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Date:
2021-01-01

Citation:
Hom, C. L., Samson, D., Cebon, P. B. & Cregan, C. (2021). Inside the black box: an investigation of non-executive director activity through the lens of dynamic capability. Asia Pacific Journal of Management, 38 (3), pp.857-895. https://doi.org/10.1007/s10490-019-09693-x.

Asia Pacific Journal of Management (2021) 38:857–895
https://doi.org/10.1007/s10490-019-09693-x

Inside the black box: an investigation of non-executive director activity through the lens of dynamic capability

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Published online: 9 November 2019

Abstract
Through a dynamic capability lens, we investigate the activities of non-executive directors (NEDs) of Anglo-American one-tiered corporate boards. We hypothesize that their perceptions of their own efficacy and of their duties rooted in resource dependence theory are motivators for dynamic capability relevant activities - activities that may be antecedents for organization dynamic capability - and may affect organization dynamic capability performance. Based on discussions with NEDs, we developed a list of NED and board activities which could be dynamic capability relevant and conducted a survey of Anglo-American organizations in Asia-Pacific and elsewhere. Our findings suggest partial positive association between resource dependence based duty and several dynamic capabilities-relevant activity groupings of NEDs. In one of those groupings, the NEDs' perceived efficacy may positively moderate that relationship and there may be positive association with organization performance. Our research provides a way forward in operationalizing the 3-element dynamic capability concept. It also suggests that the NEDs' perceptions of their efficacy and importance of their duty to provide resources are positively associated with dynamic capability relevant activities and to a limited extent organization performance. NEDs can exceed traditional normative baseline activities and suggest NED activity outside of the formal confines of the board meetings can play a part in the organization. By examining NEDs in a strategic risk perspective such as that addressed by dynamic capability this may yield important findings about NEDs that extend beyond the principal-agent board-executives relationship.

Keywords Dynamic capabilities · Board · Director · Governance · Innovation · Resource dependence · Self-efficacy · Australia · New Zealand

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What do non-executive directors[1] (NEDs) do and how do they contribute to organizations? Researchers have been long calling for the investigations of the inner workings of the board and its directors to advance theoretical development on corporate boards (Buchholtz, Young, & Powell, 1998; Young, Tsai, Wang, Liu, & Ahlstrom, 2014). In response, we examine the motives and activities of a key group of board members, the NEDs, under a dynamic capability lens as this provides a scope that is manageable yet potentially relevant to a wide range of organizations.[2] An organization's dynamic capability, that is, its ability to sense emergent opportunities and threats, seize them, and transform the organization as needed (Teece, 2007; Barreto, 2010), is considered important for the ongoing survival, prosperity, and growth of organizations in dynamic business environments (Ahlstrom, 2010; Teece, 2007; Helfat & Winter, 2011; Eisenhardt & Martin, 2000). At the "apex" of many Anglo-American corporations, NEDs are ultimately responsible for their organization (Fama & Jensen, 1983, p. 311),[3] and often are charged with matters critical to the organization's welfare and long term interests and ethical behavior.

There has been little investigation in the dynamic capability oriented role of NEDs beyond investigations of their attitudes (Tipurić, Mešin, & Tomšić, 2014) and demography (Macus, 2008). The few investigations of the dynamic capability-relevant processes at the level of the corporate elite (board directors and high-level executives) have generally relied upon proxies of processes such as values (Tipurić et al., 2014), human and social capital (Kor & Mesko, 2013), published strategic decisions (Adner & Helfat, 2003), and board structures and composition (Macus, 2008). Therefore, the processes of the corporate elite that may be dynamic capability relevant are not as well researched or understood.

Noting the inconclusiveness of board demographics–firm performance research, Forbes and Milliken (1999) proposed that board activities are key contributors to board effectiveness. We thus address the research question through the context of dynamic capability relevant NED activities (activities which, on their face, have the potential to contribute to organization dynamic capability) and formulate and test hypotheses about the relationships between the extent to which NEDs engage in those activities and two antecedents - the NEDs' perceptions of their duty to provide resources to the organization and of their ability (self-efficacy). Our parsimonious selection of the antecedents reflects two notions: the first is the positive relationship between self efficacy, actual ability, proactiveness, and role breadth, that is, higher ability directors are less likely to be passive. The second is the development of new relevant organizational capabilities to respond to novel emergent threats and opportunities relies upon acquiring external resources and knowledge that the organization does not already have. We draw upon resource dependence theory (Hillman, Withers, & Collins, 2009; Pfeffer, 1972) from corporate governance research to inform a rational based discussion of how NEDs may address the elements required for dynamic capability.

[1] We define a non-executive director as a board director who (1) is not an official member of the executive management team; and (2) does not have an official employment agreement (nor is compensated for) any services rendered outside the official duties pertaining of the board.

[2] A practical reason for focusing on the NEDs is that it may be difficult to discern between the managerial and director/board related attitudes and activities of the executive directors.

[3] For countries in the Pacific Rim, see, e.g., Corporations Act 2001 (Cth) s 198A(1) (Austl.); Companies Act 1993, s 128 (N.Z.), Canada Business Corporations Act, R.S.C. 1985, c C-44, s 102 (Can. 2001), Del. Code Ann. Tit. 8, § 1–141(a) (Del., U.S. 2014).

In the empirical investigation, we respond to the need to operationalize dynamic capabilities and test our hypothesis through a quantitative survey of NEDs of corporations domiciled in Anglo-American countries from North America and Europe to Africa and Australia-New Zealand. The multi-country area was selected to mitigate generally low response rates by managerial elites through increasing the pool of potential qualified respondents for the survey while attempting to minimize potential differences in corporate governance related customs, laws, and normative practices.

Our research makes three main contributions. First, we bring together two streams of research (boards and dynamic capability) that have in the past remained largely separate and, thus extend and uniquely operationalize the dynamic capability lens into the apex of the managerial elite (Barreto, 2010; Peteraf, Di Stefano, & Verona, 2013). Second, we assess board activity more directly than has been done previously through structural and demographic proxies, and we suggest ways to mitigate data acquisition issues regarding board processes and multiple theories at work (Forbes & Milliken, 1999; Hermalin & Weisbach, 1991; Liu, Wang, Zhao, & Ahlstrom, 2013). Finally, our findings contribute to shaping the normative activity space of the board as some dynamic capability relevant activities lay within the normative duties of the board and are thus done frequently but other activities are outside the normative space are not often performed, even though by doing them, key firm performance factors such as innovation and corporate venturing may be enhanced which are key to firm competitiveness (Ahlstrom, 2010; Hill & Georgoulas, 2016).

Literature review

We characterize the extent of dynamic capability research with the aim of this paper to extend its application into the board of directors. The review begins with a discussion and definition of dynamic capability, proceeds to dynamic capability applications at the top management levels and highlights theoretical bases for the role of NEDs in dynamic capability through resource dependence. In the review we highlight the limits of corporate governance research as it relates to NEDs and dynamic capability.

Dynamic capability

One source of ongoing strategic, externally originating risk to an organization are emergent exogenous changes in dynamic business environments. The dynamically capable organizations address these changes by modifying or creating new capabilities in a relevant, timely manner (Teece, Pisano, & Shuen, 1997, p. 515). Dynamic capability is the organization's ability to adapt to changing business environments through integrating, reconfiguring and innovating internal and external competencies, (Teece et al., 1997, p. 516, Teece, Peteraf, & Leih, 2016, p. 18; Leonard-Barton, 1992). In essence, it is a measure of the organization's potential to "alter how it currently makes a living" (Helfat & Winter, 2011, p. 1244) and "ability to achieve new and innovative forms of competitive advantage given path dependences and market positions" (Teece et al., 1997, p. 516; Leonard-Barton, 1992).

Operationally, dynamic capability is the organization's ability to competitively meet emergent external challenges through three organization elements (Barreto, 2010, p. 271; Teece, 2007). First, it is the ability/propensity to sense emergent opportunities and threats arising from environmental change. Second, the firm should be able to seize opportunities and manage threats through formulating, selecting and modifying plans in a timely, unbiased manner.[4] Finally, it should also have the ability/propensity to conduct organizational transformation (its processes, assets, resources, internal structures, capabilities, products or services) as needed to effectively carry out the plans and respond to the opportunities and threats, where activities (processes, routines, or behaviors) are necessary antecedents for dynamic capability (Peteraf et al., 2013, p. 1392; Teece et al., 2016, p. 18).[5] We find this definition accommodative of NED potential. Being part-timers and infrequent participants in operations (Carter & Lorsch, 2004), they are also less likely on their own to create organization reconfigurations, and new products or services. Rather, NED activities may increase the likelihood that the organization successfully addresses emerging threats and opportunities. This three-element definition provides flexibility by allowing activities in combination to change organization dynamic capability though each activity might only affect one or two of the elements (Barreto, 2010).[6]

While dynamic capability is an extension of the resource based view (Wernerfelt, 1995; Barney, 1991), we assume for this investigation that dynamic capability relevant activities are, on at least a general level, neither rare nor inimitable and can be adopted across organizations or constitute potential best practices (Eisenhardt & Martin, 2000, p. 1116).[7] This assumption facilitates a cross section analysis of organizations, and may enable practice recommendations.

