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Dynamic Capabilities and Resilient Organizations Amid Environmental Jolts

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DYNAMIC CAPABILITIES AND RESILIENT ORGANIZATIONS AMID ENVIRONMENTAL JOLTS

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ABSTRACT

Despite a growing body of research on dynamic capabilities, their contribution to competitive advantage and firm performance, as well as their origins remain unclear. This three-essay dissertation integrates the literatures on dynamic capabilities, environmental jolts, and imprinting theory to examine the following research questions:

1) What is the relationship between dynamic capabilities and firm performance?

2) How do dynamic capabilities influence firm performance during environmental jolts? and

3) What is the role of industry conditions in the development of dynamic capabilities and the dynamic capabilities-performance relationship?

While several scholars have suggested that dynamic capabilities should lead to superior firm performance, others put forth a more skeptical perspective. Thus, the exact nature of the relationship between dynamic capabilities and firm performance, and the contingencies that affect it remain a topic of heated theoretical debates and contradictory findings. Essay 1 addresses these issues by performing a meta-analysis of empirical studies on dynamic capabilities and firm performance published over the past two decades. Results provide support for an overall positive contribution of dynamic capabilities to performance, with evidence for a stronger relationship between the two constructs in emerging markets. Surprisingly, results suggest that dynamic capabilities contribute more to performance in moderately dynamic environments.

Essay 2 examines whether and how dynamic capabilities contribute to organizational performance amid environmental jolts. Using a sample of firms operating in Israel during the 2008 global financial crisis, I found that dynamic managerial capability and dynamic knowledge-management capability were positively related to performance, while dynamic relationship management capability was not related to performance. Further, I found that interactions between pairs of these capabilities produce negative influences on performance, suggesting that these capabilities are substitutable. Thus, this essay contributes to theory and practice by examining the influence of dynamic capabilities on organizational performance during extremely unfavorable macro-environmental conditions.

Essay 3 uses imprinting theory to argue that firms develop dynamic capabilities as an evolutionary means to successfully compete in their task environments. My analysis using a sample of multinational enterprises (MNEs) found that global industry dynamism had a positive effect on asset management capability. However, results also revealed that asset management capability had a negative impact on financial performance during the 2008 economic crisis, though this effect was positive for MNEs operating in munificent global industries. This study contributes to the dynamic capabilities literature by suggesting that dynamic capabilities may be an outcome of operating in dynamic task environments, rather than driving performance of firms in dynamic task environments. In addition, the findings suggest that some dynamic capabilities may have negative performance implications during times of crisis, and that the availability of critical resources in the environment is complementary to dynamic capability deployment.

DEDICATION

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TABLE OF CONTENTS

Page

TABLE OF CONTENTS (cont.)

Page

LIST OF TABLES

LIST OF FIGURES

Figure Page

CHAPTER 1

INTRODUCTION

Dynamic capabilities (DCs) have drawn much attention from strategic management scholars in the past 16 years. Not surprisingly, my search of the keyword 'dynamic capabilities' in abstracts and titles using the ABI/Inform database of published peer-reviewed articles resulted in no less than 550 results. As environments became ever more uncertain, turbulent and hypercompetitive (D'Aveni, Dagnino, and Smith, 2010), DCs has emerged as an extension to the resource-based view (Barney, 1991), seeking to explain heterogeneity in firm performance and competitive advantage, especially but only in rapidly changing environments (Teece, 2014). In recent years, interest in DCs has spread to other fields such as marketing and supply chain management as well (Fang and Zou, 2009; Marcus and Anderson, 2006; Menguc and Auh, 2006).

Penrose (1959) noted that it is not resources alone that were critical to competitive advantage, but the services that resources could provide. Similarly, other scholars proposed that resources were building blocks for the development of capabilities (Amit & Schoemaker, 1993; Barney, 1991; Makadok, 2001), which involved activities and routines inside the firm that spanned resources (Winter, 2003). Building on these notions and the RBV literature, Teece, Pisano, and Shuen's (1997) seminal article defined DCs as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (p.516). As research on the origins and consequences of DCs grew, additional definitions emerged (e.g., Ambrosini & Bowman, 2009; Baretto, 2010; Wang & Ahmed, 2007; Teece, 2007; Helfat et al., 2007; Di Stefano, Peteraf, and Verona, 2010; Peteraf et al., 2013), mainly in an attempt to provide more

clarity to the DCs concept. Heftat et al.'s (2007) definition in particular seems to be widely accepted, conceptualizing DCs as the "capacity of an organization to purposefully create, extend, or modify its resource base" (p. 4)

Generally, the term 'dynamic capabilities' can be deconstructed into two main elements: *capability* and *dynamic*. The term 'capability' (i.e., ordinary/first-order/operational capability) refers to a routine-based activity inside the firm which develops over time through problem-solving and collective learning (Winter, 2003). Ad-hoc problem-solving or any kind of disjointed entrepreneurial improvisation are not capabilities, unless they initiate the emergence of some pattern over time and based on prior outcomes (Moliterno & Wiersema, 2007). Winter (2012) noted that capabilities emerge over time by means of natural selection as firms respond to their competitive environment. Further, a capability is a patterned activity that generates some kind of output in a reliable (i.e., consistent) manner (Helfat & Peteraf, 2003). Helfat and Winter (2011: 1244) succinctly summarize the various definitions of an organizational capability, noting that such capability is in place when "the organization (or its constituent parts) has the capacity to perform a particular activity in a reliable and at least minimally satisfactory manner".

While such capabilities may allow an organization to make a living in the present, what makes capabilities 'dynamic' is their ability to alter the way an organization makes its living, by for instance changing ordinary capabilities, altering the resource base, and/or initiating change in the organization's external environment (Helfat & Winter, 2011; Teece, 2007). Eisenhardt and Martin (2000) identified strategic decision-making and product and process development as DCs, while Rothaermel and Deeds (2006)

described how alliance-management capability creates new alliances while deriving rents from existing ones. Such capabilities are "high performance routines operating inside the firm, embedded in the firm's processes, and conditioned by its history" (Teece and Pisano, 1994: 537).

Scholars have indeed distinguished dynamic capabilities from operational or substantive capabilities. For instance, Zahra, Sapienza, and Davidsson (2006: 921) noted that, "new routine for product development is a new substantive capability but the ability to *change* such capabilities is a dynamic capability." Helfat and Winter (2011: 1249) also note that capabilities which "promote economically significant change are dynamic, even if the pace of change appears slow or undramatic." Thus, it is possible to think of DCs as higher-order routines within organizations that utilize existing rent-generating resources and capabilities, and at the same time, spawn new resources and competencies (Danneels, 2008).

Yet, despite the flux of empirical evidence in the DCs field, existing literature falls short in three important ways, while support for either the RBV or the DCs frameworks remains limited and equivocal (Newbert, 2007). First, while several key articles (e.g., Teece, 2007, 2014; Teece, Pisano, & Shuen, 1997; Fang & Zou, 2009; Helfat & Peteraf, 2014; Stadler, Helfat, and Verona, 2013; Wang and Ahmed, 2007) have suggested that DCs should lead to high performance, the DCs-performance link remains unclear, with empirical evidence being scarce and dispersed (Peteraf, Di Stefano, & Verona, 2013; Baretto, 2010).

Recently, Peteraf, Di Stefano, and Verona (2013) found that the DCs literature is clustered around two seminal pieces [i.e., Teece, Pisano, and Shuen (TPS), (1997) and

Eisenhardt and Martin (EM), (2000)] that are divergent in several ways. Importantly, they noted that "whereas TPS suggests that dynamic capabilities may be a source of competitive advantage, EM's portrayal of dynamic capabilities implies that any such advantage is likely to be relatively small. While the differences between the two papers are not extensive in number, they are critical in nature. They concern the very heart of the matter behind TPS's approach to dynamic capabilities and include the framework's boundary conditions." (p. 1395). This current state of the DCs literature positioned it in the center of a heated debate among organizational scholars (Peteraf et al., 2013), calling for an effort to initiate paradigmatic development through convergence and "capitalization on previous research in a more structured, focused way." (Baretto, 2010: 277).

To begin answering this call, and in an attempt to bring the disparate DCs literature together, I asked the following research question: what is the relationship between DCs and firm performance? In Essay I, I review and meta-analyze the relationship between DCs and firm performance, especially focusing on the various conceptual and methodological boundary conditions of the DCs-performance relationship. As DCs have been proposed by some to be positively related (e.g. Drnevich and Kriauciunas, 2011) and by others to be at times unrelated (or even adversely) related to firm performance (e.g., Wilden, Gudergan, Nielsen, and Lings, 2013; Winter, 2003; Schilke, 2013), it is appropriate at this stage of the field's evolution to initiate convergence around a DCs theory that holds for *populations* of firms (Crook *et al.*, 2008).

Further, because the value of DCs has been argued to vary with environmental (e.g., Drnevich and Kriauciunas, 2011; Schilke, 2013) and organizational contexts (e.g., Wilden *et al.*, 2013), special attention to contingencies is warranted (Peteraf et al., 2013). The meta-analytic examination of methodological moderators in particular may help explain contradictory findings in prior studies, and understand whether methodological artifacts (Crook *et al.*, 2008) may have prevented the accumulation of consistent evidence in support of a robust DCs theory. By focusing on contingencies, I am able to uncover opportunities to build bridges between TPS and EM (Peteraf *et al.*, 2013), and thus facilitate the accumulation of consistent evidence in support of a robust theory of DCs.

Second, I integrate insights from the DCs literature with the nascent organizational resilience literature (Lengnick-Hall, Beck, & Lengnick-Hall, 2011), to examine the following research question in Essay II: What is the relationship between DCs and firm performance, especially during environmental jolts? Meyer (1982) defined environmental jolts as "transient perturbations whose occurrences are difficult to foresee and whose impacts on organizations are disruptive and potentially inimical." (p. 515). Ultimately, organizational resilience translates into displaying good financial performance not only during times of prosperity, but more so during times of severe decline (Collins & Hansen, 2011; Wan & Yiu, 2009). Indeed, the staggering costs of low preparedness and ineffective action in the context of environmental jolts, as well as the rising frequency of such events (Taleb, 2012), create a pressing need to study the ability of firms to perform well amid major environmental setbacks (Carmeli & Markman, 2011; Wan & Yiu, 2009; Sutcliffe & Vogus, 2003; Meyer, 1982).

However, while fragile organizations pose great risk to communities, economies, governments, and as seen in 2008, the global economy as a whole, the proper organizational actions needed to facilitate firm resilience in such environments remain unclear (Kunc & Bandahari, 2011). During a jolt, the rapid and unexpected change in the environment may often render existing strategies obsolete (Wan & Yiu, 2009). Yet firm resilience may be a function of pre-jolt anticipatory strategic actions (Meyer, 1982), wherein firms develop and deploy resource-configurations that allow persistence during environmental jolts (Kraatz & Zajac, 2001). Thus, in Essay II, I utilize a dynamic capabilities approach (Teece et al., 1997; Teece & Pisano, 1994) to study the resilience of Israeli firms during the 2008 financial crisis. According to Drnevich and Kriauciunas (2011: 260), "firms operating in dynamic environments can gain greater benefits from using dynamic capabilities than in stable environments since such capabilities enable the firm to adjust to the environment". To date, few studies have examined the relationship between dynamic capabilities and firm performance under extreme, unfavorable, dynamic macro environmental conditions (i.e., crises; for two notable exceptions, please see Makkonen, Pohjola, Olkkonen, and Koponen, 2014 and Nair, Rustambekov, McShane, and Fainshmidt, 2013), and results have been inconclusive.

Third, while most scholars focus on antecedents of dynamic capabilities (Barreto, 2010; Di Stefano, Peteraf, and Verona, 2010), our knowledge of how and why firms develop dynamic capabilities is still nascent. Notably, scholars have begun to empirically uncover the micro-foundations of dynamic capabilities (e.g., Argote & Ren, 2012), as well as environmental and firm-level antecedents (Rothaermel & Hess, 2007; Fang & Zou, 2009; Eisenhardt & Martin, 2000; Wang & Ahmed, 2007; Barreto, 2010; Zahra,

Sapienza, & Davidsson, 2006). However, they have been surprisingly silent with regards to the role of industry conditions in the evolution of dynamic capabilities and their contribution to firm performance, though scholars have implied that dynamic capabilities emerge over time by means of natural selection as firms respond to their environment (Zollo and Winter, 2002; Winter, 2012).

Thus, in Essay III, I set out to examine the following research question: What is the role of industry conditions in (a) the development of dynamic capabilities, and (b) the dynamic capabilities-performance relationship? Drawing from cognitive imprinting theory (Holburn and Zelner, 2010), I argue that dynamic capabilities are partially shaped by a firm's task environment, and thus hypothesize that industry dynamism will serve as a precursor to dynamic capabilities. Nonetheless, I also posit that the dynamic capabilities-performance link is contingent upon the munificence of the task environment. I test my hypotheses using a multinational sample of firms and examine how dynamic capabilities influenced firm performance during the global financial crisis of 2008. I advance understanding of the dynamic capabilities-performance link by examining the role of macro-environmental jolts and industry dynamics in this crucial relationship.

REFERENCES

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management?. *International Journal of Management Reviews*, *11*(1), 29-49.

Amit, R., & Schoemaker, P. J. (1993). Strategic assets and organizational rent. *Strategic management journal*, *14*(1), 33-46.

Argote, L., & Ren, Y. (2012). Transactive memory systems: a microfoundation of dynamic capabilities. *Journal of Management Studies*, 49, 1375-1382.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99-120.

Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management*, 36(1), 256-280.

Carmeli, A., & Markman, G. D. (2011). Capture, governance, and resilience: strategy implications from the history of Rome. *Strategic Management Journal*, *32*(3), 322-341.

Collins, J., & Hansen, M. T. (2011). *Great by Choice: Uncertainty, Chaos and Luck-Why Some Thrive Despite Them All.* Random House.

Crook, T. R., Ketchen, D. J., Combs, J. G., & Todd, S. Y. (2008). Strategic resources and performance: a meta-analysis. *Strategic management journal*, *29*(11), 1141-1154.

Danneels, E. (2008). Organizational antecedents of second-order competences. *Strategic Management Journal*, 29(5), 519-543.

D'Aveni, R. A., Dagnino, G. B., & Smith, K. G. (2010). The age of temporary advantage. *Strategic Management Journal*, 31(13), 1371-1385.

Di Stefano, G., Peteraf, M., & Verona, G. (2010). Dynamic capabilities deconstructed: a bibliographic investigation into the origins, development, and future directions of the research domain. *Industrial and Corporate Change*, *19*(4), 1187-1204.

Drnevich, P. L., & Kriauciunas, A. P. (2011). Clarifying the conditions and limits of the contributions of ordinary and dynamic capabilities to relative firm performance. *Strategic Management Journal*, 32(3), 254-279.

Eisenhardt, K. M., & Martin, J. (2000). Dynamic capabilities: What are they?. *Strategic Management Journal*, 21 (special issue), 1105-1121.

Fang, E. E., & Zou, S. (2009). Antecedents and consequences of marketing dynamic capabilities in international joint ventures. *Journal of International Business Studies*, 40(5), 742-761.

Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic management journal*, *24*(10), 997-1010.

Helfat, C. E., & Peteraf, M. A. (2014). Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management Journal*. Accepted Article, DOI: 10.1002/smj.2247.

