MNE performance during a crisis: An evolutionary perspective on the role of dynamic managerial capabilities and industry context

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Abstract:

As the likelihood of worldwide crises increases due to globalization and the resulting economic contagion, understanding why some multinational enterprises (MNEs) prevail in such environments becomes ever more critical. Drawing from the concept of dynamic managerial capabilities, we posit that MNE in-crisis performance is associated with the pre-crisis development of *asset management capabilities*, or the capacity of managers to orchestrate assets so as to extract more value from the firm's resource pool. Specifically, we argue that because dynamic managerial capabilities evolve as a response to a firm's task environment, MNEs that operate in dynamic industries develop stronger asset management capabilities. However, we also posit that whether these capabilities contribute to in-crisis performance is contingent upon the munificence of the industry environment in which the capability evolves. Asset management capabilities that evolve in munificent environments would encompass a wider spectrum of routine-altering activities, and thus increase the ability of the MNE to react to more revolutionary events, such as global economic crises. Conversely, asset management capabilities that evolve in resource-scarce environments will result in more strategic lock-in due to firms' constrained ability to experiment with novel resource configurations, resulting in poorer in-crisis performance. We test our hypotheses using a sample of 854 MNEs in the context of the global financial crisis of 2008, and find support for our hypotheses. We discuss implications for the dynamic capabilities view and MNE resilience.

Keywords: dynamic managerial capabilities | asset management capability | MNE resilience | economic crisis | industry dynamism | industry munificence | evolutionary logic

Article:

1. Introduction

Crises often surprise and catch organizations unprepared. The global financial crisis in 2008 resulted in a worldwide market capitalization loss of 19.4 USD trillion, a 46 percent drop compared to 2007 (Garelli, 2009). The staggering costs of low preparedness and ineffective action in the context of environmental jolts (Meyer, 1982), as well as the rising frequency of such events (Taleb, 2012), create a pressing need to study the ability of firms to not only survive,

but also perform well amid major environmental setbacks (Carmeli and Markman, 2011, Goll and Rasheed, 2011, Park and Mezias, 2005, Sutcliffe and Vogus, 2003, Wan and Yiu, 2009). Unfortunately, although failing organizations pose great economic and social risk, it remains unclear why firms decline or thrive during crises (Kunc & Bandahari, 2011). This issue is especially pertinent – yet understudied – for multinational enterprises (MNEs). While the multinational network structure of MNEs may provide them with the operational flexibility needed to expand or contract operations in troubled markets or regions (Chung, Lee, Beamish, & Isobe, 2010), such intra-firm shifts may be problematic in the face of a *global* crisis, such as the economic crisis of 2008, whereby adversity is worldwide (Westney, 2011). We therefore pose the following research question: *what factors explain performance differentials among MNEs during a global crisis?*

To begin answering our research question, we rely on the concept of dynamic managerial capabilities – "the capabilities with which managers create, extend, and modify the ways in which firms make a living" (Helfat & Martin, 2014: 2). These capabilities encompass activities by which managers continuously orchestrate assets into valuable resource combinations (Sirmon & Hitt, 2009), which makes them well-suited to explain performance differentials of MNEs during crises. We focus our attention on one key capability, namely, *asset management capability*, which captures the extent to which managers are able to configure resources so as to extract more value from the firm's resource base. Drawing from theory on industry recipes and managerial mental models (Shinkle and Kriauciunas, 2012, Spender, 1989), we leverage an evolutionary logic to argue that because dynamic managerial capabilities are partially shaped by a firm's task environment, MNEs that had been operating in dynamic global industries before the crisis would develop stronger asset management capabilities.

However, we also posit that whether asset management capabilities contribute to in-crisis performance is contingent upon the munificence of the industry environment in which the capability evolved before the crisis. Specifically, we theorize that asset management capabilities that evolve in munificent environments would encourage greater experimentation, and thus increase the ability of the MNE to react to more revolutionary events, such as global economic crises. Conversely, asset management capabilities that evolve in resource-scarce environments will result in more strategic lock-in due to firms' constrained ability to experiment with novel resource configurations, resulting in poorer in-crisis performance. Because asset management capabilities evolve as a means to adapt to a particular environment, they may result in overspecialization and lock-in that translate into a disadvantage amid unforeseen change (Burgelman, 2002). Yet, when these capabilities evolve in more munificent contexts, access to abundant growth resources in an industry encourages a wider spectrum of routine-altering activities and thus diminishes the path-dependent evolution of these routines when atypical change takes place (Daniel, Lohrke, Fornaciari, & Turner, 2004).

Overall, our research rests on the premise that performance during a crisis may be a function of pre-crisis strategic activities and the context that shapes these activities (Kraatz and Zajac, 2001, Meyer, 1982). While Jallat and Shultz (2011: 483) have noted that "[s]uccessfully diffusing a crisis requires an understanding of how to handle a crisis before it occurs," our research highlights the notion that performing well during a crisis may depend not only on preparedness, but also on the capabilities that evolve within the task environment, which may

have little to do with addressing crises per se. This is consistent with Ritchie's (2004) call for a more strategic and holistic approach to crisis management that takes into account both crisis and non-crisis activities.

We test our hypotheses using hierarchical linear modeling and a sample of 854 MNEs operating in 24 global industries. Consistent with our evolutionary predictions, we find support for a pre-crisis positive effect of global industry dynamism on asset management capability. During the crisis, however, the effect of asset management capabilities on MNE performance was only positive for MNEs operating in global industries that were munificent *before* the crisis. For asset management capabilities that were developed in more resource-scarce industries, their effect on in-crisis MNE performance was negative. These results suggest that while dynamic managerial capabilities may be a useful concept for explaining performance differentials during times of crisis, their relationship with in-crisis MNE performance is contingent upon the context in which such capabilities evolve.

Our study makes important contributions to two research streams. First, we provide insights to the bourgeoning literature on MNE resilience. For instance, previous literature has focused more on actions and implications at the subsidiary level in the context of crises (e.g., Chung et al., 2010, 2013). Other studies have focused more on pre-crisis and post-crisis performance in an international context (e.g., Lee, Beamish, Lee, & Park, 2009). We complement these studies by examining performance differentials *during* a crisis at the *enterprise* level (cf. Boubakri, Guedhami, & Mishra, 2010). Explicating the role of asset management capability and global industry context as sources of such performance differentials helps to "shed light on the nature of the MNE, and the foundations of SCA [sustainable competitive advantage]" (Teece, 2014: 9).[1]

Second, we offer novel insights to dynamic capabilities research. Whereas industry dynamism has often been cast as a boundary condition in the capabilities-performance relationship (Peteraf et al., 2013), we demonstrate that dynamic managerial capabilities may be an evolutionary *outcome* of operating in dynamic task environments (Wang & Ahmed, 2007). Further, few studies have examined the relationship between dynamic managerial capabilities and firm performance under extreme, unfavorable macro-environmental conditions (for two exceptions, see Makkonen et al., 2014 and Nair et al., 2014). Our study therefore sheds light on the performance implications of such capabilities, as well as their being contingent upon the context in which they develop. Importantly, existing literature has been heavily occupied with the role of environmental dynamism in the advantage-generating efficacy of dynamic capabilities, whereas our study offers theory regarding the role of other dimensions of the task environment, namely, munificence.

