85)	(1.28)
resDUTY	0.26**	0.35**	0.17	–0.00	0.16*	0.01
	(0.09)	(0.11)	(0.13)	(0.10)	(0.08)	(0.11)
nedABILITY	0.06	–0.01	–0.00	–0.04	0.39**	–0.13
	(0.15)	(0.19)	(0.23)	(0.17)	(0.13)	(0.20)
nedABILITY × resDUTY	–	–	–	–	–	–
downDUTY	–0.12	–0.12	0.04	0.37**	0.33**	0.04
	(0.12)	(0.14)	(0.18)	(0.13)	(0.10)	(0.15)
upDUTY	0.27	–0.31	0.37	0.26	0.49**	0.20
	(0.17)	(0.20)	(0.25)	(0.18)	(0.14)	(0.22)
Adjusted R^2	0.15	0.15	0.01	0.12	0.44	–0.05
$F(4, 49)$ (p value)	3.39**	3.30*	1.15	2.83*	11.36**	0.36
	(0.02)	(0.02)	(0.34)	(0.03)	(0.00)	(0.84)

*$p \leq 0.05$; **$p \leq 0.01$.

Table 8. Regression analysis for AUTO3 and AUTO5 using the interactive term (nedABILITY × resDUTY; standard errors are in parentheses; $N = 54$).

	AUTO3	AUTO3	AUTO5	AUTO5
	(3)	(4)	(3)	(4)
Constant	10.58**	9.23**	3.57*	–0.40
	(2.24)	(2.64)	(1.73)	(1.69)
resDUTY	–2.74**	–2.61**	–0.84	–0.51
	(0.74)	(0.75)	(0.57)	(0.48)
nedABILITY	–2.04**	–1.96**	–0.27	–0.08
	(0.55)	(0.56)	(0.42)	(0.36)
nedABILITY × resDUTY	0.73**	0.69**	0.25	0.17
	(0.18)	(0.19)	(0.14)	(0.12)
downDUTY	–	0.03	–	0.33
		(0.16)		(0.10)
upDUTY	–	0.22	–	0.45
		(0.23)		(0.14)
Adjusted R^2	0.23	0.22	0.21	0.45
$F(3, 50)$ for cols 1 & 3	6.39**	3.96**	5.72	9.66
$F(5, 48)$ for cols 2 & 4 (p value)	(0.00)	(0.00)	(0.00)	(0.00)

*$p \leq 0.05$; **$p \leq 0.01$.

high (see Figures 1 and 2). For both equations, the simple slope test (Cohen et al., 2003; Dawson, 2014) showed statistically insignificant relationships between resDUTY and AUTO03 at nedABILITY$_{low}$ $(p \geq 0.12)$. However, the relationship was positive and significant at nedABILITY^{high} $(p = 0.000)$. These findings are consistent with Hypotheses 1 and 2b-1 and suggest that there are