Helfat, C. E., & Winter, S. G. (2011). Untangling Dynamic and Operational Capabilities: Strategy for the (N) ever-Changing World. *Strategic Management Journal*, 32(11), 1243-1250.

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., & Winter, S. G. (2007). *Dynamic Capabilities: Understanding Strategic Change in Organizations*. London: Blackwell.

Holburn, G. L., & Zelner, B. A. (2010). Political capabilities, policy risk, and international investment strategy: Evidence from the global electric power generation industry. *Strategic Management Journal*, *31*(12), 1290-1315.

Kraatz, M. S., & Zajac, E. J. (2001). How organizational resources affect strategic change and performance in turbulent environments: Theory and evidence. *Organization Science*, *12*(5), 632-657.

Kunc, M., & Bandahari, R. (2011). Strategic development processes during economic and financial crisis. *Management Decision*, 49(8), 1343-1353.

Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, *21*(3), 243-255.

Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic management journal*, *22*(5), 387-401.

Makkonen, H., Pohjola, M., Olkkonen, R., & Koponen, A. (2014). Dynamic capabilities and firm performance in a financial crisis. *Journal of Business Research*, *67*(1), 2707-2719.

Marcus, A. A., & Anderson, M. H. (2006). A General Dynamic Capability: Does it Propagate Business and Social Competencies in the Retail Food Industry?*. *Journal of Management Studies*, *43*(1), 19-46.

Menguc, B., & Auh, S. (2006). Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Journal of the Academy of Marketing Science*, *34*(1), 63-73.

Meyer, A. D. (1982). Adapting to environmental jolts. *Administrative science quarterly*, 27, 515-537.

Moliterno, T. P., & Wiersema, M. F. (2007). Firm performance, rent appropriation, and the strategic resource divestment capability. *Strategic Management Journal*, *28*(11), 1065-1087.

Nair, A., Rustambekov, E., McShane, M. and Fainshmidt, S. (2013). Enterprise Risk Management as a Dynamic Capability: A test of its effectiveness during a crisis. *Managerial and Decision Economics*. doi: 10.1002/mde.2641

Penrose, E. T. (1959). *The theory of the growth of the firm. Cambridge, MA.*

Peteraf, M., Di Stefano, G., & Verona, G. (2013). The elephant in the room of dynamic capabilities: Bringing two diverging conversations together. *Strategic Management Journal*, 34(12), 1389-1410.

Rothaermel, F. T., & Hess, A. M. (2007). Building dynamic capabilities: Innovation driven by individual-, firm-, and network-level effects. *Organization Science*, *18*(6), 898-921.

Schilke, O. (2013). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*. doi: 10.1002/smj.2099

Stadler, C., Helfat, C. E., & Verona, G. (2013). The impact of dynamic capabilities on resource access and development. *Organization Science*. Published Online: February 28, 2013. http://pubsonline.informs.org/doi/abs/10.1287/orsc.1120.0810

Sutcliffe, K. M., & Vogus, T. J. (2003). Organizing for resilience. *Positive organizational scholarship: Foundations of a new discipline*, *94*, 110.

Taleb, N. N. (2012). *Antifragile: things that gain from disorder*. Random House LLC.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal*, 28(13), 1319-1350.

Teece, D. J. (2014). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of International Business Studies*, *45*(1), 8-37.

Teece, D., & Pisano, G. (1994). The dynamic capabilities of firms: an introduction. *Industrial and corporate change*, 3(3), 537-556.

Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal,* 18, 509-533.

Wan, W. P., & Yiu, D. W. (2009). From crisis to opportunity: Environmental jolt, corporate acquisitions, and firm performance. *Strategic Management Journal*, 30(7), 791-801.

Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31-51.

Wilden, R., Gudergan, S. P., Nielsen, B. B., & Lings, I. (2013). Dynamic capabilities and performance: strategy, structure and environment. *Long Range Planning*, *46*(1), 72-96.

Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic management journal*, 24(10), 991-995.

Winter, S. G. (2012). Capabilities: their origins and ancestry. *Journal of Management Studies,* 49, 1402-1406.

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: a review, model and research agenda*. *Journal of Management studies*, *43*(4), 917-955.

Zollo, M., & Winter, S.G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science,* 13, 339-351.

CHAPTER 2

ESSAY I: DYNAMIC CAPABILITIES, ENVIRONMENT, AND PERFORMANCE: A META-ANALYTIC REVIEW

2.1 ABSTRACT

The concept of dynamic capabilities has drawn much attention from strategic management scholars in the past 16 years. While several scholars have suggested that dynamic capabilities should lead to superior performance, their contribution to firm performance remains a topic of heated theoretical debate. In this paper I attempt to provide more clarity to this link by meta-analyzing empirical studies conducted over a period of almost two decades. Results provide support for an overall positive contribution of dynamic capabilities to performance, and as expected, a stronger contribution in non-developed markets. Surprisingly, while dynamic capabilities contributed more to performance in moderately dynamic environments, they did not so in highly dynamic environments. Industry conditions and multinationality were not significant moderators of the dynamic capabilities-performance link. Furthermore, dynamic capabilities were similarly related to profitability and market performance and an examination of methodological contingencies showed that results in dynamic capabilities research may have been affected by methodological artifacts and lack of a validated scale. Implications and future research directions are discussed.

2.2 INTRODUCTION

Dynamic capabilities (DCs) – "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece, Pisano, & Shuen, 1997, p.516) - have drawn much attention from strategic management scholars in the past 16 years. Its dynamic nature yet somewhat unclear domain (Baretto, 2010) has positioned it in the center of a heated debate among organizational scholars. Not surprisingly, my search of the keyword 'dynamic capabilities' in abstracts and titles using the ABI/Inform database of published peer-reviewed articles resulted in no less than 550 results. However, to date most work has been conceptual, focusing on antecedents of firm DCs (Baretto, 2010; Di Stefano, Peteraf, & Verona, 2010). And while several key articles (e.g., Teece, 2007; Eisenhardt & Martin, 2000) have suggested that DCs should lead to superior performance, the DCs-performance link remains unclear, with empirical evidence being scarce and dispersed.

As Baretto (2010) noted with regards to DCs research, "so far we have predominantly observed a *variation* stage in the literature itself, that is, with a proliferation of concepts and relationships. Now is the right time to move toward more *selection*- and *retention*-oriented stages, that is, with a consolidation of the main construct and a capitalization on previous research in a more structured, focused way" (p. 277). In an attempt to bring the disparate literature together, this paper seeks to review and empirically analyze the relationship between DCs and firm performance in a systematic way. Why is this link so important? First, DCs emerged as an extension to the resource-based view, seeking to explain heterogeneity in firm performance and more broadly sustainable competitive advantage (Barney, 1991; Teece et al., 1997). As such, the core

of DCs and its validity lies in its influence on organizational outcomes, of which performance is of great interest.

Second, in order for DCs research to continue making a significant contribution to the field of strategic management, it must achieve both conceptual rigor and practical usefulness (Shrivastava, 1987). The examination of the DCs-performance link will help in determining its practical usefulness to managers and facilitate further theory-driven research among scholars. Importantly, as this stream of research continues to mature, it is important to establish empirical consistency, interpretable findings, and general consensus about key relationships (Palich, Cardinal, & Miller, 2000). A recent meta-analysis by Krasnikov and Jayachandran (2008) showed a positive overall relationship between firm capabilities and performance. They also found that marketing capabilities affect firm performance more strongly than R&D or operations capabilities. With that said their study was limited in two main ways. First, they did not address the boundary conditions of the focal relationship, especially with regards to environmental dynamism. Dynamic capabilities have been proposed to have differential effects on firm performance under varying environmental conditions (Eisenhardt & Martin, 2000), an issue overlooked in their meta-analytic review.

Further, many studies in the Krasnikov and Jayachandran (2008) meta-analysis utilize DCs as a perspective, rather than as a construct. For instance, firm capabilities (e.g., marketing capabilities; Day, 1994) and competencies (e.g., production competence; Hitt & Ireland, 1985) were included as DCs as well, making inferences regarding DCs problematic. This view is consistent with Zollo and Winter (2002) who noted that "an organization that adapts in a creative but disjointed way to a succession of crises is not

exercising a dynamic capability" (p. 340). As such, firm capabilities such as R&D and Technological innovativeness (Menguc & Auh 2006) are only partially in line with the definition of DCs. DCs are more so generic organization-wide activities (Ambrosini & Bowman, 2009) that "systematically solve problems...[and] sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base." (Barreto, 2010: 271). Thus in this paper I overcome these limitations by specifically focusing on the relationship between the *construct* of DCs and performance, as well as contingencies in that relationship.

Thus far, there has been much debate in the literature regarding the effect of DCs on performance. Scholars have offered positive, negative, insignificant, and contingent models of the DCs-performance link. For example, those who argue for a positive relationship under dynamic environmental conditions maintain that as globalization increases, competitive intensity rises, economies open-up, and environmental turbulence becomes more prevalent and frequent worldwide, DCs will likely become even more important to organizational success in the future (Cao, 2011; Teece, 2007; Griffith & Harvey, 2001; Weerawardena et al., 2007). Consistent with that approach, Drnevich and Kriauciunas (2011) found that DCs have a significant positive effect on performance during periods of environmental dynamism among Chilean firms. The purpose of this paper is therefore to provide more clarity to the DCs-performance relationship by meta-analyzing empirical studies conducted over a period of almost two decades. I also emphasize the boundary conditions of the DC-performance link, especially under varying environmental contexts (Eisenhardt & Martin, 2000).

Results, based on an analysis of 5,171 organizations from 19 studies and 33 samples, provide overall support for a positive link between DCs and performance. However, results also provide mixed evidence for several contingency variables. Specifically, while dynamic capabilities contributed more to performance in moderately dynamic environments, they did not so in highly dynamic environments. DCs were also found to contribute more to performance in non-developed markets. However, industry conditions and multinationality were not significant moderators of the DCs-performance link. DCs were also found to contribute similarly to profitability and efficiency, and market performance. Finally, the contribution of DCs to performance was stronger when performance was operationalized as a subjective measure and when data were obtained from non-independent sources, suggesting that results in DCs research may be affected by methodological artifacts and lack of a validated scale.

This paper is organized as follows. First, I review existing literature on DCs, with a specific focus on models of the DCs-firm performance link. Via this process of theoretical synthesis I tease out testable hypotheses that serve as the basis for my analyses. Second, I outline the meta-analytic procedures followed in this research and describe the nature of my sample. Third, I present the results of several meta-analyses and interpret the findings. Finally, I discuss implications of my findings for theory and practice, limitations of the research design, and future research directions.

2.3 THEORETICAL BACKGROUND AND HYPOTHESES

What are Dynamic Capabilities?

DCs are an organization's set of behavioral routines that utilize existing rent-generating resources and, at the same time, spawn new resources and competencies to

create sustainable competitive advantage (Teece, 2007; Teece et al., 1997; Tallman, 1991). Eisenhardt and Martin (2000) have suggested that DCs consist of strategic processes by which the organization regenerates products, processes, networks, and positions in the marketplace (Teece et al., 1997). Helfat et al. (2007: 4), integrating previous definitions, proposed that DCs are generally the "capacity of an organization to purposefully create, extend, or modify its resource base". In essence, DCs emerged from the resource based-view (RBV, Barney, 1991) as a conceptual tool to understand firm heterogeneity in ability to succeed in the face of change by altering, redeploying, and building unique bundles of resources (Teece, 2007). Even the early work of Penrose (1959) and consequent studies (e.g., Makadok, 2001) have argued that what drives competitive advantage and superior firm performance is not resources but rather capabilities – the activities and routines inside the firm that span resources (Winter, 2003). Indeed, the RBV has received only modest support in empirical studies (Newbert, 2007).

According to Teece (2007) DCs are the firm's ability to sense and seize opportunities and threats, which ultimately leads to sustainable superior performance (Baretto, 2010). Eisenhardt and Martin (2000) argued that DCs are "best-practices" commonly found among most successful firms. Namely, they posited that these practices are largely common to all successful firms, yet each firm possesses some small portion of unique characteristics. The literature on DCs has offered several examples of such capabilities. Eisenhardt and Martin (2000) listed strategic decision-making, alliancing, and product and process development as DCs. Rothaermel and Deeds (2006) suggested the alliance-management capability as one that creates new alliances while deriving rents

from existing ones with other organizations. Further, Luo (2002, 2003) and Park and Luo (2001) explained that managerial ties and political ties are DCs that exploit existing ties with managers and political actors (i.e., resources) while generating new ties with new actors.

However, other scholars have argued that DCs are generic organization-wide activities that cannot be captured by a single capability (Winter, 2003; Nelson & Winter, 1982). Indeed, such nonspecific approach is more consistent with existing definitions of DCs (e.g., Teece et al., 1997; Heflat et al., 2007; Barreto, 2010) that guide this paper. More specifically, DCs are second-order capabilities that reflect the organization's capacity to alter existing resources and build new first order capabilities, such as R&D, marketing, and operating routines (Danneels, 2008, 2002). As such, any function-specific first order capability cannot fully capture the whole set of "high performance routine operating inside the firm, embedded in the firm's processes, and conditioned by its history" (Teece & Pisano, 1994: 537).

Clearly, the lack of coherent construct definition and disparity in how researchers utilize DCs adds to ongoing debates regarding what DCs are. Similarly, to date no consensus has emerged regarding the nature of the relationship between DCs and firm performance (Hoopes, Madsen, & Walker, 2003; Armstrong & Shimizu, 2007) and it is still unclear to what extent DCs contribute to firm performance, if any. While several scholars argue for a direct linear link between DCs and performance (e.g., Teece, 2007), others maintain that this relationship is far more complex, depending on contextual contingencies (e.g., Drnevich & Kriauciunas, 2011; Krasnikov & Jayachandran, 2008).

The next section reviews existing theorizing of the DC-performance link and outlines hypotheses consistent with these conceptual models.

Dynamic Capabilities and Performance

According to Wang and Ahmed (2007: 36), "dynamic capabilities are the 'ultimate' organizational capabilities that are conducive to long-term performance". DCs create organizational ability to choose the right resources from the resource market and at the same time develop new idiosyncratic capabilities internally that then span resources to create economic rents (Zott, 2003; Makadok, 2001; Barney, 1986). Constant creation of new products and processes grants organizations that possess strong DCs valuable know-how that translates into higher profitability (Helfat, 1997). Even on a corporate level, the reconfiguration and development of SBUs may prolong subsidiary survival and thus provide substantial performance benefits (Karim, 2006). Similarly, DCs may provide better power position in cross-border inter-organizational relationships through the development of alliance strategies spanning strong resource-bases (Griffith & Harvey, 2001).

Organizations with strong DCs are intensely entrepreneurial (Teece, 2007). The constant search for opportunities and threats, as well as the proclivity to obtain new resources and alter the resource-base facilitate knowledge creation, absorption, and integration (Verona & Ravasi, 2003; Zahra & George, 2002). As such, firms with strong DCs are more likely to exhibit innovativeness than others (Wang & Ahmed, 2004, 2007). Fang and Zou (2009) found that dynamic marketing capabilities of international joint ventures lead to superior performance. This is because these ventures "track changes in the consumer environment quickly, and respond to them efficiently" (Fang and Zou,

2009: 749), thus capturing new market opportunities and generating positive consumer responses (Amit & Livnat, 1988). But nevertheless, firms that constantly revise their operating routines and engage in deliberate learning are more likely to achieve superior efficiency (Zollo & Winter, 2002). Consistent with that view, Zúñiga-Vicente and Vicente-Lorente (2006) used the DC perspective to argue that strategic moves (Ferrier, 2001) and strategic change lead to increased likelihood of organizational survival.