This paper is organized as follows. In the next section, we review relevant literature regarding crises and how MNEs respond to such unforeseen events, highlighting the theoretical gaps our study attempts to address. We then draw from the concept of dynamic managerial capabilities and evolutionary logic to develop theory regarding the development and in-crisis effectiveness of asset management capabilities. Next, we present the data and analyses of our study. A discussion of the theoretical and practical implications of our findings follows. We end with a discussion of

[1] By examining MNE performance during the economic crisis of 2008, this study contributes to emerging general theory of organizational resilience as well (e.g., Lengnick-Hall & Beck, 2009).

limitations and future research avenues that could further bolster theory of MNE resilience and the dynamic capabilities view.

2. Theoretical framework

2.1. Crises: consequences and coping strategies

A crisis is "a low-probability, high-impact event that threatens the viability of the organization and is characterized by ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly" (Pearson & Clair, 1998: 60). According to Jallat and Shultz (2011: 477), "crises are becoming more complex; they increasingly transcend boundaries, and affect many institutions… corporate crisis management remains an evolving area in many MNCs [multinational corporations]." It is inevitable that in a world of increasing levels of global interconnectedness, growing exposure of organizations to worldwide environmental jolts would take place. The economic crisis of 2008, for instance, was so pervasive that for many MNEs, the task was not as simple as divesting or leveraging flexibility to reduce activity in one subsidiary, while doing the opposite elsewhere (Bartnar & Bodnar, 2009; Chung et al., 2013).

Scholars have examined several organizational characteristics and actions that may facilitate better performance during crises. For instance, Meyer (1982) posited that an entrepreneurial organizational culture and adaptive ideology are the main strategic drivers of organizational resilience because they allow firms to detect the tremors and prepare for jolts. Further, firms may also engage in alliance formations (Park & Mezias, 2005) and acquisitions (Wan & Yiu, 2009) during a crisis to increase stock price and profitability. Others have noted that the firm's human resource management system may create the human capital needed to thrive under adverse conditions (Lengnick-Hall et al., 2011), and that enterprise risk-management systems may help hedge against economic downturns (Nair et al., 2014). Firms also exhibit patterns of learning in dealing with severe crises. Venkataraman and van de Ven, (1998) discovered that firms that survived jolts gained valuable experience that allowed them to exhibit stronger resilience in subsequent jolts. According to Chakravarthy (1982), proactive strategies coupled with an organic structure facilitate strong resilience to crises, as managers are more likely to anticipate environmental changes and make innovative decisions.

Chung et al. (2010, 2013), using real-options logic, found that MNEs may benefit from building operational flexibility in foreign subsidiaries, which allows them to invest/divest in crisis-stricken areas. This is consistent with Chung et al.'s (2008) earlier finding that the latent flexibility residing in multinational networks of foreign subsidiaries allows them to better cope with economic crises. Further, Wang, Huang, and Bansal (2005) found that business group affiliation, parent firm industry experience, and subsidiary experience have all contributed to superior subsidiary performance during the Asian crisis of 1997. From a financial perspective, Boubakri et al. (2010) have argued that concentrated family ownership may render investors more demanding and hence increase the cost of capital during crises.

While these studies propose several important organizational characteristics and actions as drivers of success in times of crisis, they are also limited in several regards. First, they do not specify the underlying capabilities of firms that enable a capacity for resilience (Kunc &

Bandahari, 2011). For instance, a firm might engage in acquisitions to enhance its growth during a crisis (Wan & Yiu, 2009), yet it might lack the managerial ability to "'stitch' and leverage on [acquired] resources and capabilities" (Carmeli & Markman, 2011: 331). Indeed, Grewal and Tansuhaj (2001) suggested that the *ability* to respond promptly to market opportunities and changing technologies enhances organizational performance during an economic crisis. Hence, although capabilities have been suggested to be relevant during a crisis (Lee et al., 2009; Markman et al., 2009; Yu, Sengul, & Lester, 2008), there have been few studies to explicate how and why.

Second, studies often focus on subsidiary-level actions/performance, and do not examine the performance of the MNE as a whole. This may not represent a limitation per se, as MNE performance is inextricably linked to the performance of subsidiaries. However, with the increasing likelihood of interconnected, *global* crises, a more holistic approach is warranted (Ritchie, 2004). In fact, most studies aimed at understanding superior performance during crises have not necessarily focused on international settings. As firms throughout the world continue to internationalize and deal with increasingly complex institutional and task environments, there is an impetus to understand what makes MNEs more successful during global crises. In the next section, we introduce asset management capability as a dynamic managerial capability, and then turn to discussing the theoretical underpinning of its evolution and relevance to MNE performance during a crisis.

2.2. Asset management capability as a dynamic managerial capability

Helfat and Winter (2011: 1244) defined an organizational capability as the "capacity to perform a particular activity in a reliable and at least minimally satisfactory manner." Dynamic capabilities are change-oriented organizational capabilities pertaining to the "capacity of an organization to purposefully create, extend, or modify its resource base" (Helfat et al., 2007: 4). Thus, dynamic capabilities utilize existing resources and capabilities while generating new ones (Danneels, 2008; Teece, Pisano, & Shuen, 1997).

Research on dynamic *managerial* capabilities focuses on the role of managers in systematically changing the resource base (e.g., Helfat and Martin, 2014, Rodenbach and Brettel, 2012, Sirmon and Hitt, 2009, Tripsas and Gavetti, 2000). Adner and Helfat (2003: 1012) maintained that a critical dynamic managerial capability is the capacity or skill of managers to continuously orchestrate resources into bundles that extract more value from the firm's resource pool (Sirmon et al., 2011). For instance, Sirmon and Hitt (2009) demonstrated among a sample of U.S. banks how bundling and deploying sophisticated resources in sophisticated markets, while bundling and deploying simpler resources in simple-service markets, allowed managers to extract more value from resource configurations, ultimately resulting in superior financial performance. In this paper, we refer to such capacity as *asset management capability*, formally defined as the extent to which managers are able to continuously orchestrate resources so as to extract more value from the firm's resource base.

Asset management capability results in changes by managers to the organizational resource base and the way assets are bundled to generate value. Essentially, it is a systematic activity by which managers combine and span the firm's strategic assets in an attempt to increase asset

productivity (Sirmon & Hitt, 2009). According to Teece (2012: 1398), systematic "asset orchestration (i.e. asset alignment, coalignment, realignment, and redeployment) is necessary to minimize internal conflict and to maximize complementarities inside and outside the enterprise." Additionally, because the value of assets may decrease as the environment changes, prior studies suggest that managers who develop stronger asset management capabilities may be able to extract higher value from, and decrease the value loss of, a given resource base (Dong, Xu & Zhu, 2009). Hence, asset management capability seems highly relevant in the context of a crisis, though it is still unclear how it may affect performance under such circumstances. We turn to this issue next.