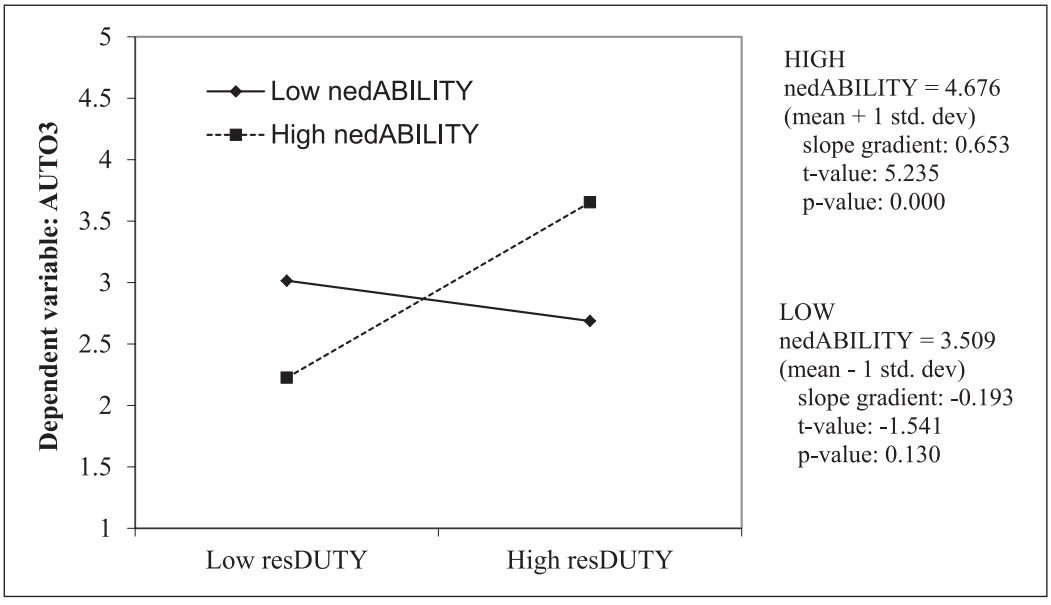


Figure 1. Slope analysis of nedABILITY as a moderator. The association between resDUTY and AUTO3 under varying levels of nedABILITY (one standard deviation (0.584) above or below its mean (4.093)) without other duties as controls. $N = 54$. At the high level of nedABILITY, resDUTY is positively associated with AUTO3 at a significance level of $p = 0.000$.

positive main effects for both nedABILITY and resDUTY at high levels of both variables and a positive interaction effect (Aiken and West, 1991). We caution that since nedABILITY and resDUTY were not statistically significant when the interaction variable was not included, that support for Hypothesis 2b needs to be further investigated.

Overall, the results provided some support for Hypothesis 1 while Hypothesis 2 had a more limited scope of support for the positive effects of self-efficacy.

6. Discussion

The results suggest that prioritization of resource dependence/provision duties is positively associated with increased autonomous activity of NEDs. However, the varying results across the autonomous activity groups may indicate that this association takes place in the context of institutional norms and board-executive relationships.

Holding group discussion without the CEO, assessing executives' performance and reviewing management reports (AUTO03, 04, and 06, respectively)—were not associated with resDUTY or nedABILITY. This was expected as performance of these activities are, in part, encouraged by coercive (legal) and normative pressures (DiMaggio and Powell, 1983) such as the requirements to fulfill the directors' duty of care. Such pressures may substitute or override other motivational factors. That group performance assessment (of the executives) and review of management reports activities were often carried out is consistent with such activities being long established norms and considered appropriate conduct even when managerialism was dominant. Holding group discussions without the CEO present was reported to be carried out less frequently. This may be because it became a formal requirement in more recent times, or because formal NED group activities are difficult to schedule frequently.