In an extension of dynamic capability, scholars have proposed that dynamic managerial capabilities (Adner & Helfat, 2003; Helfat & Martin, 2015) are tools with which managers "build, integrate and reconfigure organizational resources and competences," particularly with respect to top management teams (Adner & Helfat, 2003, p. 1012; Kor & Mesko, 2013) and "provide the capacity to direct strategic change" (Helfat & Martin, 2015, p. 1282). Dynamic managerial capabilities are managerial demographic assets "rooted in" managerial human capital (e.g., skills, training or learning), managerial social capital (e.g., friendships or social club memberships) and managerial cognition (e.g., beliefs or mental models) (Adner & Helfat, 2003, pp. 1013, 1021–1022; Corrêa, Bueno, Kato, & de Oliveira Silva, 2018). Empirically, dynamic managerial capability has been represented at the organization level through the corporate decision content

[4] Teece et al. (2016, p. 18) distinguish between strategy and dynamic capability, though claiming them to be heavily intertwined. As strategy is likely to be a main concern at the board level, we consider the ability to consistently develop strategy that is congruent with the environment as a contributor to dynamic capability.

[5] This is because resource acquisition/reconfiguration, knowledge generation and organization transformation are not likely to happen spontaneously without action.

[6] It may be possible that an activity that affects one element may predict another activity which affects the same or another element. For example, NEDs involved in seizing (strategy formulation and ratification) may feel ownership in the strategy they help to create and thus may have an interest in carrying out transformation activities that ensure the strategy's sound implementation. An analysis of these types of relationships is beyond the scope of this paper.

[7] For example, "speaking with customers" may have firm specific idiosyncrasies such as two organizations may have different customers and thus the content and the parties of their conversations may differ but the underlying activity is still the same.

(Helfat & Martin, 2015) (see, e.g., Nadkarni & Barr, 2008; Eggers, 2012 and Adner & Helfat, 2003) as opposed to specified managerial activities.

Macus (2008) proposed that board capability is the ability of the board to dynamically configure board resources (composition, committee structures) through modifying directors' interactions with the purpose of addressing "new and emerging tasks" (Dawes, 2008, pp. 100, 108). Though advising a direct investigation of board activity, Macus (2008) proposed board demographics and structure as proxies for director interactions. Ultimately, it is the organization's dynamic capability that is important for the organization's ongoing survival.

Finally, the motivator of voluntary activity (interactions) are not objects or structures but rather perceptions and goals (Morsella, Bargh, & Gollwitzer, 2008). Emergent threats and opportunities may require a dynamically capable organization to understand unfamiliar business environment situations (Teece et al., 1997) and achieve "organizational and managerial innovations," the reinvention of business processes and the creation of new product, services or technologies (Teece, 2007, pp. 1320–1321). Addressing novelty can be knowledge and resource intensive, and in the face of uncertainty on multiple dimensions, require widening search horizons, overcoming biasness and reluctance to change in the face of uncertainty on multiple dimensions (O'Connor, 2008; Teece, 2007), and sensemaking to reduce potentially costly trial and error (Weick, Sutcliffe, & Obstfeld, 2005).

Managerial Hegemony Theory ("Managerialism"), an early institutionalized view of boards, proposed that the NEDs, being part-time and from the outside, have neither the expertise nor opportunity to understand or contribute to the organization in a meaningful manner. They fill a ceremonial leadership role that provides the organization with external legitimacy (Drucker, 1986; Meyer & Rowan, 1977); and serve as counsel to the CEO, as corporate conscience and as a rubber stamp of the CEO's strategy (Lorsch & MacIver, 1989; Mace, 1971, pp. 15, 205–206, Mace, 1972). Under managerialism, dynamic capability is the responsibility of the executives and the NEDs role is likely passive if not insignificant.

The more recent agency theory (Jensen & Meckling, 1976), a very influential theoretical perspective of board research (Pugliese et al., 2009), prescribes that through incentive design decision control (strategy ratification) and monitoring, NEDs can mitigate biases, motivation, and misaligned interest issues of executives. Although empirical studies have yielded ambiguous and contradictory results,[8] agency theory's prescriptions above are highly institutionalized norms in Anglo-American governance and have been adopted widely.[9] These prescriptions serve as a baseline for NED activity in our analysis. These normative prescriptions are important for dynamic capability such as for motivating executives to search for new ventures, learn new technologies and implement organizational transformation in line with the selected

[8] See, e.g., Daily, Dalton, and Cannella Jr. (2003); Dalton, Daily, Certo, and Roengpitya (2003); Hermalin and Weisbach (2003); Huse, Hoskisson, Zattoni, and Viganò (2011); Liu et al. (2013); Tosi, Werner, Katz, and Gomez-Mejia (2000); van Essen, van Oosterhout, and Carney (2012).

[9] See, e.g., Principles 4.1–4.4 of the Corporate Governance Code (Tokyo Stock Exchange, Inc. (2015 Japan); Organization for Economic Co-operation and Development Principles of Corporate Governance (, 2004); Higgs (2003); Australian Stock Exchange Listing Rules §§ 12.7, 12.8 (Jan. 1, 2011); Sarbanes-Oxley Act of 2002 (15 U.S.C. § 7201 et seq. (U.S.A. 2002); New Zealand Exchange Corporate Governance Code, Recommendation 3.3 (2017). For exceptions see Young, Peng, Ahlstrom, Bruton, and Jiang (2008).

strategy. Agency theory, however, focuses on internal relationships, sets aside externally focused elements of dynamic capability. It presumes that NEDs have sufficient knowledge and competence to, in a timely manner, determine the proper strategy for which to base executive compensation and decision control; and that the executives, once aligned and behaving like stewards (Davis, Schoorman, & Donaldson, 1997), know what to do (J. Hendry, 2002; Kruger & Dunning, 1999), and have the ability to access and modify resources as needed.

Resource dependence theory ("RDT")

NED biographies, such as those listed in organization websites or annual reports, often show that NEDs have extensive backgrounds and experiences, hold or have held top managerial positions in other organizations, and possess significant personal and professional networks. In addition, the difference between the NEDs and executives in knowledge about the organization may be less than commonly assumed as evidenced by generally small differences in trading performance of company stock between NEDs and executives (Ravina & Sapienza, 2010). As such, a board's NEDs may have combined experience, knowledge, expertise and networks that could exceed or significantly complement that of the executive management team (Hillman & Dalziel, 2003; McDonald, Westphal, & Graebner, 2008; Pfeffer & Salancik, 1978), the latter of which may be busy and too specialized with current operations. Therefore, being from the outside with diverse backgrounds NEDs may have the potential to bring a diversity of viewpoints (Barroso-Castro, Ma Mar, & Dominguez, 2017) and expertise.

Considering the above, resource dependence suggests a board's NEDs, if relevantly diverse, might address dynamic capability knowledge, resource and competence needs through their "human capital (experience, expertise, reputation)," "relational capital (network of ties to other firms and external contingencies)" (Hillman & Dalziel, 2003, p. 383), and cognitive diversity (for sensemaking) (Rindova, 1999). Relational capital enables NEDs to serve as conduits to resources outside of the organization such as by providing access to channels of information to environmental contingencies, preferential access to resources (e.g., being a joint member of the external organization which controls the resources), (Hillman et al., 2009, p. 1408; Makadok, 2001; Pfeffer & Salancik, 1978) and, like managerialism, legitimacy or credibility to potential outside resource providers such as lenders (Daily, 1996, p. 372).

RDT has considerable empirical support particularly in "black box" (Finkelstein & Mooney, 2003; Lawrence, 1997; Leblanc & Schwartz, 2007) studies which examine relationships between board structure and demographics inputs and organization performance (Guldiken & Darendeli, 2016; Hillman et al., 2009; Johnson & Greening, 1999; McDonald et al., 2008; Mizruchi & Stearns, 1988, 1994; Provan, 1980). This has led to the normative practice of changing board composition so that the directors' human and relational capital match anticipated needs, threats and chosen strategic directions (Hillman et al., 2009).

The more limited RDT research into NED activities has focused inward to the executive-board interaction (Minichilli, Zattoni, Nielsen, & Huse, 2012; Westphal, 1999) such as NEDs providing counsel and advice to executives (Lorsch & MacIver, 1989; Roberts, McNulty, & Stiles, 2005), reviewing and refining strategic decisions

(Hill, 1995) or engaging in procedural or interactive communication with management depending on strategic posture of the board and the relative power between the board and management (K. P. Hendry, Kiel, & Nicholson, 2010).

Research on NED activity can clarify the extent of NED proactiveness. NEDs can, when requested by the CEO, interact with outside parties and give counsel to executives. Resources sought out on the NEDs' own initiatives and knowledge proactively given to management might help in such circumstances. However, there are hazards in doing this. Though favorable social ties between the CEO and directors may make the CEO more receptive to proactive actions by directors and may make the directors more willing to engage in such activity (Westphal, 1999), an NED that appears to the executives as too proactive may be viewed as overstepping his bounds and meddling (Roberts et al., 2005). This may cause a breakdown in the NED-executive relationship (Roberts et al., 2005) which could, in turn, negatively impact the abilities to jointly share and create knowledge, or to engage in joint sensemaking. Investigations into NED activities might show how NEDs balance the need to provision resources with the need to preserve a working relationship with the executives.

As in agency and stewardship research, RDT demography-based analysis has taken the strategic direction as given and assumes that the necessary NED capital can be identified, and that NEDs with such capital can be brought on the board (e.g., McDonald et al., 2008). In essence, the development of resource dependence theory has fallen short in the analysis of time scales when changes in the dynamic environment require changes in strategic direction to which incumbent NEDs' existing capital is not closely coupled. To effectively provide resources one needs to know what resources are needed and how to access them. In the dynamic capability context, this may require actively sensing and making sense of the environment. Using a dynamic capability lens to research NED activity may advance RDT by identifying how NEDs go about becoming effective resource providers despite not having expertise on every situation that occurs over time. We submit that all else equal, directors who participate in sensing and learning about the business environment may be more effective than those who do not.