2.3. The evolution of asset management capabilities and implications for in-crisis performance

According to Shinkle and Kriauciunas (2012), organizations adapt to their current circumstances, as managers scan the environment and, in response, develop capabilities and strategies. Indeed, varying competitive settings across task environments create heterogeneity in the bundles of assets that organizations accumulate and the capabilities that they develop (Teece et al., 1997, Wielemaker and Gedajlovic, 2011). Spender (1989) referred to this phenomenon as the emergence of "industry recipes" – the core set of beliefs and assumptions shared by managers in an industry. According to Brownlie and Spender (1995: 43), "[a]n organization's strategy is then typically configured within the bounds of this recipe. The recipe has cultural dimensions and does represent the collective managerial experience of an organization that is known to be so important in the formulation of strategy."

Holburn and Zelner (2010: 1293) explicated that, "[a]s a result of shared experiences… managers develop mental models – simplified representations of reality – which they then use to interpret the environment and guide their actions under conditions of uncertainty." As MNEs learn to deal with their respective task environments, they develop dynamic managerial capabilities through processes of learning and cognitive imprinting of routines (Holburn and Zelner, 2010, Kriauciunas and Kale, 2006, Roth and Kostova, 2003, Shinkle and Kriauciunas, 2012). Therefore, as a result of the differing survival requirements across industries (Eisenhardt & Martin, 2000), MNEs from different industries may exhibit some inter-industry variability and some intra-industry homogeneity in the way resources are allocated and utilized (Hitt and Tyler, 1991, McGahan and Victer, 2010, Reger and Huff, 1993). Indeed, prior work suggests that industry characteristics play a central role in the development of firm-level dynamic managerial capabilities (Eisenhardt and Martin, 2000, Vergne and Durand, 2011).

Dess and Beard's (1984) seminal work encompassed several dimensions of the task or industry environment, including dynamism, munificence, and complexity. However, subsequent studies have argued that dynamism and munificence are the key factors in strategic resource-allocation decisions and capability-building processes among firms (e.g., Baum and Wally, 2003, Keats and Hitt, 1988; Sirmon, Hitt, & Ireland, 2007; Subramanian & Youndt 2005; Weerawardena, O'Cass, & Julian, 2006). Importantly, prior work suggests that industries differ in the pace of change, thus shaping the intensity with which MNEs must develop asset management capabilities to perform well (Holburn and Zelner, 2010, McGahan and Victer, 2010, Winter, 2012). Accordingly, we first focus on industry dynamism, the extent to which the industry is characterized by change and uncertainty (Datta, Guthrie, and Wright, 2005; McCarthy,

Lawrence, Wixted, & Gordon, 2010), as an evolutionary antecedent to asset management capability (Dess & Beard, 1984; McNamara, Haleblian, and Dykes, 2008; McNamara, Vaaler, & Devers, 2003).

2.3.1. Industry dynamism: an evolutionary precursor to asset management capability

Dynamism in an industry creates pressure on firms to innovate and manage resources efficiently (Lazonick, 1993, Porter, 1990). As noted by Zahra, Sapienza, and Davidsson (2006: 931), "development and use of dynamic capabilities will vary with the rate of change in the industry itself." Indeed, Subramaniam and Youndt (2005) showed that firms' radical innovative capabilities tended to be stronger in dynamic industries. Similarly, Lampel and Shamsie (2003) found that regulatory shifts in the film-making industry pushed firms to develop dynamic capabilities that focused on resource bundling (also see Wang & Ahmed, 2007). Drawing from neuroscience and psychology research, Stamp's (1981: 280) assertion illustrates this process well:

> "[Managerial] capability defines the scope and complexity of the world which people construct and in which they operate. It is therefore reflected in the degree of uncertainty which people perceive and can tolerate, the scale of their view of the world, and the kind of inner structure which they bring to bear on the definition of problems and the pursuit of their solutions."

Prior research therefore suggests that dynamic environments may result in the development of dynamic managerial capabilities (Aragón-Correa and Sharma, 2003, Tripsas and Gavetti, 2000, Wang and Ahmed, 2007). In essence, managers operating in dynamic industries learn how to deal with such volatile settings, consequently developing a greater capacity to continuously reconfigure their firms' resources into valuable combinations (Rindova & Kotha, 2001). This is because dynamic managerial capabilities evolve in a path-dependent fashion, such that firms become even more efficient in their asset management capabilities over time when they operate in a dynamic environment that rewards such capabilities (Vergne & Durand, 2011). Consistent with this view, Narayanan, Colwell, and Douglas (2009) demonstrated how instability and uncertainty in the pharmaceutical industry pressured bio-tech firms to increase the effectiveness of their activities to derive value from new product development. Therefore, we expect that MNEs operating in more dynamic industries will respond to their task environment by developing stronger asset management capabilities than MNEs operating in more stable industries. Formally stated:

> **Hypothesis 1.** Industry dynamism is positively related to asset management capability of MNEs.

2.3.2. Asset management capability and in-crisis performance: the role of industry munificence

Asset management capability represents a capacity to "do more with less" or at least "do more with the same" (Martin, 2011), which may prove useful as a buffer against environmental jolts. For instance, Grewal and Tansuhaj (2001) found that the ability of Thai firms to effectively manage their resource pool was positively associated with their performance after the Asian

economic crisis of 1997. Past research has argued that asset management capability may enhance MNEs' adaptive capacity and evolutionary fit (Flier, Van Den Bosch, & Volberda, 2003; Kor & Mesko, 2013), as it increases the fungibility of firm resources. Fungibility is an attribute of a resource or capability that "facilitates its application to different organizational and market settings" (Anand & Singh, 1997: 101). By developing an ability to continuously reorganize assets for value creation, managers enhance the potential of a resource to be rebundled or repurposed when environmental conditions change (O'Brien & Folta, 2009). Indeed, prior studies suggest that asset management capability may be "especially critical in times of decline, when uncertainty and ambiguity tend to be (unusually) high" (Walrave, van Oorschot, & Romme, 2011: 1739).

However, asset management capability evolves as a means to adapt to *particular* changing environments, as managers continuously reconfigure existing resources into new combinations that extract more value from the MNE's resource pool (Bradley et al., 2011; Lahiri, Kedia, & Mukherjee, 2012). Put differently, the path-dependent nature of asset management capability development can be a source of advantage as the environment evolves, but it can also lead to strategic and cognitive lock-in if the environment experiences more atypical changes, creating a mismatch between firm capabilities and the environment (Vergne & Durand, 2011). Once asset management capabilities are learned, significant new learning typically does not occur again unless instigated by a large environmental change, such as a crisis (Helfat, 2000). Hence a black-swan event, such as an unexpected economic crisis, may lead to a competitive *disadvantage* for firms that have developed asset management capabilities. Essentially, these firms continue to deploy routines developed during evolutionary times, even though the environment may necessitate revolutionary activities.