Other scholars presented a much more skeptical view of DCs and their performance implications. According to Eisenhardt and Martin (2000: 1106), "dynamic capabilities are necessary, but not sufficient, conditions for competitive advantage". It could be that DCs affect intermediate organizational outcomes such as product and market development, which may or may not lead to superior performance (Slater & Narver, 2000). Further, capabilities may be 'best practices' that are imitable by other firms (Eisenhardt & Martin, 2000) or simply similar across firms within an industry (Lampel & Shamsie, 2003). And even those capabilities that are not imitable may be vulnerable to erosion during organizational adaptation to environmental conditions, or replacement by another dynamic capability (Collis, 1994). While DCs may alter the resource base, the new configuration is not guaranteed to create value (Ambrosini & Bowman, 2009; Helfat et al., 2007). It has been suggested that the vast managerial and cognitive costs of deploying DCs are larger than potential benefits (Lavie, 2006; Pablo et al., 2007).

Overall, while these streams of the literature suggest different relationships between DCs and performance, the vast majority of empirical and conceptual research

supports a direct positive link. Thus, in order to test the overall nature of the relationship between DCs and performance, I propose the following hypothesis:

Hypothesis 1: There is a positive relationship between dynamic capabilities and firm performance.

Contingencies in the DC-performance Relationship

Environmental Dynamism

Rapidly changing environmental conditions pose a threat to organizational capabilities and performance (Wang & Ang, 2004) as the value of existing competencies is eroded. In such dynamic environments, DCs can continuously generate new competencies and strategies that revive the firm's competitive position (Drnevich and Kriauciunas, 2011; Helfat et al., 2007; Eisenhardt, 1989). In essence, "firms operating in dynamic environments can gain greater benefits from using dynamic capabilities than in stable environments since such capabilities enable the firm to adjust to the environment" (Drnevich and Kriauciunas, 2011: 260). In dynamic environments, DCs are likely to take a more experiential form as firms learn while doing, whereas in more stable contexts DCs are more elaborative and crystallized activities, resembling processes of learning from doing. Emphasis on simultaneous learning *and* doing facilitates managerial capacity and skills to identify and exploit new opportunities in an evolving environment (Rindova & Taylor, 2002).

Winter (2003) extended the ideas of Teece et al. (1997) and Nelson and Winter (1982) to propose that because DCs are higher-order routines that alter zero-order operational routines, they require constant maintenance and investment, which makes them costly. Firms with strong DCs are intensely entrepreneurial and innovative, constantly sensing, seizing, and managing opportunities and threats in the environment,

which makes them better performers in dynamic industries by achieving Schumpeterian rents (Teece, 2007; Schumpeter, 1934). However, if the environment is stable enough, DCs may become too costly relative to their added value. In such cases, ad-hoc problem solving may be more beneficial (Winter, 2003). In an international context, Luo (2002) found that firms that more intensively exploit existing capabilities and build new ones in complex foreign markets tend to be better performers. Similarly, Fang and Zou (2009) found that international joint ventures possessing stronger marketing dynamic capabilities tend to outperform other ventures in China through, for example, capturing bigger market share. Furthermore, firms possessing dynamic capabilities may have an advantage when entering and/or operating in emerging markets, characterized by rapid growth and dynamism (Hoskisson et al., 2000), because they possess the necessary tools to handle policy risk (Holburn & Zelner, 2010). Overall, prior literature suggests that DCs will contribute more to firm performance as environmental dynamism increases. Formally stated:

Hypothesis 2a: The positive relationship between DCs and firm performance is stronger in more dynamic environments.

Hypothesis 2b: The positive relationship between DCs and firm performance is stronger in non-developed economies than in developed economies.

Industry Conditions

Industries vary substantially in levels of technological change, consumer demands and competitive intensity (Porter, 1990), all of which may often possess the threat of destroying firm competence (Tripsas, 1997). Some industries reward companies that constantly renew organizational capabilities (Eisenhardt, 1989), while others require a more efficiency-centered and reactive approach to strategy (Snow & Hrebiniak, 1980;

Finkelstein & Hambrick 1990). For instance, in globally hyper-competitive industries such as biotechnology and computers, firms must pool their technological and managerial abilities to create a dynamic product development capability if they are to remain viable in the market (Deeds et al., 2000). Firms that possess a set of DCs in knowledge-based industries enable "these firms to develop cutting-edge knowledge intensive products, paving the way for their accelerated market entry" (Weerawardena et al., 2007: 294). In contrast, possessing general DCs in the US retail food industry seems to have less of a profound effect on organizational outcomes (Marcus & Anderson, 2006). Prior literature suggests that DCs may have a more profound impact on firm performance in high-technology-based, knowledge-intensive, fast-changing industries as a means to deal with these dynamic competitive settings. Thus, DCs are posited to have a differential effect on firm performance across industries as a function of knowledge-intensiveness. This leads to the following hypothesis:

Hypothesis 3: The positive relationship between DCs and firm performance is stronger in high-tech and knowledge-intensive industries.

Type of Firm Performance

According to Krasnikov and Jayachandran (2008), the value of DCs lies in their imperfect imitability and imperfect mobility. Thus, DCs that are less imitable and mobile should contribute more to firm performance. While internal capabilities facilitate process and product development, external capabilities deal with exploitation and development of market resources and knowledge. In essence, operational routines and technology (e.g., patenting, firm manuals) are usually more codifiable than market knowledge, which makes them more susceptible to imitation. On the other hand, market knowledge and organizational culture are examples of largely tacit and socially complex resources

(Barney, 2007). DCs, governing other capabilities in the firm, create and implement new ways of doing business (Drnevich & Kriauciunas, 2011). However, their effect on market-performance (e.g., market share, growth, customer satisfaction) may differ from the one on profitability and efficiency. The internal and external competencies that DCs continuously create differ substantially in their levels of imitability (Teece et al., 1997; Krasnikov & Jayachandran, 2008). While internal competencies, such as technology, R&D, and operational efficiency are susceptible to imitation by rivals, external competencies such as market knowledge, bargaining power, and alliancing are much harder to replicate by competitors. As such, DCs are posited to have a more pronounced effect on market-performance than on profitability. I therefore propose the following hypothesis:

Hypothesis 4: The positive relationship between DCs and firm performance is stronger for market-performance than for profitability and internal efficiency.

Domestic Firms and Multinational Enterprises

Today's world economy is characterized by rising globalization and increased competitiveness. These processes push and pull firms to become increasingly global in their thinking and operations if they are to remain viable. In such times, DCs are fundamental to multinational enterprise (MNE) success, mitigating liability of foreignness (Zaheer, 1995) via exploitation, development, and adaptation of competencies in unfamiliar markets (Luo, 2000). Unlike domestic firms, MNEs are subject to multiple institutional pressures (Kostova & Zaheer, 1999; Kostova et al., 2008), requiring them to be intensely entrepreneurial (Augier & Teece, 2007) and cognitively complex (Bartlett & Ghoshal, 1989). MNEs that deploy DCs by for example, exerting flexible subsidiary control and local responsiveness, achieve superior

performance (Luo, 2003). A strong set of DCs may facilitate development of cutting-edge products and speedy market entry of international entrepreneurial ventures (Weerawardena et al., 2007). While DCs may be important to both MNEs and domestic firms, the complexity of multinational operation brings about more intense need for an ability to address rapidly changing environments (Uhlenbruck, 2004). Thus, MNEs that more strongly leverage DCs are expected to achieve better performance than their domestic counterparts (McGahan & Victer, 2010). I therefore hypothesize the following:

Hypothesis 5: The positive relationship between dynamic capabilities and firm performance is stronger for MNEs than for domestic companies.

2.4 METHODS

Sample

The sample selection procedure was comprised of three stages, consistent with Kirca et al. (2011). First, using the key terms "dynamic capabilities" and "performance", I searched for articles in the ABI/INFORM, Google Scholar, and Web of Science databases, published prior to August 2012 but later than 1997 – the publication year of the seminal piece of Teece et al. Second, I conducted a series of manual searches in pertinent management, international business, marketing, and entrepreneurship journals[1]. Finally, reference sections of published review articles (e.g., Baretto, 2010; Easterby-Smith et al., 2009) were examined to ensure that relevant research was not overlooked. Similar to Palich et al. (2000), I did not obtain unpublished papers (a fourth step outlined in Kirca et al., 2011) for two main reasons. First, a comprehensive examination of the

[1] I searched in tables of contents of *Strategic Management Journal, Journal of Management, Academy of Management Journal, Journal of Management Studies, Administrative Science Quarterly, International Business Review, International Marketing Review, Journal of Marketing, Journal of International Business Studies, Journal of International Marketing, Journal of World Business, Journal of Business Venturing, Entrepreneurship Theory and Practice, Industrial and Corporate Change,* and *Corporate Governance: an International Review.*

"file-drawer" bias (Rosenthal, 1995) by Dalton et al. (2012) revealed that the influence of unpublished studies on meta-analytic results is insignificant. Second, Krasnikov and Jayachandran (2008) found that results in unpublished DCs studies do not differ significantly from those of published studies.

Empirical studies were included in the sample if they: (a) reported sample sizes and correlations, or other statistics that allowed us to calculate these (b) used SBU, joint venture, firm, or subsidiary as the unit of analysis, and (c) did not use samples already utilized by articles in our dataset. Studies also had to cite Teece et al. (1997) and examine 'dynamic capabilities' as a construct[2]. However, other constructs explicitly stated to represent a dynamic capability (e.g., dynamic marketing capabilities; Fang & Zou, 2009) were also considered. In such cases two coders of the research team reviewed the definition and measurement of those constructs and independently assessed their compatibility with Helfat et al.'s definition of DCs. Constructs were included in the sample if both coders found them to be consistent with the DCs definition; the two coders agreed in all cases. These procedures yielded a final set of 19 relevant studies and 33 samples for further analysis, as listed in Table 2.1.

[Insert Table 2.1 about here]

Coding

Coding was conducted to accompany procedures outlined in Kirca et al. (2011), Palich et al. (2000), and Crook et al. (2008). Specifically, I prepared a coding protocol and revised it following discussion and several consultation sessions with management

[2] This narrow approach allows for increased comparability across samples. Namely, the inclusion of studies that utilize the DCs perspective to examine broad arrays of specific capabilities (e.g., innovativeness, market orientation, acquisition-integration capability) may introduce the "apples and oranges" problem (Wolf, 1986), which may render results meaningless.

scholars experienced in meta-analytic research. This process yielded a coding sheet, instructing how to obtain required statistics and study characteristics (e.g., sample size, correlations, reliability, sources of data). To ensure that coding is internally valid, two coders familiar with the DCs literature and experienced in meta-analytic research coded all selected articles. The overall inter-coder reliability estimate was 0.95 and always above 0.7 for individual variables, indicating high internal validity (Miles & Huberman, 1994). In cases where discrepancies arose, the two coders resolved issues through discussion.

To assess the moderating effect of substantive contingency hypotheses, I coded the extent of environmental dynamism reported in the study, industry and country from which samples were taken, whether the sample consists of MNEs or domestic firms, and type of performance metric reported. To code environmental dynamism I employed procedures outlined in Song et al. (2005). Namely, two independent researchers qualitatively reviewed the studies in our sample and determined whether they took place in a stable, moderately dynamic, or highly dynamic context (Eisenhardt & Martin, 2000; Miller & Cardinal, 1994). Environmental dynamism was regarded as a broad construct, including several factors that measure the extent of instability and change in the external environment (e.g., turbulence, technological change, privatization, market growth, competitive intensity). Often, studies present sufficient information to determine the extent of environmental dynamism. However, when such information was not provided, or when data spanned both dynamic and stable environments, we relied on indicators such as industry, country, years of study, or the combination of those to determine environmental dynamism. The inter-rater reliability for this classification was 0.88,

indicating very high agreement among coders. Disagreements were resolved via discussion.

We coded the industry and country of studies as stated in the methodology section of each article. Studies that examined samples that may belong to several categories were coded as 'mixed' and not used in the respective moderator analysis. Country of study was categorized into developed versus non-developed according to the World Bank (2012). Following Daily et al. (2005), we coded samples of firms as either operating in high-tech, knowledge-intensive or other industries. For instance, when the primary industry was computer hardware (SIC 35), computer software (SIC 73), biotechnology (SIC 28), or telecommunications (SIC 48), the sample was classified as operating within a high-tech, knowledge-intensive industry. We coded performance into two main categories (Miller & Cardinal, 1994), market performance and profitability/efficiency based on the performance metric reported in the study. Namely, market-share, stock returns, innovation, and growth were coded as market performance while return on assets, profit margin, and operational efficiency were coded as profitability/efficiency. For some studies, several performance indicators were reported; all were obtained and coded separately. Further, we coded the methodological characteristics of each study to assess the impact of scholarly methods on published results (Certo et al., 2006). Specifically, we coded whether DCs and performance were operationalized using perceptual or archival measures, and whether data sources for these two constructs were independent.

Data Analysis

I analyzed the data following procedures established by Hunter and Schmidt (2004). Namely, I calculated a sample-size-weighted mean estimate of the correlations (r)

between DCs and performance. To properly examine each hypothesis, I used three as the minimum number of independent samples on which the meta-analytic correlations were based (Seibert et al., 2011). Because many studies used perceptual data, I also obtained information about the reliability of the measures and calculated unreliability-corrected correlations. However, not all studies reported reliability statistics, so for constructs from such studies I used the average reliability of similar constructs from studies that did report reliability.

I also calculated the variability, statistical significance, and generalizability for each correlation. Variability is measured by the standard deviation of the corrected correlations (SD_ρ). Statistical significance is inferred from the 95% confidence intervals around the point estimate. If a 95% confidence interval does not include zero, then the meta-analyzed correlation coefficient is significantly different from zero. Generalizability is inferred from the 80% confidence intervals. Confidence intervals tell us about the distribution of correlations in the sample. If an 80% confidence interval does not include zero, we can infer that the vast majority of the correlations are larger than zero for positive correlations or smaller than zero for negative ones. Credibility intervals are also used to explore the possible existence of moderators, which is of great importance to this study. Wide credibility intervals, or credibility intervals that span zero, might indicate that there is not a broad pattern in the individual correlations. In these situations it is likely that some contingencies distinguish between several groups of correlations.

To test whether moderation effects are significant, confidence intervals of the examined subgroups effects should not overlap (Hunter & Schmidt, 2004). However, examining overlapping 95% confidence intervals may introduce type 2 error as such

approach detects moderation based on the extremely stringent significance level of .006 (Knol et al., 2011). Namely, examining overlap of 95% confidence intervals may lead to rejecting a moderation hypothesis when moderation effects at the .05 level indeed exist. Thus, in order to establish moderation at the .05 level, non-overlap of 83.4% confidence intervals is required (see Knol et al., 2011). I based my moderation hypotheses testing on the 83.4% confidence intervals as described below.