Finally, an area that activity studies can help to investigate is efficiency of the board as a group. The demographic approach does not uncover the inner workings of the board and how the NEDs utilize their capital (such as through communication and sensemaking with each other) to make the board as a group more effective.

Scholars suggest that opening up the black box and directly investigating board and director activity may bring more clarity and theoretical advancement (Roberts et al., 2005; Sundaramurthy & Lewis, 2003). From a practice perspective, direct investigation of board activity may provide practical advice on how directors can better perform their roles. Thus, from both a research and professional standpoints, activity-based studies of the NEDs using a dynamic capability lens are needed.

Operationalization of the three-element dynamic CAPABILTY form - sense, seize, transform

There have been some attempts to quantitatively operationalize Teece (2007)'s dynamic capability three element construct. Tipurić et al. (2014) may be the only research to date that has attempted this at the board-level though they only focused on perceptual attitudes. Scholars have attributed this lack to the continuing evolution of the definition and characterization of dynamic capability (Ambrosini & Bowman, 2009; Barreto, 2010; Helfat & Winter, 2011; Pavlou & El Sawy, 2011). Some attempts to operationalize Teece's version have deviated from the three-element specification. For example, Pavlou and El Sawy (2011) and Nieves and Haller (2014) modified the three elements into four: sensing, learning, integrating and coordinating. Operationalization efforts have also been reliant on black box methods using proxies (e.g., director perceptions and board demographics) for unspecified processes, thus leaving the question of how the managerial elite try to create or maintain organization dynamic capability unanswered. See, e.g., Pavlou and El Sawy (2011) and Tipurić et al. (2014).

Hypotheses development

We develop hypotheses in a relationship framework where NED's perceptions are associated with the activities they perform; their activities are associated with organization performance; and thus their perceptions are indirectly associated with organization performance (Fig. 1). We adopt a rational approach and assume the that perceived organization needs may overcome limits imposed by institutional beliefs and personal relationships. In our development, we discuss how NEDs, may help address the resource, capability development and knowledge needs of a dynamically capable organization and examine how NED perceptions relevant to resource dependence may promote departures from the institutional baseline.

We define a *Dynamic Capability ("DC")-relevant activity* to have the potential to contribute to one or more elements (sense, seize, or transform) of an organization's dynamic capability. Such activities may thus be relevant to externally and future oriented issues (Ambrosini & Bowman, 2009, p. 34), and to strategy development or execution. They are not tied to a specific strategy and therefore may make ongoing contributions towards organization success. An NED meeting with major customers to discuss their future needs may be an example of "sensing" external opportunities. Less likely to be DC-relevant might be mandatory regulatory compliance reporting activities, the time intensiveness of which might crowd out other activities (Linck, Netter, & Yang, 2009).

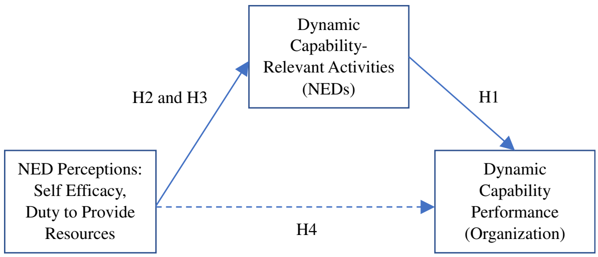

Fig. 1 Relationship framework between NED perceptions, NED activities and organization performance

DC-relevant activities and organization performance

Sensing Management may have difficulty in carrying out the scanning, searching and exploring "across technologies and markets both 'local' and 'distant'" necessary for effective sensing (and shaping) of emergent opportunities and threats (D. J. Teece, 2007, p. 1322) for several reasons. The skills for sensing threats and opportunities are different from those needed to exploit known opportunities developed capabilities (O'Reilly III & Tushman, 2008; Teece, 2007). At the executive level, incumbent senior management teams may have "deeply ingrained assumptions, information filters and problem solving strategies..." (Teece, 2007, p. 1332; O'Reilly III & Tushman, 2008) and the individual team members have finite knowledge and analytical capacities (Simon, 1991) and available time. The organization's managers, therefore, may not possess the proper cognitive mindset, expertise and resources to detect, properly evaluate and address new and unfamiliar developments in the business environment.

As suggested by a resource dependence lens, NEDs activities contribute their human and relational capital to address the above. NEDs might conduct additional scanning of the environment (and share their findings with the rest of the board and management), use their relational capital to obtain access information that the organization might not otherwise be able to obtain, provide cognitive diversity and diversity of viewpoints to help assess the threats and opportunities, or create knowledge and understanding about the business environment changes through application of their expertise (individual sensemaking) and through participation in joint sensemaking with other NEDs and executives.

Regarding governance, NEDs might use their expertise to ensure that sensing is carried out and that sensing is directed towards needed areas such as a particular sector or emerging market. This could be done, for example, through the baseline agency theory normative practices (e.g., incentive design), putting sensing issues on formal or informal discussion agendas with other directors and executives, and issuing directives. Therefore it is hypothesized,

Hypothesis 1a Sensing-relevant activities conducted by NEDs are positively associated with organization dynamic capability (performance).

Seizing (developing plans/strategy) Management may be unable to properly evaluate and respond to an emergent issue; or may deliberately avoid emergent issues that may require or involve significant change or uncertainty. Some cause may be that executives are risk averse (Fama & Jensen, 1983), have biases or (unrealized) irrationalities (Kahneman, 2011), face internal politics that favor current operations, or as before lack expertise or time because of their orientation towards meeting the demands exploiting current capabilities in the day to day operations.

Similar to sensing, under resource dependence, NED may (1) provide access to external resources and information which may enable a wider set of strategies to be considered; (2) provide a diversity of viewpoints and expertise to overcome group think of a management concerned with current operations; (3) and participate in sensemaking and problem solving. Some activities that apply this potential include strategy making sessions and individual consultations with other NEDs or with executives. Roberts et al. (2005) suggest that NEDs' interactions with executives provide resources through challenging executives' plans and ideas while concurrently advising. Some of such discourse may happen outside the formal board meeting (McNulty & Pettigrew, 1999).

In governance, the NEDs' independence and structural position at the organization apex may render themselves less susceptible to internal politics, more open to understanding and accepting emergent developments that require changes in strategic direction and (compared to junior managers) better positioned to make sure such issues and associated information emerging from the business environment are presented and addressed at high levels such as through placing them on the agendas of formal board meeting or informal discussions with the executives. Additionally, by participating in planning and ratification, NEDs may contribute by absorbing some of the responsibility for failure. Doing so can encourage risk averse executives to undertake strategies which have more uncertainty, such as innovation strategies or actions regarding significant intellectual property investment (Peng, Ahlstrom, Carraher, & Shi, 2017). These which could in turn also help promote an organizational ambidexterity (O'Reilly III & Tushman, 2013) in that a project portfolio which balances the risks and benefits of exploration and development of future capabilities with the exploitation of existing ones. Therefore,

Hypothesis 1b Seizing-relevant activities conducted by NEDs are positively associated with organization dynamic capability (performance).

Transformation (strategy execution) NEDs might enhance the organization's dynamic capability from a resource/service perspective (1) by providing relevant expertise to the executives on strategy execution matters (McDonald et al., 2008) such as through formal and informal consultation; (2) by providing access (through networks) to external resources necessary to carry out the plans (McDonald et al., 2008; Westphal & Fredrickson, 2001), and (3) by providing temporary direct active operational assistance in executing a strategy (such as in a resource or manpower constrained non-profit organization). However, as transformation may be considered as part of day to day operations and with operations institutionally considered to be the management's "turf" (Carter & Lorsch, 2004), NEDs may take a passive approach and may only engage in such activities as related to transformation infrequently and only when asked.

Given potential institutional barriers, NEDs may be more likely to adopt a transformation support role that is a project governance monitoring role designed to ensure the transformation is carried out in a timely manner in line with the intended strategy. Monitoring might be done such as by assessing strategy implementation through benchmarking or achieving milestones, reviewing reports. Monitoring may also help the board know when it needs to step in such as to resolve significant internal differences in strategy execution or to absorb risk when strategy implementation encounters significant uncertainty in its next steps. Therefore,

Hypothesis 1c Transformation-relevant activities conducted by NEDs are positively associated with organization dynamic capability (performance).

Perceptual attitudes and DC-relevant activity

Legal and professional norms (Pettigrew & McNulty, 1995, p. 860), CEO hubris (Hiller & Hambrick, 2005) or narcissism (M. Higgs, 2009) can exert considerable pressure for NEDs to be passive or to adhere to the generally accepted baseline practices. NEDs can worry about causing resentment from management if they appear to overstep their authority and participate beyond their capabilities (Carter & Lorsch, 2004; Roberts et al., 2005). These factors might pressure boards to not act even in the face of organization needs unmet or unaddressed by the executives. Nevertheless, as perceptions and goals drive voluntary action (Morsella et al., 2008), we propose that, assuming the NEDs detect organization needs (in this case, dynamic capability based needs), the NEDs' propensity to act to address those needs increases the more they believe it is their duty to assist in that area and the more they believe themselves capable of doing so.

Perception of importance of the duty to provide resources The discussion of Hypothesis 1 highlighted activities that may address resource needs relevant to organization dynamic capability. NEDs may address some of the needs as a matter of course through baseline activities (e.g., applying expertise to design proper incentives) and thus the influence of the duty to provide resources may be intertwined with institutional and other motivators. However, some of the resource provision activities (e.g., interacting with the business environment on behalf of the organization, engaging in sensemaking and discourse – inside and outside of the formal boardroom meeting – with other board members and executives, participation in strategy creation, and setting discussion and meeting agendas that promote dynamic capability) may fall outside the baseline practices. From a rational perspective, the NEDs propensity to engage in those activities (given identifiable organization needs) increases as their perceived importance of duty to ensure the organization obtains such resources grows and counteracts forces pressuring them to be passive or adhere to the baseline. Thus,

Hypothesis 2 The NEDs' perception of the importance of their duty to provide resources to the organization is positively associated with NED DC-relevant activity.