Indeed, empirical research has demonstrated that firms continue deploying strategies that have made them successful in the past, even though radical environmental changes make these strategies untenable (Audia, Locke, & Smith, 2000; Burgelman, 2002). Similarly, prior research points to the potential negative outcomes of dynamic capabilities under circumstances of higher volatility (e.g., Schilke, 2014), as the likelihood of finding the "right" resource configuration may be diminished (Ambrosini and Bowman, 2009, Nair et al., 2014). This may be the case particularly for MNEs with capabilities that better fit pre-crisis conditions, because such fit indicates higher specialization in a particular type or set of industry changes (Schreyögg & Kliesch-Eberl, 2007).

Evidently, there exists a theoretical tension between the two views presented above, resulting in conflicting expectations about the efficacy of asset management capability during a crisis. That is, the ability to extract more value from existing resources is thought to be important during a crisis, yet reliance on previously learned capabilities could be a source of strategic inertia during a time when significant, path-breaking changes are warranted. We argue that this tension can be at least partly resolved by considering the munificence of the industry environment in which the asset management capability evolves.

Munificence refers to the abundance of resources for growth within an industry (Castrogiovanni, 1991). According to Aragón-Correa and Sharma (2003: 81), munificence provides "resources for exploration and innovation, facilitates conflict resolution, and helps maintain organizational

coalitions." The richness of resources in the environment reduces the potential drawbacks of poor resource configurations (Sirmon et al., 2007). Thus, when the MNE invests in developing a stronger asset management capability in an industry characterized by abundant growth resources, managers are likely to find more opportunities for innovative resource combinations, more resources for the development and exploration of new routines and activities, and more incentives to deploy proactive strategies (Rueda-Manzanares, Aragón-Correa, and Sharma, 2008).

Although MNEs in both munificent and resource-scarce industries can develop superior capacities to continuously manage their assets productively, access to abundant growth resources in an industry encourages a wider spectrum of routine-altering activities (Rueda-Manzanares et al., 2008, Sirmon et al., 2007). This is because a munificent environment facilitates the acquisition of new information and resources that could be combined with existing ones, as well as encourages more heterogeneous changes among firms within the industry (Luo, 2001, Teece, 2012). Put differently, munificence encourages the fungibility-enhancing aspects of asset management capabilities. Consequently, experience with a broader repertoire of resource-combinations may render MNE managers who developed superior asset management capabilities better equipped to identify and span resources into valuable resource-configurations when environmental conditions change drastically (Sirmon et al., 2010). In other words, MNEs in both munificent and resource-scarce industries may possess superior asset management capabilities relative to their competitors, but the capabilities developed in munificent environments would exhibit a wider spectrum of creative resource configurations, and thus increase the ability of the firm to react to revolutionary events, such as global economic crises.

Resource-scarce industry environments are less forgiving to MNEs that lack fit, so managers are pressured to focus on competition, efficiency, and specialization, rather than fungibility. Successful specialization and enhanced fit provide incentives to further specialize and bank on strategic momentum, while at the same time reducing incentives for distant search and experimentation outside of incremental improvements to reinforce fit (Burgelman, 2002). Hence, the most productive MNEs, those possessing a superior asset management capability, may find themselves overly specialized and too focused on their immediate task environment when a crisis hits. Conversely, MNEs operating in munificent environments are likely to divert managerial attention to deploying asset management capabilities towards the development of more novel resource configurations. This broader repertoire of resource configurations would allow these MNEs to exhibit less lock-in and be better positioned to identify newly valuable resource configurations, thus making them more likely to perform well during a crisis.

Taken together, we posit that the industry munificence in which the asset management capability evolves acts as a contingency to the value an MNE may derive from such dynamic managerial capability in the face of a crisis. Formally stated:

> **Hypothesis 2.** Industry munificence in the pre-crisis period moderates the effect of asset management capability on MNE performance during a crisis, such that asset management capability is positively related to MNE in-crisis performance in munificent industries and negatively related to MNE in-crisis performance in resource-scarce industries.

To summarize our theoretical arguments, we posit that industry dynamism during the pre-crisis period will act as an evolutionary antecedent to the development of an asset management capability, which then affects MNE performance during a crisis, contingent upon pre-crisis industry munificence. The conceptual model illustrating these relationships is presented in Fig. 1.

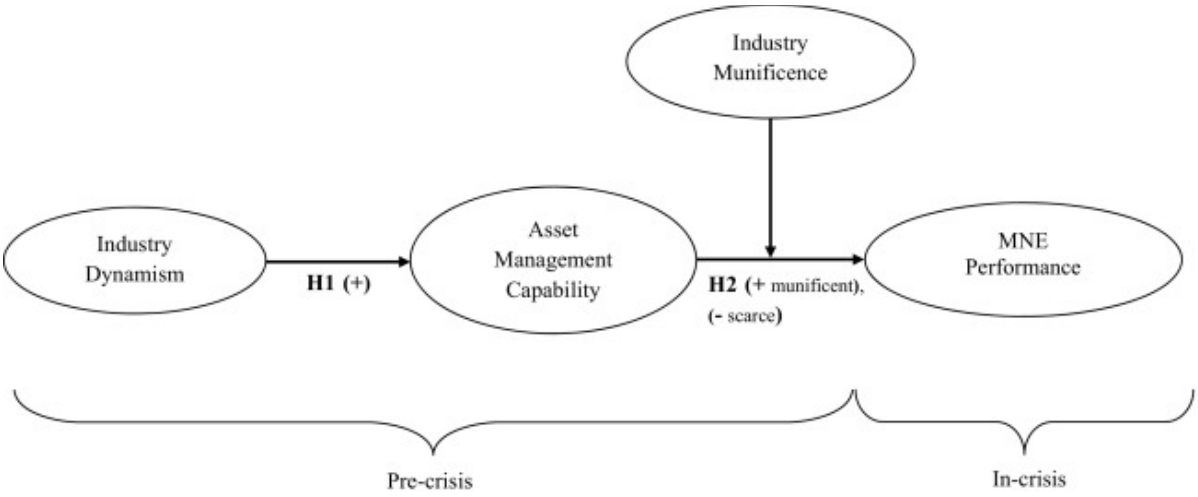

Fig. 1. Conceptual Model.

3. Data and methodology

3.1. Data source and sampling procedure

Data for this study were procured via the Bloomberg database, a comprehensive data source that includes information about more than 60,000 companies around the world (Bloomberg, 2013). Bloomberg L.P., a financial data vendor, provides a computer system that allows users to remotely access real-time and historical data. We focus on the financial crisis of 2008 as the most recent, large-magnitude crisis. This crisis is an interesting natural experiment of firm performance amid dramatic environmental changes (Park & Mezias, 2005).