2.5 RESULTS

Table 2.2 reports the results of the hypotheses tests. Hypothesis 1a received support as the corrected correlation between DCs and performance was positive ($r_c = .31$) and the 95% confidence interval did not include zero. But nevertheless, the wide credibility interval (CRI 0.02:0.60) suggests that the DC-performance relationship is contingent on other factors, which may explain inconsistent findings of prior studies. In testing the moderating effect of environmental dynamism, hypothesis 2a was partially supported. Among the three environmental dynamism subgroups, the only instance where the 83.4% confidence intervals did not overlap was between moderate environment and stable environment. In moderately dynamic environments the contribution of DCs to performance was the highest ($r_c = .52$). However, DCs contribute almost equally to performance in dynamic and stable environments ($r_c = .27$ versus $r_c = .30$, respectively). While not significant at the .05 level, the overlap between the 83.4% confidence intervals of moderate and dynamic environment was marginal (=0.02, $p < .10$), indicating possible inverted U-shaped relationship between DCs and performance with increasing levels of environmental dynamism. Interestingly, the credibility interval in dynamic environments was very wide (CRI -0.11:0.65), indicating that the effect of DCs on performance in

dynamic environments varies substantially, to the extent of having a negative influence on performance. Hypothesis 2b was supported as the effect of DCs was much stronger in non-developed economies (r_c = .59 versus r_c = .17), with potential negative effect in develop contexts (CRI -0.02:0.36). The range of effects in these two subgroups did not overlap.

[Insert Table 2.2 about here]

Next, I examined the moderating role of industry context on the DCs-performance link. DCs were found to have stronger impact on performance in industries that are not high-tech or knowledge-intensive (r_c = .40 versus r_c = .26), yet this difference is not significant, failing to support hypothesis 3. In fact, results were more indicative of a counterintuitive effect, if any. Further, in knowledge-intensive industries DCs have a wider spectrum of possible effects, evident in the wide credibility interval (CRI -0.14:0.66), as opposed to a more narrow effect in other industries (CRI 0.23:0.57). Hypothesis 4 predicted a stronger effect of DCs on market performance (r_c = .22) than on profitability and efficiency (r_c = 0.34), yet results revealed similar effect across the two at the .05 level. In fact, results revealed possible negative influence on market performance at the extreme (CRI -0.01:0.45). Results showed no support for hypothesis 5. Namely, DCs were related similarly to performance among domestic companies (r_c = .38) than MNEs (r_c = .34). While ranges of the confidence intervals of these two subgroups overlapped substantially, the sample size for this sub-group analysis was quite small and results should be interpreted with caution.

Overall, across several main effect and moderator analyses, 95% confidence intervals consistently excluded zero (ranged 0.02 to 0.69), supporting the significance of

the reported results. With that said an examination of data-source independence and performance metric source revealed interesting patterns. While the DCs-performance relationship was positive and significantly different from zero for non-independent data sources (r_c = .43; 95% CI 0.36:0.51), independent data sources yielded much lower effects (r_c = .06) with confidence intervals including zero (95% CI -0.05:0.17). The 83.4% confidence intervals of the two effects did not overlap in their range, indicating that this methodological moderator is significant at the .05 level. This result indicates possible common-method bias in DCs empirical research. Consistent with this finding, DCs were found to have a much stronger effect on perceptual performance (r_c = .42) than on archival measures of performance (r_c = .00). In fact, when performance measures were obtained from archival sources the DCs-performance link was not significantly different from zero (95% CI -0.08:0.07). This methodological moderator was significant at the .05 level as well, evident in non-overlapping 83.4% confidence intervals of the two subgroups. In the next section I discuss implications of the above mentioned results.

2.6 DISCUSSION AND CONCLUSIONS

The two main purposes of this study were to (a) provide more clarity to the DCs-performance link and by doing so, move literature on DCs forward toward resolving the ongoing theoretical debate regarding the contribution of DCs to performance, and (b) provide a systematic empirical analysis of the substantive and methodological contingencies in the DC-performance relationship. In general, empirical evidence supports an overall positive contribution of DCs to performance. However, results also provide strong evidence for several contingencies substantially affecting the DCs-performance link. Nevertheless, some previously proposed conceptual moderators were

found to have non-significant influences on the DC-performance relationship. These contingencies might have been the underlying cause for ongoing debates in the DCs literature. Integrating these findings together, we are able to see a more complete and nuanced picture of the crucial yet complex contribution of DCs to performance. Figure 2.1 presents the model supported by our meta-analytic examination.

[Insert Figure 2.1 about here]

Scholarly Implications

The findings of this meta-analysis have several important implications for DCs theory as well as future directions for this research stream. The tautology of the DCs framework has been subject to a heated debate among strategic management scholars (Barreto, 2010). Scholars have argued that DCs and performance are inseparable and that DCs is too vague of a concept. On one hand, my results show a moderate correlation between DCs and performance ($r_c = .31$), suggesting that the two are indeed related but distinct constructs. That is, results of this study did not point to a tautological link, bolstering the validity of DCs theory. The exclusive approach I employed towards examining specifically the construct of DCs lends further validity to the significant yet non-tautological contribution of DCs to performance. On the other hand, I did not find a rigorously validated scale to measure DCs. While there are major overlaps in how DCs were measured across the studies in my sample, DCs remains a somewhat vague concept in terms of operationalization. To date, studies have focused on measuring specific capabilities, often applicable to a restricted range of industries (e.g., Macher & Mowery, 2009; Tang & Liou, 2009). Clearly, research following well-established scale

development procedures (e.g., Hinkin, 1998) to develop an instrument for measuring organization-wide DCs is warranted.

I found a stronger positive relationship between DCs and performance as environmental dynamism increases to a certain point. Namely, this relationship is strongest in moderate environments. This finding may be partially at odds with theoretical work suggesting that DCs allow the firm to address rapidly changing environments (Teece et al., 1997). Winter (2003) suggested that in high-velocity contexts, DCs may be too costly to implement and maintain as their value is quickly eroded. In such environments, organizations may benefit more from improvising and experimenting (Zahra, Sapienza, & Davidsson, 2006). It could be that the additional benefits accrued due to possessing strong DCs in dynamic environments match the extensive resources needed to build and maintain DCs in rapidly changing business settings. It could also be that organizations in highly-dynamic environments possess stronger DCs to begin with, positioning them at par with their counterparts in stable environments.

Nevertheless, the positive contribution of DCs to performance in stable environments suggests that organizations operating under steadier circumstances may benefit from initiating change. By constantly reconfiguring the resource-base, firms with strong DCs in stable environments enjoy longer-lasting competitive advantages by, for instance, being the source of change, rather than responding to it. Conversely, it may be that research has not examined the value of DCs in extreme environmental conditions. For instance, the ability to rapidly reconfigure the resource-base may come in very handy in times of environmental jolts or decline in environmental munificence (Meyer, 1982). I

believe future research more specifically examining DCs under extreme environmental conditions may lead to important insights. Nevertheless, results of this study support a stronger effect under moderate environmental dynamism.

Firms operating in high-tech and knowledge-intensive industries may experience a similar equilibrium in the DCs cost-benefit tradeoff because (a) the advantage provided by DCs is quickly eroded or imitated and/or (b) firms engage in improvisation and experimentation that produce tacit knowledge. This finding point to the inevitable evolutionary nature of DCs (Helfat & Peteraf, 2003; Helfat, 2000; Zollo & Winter, 2002). Namely, the benefits and costs of DCs may be largely similar for companies across industries because these DCs evolve as a means to deal with the organization's environment (Holburn & Zelner, 2010). In knowledge-intensive industries firms may exhibit quantum changes, whereby capabilities are updated or replaced cyclically because experimentation and improvisation generate 'new ways of doing business'. Moreover, it could be that organization-wide DCs are a proper tool to deal with macro environments rather than more specific contexts, which require custom-tailored capabilities. Indeed, the stronger contribution of DCs to performance in non-developed markets supports this notion. The benefits of DCs may exceed the costs when there is a pressing concern to address environmental dynamism on a national level. An intra-organizational comparative analysis of MNE foreign subsidiaries dispersed in developed and emerging markets may lead to valuable insights regarding these differences (Birkinshaw, 1997; Birkinshaw & Hood, 1998).

I hypothesized that DCs will have a stronger influence on market performance than on profitability because DCs create and implement new ways of doing business

(Drnevich & Kriauciunas, 2011). However, results revealed no significant differences. It is possible, though, that study design issues drive these results. Studies rarely examine the longitudinal effect of DCs on performance. The effect of DCs on organizational outcomes such as growth, market share, and customer satisfaction may take more time to realize than immediate improvements in efficiency through internal resource-reconfigurations. Additionally, "business units producing profits today may not represent the best opportunities for business tomorrow." (Lawson & Samson, 2001: 382). Thus, deploying DCs may contribute more to immediate improvements in profitability than to benefits from changes in future market positions. Additionally, DCs may have internal implications for organizational efficiency that are, at least, equal to effects on market performance. Continuous reconfiguration of the resource-base may well translate into managers learning to, at the very least, 'do the same with less'. These issues require further examination in future research.

Domestic and multinational firms were found to benefit similarly from DCs. Although I predicted that the complexity (Bartlett & Ghoshal, 1989) and competitive intensity MNEs face will result in greater contribution of DCs to overall MNE performance (Luo, 2003), I found that, if any, domestic firms enjoy the benefits of DCs slightly more. A possible explanation is that due to increasing globalization and competitive intensity in domestic markets around the world, domestic firms build and deploy DCs as a means to deal with the rapidly changing environment. Overall, several previously hypothesized moderators were not found to play a statistically significant role in the DCs-performance link. However, results indeed show that this relationship is

influenced by contingencies. Future research aiming at uncovering more such boundary conditions is an important avenue for future research.

Finally, one of the most meaningful findings in regard to methodological moderators was when I examined the potential impact of subjective and objective performance measures. I found that the corrected correlations were much higher for subjective performance. This finding points to potential upward bias in studies utilizing subjective performance data and nevertheless casts potential doubts in the validity of the DCs framework with regards to its ability to explain heterogeneity in performance. Additionally, the lower corrected correlation between DCs and performance for non-independent DCs and performance data sources suggests that common method variance might be at play, artificially creating higher correlations between DCs and performance. Clearly, there is a pressing concern to push DCs research towards higher levels of methodological rigor in order to alleviate such empirical artifacts that may misinform theory. These issues require further research in the future as well.

Practical Contributions

The results of our study highlight a number of practical implications associated with DCs. First, this study not only provides overarching evidence that building and deploying DCs is beneficial for performance, but also delineates the circumstances under which investment in DCs is more likely to translate into superior performance. First, DCs were strongly related to profitability, a performance outcome managers put great emphasis on. Thus, building dynamic capabilities may benefit organizations not only in achieving market objectives, but also in terms of the bottom line. Second, companies looking to establish subsidiaries in foreign markets may implement more successful

strategies by diffusing and building new capabilities in emerging and transition markets (Luo, 2002; Peng & Luo, 2000) while using more crystalized routines in developed economies. Finally, this study outlines several critical tradeoffs embedded in the decision to pursue and upgrade DCs, providing important insights for managers seeking to find a proper fit between their firm's strategic capabilities and environment.

Limitations and Conclusion

Although I believe that this research effort contributes to the DCs literature, it is not without limitations that must be acknowledged. First, the sample size for several moderator analyses was quite small. Thus, inferences made from our results should be made with caution. Although a larger number of original studies is desirable, the presentation of a more comprehensive moderator analysis highlighted areas of future inquiry that is available to DCs researchers. Second, the majority of the studies were cross sectional in nature, rather than longitudinal, so one must be cautious in making assertions of causality. I encourage future research to examine these variables in longitudinal research to address this issue. Third, an examination of moderators shows that the vast majority of the studies in my sample used subjective measures rather than objective measures. Thus, in light of the finding that objective measures yield significantly lower correlations, I must acknowledge this limitation as well. Finally, my exclusive approach toward sample selection allowed for increased comparability across samples. However, this may limit the generalizability of the results to more specific capabilities (e.g., innovativeness, market orientation, acquisition-integration capability). Nevertheless, the results of this study do demonstrate that DCs is an important construct

to organizational performance. I hope that the results will encourage researchers to pursue these and other investigations into the role of DCs in organizational success.

2.7 REFERENCES

Ambrosini, V., & Bowman, C. 2009. What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews*, 11: 29-49.

Amit, R., & Livnat, J. 1988. Diversification and the risk-return trade-off. *Academy of Management Journal*, 31: 154-166.

Armstrong, F.E., & Shimizu, K. 2007. A review of approaches to empirical research on the resource-based view of the firm. *Journal of Management*, 33, 959–986.

Augier, M., & Teece, D.J. 2007. Dynamic capabilities and multinational enterprise: Penrosean insights and omissions. *Management International Review*, 47, 175–192.

Barney, J. B. 1986. Strategic factor markets: Expectations, luck, and business strategy. *Management Science*, 32: 1231-1241.

Barney, J. B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17: 99-120.

Barney, J.B. 2007. Looking inside for competitive advantage. In R.S. Schuler and S.E. Jackson (Eds.), *Strategic Human Resources Management*, 9-22. Malden, MA: Blackwell.

Barreto, I. 2010. Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management,* 36(1): 256-280.

Bartlett, C.A., & Ghoshal, S. 1989/2002. *Managing Across Borders: The Transnational Solution*. Second edition. Boston: Harvard Business School Press.

Birkinshaw, J.M. 1997. Entrepreneurship in multinational corporations: the characteristics of subsidiary initiatives. *Strategic Management Journal,* 18(3): 207- 229.

Birkinshaw, J.M., & Hood, N. 1998. Multinational subsidiary evolution: capability and charter change in foreign-owned subsidiary companies. *Academy of Management Review,* 23(4): 773-795.

Cao, L. 2011. Dynamic capabilities in a turbulent market environment: Empirical evidence from international retailers in china. *Journal of Strategic Marketing*, 19(5), 455.

Certo, S., Lester, R., Dalton, C. & Dalton, D. 2006. Top management teams, strategy and financial performance: A meta-analytic examination. *Journal of Management Studies*, 43: 813-823.

Collis, D. J. 1994. How valuable are organizational capabilities? *Strategic Management Journal*, 24: 143-152.

Crook, T. R., Ketchen, D. J., Jr., Combs, J. G., & Todd, S. Y. 2008. Strategic resources and performance: A meta-analysis. *Strategic Management Journal,* 29: 1141-1154.

Daily, C. M., Certo, S. T., & Dalton, D. R. 2005. Investment bankers and IPO pricing: Does prospectus information matter? *Journal of Business Venturing,* 20: 93-111.

Dalton, D.R., Aguinis, H., Dalton, C.M., Bosco, F.A., & Pierce, C.A. 2012. Revisiting the file drawer problem in meta-analysis: an assessment of published and unpublished correlation matrices. *Personnel Psychology*, 65: 221–249.

Danneels, E. 2002. The dynamics of product innovation and firm competencies. *Strategic Management journal*, 23: 1095-2021.

Danneels, E. 2008. Organizational antecedents of second-order competences. *Strategic Management Journal*, 29: 519-543.

Day, G. S. 1994. The capabilities of market driven organizations. *Journal of Marketing*, 58, 37–52.

Deeds DL, DeCarolis DM, & Coombs J. 2000. Dynamic capabilities and new product development in high technology ventures: an empirical analysis of new biotechnology firms. *Journal of Business Venturing,* 15: 211–229.

Di Stefano, G., Peteraf, M., & Verona, G. 2010. Dynamic Capabilities Deconstructed: A Bibliographic Investigation into the Origins, Development, and Future Directions of the Research. *Industrial and Corporate Change,* 19(4): 1187-1204.

Drnevich, P., & Kriauciunas, A. 2011. Clarifying the conditions and limits of the contributions of ordinary and dynamic capabilities to relative firm performance. *Strategic Management Journal*, 32(3), 254.