Perceived self efficacy measures how well an entity perceives itself to "execute courses of action required to deal with prospective situations" and "achieve varying levels of results" (Bandura, 1982, pp. 122, 144; Gibson, 1999; Lindsley, Brass, & Thomas, 1995, p. 648). It is, in essence, the entity's own measure of its ability - level of skills, competencies and characteristics that it has to enable it to have influence within a specific domain (Mayer, Davis, & Schoorman, 1995, p. 717). Perceived efficacy has been positively associated with higher goal setting (Phillips & Gully, 1997), proactivity, job autonomy and role expansion to carry out additional duties perceived to be needed (Crant, 2000; Parker, 2000), and persistence and effort (Bandura & Schunk, 1981; Greenlees, Graydon, & Maynard, 1999; I. Brown & Inouye, 1978; Bandura, 1982). These associations have been found at both the individual and group (collective) levels of perceived efficacy (Bandura, 2001). If NEDs perceive themselves (as individuals or as a group) to have ability that matches to perceived needs of the organization, they may be more confident thus more assertive and active (Anderson, Melanson, & Maly, 2007) in assisting the organization.

Self-efficacy may have two effects. In the context of role breadth self-efficacy (RBSE), the extent to which an individual (or a group) "feels confident" in "carrying out a broader and more proactive role" beyond the specified requirements of the role (Parker, 1998, p. 835, Parker, 2000, p. 450), self-efficacy has an independent effect on NED activity. That is RBSE generally increases the propensity and effort which directors will adopt activities beyond the baseline (of which some dynamic capability relevant activities are) on the general belief that that they can do so competently. Thus, it is hypothesized,

Hypothesis 3a The NEDs' self efficacy is positively associated with NED DC-relevant activity.

The second effect, concerns judgment about the ability to carry out an individual task (Brockner, 1988) and thus the effort exerted on it. This perspective may be relevant especially if the NEDs face time constraints (Carter & Lorsch, 2004) where NEDs may not take action unless they sense a need (see hypothesis (1) discussion) and feel they have a duty to act upon it. In this instance, duty to provide resources specifies the range of tasks the NED will perform (e.g., activities which contribute resources) and a base propensity to perform those tasks while self efficacy affects the effort to which the task is performed. Self-efficacy may therefore have a positive moderating effect to the duty to provide resources and dynamic capability-relevant activity relationship. Thus,

Hypothesis 3b The NEDs self efficacy positively moderates the relationship between the NEDs' perception of their duty to provide resources and NED DC-relevant activity.

Attitudes and organization performance

The attitudes, as discussed in hypotheses 2 and 3, do not guarantee that directors will select the correct activities or conduct them properly. However, from a resource provision perspective, many NEDs are highly accomplished and often have senior management experience themselves (Anderson et al., 2007), and their prior background and expertise (which are human and relational capital factors) have been associated with their organizations' positive strategic outcomes (McDonald et al., 2008). Furthermore, self efficacy has been positively associated with prior performance based measures of actual ability (Thomas & Mathieu, 1994; Phillips & Gully, 1997) and ultimately higher performance at the individual and collective levels (Gibson, 1999; Earley, 1993; Stajkovic & Luthans, 1998; Earley, 1994; Little & Madigan, 1997). High ability and performance may mean NEDs perform their activities more effectively and therefore increase the likelihood they positively affect organization performance. With these factors and Hypotheses 1–3 providing a potential linkage between attitudes and organization performance, we propose:

Hypothesis 4 The higher the self efficacy of NEDs and perception of duty to provide resources, the more likely the NEDs will positively affect performance indirectly through their relationship with their dynamic capability relevant activities.

Methods

The empirical analysis utilized a non-random, online, survey of NEDs of Anglo-American organizations from several countries[10] (primarily Australia and the USA: these countries were chosen because they are broadly similar in their 'Western' corporate culture, governance and managerial processes) across different organization types (profit, non-profit and public). As the unit of analysis was the board, the NEDs of an individual board were represented by a single NED respondent. Corporate governance studies in leading journals have relied upon the use of a single respondent to "report on behalf of the entire board . . . [s]ince it is traditionally difficult to gain access to" director activity data (Minichilli et al., 2012, p. 201; Minichilli, Zattoni, & Zona, 2009; Pearce II & Zahra, 1991; Zahra, 1996; Zahra, Neubaum, & Huse, 2000). Attempts were made to ensure that the respondents were the highest ranking NEDs (e.g., non-executive chair) in their boards. Compared to an ordinary general director, the highest-ranking NED as a leader of the NEDs (and potentially of the board), may be more aware of the general sentiments of the NEDs and the board. While multiple respondents from the same organization may help address triangulation issues, the averaging of responses may be insufficient if there is significant disagreement between the respondents that is driven by either knowledge and competence differences, or perceptual disagreement (Kumar, Stern, & Anderson, 1993) such may exist between executive and non-executive directors.

Since there were no pre-existing item formulations to measure certain variables in the model, new items were developed. In 2012–1013, interviews were conducted with Australian and US NEDs and focus groups of Australian NEDs were organized (see Appendix A). Participants suggested that relevant activities might be performed by individual directors (or small informal groups) and formal groups of directors.

Based on responses, items to measure NEDs' perception of the importance of their duty to provide resources to the organization and the DC-relevant activities were developed. Items to measure NEDs' perception of their own ability level were developed from prior research (Mayer & Davis, 1999, p. 136). Academic colleagues and board directors evaluated preliminary survey versions and their expert opinion was used to establish face validity of the survey items and the resulting item-average scales (Bernard, 2000). The survey was piloted with the Australian Institute of Company Directors and, subsequently, some items were excluded. The results of the pilot study and prior research indicated that response rates of surveys of *top managers is generally low* (Cycyota & Harrison, 2006; Leblanc & Schwartz, 2007) *and response rates of the NEDs is likely* to be even lower: directors' work is often considered confidential; professional, ethical and legal considerations mean that directors may be reluctant to share information about their role (Leblanc & Schwartz, 2007; Leighton & Thain, 1997); and, finally, directors are also busy individuals (Carter & Lorsch, 2004). To mitigate the expected low response rate, several steps were taken. First, Likert-Type questions were structured to ask about activity in a manner that was not tied to

[10] It was assumed that Anglo-American organizations generally have similar structures, board customs and institutional environments (e.g., single tier and common and statutory and common law requirements, perceived roles, and common origin (England)).

any specific strategy being taken. Second, the use of several different methods of solicitation has been encouraged where response rates are likely to be low due to sensitivity of the respondent (Biernacki & Waldorf, 1981; Leblanc & Schwartz, 2007). Third, we delayed publication efforts that would use the survey data so as to increase the likelihood that any inadvertent disclosure by a director concerning a specific strategy would be obsolete by the time the survey data would be released in any form.

The final survey was made available online September through October 2014. It was anonymous and primarily reliant upon Likert-type responses. In the beginning of September, an invitation to take the survey was sent by mail to the highest ranking NEDs of Australian Securities Exchange (1209), Australian Medicare Locals (62) and Australian Health Service/Network Provider (66) organizations in September and a reminder was sent 1 month later. The mail-out targeted these organizations as the director contact and status information were readily available from commercial databases (Thomson Reuters' Connect4 BoardRoom), organization websites or through phone calls. A social media campaign (Twitter, Facebook and LinkedIn) to a broader audience was conducted in conjunction with the mail-out. In LinkedIn, announcements were posted to board director professional groups and InMails were sent to individuals who had profiles indicating that they might be a qualified to respond (e.g., lead NED of an Anglo-American organization). We also utilized our own personal and professional networks to advertise the survey (e.g., personal emails and phone calls). Finally, announcements of the survey were made on our' behalf in the alumni and university staff e-newsletters at The University of Melbourne and the Massachusetts Institute of Technology Venture Mentoring service. In all promotions, recipients were encouraged to pass awareness of the survey to their colleagues.

The reliance upon single respondents from each board in the anonymous survey required measures to prevent the inclusion of multiple respondents from the same board in the analysis. Respondents were encouraged to respond about a board in which they were currently the highest ranking NEDs. The highest-ranking NED is often a position held by a single director (e.g., non-executive chairman). In addition, the survey collected general characteristics of the respondent's selected organization (e.g., number of employees, revenue, location, and industrial code, board size, and number of NEDs). If there was a match, one of the matching respondents was randomly selected and the others excluded from the analysis.

Common method bias Because protecting the anonymity and confidentiality of the respondents and their organizations was of great importance, the survey was the only source of data in this study as matching outside data with the respondent's answers would likely compromise the identities of themselves and their organizations. However, this could have the effect of introducing common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) as the study relied upon respondents who self reported their perceptions and beliefs about both the independent and dependent variables. In board research and in particular analysis of board processes, reliance upon self-reported information has been accepted (see, Hendry et al., 2010; McNulty & Pettigrew, 1999; Roberts et al., 2005). This is likely due to the difficulty in gaining access to observe highly confidential activities of the board (Daily et al., 2003). While survey anonymity and sample size may have precluded some methods to dealing with common method bias, protecting the anonymity and confidentiality of the respondents and providing clear scale items may have encouraged respondents to give unbiased answers (Podsakoff et al., 2003, pp. 887–889, 898 (situation 7)).