We initiated the sampling procedure by screening out private firms, as data pertaining to such firms are largely unavailable. Next, due to the global nature of this crisis, we sampled large, publicly-traded enterprises, as these were at the forefront of the 2008 global economic crisis (Bartram & Bodnar, 2009). Specifically, firms that were included in the global top 10th percentile of total assets, market capitalization, and revenue as of 2007 were retained for further analysis. The sampled enterprises appeared on the Forbes Global list as of 2007. After removing several missing data entries, the final sample includes 854 MNEs from 52 home countries. We focus on MNE performance during 2008, as this year represented the lion's share of the collapse in capital markets (Bartram & Bodnar, 2009). As presented in Fig. 2, by the end of 2008, the Standard and Poor's 500 index has undergone the bulk of the downswing, reaching an all-time low on March 2nd of 2009.

Fig. 2. Standard and Poor's 500 Index Before, During, and After the 2008 Economic Crisis.

3.2. Measurement

3.2.1. MNE in-crisis performance

A variety of approaches may be employed to examine an MNE's performance amid crises (see Markman & Venzin, 2014 for an expanded discussion). Here, it was particularly important to capture MNE performance in 2008 in order to test our hypotheses during the crisis. Hence, consistent with prior literature (e.g., Wan & Yiu, 2009), we measured financial performance as the return on assets (ROA) during 2008 (Hsu & Wang, 2012).

3.2.2. Asset management capability

To measure asset management capability, we relied on a framework provided by Tang and Liou (2010). As such capabilities are largely unobservable, a specific ensemble of financial indicators can serve as a valid proxy for differences in asset management capability (Tang & Liou, 2010). Recently, Stadler, Helfat, and Verona (2013: 1792) have argued that "by using a measure that reflects key underlying attributes of dynamic [managerial] capabilities, we [can] capture the potential for a firm to obtain and develop new resources." This is consistent with Tang and Liou's (2010: 49) assertion that "capabilities of firms can be inferred from their observable financial indicators."

Based on Tang and Liou (2010), we measured asset management capability as the factor score of asset depreciation to sales ratio (i.e., an indicator of diminishment in resource value) and asset turnover ratio (i.e., an indicator of value extracted from resources). Notably, these ratios represent value loss and extraction with regards to both tangible and intangible resources (IASPlus, 2013). According to Dietrich and Sorensen (1984: 396), "[l]ow [asset] turnover represents an inefficient use of assets – it may indicate that current management has undertaken heavy investment but been unable to generate sales growth." Similarly, Pan and Tse (2000) found that firms with higher asset turnover ratios are more likely to employ an equity-

based expansion strategy abroad, likely due to their superior ability to manage assets in such challenging endeavors. Furthermore, Liou, Tang, and Huang (2008) maintained that a lower depreciation to sales ratio represents the ability of managers to implement a lighter asset structure and manage their resources with minimal value erosion (Liou & Gao, 2011).

To establish temporal precedence between asset management capabilities and performance, as well as ensure that these capabilities were still in place at the beginning of the crisis, we obtained data from 2005 to 2007 for each financial indicator (Chatterjee & Hambrick, 2007). This is also consistent with Kor and Mahoney (2005), who maintained that a period of three years is required to properly capture such capabilities. We calculated the average for each indicator across the three years examined prior to extracting the factor score because the inclusion of each year separately may bias the results by treating the six indicator-years as separate, rather than as a temporal sequence of a single variable.

3.2.3. Industry dynamism and munificence

Consistent with previous studies (e.g., Anderson and Tushman, 2001, Child, 1975; Dess, Ireland, & Hitt, 1990; McNamara et al., 2008; Misangyi et al., 2006; Subramanian & Youndt, 2005), industry dynamism and munificence were obtained by first regressing total industry demand on a year-count variable for a period of five years (2003–2007). Then, munificence was measured as the slope coefficient divided by the mean value of industry sales for the five year period. Dynamism was measured as the standard error of the regression slope coefficient divided by the mean value of industry sales for the examined period.

Due to the global nature of our sample, we created industry variables using the Global Industry Classification Standard (GICS; MSCI, 2013). According to Bhojraj, Lee, and Oler (2003), GICS codes are more stable over time than other commonly used standards (e.g., SIC, NAICS). We grouped MNEs into global industries based on 4-digit GICS codes, as grouping into 2-digit industries resulted in only 10 industries at level 2, which poses a major concern when utilizing hierarchical linear modeling to predict relationships at levels higher than level 1 Cohen, 1998, Hoffman, 1997, Raudenbush and Bryk, 2002, Snijders and Bosker, 1994; Raudenbush, Bryk, Cheong, Congdon, & Toit, 2011). That is, significant effects may go undetected. Further, grouping into 6-digit industries (i.e., 165 groups) poses an opposite obstacle, whereby many industries include too few MNEs. Also, 6-digit grouping may create confounding effects, as many of these MNEs operate in several related sub-industries. Hence, a 4-digit grouping was deemed most appropriate to balance the above mentioned issues. The industry level of our data is comprised of 24 groups.[2]

3.2.4. Control variables

Based on prior studies, we included several control variables at both the industry and the firm levels that were expected to affect asset management capability and/or performance (Bradley et al., 2011, Dess and Beard, 1984, Grewal and Tansuhaj, 2001, Hsu and Wang, 2012, Lee et al., 2009, Wan and Yiu, 2009, Zúñiga-Vicente and Vicente-Lorente, 2006). Larger firms may have more resources available to utilize in times of crisis, and leveraged firms may experience severe

[2] Dynamism and munificence values for each of the 24 industries are available from the authors.

liquidity problems during a crisis, regardless of their managerial capabilities. Hence, we controlled for firm size and leverage. Firm size was calculated as the logarithmic transformation of total assets as of 2007 (Liu et al., 2014); leverage was measured as total liabilities to total assets as of 2007. In addition, we controlled for prior performance, measured as average ROA during 2005–2007, to partial out potential competitive advantages some companies may have had going into the crisis (see generally, Chacar, Newburry, & Vissa, 2010).

At the industry level, it was important to rule out alternative explanations to dynamism for heterogeneity in asset management capabilities. Therefore, we controlled for (1) industry complexity, calculated as the average four-firm concentration ratio in each industry over the examined period (Hay and Morris, 1979, Misangyi et al., 2006); (2) industry capital intensity, calculated as the median fixed assets to sales ratio in each industry over the examined period; (3) industry profitability, calculated as the median ROA in each industry over the examined period; and (4) industry productivity, calculated as the median revenue per employee in each industry over the examined period. Finally, we included a measure of in-crisis munificence (i.e., demand growth rate in 2008) in the models predicting performance to rule out the effects of current munificence on performance. We relied on median values, as means were severely skewed by outliers. Descriptive statistics and correlations of all the study's variables are presented in Table 1.

Table 1. Descriptive Statistics and Correlations.