Easterby-Smith M., M. Lyles, & M. Peteraf. 2009. The practice of dynamic capabilities. *British Journal of Management,* Special Issue, 20(1).

Eisenhardt, K. M., & Martin, J. A. 2000. Dynamic capabilities: What are they? *Strategic Management Journal,* 21: 1105-1121.

Eisenhardt, K.M. 1989. Making fast strategic decisions in high-velocity environments. *Academy of Management Journal*, 32: 543-576.

Fang, E., & Zou, S. 2009. Antecedents and consequences of marketing dynamic capabilities in international joint ventures. *Journal of International Business Studies*, 40(5), 742.

Ferrier, W.J. 2001. Navigating the Competitive Landscape: The Drivers and Consequences of Competitive Aggressiveness. *Academy of Management Journal*, 44: 858-877.

Finkelstein, S. & Hambrick, D.C. 1990. Top-management-team tenure and organizational outcomes: The moderating role of managerial discretion. *Administrative Science Quarterly*, 35: 484-503.

Griffith, D. A., & Harvey, M. G. 2001. A resource perspective of global dynamic capabilities. *Journal of International Business Studies*, 32(3): 597-606.

Helfat, C. E. 2000. Guest editor's introduction to the special issue: The evolution of firm capabilities. *Strategic Management Journal*, 21(10-11), 955-959.

Helfat, C. E. 1997. Know-how and asset complementarity and dynamic capability accumulation: The case of R&D. *Strategic Management Journal*, 18: 339-360.

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., & Winter, S. G. 2007. *Dynamic capabilities: Understanding strategic change in organizations.* London: Blackwell.

Helfat, C. E., & Peteraf, M. A. 2003. The dynamic resource-based view: capability lifecycles. *Strategic management journal*, 24(10), 997-1010.

Hinkin, T. R. 1998. A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 1, 104-121.

Hitt, M. A., & Ireland, R. D. 1985. Corporate Distinctive Competence, Strategy, Industry, and Performance. *Strategic Management Journal*, 6: 273–293.

Holburn, G. L. F., & Zelner, B. A. 2010. Political capabilities, policy risk, and international investment strategy: evidence from the global electric power generation industry. *Strategic Management Journal,* 31: 1290–1315.

Hoopes DG, Madsen TL, & Walker G. 2003. Guest editors' introduction to the special issue: Why is there a resource-based view? Toward a theory of competitive heterogeneity. *Strategic Management Journal*, Special Issue 24(10): 889–902.

Hoskisson, R., Eden, L., Lau, C., & Wright, M. 2000. Strategy in emerging economies. *Academy of Management Journal*, 43: 249-267.

Hunter, J. E., & Schmidt, F. L. 2004. *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*, 2d ed. Newbury Park, CA: Sage Publications.

Karim, S. 2006. Modularity in organizational structure: The reconfiguration of internally developed and acquired business units. *Strategic Management Journal*, 27: 799-823.

Kirca, A., Hult, G.T. Roth, K. Causgil, S. T. et al. 2011. Firm-specific assets, multinationality, and financial performance: A meta-analytic and theoretical integration. *Academy of Management Journal*, 54: 47-72.

Knol, M. J., Pestman, W. R., & Grobbee, D. E. (2011). The (mis) use of overlap of confidence intervals to assess effect modification. *European journal of epidemiology*, 26(4), 253-254.

Kostova, T., & Zaheer, S. 1999. Organizational legitimacy under conditions of complexity: The case of the multinational enterprise. *Academy of Management Review*, 24: 64-81.

Kostova, T., Roth, K., & Dacin, M. T. 2008. Institutional theory in the study of multinational corporations: A critique and new directions. *Academy of Management Review,* 33(4), 994–1006.

Krasnikov, A., & Jayachandran, S. 2008. The relative impact of marketing, research and development, and operations capabilities on firm performance. *Journal of Marketing*, 72(4), 1–11.

Lampel, J., & Shamsie, J. 2003. Capabilities in motion: New organizational forms and the reshaping of the Hollywood movie industry. *Journal of Management Studies*, 40: 2189-2210.

Lavie D. 2006. The competitive advantage of interconnected firms: an extension of the resource-based view. *Academy of Management Review,* 31(3): 638–658.

Lawson, B., & Samson, D. 2001. Developing Innovation Capability in Organizations: A Dynamic Capabilities Approach. *International Journal of Innovation Management*, 5(3), 377-400.

Luo, Y. 2000. Dynamic capabilities in international expansion. *Journal of World Business*, 35(4): 355-378.

Luo, Y. 2002. Capability exploitation and building in a foreign market: Implications for multinational enterprises. *Organization Science,* 13(1): 48-63.

Luo, Y. 2003. Market-seeking MNEs in an emerging market: how parent–subsidiary links shape overseas success. *Journal of International Business Studies,* 34(3): 290–309.

Macher, J. T., & Mowery, D. C. 2009. Measuring dynamic capabilities: Practices and performance in semiconductor manufacturing. *British Journal of Management*, 20(S1), 41–62.

Makadok, R. 2001. Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, 22: 387-401.

Marcus, A. A., & Anderson, M. H. 2006. A general dynamic capability: does it propagate business *and* social competencies in the retail food industry? *Journal of Management Studies*, 43, 1, 19–46.

McGahan, A. M., & Victer, R. 2010. How much does home country matter to corporate profitability. *Journal of International Business Studies*, 41(1): 142-165.

Menguc, B., & Auh, S. 2006. Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Academy of Marketing Science*, 34: 63-73.

Miles, M. B., & Huberman, A. M. 1994. *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.

Miller, C. & Cardinal, L. 1994. Strategic planning and firm performance: A synthesis of more than two decades of research. *Academy of Management Journal*, 37: 1649-1665.

Nelson, R. R., & Winter, S. G. 1982. *An evolutionary theory of economic change.* Cambridge, MA: Belknap.

Newbert, S. L. 2007. Empirical research on the resource-based view of the firm: An assessment and suggestions for future research. *Strategic Management Journal*, 28: 121-146.

Pablo, A., Reay, T., Dewald, J.R., & Casebeer, A.L. 2007. Identifying, enabling and managing dynamic capabilities in the public sector. *Journal of Management Studies*, 44, 687–708.

Palich, L. E., Cardinal, L. B., & Miller, C. C. 2000. Curvilinearity in the diversification-performance linkage: An examination of over three decades of research. *Strategic Management Journal*, 21 (2): 155-174.

Park, S. H., & Luo, Y. 2001. *Guanxi* and organizational dynamics: organizational networking in Chinese firms. *Strategic Management Journal,* 22(5): 455–477.

Peng, M. W., & Luo, Y. 2000. Managerial ties and firm performance in a transition economy: The nature of a micro-macro link. *Academy of Management Journal,* 43: 486- 501.

Penrose, E. T. 1959/1995. *The Theory of the Growth of the Firm*, 3rd ed. Oxford University Press, Oxford, UK.

Porter, M.E. 1990. *The Competitive Advantage of Nations*. New York: Free Press.

Rindova, V., & Taylor, S. 2002. Dynamic capabilities as macro and micro organizational evolution. www.rhsmith.umd.edu/hcit/docs/dynamic.pdf

Rosenthal, R. 1995. Writing meta-analytic reviews. *Psychological Bulletin,* 118, 183–192.

Rothaermel, F., & Deeds, D. 2006. Alliance type, alliance experience and alliance management capability in high-technology ventures. *Journal of Business Venturing*, 21(4): 429-460.

Schumpeter, J. A. 1934. *Theory of economic development.* Cambridge, MA: Harvard University Press.

Seibert, S. E., Wang, G., & Courtright, S. H. 2011. Antecedents and consequences of psychological and team empowerment in organizations: A meta-analytic review. *Journal of Applied Psychology,* 96: 981–1003.

Shrivastava, P. 1987. Rigor and practical usefulness of research in strategic management, *Strategic Management Journal*, 8: 77-92.

Slater, S. F., & Narver, J. C. 2000. The positive effect of a market orientation on business profitability: A balanced replication. *Journal of Business Research*, 48(1), 69– 73.

Snow, C.C. & Hrebiniak, L.G. 1980. Strategy, distinctive competence, and organizational performance. *Administrative Science Quarterly*, 25: 317-336.

Song, M., Droge, C., Hanvanich, S., & Calantone, R. 2005. Marketing and technology resource complementarity: An analysis of their interaction effect in two environmental contexts. *Strategic Management Journal*, 26: 259-276.

Tallman, S. 1991. Strategic management models and resource-based strategies among MNEs in a host market. *Strategic Management J*ournal, 12: 69-82.

Tang, Y.-C., & Liou, F.-M. 2009. Does firm performance reveal its own causes? The role of Bayesian inference. *Strategic Management Journal*, 31(1), 39-57.

Teece, D. J. 2007. Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28: 1319-1350.

Teece, D. J., & Pisano, G. 1994. The dynamic capabilities of firms: An introduction. *Industrial and Corporate Change*, 3: 537-556.

Teece, D. J., Pisano, G., & Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18: 509-533.

Tripas, M. 1997. Surviving radical technological change through dynamic capability: evidence from the typesetter industry. *Industrial & Corporate Change,* 6(2), 342-378.

Uhlenbruck, K. 2004. Developing acquired foreign subsidiaries: The experience of MNEs in transition economies. *Journal of International Business Studies*, 35: 109-123.

Verona, G., & Ravasi, D. 2003. Unbundling dynamic capabilities: An exploratory study of continuous product innovation. *Industrial & Corporate change*, 12(3): 577-6007.

Wang CK, & Ang BL. 2004. Determinants of venture performance in Singapore. *Journal of Small Business Management*, 42(4): 347–363.

Wang, C. L., & Ahmed, P. K. 2004. The development and validation of the organisational innovativeness construct using confirmatory factor analysis. *European Journal of Innovation Management*, 7(4), 303-313.

Wang, C., & Ahmed, P. 2007. Dynamic capabilities: a review and research agenda. *International Journal of Management Reviews*, 9, 31–51.

Weerawardena, J., Mort, G. S., Liesch, P. W., & Knight, G. 2007. Conceptualizing accelerated internationalization in the born global firm: A dynamic capabilities perspective. *Journal of World Business*, 42(3).

Whitener, E. M. 1990. Confusion of confidence intervals and credibility intervals in meta-analysis. *Journal of Applied Psychology*, 75, 315–321.

Winter, S. G. 2003. Understanding dynamic capabilities. *Strategic Management Journal*, 24: 991-995.

Wolf, F.M. 1986. Meta-analysis: quantitative methods for research synthesis. Beverly Hills: Sage Publications.

World Bank. 2012. http://data.worldbank.org/about/country-classifications (accessed on 1 September, 2012).

Zaheer, S. 1995. Overcoming the liability of foreignness. *Academy of Management Journal*, 38(2): 341-363.

Zahra, S., & George, G. 2002. Absorptive capacity: A review, reconceptualization and extension. *Academy of Management Review*, 27(2): 213-240.

Zahra, S., Sapienza, H., & Davidsson, P. 2006. Entrepreneurship and dynamic capabilities: a review, model and research agenda. *Journal of Management Studies*, 43, 917–955.

Zollo, M., & Winter, S. G. 2002. Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13: 339-351.

Zott, C. 2003. Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study. *Strategic Management Journal*, 24: 97-125.

Zúñiga-Vicente, J. Á., & Vicente-Lorente, J. D. 2006. Strategic moves and organizational survival in turbulent environments: The Case of Spanish Banks (1983-97). *Journal of Management Studies*, 43: 485-519.

2.8 TABLES AND FIGURES

Table 2.1 – List of Meta-analyzed Articles

Arthurs & Busenitz (2006)

Blesa & Ripollés (2008)

Caloghirou, Protogerou, Spanos, & Papagiannakis (2004)

Chen, Williams, & Agarwal (2012)

Chien & Tsai (2012)

Cui & Jiao (2011)

Drnevich & Kriauciunas (2011)

Fang & Zou (2009)

Huh, Yook, & Kim (2008)

Hung, Yang, Lien, McLean, & Kue (2010)

Lee, Venkatraman, Tanriverdi, & Iyer (2010)

Protogerou, Caloghirou, & Spyros (2011)

Song, Droge, Hanvanich, & Calantone (2005)

Webb & Schlemmer (2008)

Wu (2007)

Wu (2006)

Wu, Lin, & Hsu (2007)

Yalcinkaya, Calantone, & Griffith (2007)

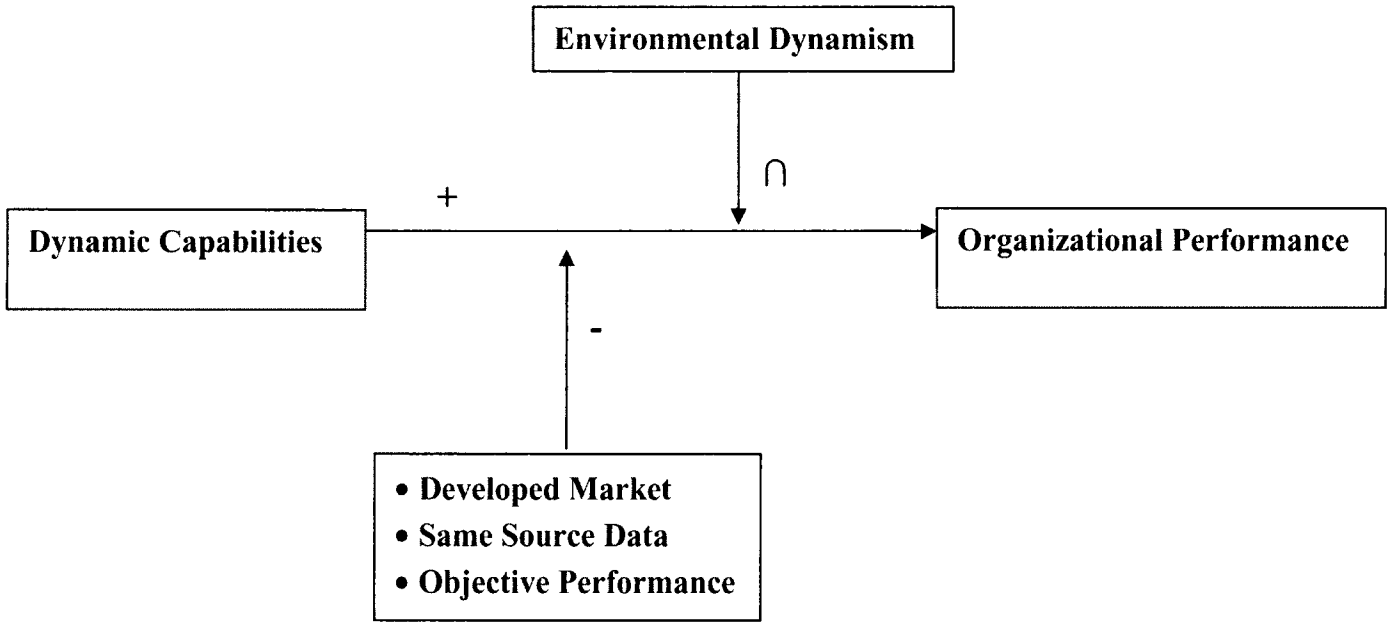
Yiu & Lau (2008)