There were 62 respondents, 54 (87%) of whom completed the survey. Of the 54, 42 (78%) reported they were the highest-ranking NED. We separated the responses into two groups (highest-ranking NED and non-highest ranking NEDs) and conducted an independent samples t-test in tandem with a Levene (1960)'s test on the 46 items used in the factor analysis. There were only five items each (11%) where the equal variances or equal means assumptions could be rejected at the 95% confidence level (one item had both). Two of the items where equal means could be rejected were later dropped in the ensuing factor analysis. Given these results, we combined the two groups to maximize the sample size. The organization characteristics provided by each respondent did not match those of any other respondent, and thus it was concluded that there was only one response per board. As the survey was also advertised to open groups (e.g., discussion boards), it was not possible to calculate a response rate. Table 6 provides the summary characteristics of the organizations that were represented. A majority (58%) of the organizations were Australian and the industry most represented was health care and social assistance. These response biases were expected since Australian lead NEDs of the ASX and Australian health care provider institutions were targeted in the direct mailing. Some of the effects of bias due to organization type may be mitigated by a diffusion of practices between boards due to board interlocks (Mizruchi, 1996; Shropshire, 2010) and respondents being NEDs in multiple organizations. Furthermore, the health care organizations solicited in Australia have independent boards.

Measures The Likert-type questions used a five point scale as it has been found to be generally equivalent to seven point scales (Colman & Norris, 1997; Dawes, 2008) and ease and quickness in answering we felt would encourage participation by busy individuals such as directors. Numerical values for the questions' response scales are defined in Tables 1, 2, 3 and 4.

Levene (1960)'s test combined with an independent samples t-test was used to investigate if and how the group of respondents who dropped out after completing the dependent variable section differed from those that completed the survey. Differences in the means of their responses were only significant ($p \leq 0.05$) in several control variable items[11] and not in any dependent variable items. Based on these results, the factor analysis for the dependent variables (DC-relevant activities) used all of the 62 available responses while 53–54 responses were used for the factor analysis of the independent variables, and the multiple regression analysis.

Variable constructs and factor analysis The item selection process for the variables' constructs used exploratory factor analysis with principal components analysis and Varimax rotation (Tables 1, 2, 3 and 4). The values of the variables were the mean of the component item values.

[11] Whether there is CEO / Chair duality, whether the respondent was the board chair, whether the respondent was a board committee chair, whether the respondent was a general director.

Table 1 Exploratory Factor Analysis of NED self efficacy (nedABILITY) ($N = 55$)

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)			.63	.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)				
(nedABILITY02).. . has the necessary skills, resources and abilities?			**.76**	.58
(nedABILITY02).. . is known to be successful at the things it tries to do?			**.88**	.77
Cronbach's α (**boldface** items) (Cronbach, 1951)			.69	
Kaiser-Meyer-Olkin ("KMO") Measure Sampling Adequacy (Hair, Anderson, Babin, & Black, 2009)		0.536		
Bartlett's Test of Sphericity (Hair et al., 2009)	Approx. Chi-Square	25.912		
	Deg. Of Freedom	3		
	Significance	< .01		

Table 2 Exploratory Factor Analysis of the Board Duty Items ($N = 54$)

ITEM	Factor Loadings			Communality
	downDUTY	upDUTY	resDUTY	
DUTY02 Minimize conflicts of interest	**.80**	−.01	−.05	.64
DUTY03 Monitor potential downside events (risks)	**.71**	.28	.03	.58
DUTY04 Manage compliance issues	**.81**	.04	.06	.67
DUTY05 Ensure executive compensation is in line with longer term interests of the organization (and stakeholders)	**.54**	.35	.08	.43
DUTY07 Manage the risk associated with key strategic investments	.22	**.67**	.23	.54
DUTY08 Actively participate in the creation of strategy	.23	**.85**	−.13	.78
DUTY09 Ensure the strategy is carried out.	.26	**.78**	.06	.69
DUTY10 Increase the organization's value/create new value	−.24	**.74**	.05	.61
DUTY11 Provide access to external resources (including fundraising)	−.22	.30	**.83**	.83
DUTY12 Manage relations with key stakeholders	.30	−.08	**.58**	.43
DUTY13 Provide operational assistance – direct involvement with operations	.03	.01	**.89**	.80
DUTY14 Ensure the MD/CEO prioritizes the organization's interest over his/her own	**.55**	.03	.44	.50
DUTY01 Selected/replace key executives other than the MD/CEO	Loaded separately			
DUTY06 Preserve organization value (assets)	Loaded separately			
Cronbach's α (**boldface** loadings)	.75	.75	.72	
KMO Measure Sampling Adequacy	0.708			
Bartlett's Test of Sphericity	Approx. Chi-Square	246.896		
	Deg. Of Freedom	91		
	Significance	< .01		

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 3 Exploratory Factor Analysis of Dynamic Capability Relevant Activities performed by at least one individual ($N = 58$)

ITEM			Factor Loadings			Communality
			DC_{indiv}^{sense}	DC_{indiv}^{seize}	DC_{indiv}^{trans}	
INDIV01 Review management reports			.04	.00	**.88**	.78
INDIV02 Review quarterly and annual reports before filing (outside of audit committee)			.03	.12	**.86**	.75
INDIV03 Engage in informal discussion (outside of meetings) with each other			.06	**.78**	.08	.62
INDIV04 Engage in informal discussion with the MD/CEO or other top executives when asked by such top executives			.06	**.86**	.04	.75
INDIV05 Initiate informal discussion with the MD/CEO or other top executives			.19	**.89**	.04	.82
INDIV06 Bring issues and/or strategies to the MD/CEO or other top executives			.12	**.84**	.06	.72
INDIV08 Attend trade shows and conferences			**.54**	−.17	.07	.33
INDIV09 Interact with (e.g., meetings, site visits, phone calls) the organization's clients *with* prior executive management approval to do so			**.73**	.14	.33	.67
INDIV10 Interact with the organization's clients *without* prior executive management approval to do so			**.81**	.02	−.02	.66
INDIV11 Interact with non-Top-Management employees *with* prior executive management approval to do so			**.56**	.15	.45	.53
INDIV12 Interact with non-Top-Management employees *without* prior executive management approval to do so			**.81**	.10	−.02	.66
INDIV13 Interact with the organization's suppliers *with* prior executive management approval to do so			**.74**	.27	.09	.62
INDIV14 Interact with the organization's suppliers *without* prior executive management approval to do so			**.82**	.11	−.05	.69
INDIV16 Interact with key stakeholders and/or large investors *without* prior executive management approval to do so			**.62**	.32	−.01	.49
INDIV07 Assist with managerial (operational) duties of the organization			Loaded separately			
INDIV15 Interact with key stakeholders and/or large investors with prior executive management approval to do so			Loaded separately			
Cronbach's α (**boldface** loadings)			.86	.88	.75	
KMO Measure of Sampling Adequacy	0.742					
Bartlett's Test of Sphericity	Approx. Chi-Square	505.360				
	Deg. Of Freedom	120				
	Significance	< .01				

How often are the following activities carried out by any of the NEDs? (1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Very often)

Table 4 Exploratory Factor Analysis of Dynamic Capability Relevant Activities performed by the NEDs as a Group ($N = 60$)

ITEM			Factor Loadings			Communality
			DC^{seize}_{group}	DC^{trans}_{group}	DC^{auto}_{group}	
GROUP01: Use outcomes to measure the performance of the MD/CEO or other top executives.			.09	**.92**	.05	.85
GROUP02: Use process milestones to assess the performance of the MD/CEO or other top executives.			.20	**.85**	.11	.78
GROUP03: Assess MD/CEO or other top executives against a structured plan (strategy).			.26	**.91**	−.01	.89
GROUP04: Decide upon the proposals of the MD/CEO or other top executives.			.20	**.55**	.37	.48
GROUP05: Create courses of action.			**.56**	.20	.43	.53
GROUP06: Plan scenarios.			**.80**	.18	−.02	.68
GROUP07: Create strategic vision (top down).			**.70**	.17	.47	.73
GROUP08: Use portfolio management techniques.			**.71**	.13	.25	.58
GROUP09: Discuss MD/CEO related issues without the MD/CEO present.			.06	.27	**.85**	.80
GROUP10: Discuss non-MD/CEO-related issues without the MD/CEO present (e.g., strategy).			.18	−.08	**.84**	.74
GROUP11: Utilize outside consultants.			**.73**	.10	−.07	.55
GROUP12: Develop situation specific performance measures.			**.71**	.27	−.07	.58
GROUP13: Review service/product development efforts to ensure that they are in line with what customers want (or need).			**.60**	.06	.27	.44
Cronbach's α (boldface items)			.86	.87	.76	
KMO Measure of Sampling Adequacy	.767					
Bartlett's Test of Sphericity	Approx. Chi-Square	403.411				
	Deg. Of Freedom	78				
	Significance	< .01				

How important are the following activities carried out by the NEDs as a group? (1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Often, 5 = Very often)

DC^{auto}_{group} consists of autonomous activities (activities carried out without the CEO present) performed by NEDs as a group

Perceptual variables For self efficacy, three items were adopted from the Mayer and Davis (1999, p. 136) item-averaged Likert-type scale of trust in the ability of an entity (individual or group) represented the NED's self efficacy (nedABILITY) on the survey. Through EFA, two items were selected (Cronbach's $\alpha = .69$, $N = 55$). See Table 1.