Variable		Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1	MNE in-crisis performance	0.03	0.09	1.00										
2	MNE pre-crisis performance	0.05	0.04	**0.22**	1.00									
3	Asset management capability	0.00	1.00	**−0.14**	−0.04	1.00								
4	MNE Size	24.36	1.25	0.02	**−0.26**	0.00	1.00							
5	MNE Leverage	4.19	1.48	0.02	**−0.33**	−0.01	**0.41**	1.00						
6	Industry profitability	3.38	1.42	0.03	0.05	**−0.12**	0.04	0.03	1.00					
7	Industry productivity	271.24	119.87	−0.06	−0.03	**0.14**	**−0.07**	**−0.07**	0.03	1.00				
8	Industry capital intensity	0.48	0.43	**0.18**	**0.15**	**0.16**	0.04	0.02	**0.13**	**0.17**	1.00			
9	Industry complexity	0.21	0.09	0.04	0.01	−0.03	**−0.08**	−0.01	0.05	**0.08**	0.07	1.00		
10	Industry dynamism	0.01	0.01	**−0.12**	−0.04	**0.35**	0.04	−0.03	**−0.42**	0.00	**−0.16**	**−0.31**	1.00	
11	Industry munificence	0.15	0.04	0.02	**0.09**	**0.22**	**0.07**	0.01	**−0.26**	**−0.08**	**0.15**	**−0.21**	**0.57**	1.00
12	In-crisis industry munificence	5.24	5.36	**−0.14**	−0.04	**0.04**	0.01	−0.02	**−0.12**	**0.14**	−0.02	0.03	**−0.03**	**−0.01**

Note: N = 854. Correlations in bold are significant at least at the 0.05 level.

3.3. Analytic approach and model specification

We employed two-level (global industry and firm) hierarchical linear modeling (HLM), a statistical method well-suited for nested data (Hofmann, 1997; Short, Ketchen, Palmer, & Hult, 2007). The HLM technique is based on a Bayesian estimation approach and allows for the simultaneous estimation of fixed effects and variance (i.e., random) components across levels of analysis (Hoffman & Gavin, 1998; Hoffman, 1997). Because MNEs are nested within global industries, asset management capability and financial performance of MNEs from the same global industry are expected to exhibit significant within-industry homogeneity that may violate the independence and homoscedasticity assumptions of ordinary least squares regression (Raudenbush and Bryk, 2002, Short et al., 2007).

To ensure that the data exhibit sufficient within-group effects, we calculated the intra-class correlation coefficient (ICC) for asset management capability and ROA by running null models, where only variance components are estimated for each of the levels. The significant ICCs for asset management capabilities (ICC = 0.40, $p < 0.01$) and ROA (ICC = 0.19, $p < 0.01$) showed that global industry accounts for a substantial portion of the variance in these variables. We also examined a 2-level model where MNEs were nested in home countries. Not surprisingly with such a global sample, the country effect accounted for less than 0.5 percent ($p > 0.10$) of the variance in these variables. Thus, we proceeded with a 2-level model, using global industry as the grouping variable.

Prior to conducting analyses, we centered all industry variables using the Grand Mean Centering approach (Hofmann & Gavin, 1998). However, we used the Group Mean Centering approach for asset management capability and other firm-level variables, especially since a cross-level interaction was of interest in this study (Enders & Tofighi, 2007). Further, group mean centering helped in addressing structural industry differences in financial indicators, such as asset turnover ratio, and thus allowed for a more comparable examination of asset management capability (i.e., relative to industry peers).

4. Results

4.1. General overview

An initial examination of Table 1 reveals that while ROA of the average MNE dropped from 5% to 3% between the pre-crisis period and 2008, the standard deviation increased from 4% to 9%. These statistics highlight the value of studying the 2008 economic crisis as a natural experiment. Not surprisingly, when environmental conditions exhibit sudden decline, firms tend to perform worse, on average. At the same time, it seems, the distinctions between superior and poor performers become clearer.

Table 1 also suggests some interesting relationships among variables. For instance, while asset management capability is significantly and negatively related to MNE in-crisis performance, it is not significantly related to MNE pre-crisis performance. Given that this capability is in place in the pre-crisis period, these correlations suggest that the capability may have differential effects during times of crisis, which further highlights the importance of studying the crisis context. Similarly, firm size and leverage seem to exhibit a statistically significant correlation with pre-crisis performance, but not on in-crisis performance. Together, these patterns suggest capabilities may work differently during a crisis, though the correlation (0.22, $p < 0.05$) between pre-crisis and in-crisis performance unsurprisingly suggests that MNEs that did well before the crisis had, on average, a slight advantage going into the crisis.

4.2. Hypotheses testing

Table 2 presents the results for the test of the Hypotheses. Models 1 and 2 examine asset management capability as the dependent variable, while Models 3 and 4 examine MNE performance during 2008 as the dependent variable. Model 1 includes only control variables at

the industry and firm level, of which only munificence ($\beta = 6.195$, $p < 0.05$) was significant. This result implies that MNEs operating in industries with better access to growth resources may exhibit stronger asset management capability. In Model 2, industry dynamism was added, and munificence ceased to be a significant predictor of asset management capability. The results provide support for Hypothesis 1, as industry dynamism was significantly and positively related to asset management capability ($\beta = 51.831$, $p < 0.05$). Additionally, deviance decreased between Model 1 and Model 2. Deviance is a measure of model fit, with numbers closer to zero generally indicating better fit than numbers farther from zero. The difference in deviance between two hierarchical linear models has a chi-square distribution, allowing for a test of statistical significance using degrees of freedom, which is equal to the difference in the number of estimated parameters in the two models. Model 2 saw a significant decrease in deviance from Model 1, indicating better model fit (Hox, 2010).

Table 2. Results of HLM Analyses. Predicting Asset Management Capability and In-crisis MNE Performance Predicting Pre-crisis and In-crisis Performance.

	Asset Management Capability		**In-crisis MNE Performance**	
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Intercept	−0.118 (0.125)	−0.118 (0.108)	0.035 (0.008)**	0.035 (0.008)**
Control variables				
Industry complexity	−0.360 (1.038)	0.818 (1.117)	0.0509 (0.079)	0.057 (0.077)
Industry profitability	−0.052 (0.044)	−0.004 (0.046)	−0.002 (0.004)	−0.002 (0.004)
Industry productivity	0.001 (0.001)	0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)
Industry capital intensity	0.445 (0.228)	0.710 (0.208)*	0.028 (0.012)*	0.026 (0.010)
MNE size	−0.012 (0.019)	−0.011 (0.018)	0.001 (0.002)	0.001 (0.001)
MNE Leverage	0.008 (0.020)	0.006 (0.020)	0.006 (0.003)*	0.006 (0.003)*
MNE pre-crisis performance	−1.279 (0.918)	−1.432 (0.913)	0.618 (0.154)**	0.607 (0.151)**
In-crisis industry munificence			0.001 (0.001)	0.001 (0.001)
Industry predictors				
Industry munificence (MUN)	6.195 (2.556)*	2.814 (2.491)	−0.160 (0.151)	−0.133 (0.153)
Industry dynamism		51.831 (18.723)*	−0.677 (1.423)	−0.855 (1.471)
Firm-level predictors				
Asset Management Capability (AMC)				−0.009 (0.002)**
Interactions				
AMC x MUN				0.151 (0.048)**
N	854	854	854	854
Deviance	2087.662	2083.933	−1986.748	−1941.495
$\chi 2$ Statistic Change		3.729*		45.908**

Note: Values represent unstandardized coefficients with corresponding robust standard errors in parentheses.
* $p < 0.05$. ** $p < 0.01$ (two-tailed significance tests).