Table 2.2. Meta-analytic Results

Sample	Hypothesis	K	N	r_{mean}	r_c	SDr_c	95% CI	83.4% CI	80% CRI
1. All studies	1	19	5,171	.265	.311	.228	0.21:0.42	0.23:0.39	0.02:0.60
2. Stable environment	2a	9	2,335	.255	.302	.102	0.23:0.38	0.25:0.35	0.17:0.43
Moderate environment	2a	4	535	.456	.519	.161	0.35:0.69	0.40:0.64	0.31:0.73
dynamic environment	2a	8	2,321	.230	.272	.297	0.06:0.48	0.12:0.42	-0.11:0.65
3. Developed economies	2b	10	3,207	.138	.167	.148	0.07:0.26	0.10:0.24	-0.02:0.36
Non-developed economies	2b	7	1,467	.505	.587	.107	0.50:0.69	0.53:0.65	0.45:0.75
4. High-tech & knowledge-based	3	7	2,086	.219	.259	.313	0.02:0.49	0.09:0.43	-0.14:0.66
Other industries	3	6	1,353	.335	.398	.131	0.28:0.51	0.31:0.48	0.23:0.57
5. Market performance	4	14	3,615	.185	.220	.177	0.12:0.32	0.15:0.29	-0.01:0.45
Profitability/efficiency	4	11	2,464	.286	.340	.162	0.24:0.44	0.27:0.41	0.13:0.55
6. MNEs	5	3	1,153	.299	.340	.123	0.19:0.49	0.23:0.45	0.18:0.50
Domestic firms	5	9	1,758	.323	.384	.205	0.24:0.52	0.28:0.49	0.12:0.65
7. Independent data sources	-	5	1,734	.048	.059	.118	-0.05:0.17	-0.02:0.14	-0.09:0.21
Non-independent data sources	-	17	3,571	.370	.434	.151	0.36:0.51	0.38:0.49	0.24:0.63
8. Archival performance	-	3	1,349	.000	.000	.053	-0.08:0.07	-0.05:0.05	-0.07:0.06
Perceptual performance	-	18	3,842	.359	.422	.150	0.35:0.50	0.37:0.47	0.23:0.61

Note: K= sum of studies; N= sum of companies; r_{mean}= sample weighted average correlation; r_c= sample weighted average correlation corrected for measurement error; SDr_c= standard deviation of r_c; CI= confidence interval; CRI= credibility interval. The sum of K for some moderator tests differs from the overall K because some studies may not include required categorization information. Confidence and credibility intervals are based on r_c (Whitener, 1990; Crook et al., 2008).

Figure 2.1. A Model of the Contribution of Dynamic Capabilities to Performance



CHAPTER 3

ESSAY II: CRISIS? WHAT CRISIS? RESILIENT ORGANIZATIONS AMID ENVIRONMENTAL JOLTS: A DYNAMIC CAPABILITIES PERSPECTIVE

3.1 ABSTRACT

While fragile organizations pose great risk to communities, economies, governments, and as seen in 2008, the global economy as a whole, the proper organizational actions needed to facilitate firm resilience in such environments remain unclear. In this paper, I examine how dynamic capabilities of the firm affect firm performance amid environmental jolts. Utilizing a sample of firms operating in Israel during the 2008 global financial crisis, I found that dynamic managerial capability and dynamic knowledge-management capability are positively related to performance, while dynamic relationship management capability is not related to performance during an environmental jolt. Further, I found that interactions between pairs of these capabilities produce negative influence on performance, suggesting that these capabilities are substitutable. Thus, this paper contributes to the emerging theory of dynamic capabilities by examining their effect on organizational performance during extreme, unfavorable environmental conditions.

"Resilient organizations thrive despite experiencing conditions that are surprising, uncertain, often adverse, and usually unstable."
(Lengnick-Hall, Beck, & Lengnick-Hall, 2011: 243).

3.2 INTRODUCTION

Crises often surprise and catch organizations unprepared. The global financial crisis in 2008 resulted in a worldwide market cap loss of 19.4 USD trillion, a 46 percent drop compared to 2007 (Garelli, 2009). The effects of this crisis are still ongoing, evident in more than 208,000 business bankruptcies in the U.S. between 2008 and 2011 (Bankruptcy Data, 2012). Notwithstanding this astounding statistic, the U.S. accounts for less than 19 percent of global insolvencies (Claessens & Klapper, 2005). Such crises have often been referred to as 'environmental jolts' (Meyer, 1982). Meyer (1982) defined environmental jolts as "transient perturbations whose occurrences are difficult to foresee and whose impacts on organizations are disruptive and potentially inimical." (p. 515). Ultimately, organizational resilience translates into displaying good financial performance not only during times of prosperity, but more so during times of severe decline (Collins & Hansen, 2011; Wan & Yiu, 2009). Indeed, the staggering costs of low preparedness and ineffective action in the context of environmental jolts, as well as the rising frequency of such events (Taleb, 2012), create a pressing need to study the ability of firms to perform well amid major environmental setbacks (Carmeli & Markman, 2011; Wan & Yiu, 2009; Sutcliffe & Vogus, 2003; Meyer, 1982).

However, while fragile organizations pose great risk to communities, economies, governments, and as seen in 2008, the global economy as a whole, the proper organizational actions needed to facilitate firm resilience in such environments remain unclear (Kunc & Bandahari, 2011). During a jolt, the rapid and unexpected change in the

environment may often render existing strategies obsolete (Wan & Yiu, 2009; Audia et al., 2000); thus strategy scholars have a deep interest in the study of firm actions amid jolts (Goll & Rasheed, 2011; Park & Mezias, 2005). Yet firm resilience may be a function of pre-jolt anticipatory strategic actions (Meyer, 1982), wherein firms develop and deploy resource-configurations that allow persistence during environmental jolts (Kraatz & Zajac, 2001). Thus, in this paper, I examine how anticipatory pre-jolt actions led to heterogeneity in firm resilience to the 2008 global financial crisis.

The 2008 global financial crisis is an interesting and valuable natural experiment to study firm anticipation of and response to dramatic environmental changes, a research setting that may contribute greatly to strategic management theory (Park & Mezias, 2005). This is because commensurate with increasing levels of global interconnectedness is a growing exposure of organizations to environmental jolts worldwide. In large part due to the ingenuity of its business sector during the financial crisis in 2007-2008, Israel was categorized as a developed country in 2009 by the International Monetary Fund (Fainshmidt, 2012). As such, Israeli companies provide a very appropriate and interesting setting to examine heterogeneity in firm performance resilience to environmental jolts.

While such jolts can be studied from many different perspectives, I utilize a dynamic capabilities approach (Teece et al., 1997; Teece & Pisano, 1994). Helfat et al. (2007), building on Teece et al.'s original definition[3], described dynamic capabilities as the "capacity of an organization to purposefully create, extend, or modify its resource base" (p.4). As firms possessing dynamic capabilities are intensely entrepreneurial in sensing and managing threats (Teece, 2007), dynamic capabilities is an especially

[3] Teece et al. (1997) defined dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (p.516).

suitable theoretical lens to test resilience in the context of jolts (Wan & Yiu, 2009). According to Drnevich and Kriauciunas (2011: 260), "firms operating in dynamic environments can gain greater benefits from using dynamic capabilities than in stable environments since such capabilities enable the firm to adjust to the environment". To date, scholars have yet to systematically examine whether and how dynamic capabilities contribute to resilience of organizational performance during crisis (Barreto, 2010). Most studies in this research stream have focused on either stable environments (e.g., Blesa & Ripollés, 2008; Arthurs & Busenitz, 2006) or somewhat dynamic environments (e.g., Drnevich & Kriauciunas, 2011; Fang & Zou, 2009), yet no study, to the best of my knowledge has examined the relationship between dynamic capabilities and firm performance under extreme environmental conditions.

As depicted in Figure 3.1, studies on the relationship between dynamic capabilities and firm performance can be divided into four types. Most studies have focused on conditions of marginal market growth, slow market attrition, or, to an extent, faster market growth (i.e., positive dynamism), while conditions of crisis and boom remain underexplored. In other words, while extant literature on dynamic capabilities has emphasized adaptation to gradual and rapid change in the environment, (whether favorable or not), the impact of such capabilities in times of crisis has yet to be examined. In this paper, I examine the following research question: how do dynamic capabilities of the firm affect firm performance amid environmental jolts? Thus this paper contributes to the emerging theory of dynamic capabilities by examining their effect on organizational performance during extreme, unfavorable environmental conditions. In the following

section I review the literature on environmental jolts, crises and dynamic capabilities and develop my hypotheses.

[Insert Figure 3.1 about Here]

3.3 THEORY DEVELOPMENT

Adapting to Environmental Jolts

Scholars have examined micro and macro level organizational characteristics and actions (or processes, resources, strategies and systems) that facilitate adaptability to environmental jolts. For instance, Meyer (1982) posited that entrepreneurial organizational culture and adaptive ideology are the main strategic drivers of organizational resilience. An entrepreneurial culture and adaptive ideology facilitates the necessary flexibility to withstand disruptive environmental change[4]. Others have shown that firms often replace strategic leaders as a means to adapt to a changing environment (Tushman & Rosenkopf, 1996; Forbes, Manrakhan, & Banerjee, 2004). Further, firms may also engage in alliance-formations (Park & Mezias, 2005) and acquisitions (Wan & Yiu, 2009) during a jolt to increase stock price and profitability. Others have noted that firms' human resource management system may create the human capital needed to thrive in adverse conditions (Lengnick-Hall et al., 2011). Firms also exhibit patterns of learning in dealing with severe crises. Venkatraman and Van de Ven (1998) discovered that firms that survived jolts could accumulate valuable experience that allowed them to exhibit stronger resilience in subsequent jolts. According to Chakravarthy (1982), an

[4] According to Meyer (1982: 528), firms "that pursue entrepreneurial strategies typically enact volatile domains and scan numerous environmental sectors keenly. Such organizations are liable to detect the tremors and prepare for jolts. [...] Jolts are unlikely to take such organizations by surprise."

adaptive fit[5] between organizational structure, strategy, and environment ensures that organization possesses the required capacity to meet unstable environmental conditions (Chakravarthy, 1982).

While these studies propose several important organizational characteristics and firm actions as drivers of success in times of crisis, they fail to specify the underlying capabilities of firms that develop capacity for resilience and action (Kunc & Bandahari, 2011). For instance, a firm might engage in acquisitions to enhance its growth (King et al., 2004) yet it might lack the "management know-how and discipline to 'stitch' and leverage on [acquired] resources and capabilities" (Carmeli & Markman, 2011: 331). Even in the absence of critical resources, firms may sustain environmental jolts by developing capabilities that rapidly reconfigure existing resources (Bradley, Aldrich, Sheperd, & Wiklund, 2011). Taken together, these arguments propose that resilience to jolts may well be a function of not only what firms possess (resources) but also the managerial activities that span the resource-base (i.e., dynamic capabilities). Yet, while several scholars have suggested that dynamic capabilities are imperative to resilience during a crisis (Markman et al., 2009; Yu. Sengul, & Lester, 2008), their role in enduring environmental jolts has been largely ignored to date.

While resource-based and industrial organization perspectives often assume relatively static environments and thus apply well to pre-jolt contexts, dynamic capabilities are more suited to explain firm performance during crises (Lee, Beamish, Lee, & Park, 2009). Grewal and Tansuhaj (2001) found that when competitive intensity is

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[5] Adaptive fit may occur when proactive strategies are coupled with organic structure, facilitating strong resilience to jolts as managers can anticipate most environmental changes ex ante and make innovative decisions. As pointed out by Chakravarthy (1982: 40), "whereas a state of adaptation ensures survival, an adaptive fit ensures in addition the optimal use of the material and organizational capacities of a firm." Such equilibrium represents an optimal balance between creativity and efficiency

enhanced by an economic crisis, the ability to respond promptly to market opportunities and changing technologies enhances organizational performance. Further, the organization's ability to effectively manage knowledge, stakeholder relationships, and internal assets plays a major role in its crisis-preparedness (Pearson & Mitroff, 1993). For instance, Israeli high-tech firms have been documented to thrive and grow during the 2008 global economic crisis, partially owing to their custom-tailored strategy of targeting few, large, global customers, allowing them to tap into and develop strong business networks (Almor, 2011). Thus, organizational resilience may well be a function of the ability to continuously pick valuable resources and develop new resource-combinations that fit changing external conditions (Makadok, 2001).

Dynamic Capabilities amid Environmental Jolts

Dynamic capabilities are an organization's behavioral routines that utilize existing rent-generating resources and, at the same time, spawn new resources and competencies to create sustainable competitive advantage (Teece, 2007; Teece et al., 1997; Tallman, 1991). Eisenhardt and Martin (2000) have suggested that dynamic capabilities consist of strategic processes by which the organization regenerates products, processes, networks, and positions in the marketplace (Teece et al., 1997). These organizational routines are deeply embedded within the organization and facilitate knowledge-processing of intensive external and internal communications that result in reduced uncertainty and superior performance through ties, resource-configurations, and unique product-market positioning (Lee, Venkatraman, Tanriverdi, & Iyer, 2010; Eisenhardt & Martin, 2000; Ancona & Caldwell, 1992; Clark & Fujimoto, 1991). Because dynamic capabilities may take years to develop (Kor & Mahoney, 2005) and are largely a product of evolution by

means of natural selection (Winter, 2012), in this study I focus on how the pre-jolt building of such capabilities affects the heterogeneity in firms' performance during an environmental jolt.

Dynamic capabilities of the firm are rooted in combination of underlying capabilities that comprise a firm's capacity to address environmental jolts by adding, reconfiguring, and deleting resources (Grewal & Tansuhaj, 2001; Adner & Helfat, 2003; Danneels, 2008). While the extant literature on dynamic capabilities does not provide clear guidance as to which underlying capabilities, of the many previously studied, are most crucial amid environmental jolts (Baretto, 2010), it does imply three underlying capabilities that may be most relevant[6]: dynamic managerial capability, dynamic knowledge-management capability, and dynamic relationship-management capability (e.g., Tang & Liou, 2010; Adner & Helfat, 2003; Teece 2012, Bapuji et al., 2012).

Dynamic managerial capability is largely a function of the quality of managers (Adner & Helfat, 2003), or the ability of managers to continuously create resource-combinations that extract more value from the firm's resource-pool. Such ability may act as a buffer against environmental jolts because it represents managers' capacity to 'do more with less', an advantage often crucial in times of crisis and resource-scarcity. Dynamic knowledge-management capability refers to managers' perception of the world they operate in (i.e., shared mental models; Walsh, 1995) and the heterogeneous ways in which managers obtain, process, create, discard, and apply knowledge. This is consistent with Adner and Helfat's (2003) focus on managerial cognition because managers from

[6] For instance, Grewal and Tanshuhaj (2001) have shown that the capability to flexibly manage resource-pools can help firms manage their way through economic crises, resulting in better post-crisis performance. Further, Teece (2012) argued that an entrepreneurial asset-orchestration ability is key to pioneering markets characterized by intense competition and major changes.

different firms often exhibit heterogeneous cognitive 'technology frames' that affect technological productivity in terms of intellectual property (e.g., patents; Acha, 2002). This dynamic capability is highly important during crisis because environmental jolts often create new knowledge needs accompanied by scarce knowledge flows (Meyer, 1982). As such, firms that manage internal and external knowledge effectively are more able to renew operational capabilities in response to market changes by creating new knowledge configurations (Cepeda & Vera, 2007). Lastly, dynamic relationship-management capability refers to a relationship advantage accrued due to ability of managers to create, utilize, and discard social capital effectively (Adler & Kwon, 2002; Tang & Liou, 2010). Notably, deep embeddedness in organizational networks (i.e., strong social capital) may at times lead to inertia and dismissal of important inflows of external information by managers (Uzzi, 1997). Yet developing a dynamic relationship-management capability ensures constant creation and reconfiguration of social capital, providing the firm with tacit, socially complex resources that, in times of decline, may result in favorable treatment from clients, suppliers, institutions, and other stakeholders. For that reason, dynamic relationship-management capability is well-suited to examine firm resilience to environmental jolts.