Items to measure the NEDs' perception of the importance of various NED duties were based on interviews and focus groups of US and Australian NEDs (Appendix A) and prior research (see, e.g., Brooks, Oliver, and Veljanovski (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 2002, *Stone v. Ritter*, 911 A.2d 362 (Del. 2006)). The NEDs' perception of the importance of their duty to provide resources to the organization ("resDUTY") was a three-item construct (DUTY11–13) ($\alpha = .72$, $N = 54$). See Table 2. resDUTY was composed of the importance of providing external resources, managing relations with key stakeholders, and providing operational assistance. Given these items, resDUTY represented the importance of the board's duty to providing a connection to external resources as well as to providing resources from itself (the directors' human capital) and thus on its face appeared to approximate resource dependence theory.

Activity variables The items for DC-relevant activities arose from the same interviews and meetings with experts and professionals for the items related to the NEDs' duties. See Appendix A. Directors participated in creating a list of potential DC-relevant activities which as the basis for the items for DC-relevant activity as there has been little prior research on operationalizing dynamic capability according to Teece (2007)'s elements (sense, seize, and transform) at the managerial elite level. Interview and focus group participants suggested that relevant activities might be performed by individual directors (or small informal groups) and formal groups of directors (e.g., formal board or board subcommittee meetings) and this suggested six activity variables – sense, seize and transform at the formal group and individuals/small informal group levels. However, the interviews and meetings did not indicate items that, on face value, would seem to be relevant to the sense element in formal group settings. We therefore did not consider that variable further. From the items (all Likert-type), EFA established five dependent DC-relevant activity variables (Tables 3 and 4). Three of them were based on DC-relevant activity performed by individuals or informal groups:

- Sense (DC_{indiv}^{sense}) was an eight-item averaged scale (INDIV08–14, and INDIV16; $\alpha = .86$) with items covering meetings with external parties and non-top management employees (the latter of which, directors indicated, might have different contact experiences with external parties than the top management (e.g., salesperson) and may give a different perspective of the business environment);
- Seize (DC_{indiv}^{seize}) was a four-item averaged scale (INDIV03–06; $\alpha = .88$) with items covering engaging in discussion with other NEDs or with executives; and

- Transform (DC^{trans}_{indiv}) was a two-item averaged scale (INDIV01–02; $\alpha = .75$) with items covering reviewing management reports and quarterly and annual reports.

The other two dependent variables were based on DC-relevant activity performed by formal groups of NEDs:

- Seize (DC^{seize}_{group}) was a seven-item averaged scale (GROUP05–08 and GROUP11–13; $\alpha = .86$) with items covering creation of strategy and performance measures, utilizing consultants and ensuring services and products are in congruence with what customers want; and
- Transform (DC^{trans}_{group}) was a four-item averaged scale (GROUP01–04; $\alpha = .87$) with items covering evaluating executive performance and deciding upon executives' proposals.

The component items selected for each of the DC-relevant activity variables appeared in congruence with the theoretical discussion. For sensing, the items included activities that involved interaction with the external environment (e.g., customers). The seizing items included items that could be involved in strategy creation and ratification (e.g. sensemaking supporting activities such as discussion). For transformation, the items included monitoring performance and execution and deciding upon executives' proposals (decision control). Though decision control could be considered seizing (strategy selection), that it did not load with strategy design suggests respondents have a nuanced view. NEDs might view decision control as a way to monitor how the CEO is chooses to carry out a higher overall strategy and thus be transformation related.

Organization dynamic capability performance (DCP) was an item averaged scale used to approximate organization dynamic capability. Measuring performance has several advantages. First, the purpose of dynamic capability is organization survival relative to the developments in the environment within which it is situated (Teece, 2007) and what matters is the result of applying the capability. Performance thus may allow normalization of environment and goal differences between organizations Second, performance may avoid the problems of measuring physical and tangible characteristics of dynamic capability and can help respondents through giving a more tangible basis upon which to provide an answer, and finally performance can keep the respondents focused on their own organization rather than speculating on the goals and performance of other organizations.

The candidate DCP Likert-type items asked about performance according to the sense, seize and transform elements of dynamic capability. The final question DCP05 covers the theoretical notion that there is no dynamic capability unless there is at least some of each of the elements present (Barreto, 2010). Face validity of the items was

[12] INDIV07 (assisting with managerial (operations) duties may be relevant to strategy execution and transformation, but as it loaded on its own, we lacked information as to how to discern when an NED would be acting like an executive director (e.g., supervising lower level employees). As such we excluded it from further analysis. However, though done infrequently ($\mu = 2.17$), its Pearson correlation with resDUTY was significant ($\rho = 0.5$, $p < .01$) and suggesting the relationship should be explored in future studies. We find the low mean to be expected given the normative views that operations are generally the "turf" of the executives and that NEDs are part-time (Carter & Lorsch, 2004).

Table 5 Exploratory Factor Analysis of Dynamic Capability Performance ($N = 61$)

ITEM			Factor Loading	Communality
DCPO1: Detecting the opportunities and threats facing the organisation.			**.85**	.73
DCP02: Assessing and tracking detected opportunities and threats.			**.88**	.78
DCP03: Creating (and modifying as necessary) suitable plans to address the opportunities and threats.			**.87**	.76
DCP04: Carrying out the plans, including transforming the organisation as necessary.			**.82**	.67
DCP05: From an overall perspective: addressing changes in the business environment.			**.93**	.87
Cronbach's α (boldface items)			.92	
KMO Measure of Sampling Adequacy	0.837			
Bartlett's Test of Sphericity	Approx. Chi-Square	232.452		
	Deg. Of Freedom	10		
	Significance	< .01		

How would you rate the organization's performance in the following activities (1 = Very Poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Very good)?

Table 6 Organization Characteristics

Country	Size (FT Employees)	Ownership	Industry
Australia: 36	Small (1–99): 30	Non-profit: 20	Computer System Design: 3
Ireland: 1	Small-Med (100–999): 12	Publicly Traded: 17	Financial & Insurance Services: 4
New Zealand: 4	Medium (1000–9999): 12	Government: 12	Health Care & Social Assistance: 19
South Africa: 1	Large (10000+): 2	Private: 8	Information Media & Telecommunications: 2
United Kingdom: 3	Unknown:6	Unknown: 5	Manufacturing: 4
USA: 10			Mining: 3
Unknown: 7			Oil and Gas Exploration and Production: 2
			Pharmaceutical/Biotech/MedTech: 4
			Other: 16
			Unknown: 5

Size Classification: US Census band

Table 7 Pearson Correlations (listwise with p values in parentheses (two-tailed))

		N	Mean	St. Dev.	2	3	4	5	6	7	8	9
1.	resDUTY	54	3.40	0.84	.13 (.33)	.46** (.00)	.32* (.02)	.01 (.48)	.50** (.00)	.33* (.02)	.04 (.76)	.02 (.86)
2.	nedABILITY	54	4.09	0.58	–	.02 (.91)	.09 (.50)	−.08 (.56)	.15 (.29)	0.31 (.06)	−.02 (.85)	.31* (.02)
3.	DC^{sense}_{indiv}	54	2.21	0.73		–	.26* (.05)	.09 (.53)	.45** (.00)	.18 (.19)	−.28 (.04)	−.22 (.11)
4.	DC^{seize}_{indiv}	54	3.90	0.69			–	.14 (.31)	.57** (.00)	.21 (.12)	.04 (.75)	.06 (.67)
5.	DC^{trans}_{indiv}	54	4.26	0.81				–	.15 (.26)	−.04 (.80)	.02 (.90)	−.07 (.63)
6.	DC^{assist}_{indiv}	54	2.17	0.93					–	.23 (.10)	−.09 (.53)	.08 (.58)
7.	DC^{seize}_{group}	54	3.17	0.69						–	.46** (.00)	.43** (.00)
8.	DC^{trans}_{group}	54	3.87	0.66							–	.48** (.00)
9.	DCP	54	3.84	0.74								–

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

Table 8 Regression analysis of dynamic capability performance (DCP) as a function of dynamic capability relevant activity (N = 54). Standard errors are in parentheses

Constant	2.08* (0.83)
DC_{indiv}^{sense}	−0.21 (0.14)
DC_{indiv}^{seize}	0.03 (0.13)
DC_{indiv}^{trans}	−0.04 (0.11)
DC_{group}^{seize}	0.34* (0.15)
DC_{group}^{trans}	0.31 (0.17)
R^2	0.32
Adjusted R^2	0.25
F(2,51) (p value)	4.63 (.00)*

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

established by management research academics at The University of Melbourne. Five items were selected (Cronbach's $\alpha = .93$, $N = 53$). See Table 5.

Results

The descriptive statistics and bivariate (Pearson) two-tailed correlations are in Tables 6 and 7. The absolute values of the Pearson correlations being all less than 0.85, supported the assumptions of discriminant validity between all of the variables (Brown, 2006; Kenny, 1979) and non-substantial collinearity within the groupings of independent variables in the regression equations below (Hair et al., 2009).

On average, the respondents viewed their duty to provide resources to be important (resDUTY: $\mu = 3.40$) and themselves as capable (nedABILITY: $\mu = 4.11$). For the DC-relevant activities, group and individual transformation, and individual seizing activities were perceived by the respondents to be frequent (DC_{indiv}^{trans}: $\mu = 4.26$, DC_{group}^{trans}: $\mu =$ 3.87, and DC_{indiv}^{seize}: $\mu = 3.90$) while sensing at the individual/informal level was perceived to be infrequent (DC_{indiv}^{sense}: $\mu = 2.21$). Seizing at the formal group level was on average perceived to be performed sometimes (DC_{group}^{seize}: $\mu = 3.17$).

For the NED activities-organization performance relationship, Hypothesis 1 was only supported through group seizing activities (DC_{group}^{seize}) (H1b: *Seizing-relevant activities conducted by NEDs are positively associated with organization dynamic capability performance*) and was not so for sensing and transforming activities. Only DC_{group}^{seize} was found to be significantly associated with *DCP* ($\lambda_4 = 0.34$, $p = .03$) though the overall model was significant at the $p < .01$ level. See Table 8. The result was consistent with Hypothesis 1b while H1a and H1c relating to sensing and transforming activities respectively were not supported.