Model 3 includes only control variables at both the industry and the firm levels as predictors of performance during the crisis. As expected, prior performance was positively and significantly ($\beta = 0.618$, $p < 0.01$) related to in-crisis performance. Additionally, leverage was positively and significantly related to performance ($\beta = 0.006$, $p < 0.05$). Hypothesis 2 posited that asset management capability would be positively related to MNE performance only when pre-crisis industry munificence was higher. We tested this hypothesis in Model 4 by adding the asset management capability variable and the interaction term between asset management capability and pre-crisis munificence. As can be seen in Model 4, this hypothesis was supported. The

interaction between asset management capability and industry munificence was positively and significantly ($\beta = 0.151$, $p < 0.01$) related to MNE performance during the crisis. Once again, deviance improved significantly from Model 3 to Model 4, indicating better model fit.[3]

To gain further insight into the nature of the moderating effect, we plotted in Fig. 3 the interaction between asset management capability and industry munificence using one standard deviation above and below the mean of the interacting variables (Aiken & West, 1991). Indeed, consistent with Hypothesis 2, increasing levels of asset management capability were associated with better MNE in-crisis performance when industries were more munificent before the crisis. However, in low-munificence industries, increasing levels of asset management capability were associated with lower MNE in-crisis performance.

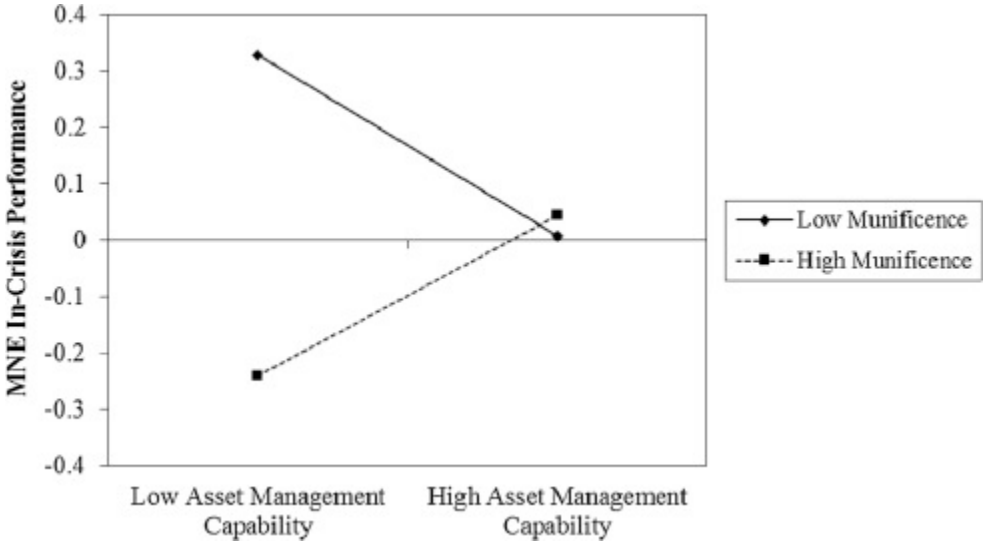

Fig. 3. The Moderating Role of Pre-crisis Industry Munificence.

4.3. Additional analyses

To add rigor to our empirical analyses, we ran several supplementary tests. First, we analyzed MNE performance in the pre-crisis period (see Models 1 and 2 in Table 3).[4] There were several noteworthy differences in the drivers of performance before the crisis vis-à-vis during the crisis. At the industry level, munificence had a positive effect before the crisis; during the crisis, it was insignificant. At the firm level, asset management capability did not influence performance before the crisis, but it did influence performance during the crisis, contingent on the munificence of the industry during the time period that the capabilities evolved. Next, we included an interaction term between industry munificence and asset management capability to see if the effect of munificence on asset management capabilities holds during non-crisis times. This interaction effect was insignificant. Taken together, these results indicate the drivers of MNE performance are different during a crisis, particularly the roles of asset management capabilities and industry munificence.

[3] Note that the likelihood function on which the deviance statistic is based can exceed 1, in which case the deviance will be negative (SSI, 2016). This is the case in Models 3 and 4. Importantly, we see improvement in fit as deviance is getting closer to zero from Model 3 to Model 4.

[4] We thank an anonymous reviewer for this insightful suggestion.

Table 3. Additional Analyses.

	Pre-Crisis Performance		In-Crisis Performance
Variables	**Model 1**	**Model 2**	**Model 3**
Intercept	0.051 (0.003)**	0.051 (0.003)**	0.035 (0.008)**
Control variables			
Industry complexity	−0.047 (0.017)*	0.046 (0.018)	0.060 (0.093)
Industry profitability	0.002 (0.001)*	0.002 (0.001)*	−0.004 (0.003)
Industry productivity	0.001 (0.001)	0.001 (0.001)	−0.001 (0.001)
Industry capital intensity	−0.001 (0.005)	−0.001 (0.005)	0.034 (0.01)*
MNE size	−0.003 (0.001)*	−0.002 (0.001)*	0.002 (0.002)
MNE Leverage	−0.005 (0.001)**	−0.005 (0.001)*	0.005 (0.002)*
MNE prior performance	0.684 (0.035)**	0.687 (0.035)**	0.487 (0.129)**
Industry predictors			
Pre-crisis Industry munificence (MUN)	0.163 (0.055)**	0.204 (0.068)*	
In-crisis Industry munificence (CMUN)			0.001 (0.001)
Pre-crisis Industry dynamism	−0.390 (0.437)	−0.392 (0.443)	−1.203 (1.641)
Firm-level predictors			
Asset Management Capability (AMC)	−0.001 (0.002)	0.001 (0.001)	−0.008 (0.003)**
Interactions			
MUN X AMC		−0.050 (0.044)	
CMUN X AMC			0.001 (0.001)
N	854	854	854
Deviance	−3356.450	−3357.424	−1911.3953

Note: Values represent unstandardized coefficients with corresponding robust standard errors in parentheses.
* $p < 0.05$. ** $p < 0.01$ (two-tailed significance tests).

Second, we tested the role of industry munificence *during* the crisis to see if it affected asset management capability's impact on in-crisis performance (see Model 3 in Table 3). Results indicated that the interaction of in-crisis munificence and asset management capability was not significant. This finding lends additional support to our contention that the environment in which capabilities evolve *before* a crisis influences their efficacy *during* a crisis.