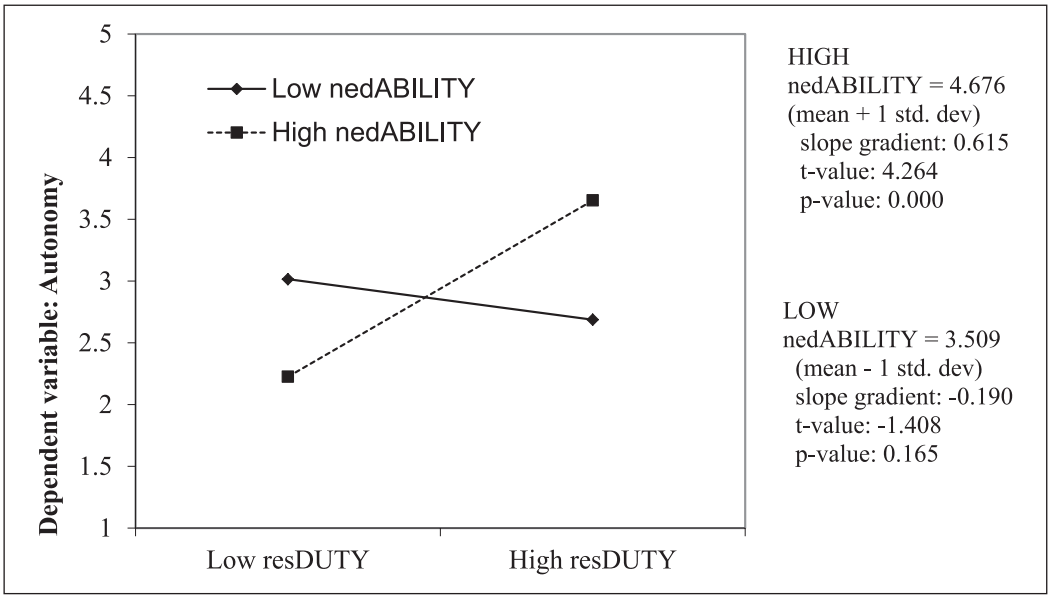


Figure 2. Slope analysis of nedABILITY as a moderator when controls are present. The association between resDUTY and AUTO3 under varying levels of nedABILITY (one standard deviation (1.009) above or below its mean (4.093)) with other duties as controls. $N = 54$. At the high level of nedABILITY, resDUTY is positively associated with AUTO3 at a significance level of $p = 0.000$.

Group performance assessment (of the executives) association with downDUTY is also consistent with the agency theory–based institutional view that performance monitoring of the executives is a way to address executive self-dealing (to which conflicts of interest and compliance issues are relevant) that results in residual losses or failure of the organization to achieve its potential.

While the duty to provide resources may not be associated to the activities above, NED resources such as expertise, experience, or the ability to access information may still be relevant. Board resources may positively affect performance of principle-agent based tasks (Hillman and Dalziel, 2003). As examples, NEDs with more expertise may be better able to scrutinize management reports or properly understand and determine what should be the strategic direction of the organization. This may allow them to more accurately determine when executives are taking courses of action or achieving outcomes that are not in the organization's interests.

The positive associations of AUTO01 (initiating informal discussion with themselves or with the CEO), AUTO02 (interacting with parties other than top management e.g. lower level employees, suppliers, stakeholders without prior management approval), and AUTO05 (creating strategy) with the duty to provide resources are consistent with independence having a service task, resource dependence–based role in how NEDs try to provide their human and relational capital to the organization. The NEDs may see informal discussion and strategy creation as opportunities to apply their expertise and externally gather experience and information toward organization success. Meeting with non-top management parties may serve both a resource (information) gathering role that can be used to supplement or confirm information provided by management and perhaps address management's biases and shortcomings. In addition, meeting with non-top management employees may represent opportunities for NEDs to provide expertise and assistance at the operational level.

Unlike AUTO03, 04 and 06, AUTO01, 02 and 05 may face significant pressure to not be performed due to management hubris, and traditional managerialism-based norms of appropriate NED conduct. Conducting some of these activities may display lack of confidence or distrust in the CEO, beliefs about who has better information/knowledge about the organization and disrupt traditional power relations that are still carried over from managerialism. AUTO01 and AUTO05, performed on average at least sometimes, may indicate NEDs having informal discussions with themselves and involvement in creating strategy. However, informal discussion with non-top management parties without prior CEO approval (AUTO02) seldom took place. This may be because it is a non-baseline activity that still is not considered proper conduct and may upset the CEO. Another reason is that NEDs may consider CEO performance assessment activities (AUTO04), which may be normatively more accepted, to be a sufficient substitute. This is supported by the negative correlation between AUTO02 and AUTO04 ($r = -0.31$, $p = 0.02$) and the higher frequency with which AUTO04 was reported to be carried out. However, the association with AUTO02 and resDUTY suggests that the resource dependence mission of the NEDs may be sufficient to, at times, override the norms of appropriate conduct that would ordinarily dampen the performance of that activity.

Managerialist normative bounds may also explain why NEDs' perceptions of their own ability were not generally associated with the autonomous activities except when they relate to institutionalized baseline activities or needs. Compared to board functions and duties, which can be formally backed by regulations or practice standards, the perception of ability is more subjective and may be affected by differing attitudes by the parties involved. Perhaps this activity must be supported by institutional norms to have an influence.