Perceptual attitudes and DC-relevant activities

resDUTY was positively associated with DC_{indiv}^{sense}, DC_{indiv}^{seize}, and DC_{group}^{seize} at the $p < .05$ significance level with the overall models significant at the $p < .01$ significance level.

Table 9 Regression analysis of dynamic capability relevant activities ($N = 54$) against NED perceptions. Standard errors are in parentheses

	DC^{seize}_{group} (1)	DC^{seize}_{group} (2)	DC^{trans}_{group} (1)	DC^{trans}_{group} (2)	DC^{sense}_{indiv} (1)	DC^{sense}_{indiv} (2)	DC^{seize}_{indiv} (1)	DC^{seize}_{indiv} (2)	DC^{trans}_{indiv} (1)	DC^{trans}_{indiv} (2)
Constant	1.05 (0.68)	5.63** (2.02)	3.87** (0.71)	6.37** (2.21)	1.05 (0.70)	0.87 (2.21)	2.78** (0.71)	4.75* (2.21)	4.44** (0.87)	3.95 (2.74)
resDUTY	0.24* (0.11)	−1.15 (0.59)	0.04 (0.11)	0.72** 0.64	0.41** (0.11)	0.47 (0.64)	0.25* (0.11)	−0.34 (0.64)	0.11 (0.14)	0.26 (0.80)
nedABILITY	0.32* (0.15)	−0.86 (0.51)	0.03 (0.16)	−0.67 (0.56)	−0.06 (0.16)	−0.01 (0.56)	0.06 (0.16)	−0.44 (0.56)	−.13 (0.14)	−0.01 (0.70)
nedABILITY x resDUTY	–	0.35* (0.15)	–	0.19 (0.16)	–	−0.01 (0.16)	–	0.15 (0.16)	–	−0.04 (0.20)
R^2	0.18	0.26	0.00	0.03	0.22	0.22	0.10	0.12	0.02	0.02
Adjusted R^2	0.15	0.22	−0.36	−0.03	0.19	0.17	0.07	0.07	−0.02	−0.04
F (*p* value)	5.56** (.01)	5.96** (.00)	0.07 (.94)	0.52 (.67)	7.04** (.00)	4.61** (.01)	2.90 (.06)	2.23 (.10)	.49 (.62)	.33 (.80)

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

F statistic degrees of freedom (regression, residual): (1) 2,51; (2) 3,50

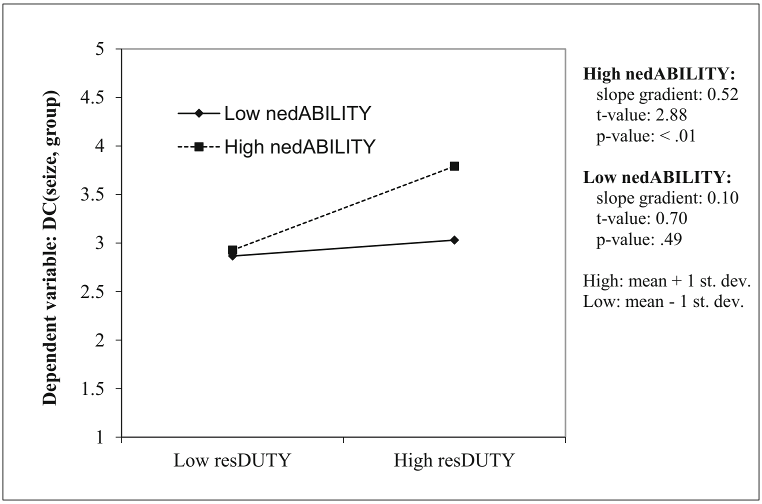

Fig. 2 Interaction between self-efficacy of the NEDs (nedABILITY) and the Perceived Duty to Provide Resources (resDUTY) upon seizing related activity performed by the NEDs in groups. Low resDUTY and high resDUTY are one standard deviation below and above the mean of resDUTY respectively. Figure generated from Dawson (2002)

These results were consistent with Hypothesis 2 (stated as: *The NEDs' perception of the importance of their duty to provide resources to the organization is positively associated with NED DC-relevant activity*).

NedABILITY was positively associated only with DC^{seize}_{group} ($p < .05$), consistent with Hypothesis 3a (stated as *The NEDs' self efficacy is positively associated with NED DC-relevant activity*). Higher levels of ability were associated with higher levels of seizing activity, but not with sensing or transformation. $DC^{trans}_{indiv}$and DC^{trans}_{group} were not significantly associated with any independent variables nor were their models significant overall. The interaction variable (nedABILITY x resDUTY) was a significant, positive predictor only for DC^{seize}_{group} ($\beta = 0.35$, $p = .02$). See Table 9. The estimate of the significant interaction term's effect size (the proportion of total variability attributable solely to the term) was 0.11 with a power of .71. The effect size compared favorably with the observed size of other interaction effects in the management literature (Aguinis, Beaty, Boik, & Pierce, 2005). The power result also compared well with

Table 10 PROCESS path analysis of the indirect associations between the NED perceptual attitudes (resDUTY and nedABILITY) and Dynamic Capability Performance (DCP). Standard errors are in parentheses

Constant	1.82 (2.34)
DC^{sense}_{indiv}	−0.29* (0.14)
DC^{seize}_{indiv}	0.05 (0.14)
DC^{seize}_{group}	0.43** (0.15)
resDUTY	0.02 (0.64)
nedABILITY	0.27 (0.55)
resDUTY x nedABILITY	−0.01 (0.16)

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

Table 11 Indirect effects of the interaction (resDUTY x nedABILITY) on Performance (DCP) via Dynamic Capability-Relevant Group Seizing Activity (DC^{seize}_{group})

resDUTY x nedABILITY	0.1605	95% CI [.0247 .4352]
High resDUTY	0.2667	95% CI [.0673 .6669]
Low resDUTY	0.0011	95% CI [−.2012 .1617]

the findings from Aguinis et al. where the mean statistical power used to detect a targeted effect size of .010 was .62.

The plot of the relationship between resDUTY and DC^{seize}_{group} at one standard deviation above and below the mean of nedABILITY (high (4.70); low (3.52)) showed an increasingly positive relationship between resDUTY and DC^{seize}_{group} as nedABILITY increased. See Fig. 2. The simple slope analysis (Cohen, Cohen, West, & Aiken, 2003; Dawson, 2014), showed the relationship between resDUTY and DC^{seize}_{group} to be statistically insignificant at $\text{nedABILITY}_{\text{low}}$ (slope = 0.01, t = 0.70, p = .49) and more positive and significant at $\text{nedABILITY}^{\text{high}}$ (slope = 0.52, t = 2.88, p < .01). This was consistent with Hypothesis 3b (stated as *The NEDs self efficacy positively moderates the relationship between the NEDs' perception of their duty to provide resources and NED DC-relevant activity*), meaning that more able NEDs viewed their duty as significantly more related to DC seizing activities than less able.

Perceptual attitudes and dynamic capability performance The results suggested an indirect association between perceptual attitudes and organization performance through DC^{seize}_{group}. To analyze this association while minimizing the possibility of confounding variables, we combined the attitudes (including interaction), activities and performance variables into one model. We first assessed the discriminant validity of the remaining measures from the same data source. We conducted a confirmatory factor analysis of a six-factor model with latent variables representing performance, individual sensing, individual seizing, group seizing, duty to provide resources and self efficacy. This generated $\chi^2 = 654.5$ (df = 390), $p < .001$. In addition, we compared the six-factor model against a five-factor model (with a single latent variable representing individual seizing and group seizing). The five-factor model generated χ^2 (df = 4) = 740.1, $p < .001$. Thus, the six-factor model fits the data significantly better than the five-factor model: $\Delta\chi^2$ (df = 5) = 85.6, $p < .05$.

We then used the PROCESS macro for SPSS (Hayes, 2013; Preacher, Rucker, & Hayes, 2007) and bias-corrected bootstrapping to test the indirect effects of the interaction as expressed in Hypothesis 4 – *The higher the self efficacy of NEDs and perception of duty to provide resources, the more likely the NEDs will positively affect organization dynamic capability performance indirectly through their relationship with their dynamic capability relevant activities.* The results are presented in Tables 10 and 11. Hypothesis 4 was supported in relation to group seizing (DC^{seize}_{group}) and at high levels of duty to provide resources (resDUTY): the interaction influenced performance via group seizing activities, (i.e., the confidence intervals do not contain zero).

Furthermore, the coefficient for high levels of perceived duty to provide resources was significant and the coefficient for low levels was nonsignificant. So it is the case that especially for the seizing aspect of DC, higher group self efficacy and sense of duty was associated with higher DC performance.

Discussion

The results gave general support to the hypotheses though it was limited to a subset of dynamic capability relevant activities with group seizing activities serving the most prominent role. It was unexpected that NED self efficacy was only significant in group seizing activities since increases in self efficacy was expected to increase NED proactiveness and autonomy from management especially in light of dynamic capability's external requirements. We offer possible explanations. The NEDs may perceive strong institutional limits, or NEDs with higher self efficacy may feel they can achieve more with less time commitment and thus the substantive content of their activities changes and not the frequency. One other possibility is that NED self efficacy is only relevant for certain activities. As an example, transformation activities were reported to be frequently performed but not associated with duty to provide resources nor self efficacy. This was expected as these activities were primarily monitoring related and, as the literature review concerning agency theory indicated, may be institutionalized activities of the NEDs. That formal group seizing activities were performed sometimes was expected since NEDs being part time may not have an opportunity to meet frequently as formal groups.