5. Discussion and conclusions

5.1. Implications

Our study has several important implications for research on MNE resilience and dynamic capabilities. First, the organizational resilience literature is still in a nascent stage (Carmelli & Markman, 2011; Lengnick-Hall, Beck, & Lengnick-Hall, 2011); even less has been done to address MNE resilience. While studies of firm or subsidiary survival and longevity abound, much less attention has been given to MNE performance in the midst of crises. We contribute to this literature by examining a key dynamic managerial capability, namely, asset management capability. We use an evolutionary logic to conceptualize the pre-crisis drivers and in-crisis consequences of stronger asset management capabilities. Our empirical analyses demonstrate the nuanced impact of this capability on MNE performance during a global crisis. Specifically, we find that dynamic task environments push firms to develop capabilities needed to deal with change, but preparedness for one type of change may not necessarily generalize to other types.

According to Linnenluecke, Griffiths, and Winn (2011: 8), "Organizations that are highly 'optimized' to deal only with certain environmental conditions, are more likely to experience a lack of resilience against unexpected shocks." Hence, we offer novel conceptual insights to emerging theory on MNE resilience by highlighting the importance of MNEs' capabilities for asset management as factors affecting their resilience.

Second, we offer insights to the dynamic capabilities view. Our study supports the notion that dynamic managerial capabilities may not be simply for dynamic environments, but also *from* dynamic task environments (Li & Liu, 2014). Even though managers have agency in developing and deploying dynamic managerial capabilities (Sirmon & Hitt, 2009), past research has suggested that such capabilities evolve as a response to the environment (Barrales-Molina, Bustinza, & Gutiérrez-Gutiérrez, 2013; Eisenhard & Martin, 2000; Winter, 2012). Indeed, the findings of this study highlight that the rate of change in the task environment can act as a driver of a key dynamic managerial capability. Thus, we advance and suggest new avenues for the understanding of where dynamic capabilities "come from" (Zollo & Winter, 2002: 340).

However, we also argue and show that the path-dependent, evolutionary nature of dynamic managerial capabilities, such as asset management capability, might render them less effective when the MNE encounters unforeseen, black-swan events (Schilke, 2014), wherein managers experience difficulties in identifying and creating productive resource bundles (Ambrosini & Bowman, 2009). Even though dynamic managerial capabilities have been posited to result in *sustainable* competitive advantage (Helfat and Martin, 2014, Teece, 2007), our examination of asset management capability during the 2008 global crisis suggests that this assertion may require a bit more nuance, particularly if discussed in the context of unforeseen change, such as crises. More research is needed to uncover the contingencies within the dynamic capabilities-performance relationship in order to advance a more precise and complete theory of dynamic managerial capabilities (Fainshmidt et al., 2016).

According to Schilke (2014: 181), "dynamic capabilities are not always an adequate means of change, even if there is a significant need for resource configurations." Our study suggests that the munificence of the task environment in which the capability evolves can shape its effectiveness in addressing less typical change, such as a global economic crisis. In doing so, we also qualify Lengick-Hall and Beck's (2005) assertion that dynamic managerial capabilities are potential proxies for resilience. Such capabilities may contribute to an MNE's resilience, depending on the context surrounding the capability's evolutionary path. Hence, our findings emphasize that the efficacy of dynamic capabilities in general may be shaped by the way the MNE *interacts* with its task environment over time. This process deserves more attention within dynamic capabilities research to better understand the performance outcomes of such capabilities.

Finally, we contribute to research of the fungibility of resources. In essence, while organizations can enhance fungibility and thus generate more strategic options, fungibility itself is context-dependent. Similarly, resilience may take various shapes and have distinct requirements in different environments. In resource-scarce environments, for example, prior research indicates that resilience to crises may be enhanced by developing "tight" networks and customized strategies (Almor, 2011); in munificent environments, a more patterned process of initiating pre-

adaptations may be more effective (Barnett & Pratt, 2000), as the task environment provides abundant resources for experimentation that in turn facilitates flexibility through extending the spectrum of environmental changes the MNE can handle. These insights are relevant to resource-based theory as well as the literature on crisis management.

Our study has implications for MNE managers as well. As our results show, managers often pursue capability development within their MNE as a means to address their immediate task environment. However, managers also have agency over the types of capabilities their firm develops and the intensity with which the firm attempts to optimize itself for task-environment conditions. The strategic choices managers make within the bounds of this agency will matter for organizational resilience or how well their organization performs in the face of atypical change. For instance, our evolutionary perspective suggests that managers in munificent industries can enhance their firms' resilience by developing dynamic managerial capabilities, such as asset management capability. They can do so by leveraging the resources available in their industry to pursue more valuable combinations, but at the same time experimenting with unusual initiatives and "what if" configurations.

Conversely, managers in more resource-scarce settings may increase resilience by not pursuing systematic activities to extract more value from resource configurations. Rather, these managers may be better off relying on ad-hoc change and allocating managerial effort toward engaging in distal search. These developmental paths may help such MNEs identify valuable resource configurations when a drastic change occurs. Within the MNE, this may entail increased focus on shared learning within the network of subsidiaries. Additionally, subsidiaries operating in resource-scarce environments could utilize the MNE network to access resources through subsidiaries in more munificent settings, so that they can experiment with resource configurations and thus enhance resilience.

5.2. Limitations and conclusion

This study has some limitations that may provide fruitful avenues for future research. First, while the focus of the study was on in-crisis performance, focusing on the performance implications of dynamic managerial capabilities during the "upswing" years (e.g., Nair et al., 2014) is warranted. Second, while our study employs ROA to measure financial performance, examining other performance metrics may uncover new insights as to how dynamic managerial capabilities shape resilience to crises. In a similar vein, asset management is one among many dynamic managerial capabilities MNEs may possess that may prove effective during a crisis. Third, as our sample consisted of large MNEs, an examination of a different sample of firms, such as born-globals, may provide additional insights. Fourth, as suggested by McCarthy et al. (2010), environmental dynamism and munificence may be multi-faceted, multi-level constructs. Although we followed established literature in conceptualizing and operationalizing these constructs, we acknowledge the imperfect nature of these measures in capturing these complex constructs. More nuanced and holistic approaches are warranted in future examinations of the role of the task environment in the performance of dynamic capabilities.

Finally, one could argue that because total assets serve as a denominator in both asset turnover ratio and ROA, the relationship between the two is inherently positive. Additionally, a higher

turnover ratio may mean higher revenues, which should lead to higher profits and thus higher ROA. However, that is likely not the case in our sample, as can be seen from the negative correlation ($r = -0.14$; $p < 0.05$) between asset management capability and firm performance in Table 1, as well as from the HLM analyses. In fact, while a firm can have a strong asset management capability that yields higher revenues, there could be inefficiencies and weaknesses in other capabilities that erode the value created by a strong asset management capability. Further, we created a lag between measuring asset turnover ratio (i.e., 2005–2007) and performance (i.e., in 2008), representing substantially different competitive conditions. Finally, we derived an underlying, unobservable factor based on asset turnover ratio *and* depreciation to sales ratio, which is not equivalent to an asset turnover ratio by itself.

Despite these limitations, we believe that this study moves forward scholarly understanding of why some MNEs prevail during crises. We hope that the theory and findings presented here spur additional and more nuanced examinations of MNE resilience and the evolution and efficacy of dynamic managerial capabilities.

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