For example, NEDs may believe themselves to have high ability but the CEO does not share the same opinion. Managing this clash of beliefs—managing the working relationship—may reduce the NEDs ability to rationally act based on their perceived ability level. However, "strategy making activities" might be seen as institutionally linked to decision ratification, and holding formal discussions without the CEO present has legal requirement support (e.g. audit and remuneration committee requirements) and to not hold such discussions would not support external legitimacy of the organization. Also, while most of the autonomous activities in this study may be observable by the executives or may be reported to the executives by other parties, strategy making activities however can be done within the discussions without the CEO present which are more recently established normative practices since the corporate reform in the beginning of the 21st century. This is supported by the significant correlation between the activities (AUTO03 and AUTO05, $r = 0.34$, $p = 0.01$). Within these discussions, NEDs may have the freedom to devote more time (as their perceived ability guides themselves) to strategy formulation without concern over the NED–CEO relationship. Overall, the results are consistent with the idea that proactiveness, persistence and role expansion that may be supported by NED self-efficacy are partially reduced by institutional beliefs (and perhaps CEO hubris) which, if ignored by the NEDs, might jeopardize their working relationship with the executives.

6.1. Contributions

This study responds to the call to investigate and open the boardroom "black box" through a cross-sectional data collection of quantitative board and director activity and attitudinal data sufficient to support statistical inference. Although not presenting new techniques, this study adds to the growing body of literature that aims to address the gaps due to limitations of demographic studies and show that the access concerns that drive preference to structure and demographic studies can an extent be overcome through attention to mixed methods for survey solicitation, and the anonymity

and confidentiality protections of the respondents and their organizations throughout the data gathering, analysis, and reporting steps.

Our investigation contributes to understanding how independence is exercised. Instead of focusing on highly institutionalized structures (e.g. NED leadership and composition of the board and subcommittees), restrictions, and state of mind (e.g. voting directors with special interests contrary to the organization must disclose and/or recuse), we examined a set of activities which may be relevant to the exercise of independence. The NED activity variables that we developed and tested represent a new contribution to knowledge in this important domain. They broadly fall into formal (group meetings) and informal activities. On the informal side, NEDs carry out data gathering activities on their own to seek information beyond what top management provides, monitor the organization and executives through reviewing management reports and corporate filings, and initiate discussion among themselves and with management. NED activities of gathering additional data suggest that NEDs can help address the deficiencies and biases of managers described by Teece (2007). The initiating discussion with managers may be indicative of when NEDs have opportunities to exercise greater control of the agenda—to have executives "account" (Roberts et al., 2005) for actions and to force management to address important issues that appear to be unaddressed. At the formal group level, NEDs engage in discussions without the CEO present, conduct top down strategy planning, and review executive performance. Formal and informal discussions without the presence of the CEO may be supportive of sensemaking and groupthink mitigation by removing the CEO—a potentially strong personality—from the activity. Overall, our study suggests that when investigating NED independence (from the executives), researchers need to account for activities that occur in and outside of the formal boardroom.

6.1.1. Theoretical implications. Our findings support a multi-theory approach to examining how boards function, in particular with respect to independence. Board independence has been adopted as a necessity to effectively carry out activities that mitigate agency-based problems concerning divergent executive interests. Yet we found that some NED activities characterized by independence or autonomy from the CEO have been associated with the NEDs' perception of the importance of their duty to provide resources. Autonomous NED activities suggest that NEDs may use aspects of their independence with the purpose of working around the CEO's deficiencies (e.g. the CEO's biases, filters, and hubris) to provide resources and apply their capital for the benefit of the organization. Such activities we identified include initiating informal discussion with other NEDs or with executives, initiating discussion with non-management entities and outside entities without prior approval, and formal group strategy planning.

This article thus contributes to the knowledge of how directors may attempt to carry out resource dependence theory relevant objectives with the distinction that we have empirically focused on the activity as opposed to the more popular board composition and demography parameters of previous studies. Of particular interest is that resource dependence-driven duties may be able to influence some autonomous activities within a setting potentially constrained by institutions and CEO self-confidence. While we have initiated parameter construction and assessment of such activities, more fine-grained development is called for.

The results for the NED group strategy creation activities model suggest that multiple duties (resource provision, down side risk prevention, upside value creation) may motivate the same activity. Here, we have contributed the separation of these types of duties into these three neat classes and operationalized them, as a contribution in itself. Furthermore, as each of these duties is related to different corporate governance or strategic management theories (e.g. resource provision with RDT, elements of downside prevention with agency theory, and upside creation with dynamic capability), multiple theoretical perspectives may also be relevant to the same activity. While

researchers have suggested that contradictory empirical findings are because NEDs face multiple phenomena where one theory may be more applicable than another, or because multiple mechanisms may contribute to organization function or enhance and substitute for one another (Daily et al., 2003), the results of this study suggest that another reason for the previous contradictory findings is that activities may serve multiple "theoretical" purposes. Because of this, successful execution of various activities (i.e. leading to board contribution) may depend upon an array of normative foundational practices related to different theories. For example, effective decision making may require structural independence at the same time a relevantly diverse board.