The results show that strong perception of duty to provide resources influenced the sensing and seizing dynamic capability relevant activity areas. However, only group seizing activities led to higher organization dynamic capability performance and in the following way. NEDs with high self efficacy and who also had a strong perception of duty to provide resources positively influenced group seizing activities which, in turn, positively influenced performance. In other words, strong perception of duty to provide resources led to activities. But it led to higher performance only in the case of group seizing activities and only for NEDs with high self efficacy.

Contributions

Theoretically, we have brought together corporate governance and dynamic capability research through a common ground of external resource needs of the organization. This is important because corporate governance has been often framed as a matter of compliance and dynamic capabilities stretches knowledge well beyond that frame. The findings suggest that resource dependence (provision) is an appropriate (though we do not claim exclusive) theoretical lens to analyze the NEDs role and contribution to organization dynamic capability at least with respect to the intentions of the board. In essence, directors who place a high value on providing resources, may be more highly involved with organization dynamic capability creation. Our operationalization of NED parameters though the DC lens was an important contribution because it began to deepen knowledge of how NEDs / boards can and do contribute to outcomes in a significantly deeper manner than by examining board demographics.

We have demonstrated operationalizing dynamic capability that is faithful to 3-element (sense, seize, and transform) components and identified component activities. By demonstrating that it is possible to adhere to the three elements analytically and theoretically, we offer a way forward to empirically develop a theory that has been troubled by definitional issues with elements differing depending on industry or part of the organization. Combined with opening up the boardroom and dynamic capability black boxes, we focus on the key underpinnings of dynamic capability: processes. For boards, we have shown that sensing and seizing elements have particular promise to be operationalized. By showing that dynamic capability can be potentially operationalized along the three elements of Teece (2007) without significant modification or creation of other elements (see, e.g., Pavlou & El Sawy, 2011), we have begun setting the foundations for analysis that supports comparison of dynamic capability efforts within different parts of an organization or identifying dynamic capability causal chains that would be difficult to analyze if dynamic capability were elementally different at various parts of an organization. This contribution is useful because it both confirms DC as being conceptually useful at board/ director level, and also provides confirmation for separate consideration of these three major elements for NEDs, who are at the boundary of the organization. Since boards discuss and make decisions about important strategic matters, then monitor outcomes, we also contribute to knowledge about boards that seizing was found to be more related to various of the NED measures than sensing or transformation, and this contribution is important, subject to further research, because it may confirm that perhaps sensing and more likely transformation are perceived as acts of management, more than boards/ NEDs.

From a methods perspective, our ability to obtain survey data and draw statistical inference (albeit with cautions mentioned below) support using a mixed methods approach as suggested by Leblanc and Schwartz (2007) to support data gathering of board and director activity. In addition to using mixed methods for survey solicitation, we show that other steps can be taken to protect director confidentiality and give them confidence in responding. This is an important contribution because it will encourage further research of highly sensitive subjects such as board / director activity and value-add measures, which is an increasingly recognized field of importance to all organizations, in a world where corporate governance shortcomings are of great practical importance. Attitudinal and perceptual Likert-type questions may provide sufficient specificity for creating constructs suitable for testing useful and relevant hypothesized relationships, while at the same time providing sufficient generality to avoid disclosure of organization strategy.

Managerial implications

This paper contributes to practice by increasing the understanding in how NEDs apply their capital. As dynamic capability requires management to overcome ingrained viewpoints (Teece, 2007), NEDs, with their independence and diverse backgrounds may have the potential to help in particular through contributing resources in active participation in strategy making. The infrequent sensing done by NEDs found in this study suggests a risk that biases of management in information gathering and interpretation may be unmitigated. Heavy reliance upon information and reports provided by management may expose NEDs to the same biases and lead the board to the same conclusions when additional information might lead to otherwise. That some NEDs engage in sensing suggests that some boards exceed the agency theoretic baseline activities (ratifying decisions, setting compensation, reviewing board papers and overseeing the audit) and that some flexibility exists in a position that is heavily influenced by institutional regimes (Young, Ahlstrom, Bruton, & Chan, 2001). This contribution is important because it shows variance in NED contributions and activities and asks questions about the current state and distribution of their activities and contributions to DC of the organization. This is particularly important as researchers try to untangle top management team behavior and governance in emerging newly developed economies in Asia (Ahlstrom & Ding, 2014; Young et al., 2008).

Limitations and future research

We advise caution in drawing conclusions and extending the findings beyond the sample, due to potential bias and low sample sizes. The latter limited the number of explanatory and control variables to satisfy statistical power. A higher sample size would have enabled the inclusion of additional NED duties. The low goodness of fit (Adjusted R^2) values of the models may indicate the possibility of additional explanatory variables. Furthermore, as this is first study of its type, the list of DC-relevant activities is likely to be incomplete and the links between the NED activities and actual organization dynamic capability as well as alternative measures for organization dynamic capability should be further investigated.

Our investigation also indicates several further research avenues. Additional perceptual motivators should be investigated (quantitatively or qualitatively) such as perceptions of the environment, the organization's culture and strategic posture and other NED duties. Duties would be particularly useful to help uncover the existence of additional (intended) roles of the board in dynamic capability, whether the performance (activities) of one duty may interfere with or be crowded out by the performance of another duty, or, if activities may serve multiple purposes. The latter of which could help contribute to untangling some of the contradictory results of board demography-based studies. More specifically, for the transformation activities, the inclusion of additional duties (such as those related to downside prevention or creating strategic upside) may uncover whether monitoring activities are more oriented towards agency theoretic purposes or innovation-like portfolio risk management .

There is an opportunity to investigate whether particular activities are associated with the performance of others, much akin to if someone having participated at one stage of a project now has a personal stake in seeing it all the way through to completion, and how ability changes the performance of an activity (in addition to intensity). For advancing knowledge on board research methods, if perceptual and demographic and structure data can be simultaneously collected on specific boards, it may be possible to run an empirical horse race 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.

Having created a list of activities, a next step is a closer investigation of the associations between the activities and organization dynamic capability performance and overall organization performance. We expect that the list of DC-relevant activities will need additions and refinements, particularly focusing on transformation and group sensing activities but improving the list of activities can be done in parallel. Finally, a broader empirical study with greater sample size may provide additional statistical certainty and additional insights. In particular the inclusion of non-Anglo-American boards should be further studied as that could yield different results due to structural, cultural and institutional differences (Dehaene, De Vuyst, & Ooghe, 2001; Young et al., 2001) as should different board members' role in start-up management and financing (Ahlstrom, Cumming, & Vismara, 2018; Mason & Brown, 2014). We add that a broader study will require significant resources. In particular, mixed methods data gathering techniques can be manpower intensive. While we have opened the 'black box', there is much more light to be shone therein.

Conclusion

How do NEDs act in contributing to organizational performance? This is particularly crucial in the new competitive environment in which firms find themselves (Hitt, Li, & Xu, 2016). And it is increasingly understood that top management contributes greatly to not only to key firm performance factors such as innovation and new venture creation (Krause, Li, Ma, & Bruton, 2019; Wang, Ahlstrom, Nair, & Hang, 2008) but also (ultimately) to country competitiveness and economic growth (Tomizawa, Zhao, Bassellier, & Ahlstrom, 2019). The key aspect of major contribution of NEDs to board effectiveness is their helping to seize opportunities with respect to sensemaking and enhanced organizational transformation. We asked how NEDs exercise their roles, individually and collectively, in the context of organization dynamic capability. In doing this we formulated NED dynamic capability relevant activities and their perceptual motivators. From a theoretical framework approach, this paper has shown that corporate governance and dynamic capability may be linked through resource dependence theory and that NEDs may exhibit an intention to provide resources to the organization in support of improved organization dynamic capability whereby self-efficacy can play a moderating role. This research contributes further to the understanding of the importance of directors to firm performance (Krause et al., 2019). Indeed if this paper could have one message, it is that a key contribution of NEDs lies primarily in the seizing and promoting of opportunities (decision-making) that have already been identified, and less so in initially identifying them, or in implementing them, the latter two of which are more the role of executive management. Future research in sensemaking, opportunity discovery, and application should also further consider nonexecutive directors and the important role they can play in enhancing firm innovation and performance.

Acknowledgements Authors wish to acknowledge valuable editorial advice from Professor David Ahlstrom.

Funding This research was supported by an Australian Government Research Training Program Scholarship.

APPENDIX 1

Directors were asked questions related to their duties and dynamic capability:

- Sensing: How do issues get on the board agenda? What systems are put into place to detect important issues? How does the board know the organization is facing threats or opportunities [and] how does it ascertain their severity? What activities does the board do to detect emerging threats and opportunities?
- Seizing: How does the organization deal with strategic threats and opportunities and what is the role of the board in that process? When you make a decision or delegate an issue (how) do you track its progress? What activities does the board do to formulate plans in response to the threats and opportunities?
- Transforming: What is the board's level of involvement around transformation (changing the organization or what it produces)?
- Generally (including duty related): What are your main concerns? Does governance of innovation matter [to the board]? Does the organization deal with threats and opportunities as well as it could? If not, how would you, as a board member, like to deal with them? What prevents you from acting the way you would like? What does it mean for the board to be (i.e., what type of activities signify) lightly or heavily involved? What does it mean for the board to play a small or big role? What are the important drivers [of board sensing, seizing and transformation related activities]? Does it matter if things happen at the board meeting or not? Is there a for/non-profit governance recipe?

During the interviews and focus groups, directors were asked to comment and add to the list of potential DC-relevant activities.

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