To date, the literature has yet to examine an exhaustive theoretical and empirical framework of dynamic capabilities. Additionally, existing research has failed to specify the interrelationships between the underlying capabilities described above. Instead, most studies choose to focus on one specific capability, or examine dynamic capabilities with respect to a specific aspect of the firm. For instance, Lee et al. (2010) examined how a resource-configuration capability leads to sales growth, and Drnevich and Kriauciunas

(2011) examined how firms enhance their performance during times of environmental dynamism by developing dynamic information technology systems. Representing one of the main contributions of our study, I apply a more comprehensive framework of dynamic capabilities and examine the interrelationships between the aforementioned underlying capabilities as well.

Dynamic Managerial Capability

Dynamic managerial capability refers to an asset orchestration ability by which managers in the firm create fit between resource-decisions and resource-deployments (Sirmon et al., 2011; Sirmon & Hitt, 2009). Prior research has shown that recreating fit in the context of major environmental change is largely a result of strong dynamic managerial capabilities (Peteraf & Reed, 2007) because "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" (Teece, 2012, p. 1398). Consistent with that view, Eggers and Kaplan (2009) found that CEO attention towards technological change, as a means to sense opportunities and threats, is associated with faster strategic responses. Similarly, Kaplan (2008) showed that such capabilities were positively associated with organizational outcomes during the fiber-optic revolution. This occurs because building dynamic managerial capability requires the development of managerial skills to sense and solve problems using both analysis and intuition (Stamp, 1981).

Further, development of strong dynamic managerial capabilities may lead to better performance during times of crisis because "where firms are particularly good at the support skills of financial management, human resource management, [and]

manufacturing/transformation processes, employees are likely to be more satisfied in their jobs" and exhibit higher levels of commitment to the firm (Hooley, Greenley, Cadogan, & Fahy, 2005: 21). From a more strategic standpoint, Grewal and Tansuhaj (2001) showed that the ability of Thai firms to flexibly manage their resource pool was positively associated with their post-Asian-crisis performance. This may occur for two reasons. First, by developing dynamic managerial capabilities, firms extract greater value from resource-pools and thus create organizational slack and agility (Cyert & March, 1963) that are readily available to deploy in times of crisis (i.e., strategic flexibility; Evans, 1991). Second, Moliterno and Wiersema's (2007) examination of Major League Baseball franchise managements revealed that managers often create competitive advantage by developing the skill to identify and dispose of productive resources (e.g., divestiture) that create disruptive synergies within the organization.

Failing to build dynamic managerial capabilities may result in a competence-trap whereby the firm's over-focus on exploiting core competencies in stable times results in weak ability to renew core competencies in times of major change (Flier, Van Den Bosch, & Volberda, 2003). For instance, Barnett and Pratt (2000) have introduced the idea of "autogenic crisis" – a process in which top managers deliberately initiate change and preparedness to crisis by alarming organizational members about future latent revolutions. That is, managers in organizations with strong dynamic managerial capability not only react to environmental jolts; they may initiate change by disseminating narratives of impending crises. Additionally, as noted above, strong dynamic managerial capability may act as a buffer against environmental jolts because it represents managers' capacity to 'do more with less', an advantage often crucial in times

of crisis. Overall, these studies suggest that dynamic managerial capability is "especially critical in times of decline, when uncertainty and ambiguity tend to be (unusually) high" (Walrave, van Oorschot, & Romme, 2011: 1739). This leads to the following hypothesis:

Hypothesis 1: Pre-jolt dynamic managerial capability is positively related to organizational resilience to an environmental jolt.

Dynamic Knowledge-management Capability

Dynamic knowledge-management capability, defined as the creation, diffusion, and usage of codifiable and tacit knowledge (Cepeda & Vera, 2005), has been proposed as a critical source of sustainable competitive advantage (Grant, 1996; Andreeva & Kianto, 2012), especially in volatile and discontinuous environments (Easterby-Smith & Prieto, 2008). This is because firms develop socio-technical routines that enhance their capacity to learn and absorb new internal and external knowledge[7] (Darroch, 2005; Vera & Crossan, 2003; Zollo & Winter, 2002). Further, the ability to manage knowledge-flows effectively allows the firm to engage in simultaneous processes of exploitation of existing resources and exploration of new ideas (Gibson & Birkinshaw, 2004). As such, strong knowledge management processes may come in handy especially during times of decline and crisis as a buffer against reduced environmental munificence (Wang, Huang, & Bansal, 2005).

In addition, firms that manage knowledge effectively are often characterized by strong transactive memory systems – within-work-group shared mental models of collective information and knowledge domains (Argote & Ren, 2012). Indeed, Miller et al. (2012) and Ren et al. (2006) have shown that transactive memory systems facilitate

[7] Dynamic knowledge-management capability is not synonymous with absorptive capacity. Cohen and Levinthal (1990) described absorptive capacity in terms of recognizing, assimilating, and applying only external knowledge.

adaptation and innovation, especially in unstable environments. This is because "transactive memory system, by providing information about who is an expert in certain domains, can facilitate the collective filtering of information about new opportunities and the flow of information to those who can make sense of it" (Argote & Ren, 2012, p. 1379). Further, according to Jones and Mahon (2012), the interaction between managers and sophisticated information systems results in better decision-making in times of crisis.

The effective management of both internal and external knowledge allows timely adjustment and renewal of operational routines in response to market changes by creating new knowledge configurations (Cepeda & Vera, 2007). Indeed, Bradley et al. (2011) have shown that independent organizations have lower mortality rates than subsidiaries due to their higher flexibility to experiment and learn, as well as fewer (corporate) restrictions to knowledge-absorption. Grant (1996) argued that organizations that intensely integrate individual knowledge of actors within the organization create larger knowledge-bases, which in turn result in stronger organizational capability and competitive advantage. For instance, Paruchuri and Eisenman (2012) found that in a post-merger context, changes in intra-firm collaborative networks of and information flow between inventors creates the need to bond network structural holes in order to strengthen R&D capabilities. Consistent with that view, Acha (2002) found that variability in cognitive technological frames across firms creates heterogeneity in intellectual output, such as patents and publications. Yet firms with strong dynamic knowledge-management capabilities are also more resilient to crisis due to their ability to unlearn quickly by changing these cognitive structures (Nystrom & Starbuck, 1984). In times of decline, a strong dynamic knowledge-management capability in place allows firms to renew

routines in a timely manner by obtaining, unlearning, processing, and applying large knowledge-bases. Therefore:

Hypothesis 2: Pre-jolt dynamic knowledge-management capability is positively related to organizational resilience to an environmental jolt.

Dynamic Relationship-management Capability

Dynamic relationship management capability is the path-dependent, organization-wide ability to build and utilize connections with customers, suppliers, business partners, political actors, and government agencies (Jarratt, 2004). Such ability is developed over time through repeated engagements (Rothaermel & Deeds, 2006). The ability of an organization to persevere in times of crisis is strongly related to its ability to conduct business with a variety of stakeholders (Venkatraman & Van de Ven, 1998). As such, strong relationships may act as a buffer against environmental decline due to the benefits that accrue from building a flexible and supporting network (Uzzi, 1997). For instance, creating and maintaining ties to powerful institutions may result in a stronger market foothold and thus a higher likelihood of survival (Bradley et al., 2011; Baum & Oliver, 1991). Similarly, companies that interact frequently with their clients accumulate customer-specific knowledge, which in turn puts them in a better position to provide superior customer service and reduce likelihood of service discontinuation in the face of crisis (Almor, 2011). As an example, Bapuji et al. (2012) demonstrated how clear and repeated communications between housekeepers and guests in the hotel industry lead to the emergence of a strong high-performance routine intended to provide better housekeeping service to guests.

Further, one of the most crucial organizational mechanisms necessary to facilitate organizational resilience is deep social capital (Lengnick-Hall & Beck, 2005). Dynamic

relationship management capability continuously creates social capital, which translates into access to broad and unique information sources (Adler & Kwon, 2002), resource-exchange networks (Inkpen & Tsang, 2005; Tsai & Ghoshal, 1998), and trust-based relationships (Ireland, Hitt, &Vaidyanath, 2002). For instance, Italian luxury fashion companies have responded to environmental turbulence by shifting structurally into a "flexible embedded network" that allowed them to continuously tap into new opportunities during times of major industrial changes (Djelic & Ainamo, 1999). Strong dynamic relationship management capability may in fact allow the firm to acquire new R&D capabilities and as such improve performance during environmental jolts (Mahmood, Zhu, & Zajac, 2011; Kim, 1998). By its nature, constant creation of social capital provides the firm with tacit, socially complex resources that, in times of decline, may result in favorable treatment from clients, suppliers, institutions, and other stakeholders. Overall, the literature supports a positive effect of dynamic relationship-management capability on firm performance during sudden declines in environmental munificence. I therefore propose that:

Hypothesis 3: Pre-jolt dynamic relationship-management capability is positively related to organizational resilience to an environmental jolt.

Interactive Effects

The underlying capabilities that makeup the dynamic capabilities of the firm often interact with each other to create synergetic effects. As Makadok (2001: 391) argued, "interactions between [these] mechanisms will make their joint effect differ from the sum of the two parts, and the two parts will themselves vary according to the firm's situation." This is because these underlying capabilities often overlap in their functional domain and nevertheless, may complement each other. For instance, Menguc and Auh (2006)

explained that when the two capabilities of market orientation and innovativeness are bundled together, it creates a synergetic enhancement of firm performance. Thus, as put forward by Helfat and Peteraf (2003: 1004), "the inclusion of more than one capability enables the analysis to incorporate the interaction among capabilities, dynamic or otherwise, that may occur as capabilities and firms evolve over time."

Organizations with strong dynamic relationship management capability must continuously handle substantial amounts of knowledge inflows that result from their embededdness in relational business networks. Indeed, the ability to absorb, disseminate, and apply inflows of network-based knowledge enhances the potential benefits from building strong business connections (Inkpen & Tsang, 2005). Especially under volatile conditions, the potential benefits of dynamic relationship management capability may not be fully realized if resources generated from such capability remain unconnected (Blyler & Coff, 2003). In other words, "firms vary in terms of their potential to discover and exploit competitive capabilities through their networks" (Zaheer & McEvily, 1999: 1134). This may occur because firms exhibit heterogeneity in their ability to effectively manage knowledge-inflows and entrepreneurially reconfigure resources that accrue from relationship-management (Eddleston, Kellermanns, & Sarathy, 2008; Yiu & Lau, 2008). Because environmental jolts bring about a great deal of uncertainty, the ability to absorb, reconfigure, and apply resources generated from business relationships becomes imperative to overcoming such uncertainties. I therefore expect that:

Hypothesis 4a: Pre-jolt dynamic knowledge-management capability enhances the positive effect of pre-jolt dynamic relationship-management capability on organizational resilience to an environmental jolt.

Hypothesis 4b: Pre-jolt dynamic managerial capability enhances the positive effect of pre-jolt dynamic relationship-management capability on organizational resilience to an environmental jolt.

Similarly, I propose that dynamic managerial capability will enhance the advantage created by dynamic knowledge management capability, especially in response to an environmental jolt. During a jolt, firms must not only acquire and absorb new resources, but also reconfigure and deploy them in a timely manner, in order to seize market opportunities and hedge against threats (Wan & Yiu, 2009). Because resource creation is not resource orchestration, dynamic knowledge-management capabilities' advantage is more fully realized when coupled with strong dynamic managerial capabilities (Sirmon et al., 2011). For instance, Almor and Hashai (2004) showed that smaller, knowledge-intensive multinationals compete globally by deploying a strategic resource configuration that allows them to leverage superior R&D capabilities. When knowledge is translated into entrepreneurial configurations of firm resources, firms are in a better position to reap rewards from knowledge-based capabilities (Almor, 2011; Grant & Baden-Fuller, 2003; Wiklund & Shepherd. 2003). This leads to the following hypothesis:

Hypothesis 5: Pre-jolt dynamic managerial capability enhances the positive effect of pre-jolt dynamic knowledge-management capability on organizational resilience to an environmental jolt.

3.4 METHODS

Research Context – Israel and the Global Financial Crisis

The global financial crisis of 2007-2008 provides a natural experiment of firm resilience to environmental jolts (Park & Mezias, 2005). While rarely used in strategic management research, such natural experiment provides a context where environmental

decline is sudden and violent, allowing for a more precise examination of organizational resilience. Indeed, the total global market capitalization loss of 19.4 trillion USD (46%) between 2007 and 2008 (Garelli, 2009) makes this global financial crisis an extreme environmental jolt for companies around the world. Israel in particular provides an appropriate and interesting setting to examine our research question. Israel is strongly connected to the U.S. in terms of economic dependence (Mark, 2005). Other than Afghanistan, Israel is the largest recipient of foreign aid from the U.S. and U.S. is its largest trading partner. Not surprisingly, Israel has the second largest number of cross-listed companies on the NASDAQ (Licht, 2003; Fainshmidt, 2012).

In the last five years, including the global financial crisis in 2008, the Israeli currency was among the few emerging currencies to stably strengthen against the US dollar, while European currencies experienced instability and decline. In the last decade Israel has engaged in two wars and nevertheless maintained a steadily growing economy, which enhanced the ingenuity of the Israeli business sector. Further, following a strong resistance to the global financial crisis (Almor, 2011), Israel was categorized as a developed country in 2009 by the International Monetary Fund, a change many associate with the ingenuity of the business sector (Fainshmidt, 2012). In fact, Almor (2011) documented a trend of growth among Israeli high-tech firms during the global financial crisis. As such, Israeli companies provide a context both appropriate and interesting for studying organizational response to environmental jolts.

Israel's geographic boundaries span merely 8,521 square miles. Israel's small, knowledge-based economy is therefore characterized by a highly clustered, competitive business environment. A steady two percent growth rate in population accompanied by

an increase of as much as 56 percent in GDP per capita between 2004 and 2008 caused a massive amplification in competitive business activity in Israel (World Bank, 2011). Nevertheless, the ownership structure of Israeli listed companies, as in most parts of Europe, is highly concentrated (Blass et al., 1998; Ben-David, 2010). While Israel follows the OECD codes of governance, corporate control is far from reaching maturity (Fainshmidt, 2012). With that said, according to the Doing Business 2011 report by the World Bank, Israel ranks 5th in investor protection laws with a high score of 8.3 out of 10.

The Israeli market, as per above, has much in common with many developed and developing markets. As such, albeit the uniqueness if its business sector in responding to the global financial crisis, Israel also provides a relevant and, to an extent, generalizable context for study. Given my focus on firm-level capabilities, it was important to control for country influences that might cause variance in strategic capabilities (Guillen & Garcia-Canal, 2009). Focusing on one country allowed me to examine how capabilities facilitate organizational resilience of firms subject to homogenous macro-economic conditions. The initial signs of the impact of the global financial crisis on Israeli companies appeared in the second quarter of 2007 (Tel Aviv Stock Exchange, 2012). The decline continued strongly into 2008, with an all-time stock market index low in the third quarter of 2008.[8] After 2008, the economy regained its positive momentum and reached a local maximum again in January 2011. In this study, I focus on the years 2007-2008 as the years of an environmental jolt, given that data on Israeli firms is available only on a calendar-year basis.