Finally, our results suggest that there may be two resource dependence effects of NED ability (human capital). NED ability can contribute to the quality of the NEDs contributions such as making a better decision or drawing a more accurate conclusion. However, if the NEDs' abilities also influence their perceptions of their own ability, NEDs may increase the activity and scope in which they apply their abilities, which may bring the organization resources as well.

6.2. Practice considerations

Our study takes initial steps toward development of best practices by measuring activities carried out by NEDs. An activities approach is useful for boards that cannot easily change their composition or structure. The next step for development of best practices is to investigate objective performance indicators that may be influenced by the activities. With this next step still to be taken, the immediate takeaway message for practitioners, consultants, and executives is that NED independence and autonomous activities are not just a tool to align manager interests but also a tool to expand strategic vision and organization potential. Managers with organization performance incentives should thus support NED autonomy.

6.3. Limitations and future directions

We advise caution in drawing conclusions and generalizing the findings beyond the sample space due to potential sampling method issues and low sample size. The latter limited the number of explanatory and control variables for reasons of statistical power. The low goodness-of-fit (Adjusted R^2) values of the models suggest the possible existence of additional explanatory variables. A bigger sample would have enabled the inclusion of additional NED duties and perceptions.

For further avenues of research, additional perceptual motivators should be investigated (quantitatively or qualitatively), such as perceptions of the environment, organization, culture, or strategic posture of the organization and other NED duties. Additional duties might uncover other (intended) purposes of autonomous activities, and whether certain specific duties interfere or reinforce other duties as revealed by their cumulative effect on activities. This could help contribute to untangling some of the contradictory results of board demography-based studies. Furthermore, investigation that directly asks why directors engage in particular activities (despite institutional limitations) or what they view are the particular benefits of such activities can help verify relationships between theoretically based purposes and NED activities.

We also advise further developing the list of activities and exploring whether activities are associated with others (upward or downward activity spirals Gibson, 1999). A more complete list can set the stage for investigating relationships between the activities and organization performance and the development of best practices. Our survey found some significant relationships between our autonomy, both positive and negative correlations (see Table 5), that is promising and merits further investigation, given our demonstration of the feasibility of the "NED activity" approach.

For advancing knowledge on board research methods, if perceptual and demographic and structure data can be simultaneously collected on specific boards, it will be possible to conduct an empirical analysis between demography and structure–based variables and perceptual variables in predicting NED activity and organization performance. Such research would help solidify the direction of (improving) research methods on boards, and knowledge of them. Finally, a broader empirical study with greater sample size will provide additional statistical confidence and additional insights. The inclusion of non-Anglo-American boards may yield different results due to structural, cultural and institutional differences (Dehaene et al., 2001).

7. Conclusion

We asked how and to what purposes do non-executive directors exercise their independence. We opened the boardroom black box to investigate whether independence plays a resource dependence role. Our findings are that resource dependence duties of the NEDs can be associated with the exercise of their independence from the executives. Furthermore, to the extent that actual ability is associated with perceived ability, higher ability directors may apply themselves with greater scope and amount in some aspects of their resource dependence duties. Our main message is that independence may have applications beyond internal mitigation of executives' misaligned incentives and through resource dependence, may be externally important by addressing strategic risk.

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Notes

1. We define a non-executive director as a board director who is not a member of the executive management team, does not have an official employment agreement with the organization, nor is compensated for any services rendered outside of the official duties pertaining to the board.
2. This survey was used to investigate several research topics relevant to corporate governance and dynamic capability. See, also Hom et al. (2019).
3. The presence of the interaction (nedABILITY x resDUTY) means that the coefficients of the first-order variables (nedABILITY and resDUTY) can no longer be interpreted as main effects. The coefficients of the interaction's component variables affect only the slope of the interaction effect (Aiken and West, 1991).

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