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[8] The peak of the index was on July, 15th, 2007. The all-time low was on August, 28th, 2008. Local maximum occurred again on January 6th, 2011. This data is available from Tel Aviv Stock Exchange (2012).

Sample

Because data regarding private firms in Israel is largely unavailable and incomplete, the sample for this study includes publicly-traded companies listed on the Tel Aviv Stock Exchange. The Thomson One database, provided by Thomson Reuters Corporation, is one of the most comprehensive archival databases, containing information about more than 50,000 publicly-traded companies around the world. My sample and data for variables is based on archival information in this database. I have identified an initial sample of 526 Israeli companies. I removed banks and financial services firms (SIC Sector H) from the sample since these are subject to unique regulation and market conditions. For instance, the banking sector in Israel is heavily regulated and highly concentrated, comprising five large banking groups in order to facilitate macro-financial stability (Ruthenberg & Landskroner, 2008). Further, I eliminated companies for which data was not available for the examined period. The final sample consists of 275 firms operating in the following six industries: natural resources (4%, SIC sectors A and B), construction (9%, SIC sector C), manufacturing (47%, SIC sector D), transportation and communication (9%, SIC sector E), wholesale and retail (11%, SIC sectors F and G), and services (20%, SIC sector I).

Measures

Consistent with prior literature (e.g., Wan & Yiu, 2009) I focused on financial performance of companies during an environmental jolt as our dependent variable. I measured financial performance as the average return on assets (ROA) during 2007-2008 (Hsu & Wang, 2012). I also obtained data for ROA in 2006 to allow comparison with pre-jolt conditions. Namely, I examine the performance of firms during the financial

crisis while controlling for prior performance. To measure dynamic capabilities I relied on a framework provided by Tang and Liou (2010). As dynamic capabilities are largely unobservable and hard to measure, a specifically-related ensemble of financial indicators can serve as a valid proxy for heterogeneity in dynamic capabilities (see Tang & Liou, 2010 for a detailed discussion). To establish temporal precedence between dynamic capabilities and performance, as well as ensure that these capabilities were still in place at the beginning of the jolt, I obtained data from 2005 to 2007 for each financial indicator (Chatterjee & Hambrick, 2007). This allowed for a one-year overlap between capability-building and performance, which was also important due to the crisis showing first impact in mid-2007. This is also consistent with our interest in capability building in the pre-jolt era, and with Kor and Mahoney (2005), who maintained that a period of three years is required to properly capture organizational dynamic capabilities.

Based on Tang and Liou (2010), I measured dynamic managerial capability as the factor score of 'asset depreciation' to sales ratio and asset turnover ratio. Dynamic knowledge management capability was measured as the factor score of R&D to sales ratio and 'selling, general, and administrative expenses' to sales ratio. Dynamic relationship management capability was measured as the factor score of accounts receivable ratio, accounts payable ratio, cost of goods sold to sales ratio, and tax expenses to sales ratio. I calculated the average for each indicator across the three years examined prior to conducting the factor analyses (Hair et al., 1998). The financial indicators of dynamic managerial capability and dynamic knowledge management capability exhibited a single factor solution, providing more support for the notion that "capabilities of firms can be inferred from their observable financial indicators" (Tang & Liou, 2010: 49). The

indicators of dynamic relationship management capability loaded onto two distinct factors. Factor 1 included tax to sales ratio and cost of goods sold to sales ratio. Factor 2 included receivables and payables turnover ratios. Due to my interest in capturing overall relationship management abilities of the organization, I calculated the average of these two factors as the measure of dynamic relationship management capability.

I employed several control variables based on existing literature and theory (Wan & Yiu, 2009; Lee et al., 2009; Venkatraman & Van de Ven, 1998; Grewal & Tansuhaj, 2001; Bradley et al., 2011; Pouder & St. John, 1996; Zuniga-Vicente & Vicente-Lorente, 2006; Hsu & Wang, 2012). First, to control for potential industry effects, I employed six industry dummies, one for each SIC sector in my sample as described above[9]. Second, I controlled for firm size, calculated as the logarithmic transformation of total assets as of 2006. Third, I included the firm's age since incorporation for the year 2006. Fourth, I controlled for prior jolt experience using a dummy variable whereby companies that survived the previous economic crisis of 2001 were coded as 1. Fifth, I controlled for pre-jolt performance, coded as the return on assets for the year 2006. This was crucial to my study because 'good performers' may have an advantage going into the jolt. Sixth, I also included the companies' average sales growth during 2005-2007. Seventh, I controlled for location advantage using a dummy variables for companies whose headquarters are located in Tel Aviv. Eighth, I controlled for the firm's financial resources and risk with two variables: natural logarithm of leverage and financial slack. Leverage was measured

[9] I also examined the potential existence of a multilevel structure with regards to firm performance. Utilizing HLM (Raudenbush et al., 2004), I tested the null model where variance in firm performance was estimated on two levels - firm and industry (Short et al., 2007). The variance components of firm and industry levels accounted for 99.1 and 0.9 percent, respectively. Further, the variance component at the industry level was insignificant ($p > 0.05$). This result shows that firm performance in my sample is not significantly affected by industry conditions. I therefore did not employ multilevel modeling and controlled for potential industry effects using dummy variables.

as total liabilities to total assets as of 2006 while financial slack was measured as the quick ratio for 2006 year end. Ninth, I controlled for the firm's acquisition activity by including the logarithmic transformation of value of total acquisitions made during the jolt. Finally, to distinguish between multinationals and purely domestic companies I also included a dummy variable coded 1 for companies with foreign sales as of 2006[10]. Overall, an extensive effort was made to include a wide array of control variables that were expected to influence the firms' return on assets during the environmental jolt.

3.5 RESULTS

Means, standard deviations, and correlations of all the study's variables are presented in Table 3.1. As expected, the mean in-jolt ROA was negative (-.01) compared to a positive mean ROA in the pre-jolt era (.02). Even though several bivariate correlations were high, an examination of variance inflation factors (VIFs) showed that multicolinearity is not a major concern of the study as all VIFs were below the 10.00 threshold (Hair et al., 1998). An exception was our dummy variables for industry classification. Due to asymmetries in sample sizes across the six industries, several industry dummies exhibited VIFs higher than 10. Thus, to ensure that this does not impede the validity of results obtained from my analyses, I ran regression models without industry dummies and compared them to models that included these controls. The direction, magnitude, and VIFs of my main effects and interactions did not change substantially. Thus, I present results based on models that include industry controls.

[Insert Table 3.1 about here]

[10] Data limitations prohibited me from measuring firm multinationality according to Sullivan's (1994) approach.

Table 3.2 presents results obtained from regression analyses. As for control variables (Model 1, adjusted $R^2 = .26$) , prior performance and firm age were strong predictors of in-jolt performance, indicating that previously successful and experienced firms are more likely to perform better during an environmental jolt. This is consistent with Kraatz and Zajac (2001), who argued that possessing historically valuable resources may yield positive outcomes during volatile times. However, prior jolt experience was negatively related to performance, indicating that firms that survived previous crises may have strong beliefs in their ability to withstand disruptive environmental change, resulting in overly inertial strategic persistence (Audia et al., 2000). These findings imply that strategic persistence may have a non-linear relationship with performance during environmental jolts.

[Insert Table 3.2 about here]

Hypothesis 1 predicted a positive effect of dynamic managerial capability on financial performance during an environmental jolt. Indeed, Model 2 reveals a significant ($p < .01$) and positive ($\beta = .15$; Δ Adjusted $R^2 = .02$) effect, thus supporting hypothesis 1. Hypothesis 2 argued for a positive effect of dynamic knowledge management capability on performance, and received strong support, evident in its significant ($p < .01$) and positive ($\beta = .23$) coefficient in Model 3 (Δ Adjusted $R^2 = .04$). However, dynamic relationship management capability was not significantly related to financial performance in Model 4 (Δ Adjusted $R^2 = .00$), failing to provide support for hypothesis 3. In fact, while not significant, dynamic relationship management capability had a negative ($\beta = -.06$) relationship with financial performance, indicating that, if any, the costs of investing in such capability may outweigh the benefits when it comes to environmental jolts.

To test hypothesis 4a, above and beyond including their main effects, I introduced an interaction term between dynamic knowledge management and relationship management capabilities in Model 5 (Adjusted $R^2 = .31$). However, this interaction term was not significant, thus not supporting hypothesis 4a. In Model 6 (Adjusted $R^2 = .32$), I employed a similar approach as above to test hypothesis 4b, namely the interaction between dynamic relationship management and dynamic managerial capabilities. This model revealed a statistically significant ($p < .01$) and negative interaction term, thus contradicting hypothesis 4b. Finally, in Model 7 (Adjusted $R^2 = .31$), I introduced an interaction term between dynamic managerial and dynamic knowledge management capabilities in order to test hypothesis 5. Similar to the previous model, this model revealed a significant ($p < .05$) and negative effect of the interaction term, contradicting hypothesis 5 as well.

3.6 DISCUSSION AND CONCLUSIONS

I started this paper by asking how dynamic capabilities of the firm affect firm performance amid environmental jolts. Building on literature on dynamic capabilities, I hypothesized that three capabilities, namely, dynamic managerial capability, dynamic knowledge-management capability, and dynamic relationship-management capability, independently and in combination, will enhance financial performance of firms during the 2008 financial crisis. Utilizing a sample of firms operating in Israel, I found that dynamic managerial capability and dynamic knowledge-management capability are positively related to performance, while dynamic relationship management capability is not related to performance during an environmental jolt. Further, I found that interactions between pairs of these capabilities produce negative influence on performance.

These findings have several theoretical and practical implications. First, the negative synergies arising from interactions of these capabilities point to the possibility of their being substitutable rather than complementary. That is, because these capabilities require extensive investment of resources, they may impede each other's utility because resources within the firm are not unlimited. From that perspective, firms are better off investing in the development of either a dynamic managerial capability or a dynamic knowledge-management capability. This rationale is also consistent with the relatively high correlation of these two capabilities ($r = 0.68$), which illustrates their substantial domain overlap. In fact, when I ran a regression model with both these capabilities as predictors, only dynamic knowledge-management capability was a significant predictor of performance. This finding points to the need to reconsider how different dynamic capabilities configure within firms to affect organizational outcomes.

Second, the findings bolster the importance of knowledge in increasingly knowledge-based economies (Grant, 1996). Israel is a knowledge-intensive economy that has, traditionally, also relied on network-based strategies (Almor, 2011). However, as Israel transitioned from an emerging market into a developed market during the financial crisis, the nature of business has also evolved from relation-based to one that is based more on market competition (Peng, 2003). Thus, some Israeli companies were more successful during the crisis due to what they knew rather than who they knew. Indeed, dynamic knowledge-management capability was the strongest predictor of financial performance during an environmental jolt. In an increasingly knowledge-based economy, firms may not reap rewards from networks during times of decline. This may be due to the reluctance of firms strongly embedded in a network to stay vigilant to changes in the

external environment (Uzzi, 1997). The findings of this study enrich social network theory in that the value of relationship-building may not only exhibit a utility function of diminishing returns (Li, Poppo, & Zhou, 2008), but also be affected by contextual contingencies such as macroeconomic conditions (i.e., the state of and trends in the economy) and overall institutional development.

Finally, the above results and discussion bring about the need to consider a contextualized resilience theory. That is, organizations embedded in dissimilar institutional contexts may employ different means to thrive during times of crisis. This may require theory-building research endeavors and an examination of organizational resilience to crisis in a cross-national setting. Because results of this study show that dynamic capabilities are critical to the resilience of firms under conditions of environmental jolts, there is a need to examine the effect of dynamic capabilities across various institutional domains. Prior literature has suggested that dynamic capabilities have an unavoidable institutional component (Dunning & Lundan, 2010). This implies that a theory explaining how dynamic capabilities configure with environmental factors to affect organizational resilience to crisis is warranted.

For managers, our findings point to the need to invest and maintain dynamic capabilities as a means to not only persevere but also thrive during times of adverse conditions. With increasing globalization and frequency of such "black swans", the value of building dynamic capabilities to wield resilient organizations seems unavoidable. Organizations can enhance their managerial capabilities through training and their knowledge-management capability through building effective processes of knowledge sharing and communication. For instance, organizations often nurture a culture of

openness or install knowledge-sharing software to develop strong transactive memory systems (Argote & Ren, 2012). Overall, results of this study point to the importance of building dynamic capabilities to one of the most important organizational outcomes manager direct attention to: financial performance.

Limitation and future research

Although I believe that this research effort contributes to literature on dynamic capabilities, environmental jolts, crisis management, and organizational resilience, it is not without limitations that must be acknowledged. First, while focusing on Israel was driven by theoretical considerations and indeed allowed me to control for macro level conditions, the generalizability of the results should be made with caution. I encourage future research to examine my research question in different countries and more so in multinational samples. Second, while many dynamic capabilities exist in the literature, it was impossible for us to include all of them. While my selection was driven by previous studies, it would be beneficial to examine how other dynamic capabilities affect performance of firms during environmental jolts. Along the same lines, using concerts of financial indicators as proxies for DCs, while based on prior literature, may not measure DCs perfectly and as such may account for some of the insignificant findings. An examination of the effects of DCs on firm resilience with more proximal measures is therefore warranted. Finally, as the focus of my study was on extremely unfavorable conditions, insights made based on this paper must not be generalized to other environmental conditions with ease. That is, there is a need to establish how dynamic capabilities affect performance during periods of extensive growth (See Figure 3.1, upper right quadrant). Nevertheless, I hope that the results of this study will encourage

researchers to pursue these and other investigations into the role of dynamic capabilities in organizational success during crisis and under other conditions.

3.7 REFERENCES

Acha V.L. (2002). Framing the past and future: the development and deployment of technological capabilities by the oil majors in the upstream petroleum industry. PhD dissertation. SPRU, University of Sussex.

Adler, P. S., & Kwon, S. W. (2002). Social capital: prospects for a new concept. *Academy of management review*, *27*(1), 17-40.

Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, *24*(10), 1011-1025.

Almor, T. (2011). Dancing as fast as they can: Israeli high-tech firms and the Great Recession of 2008. *Thunderbird International Business Review*, *53*(2), 195-208.

Almor, T., & Hashai, N. (2004). The competitive advantage and strategic configuration of knowledge-intensive, small-and medium-sized multinationals: a modified resource-based view. *Journal of International Management*, *10*(4), 479-500.

Ancona, D. G., & Caldwell, D. F. (1992). Bridging the boundary: External activity and performance in organizational teams. *Administrative science quarterly*, 37, 634-665.

Andreeva, T., & Kianto, A. (2012). Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance. *Journal of Knowledge Management*, *16*(4), 617-636.

Argote, L., & Ren, Y. (2012). Transactive memory systems: a microfoundation of dynamic capabilities. *Journal of Management Studies*, 49, 1375-1382.

Arthurs, J. D., & Busenitz, L. W. (2006). Dynamic capabilities and venture performance: The effects of venture capitalists. *Journal of Business Venturing*, 21(2), 195-215.

Audia, P. G., Locke, E. A., & Smith, K. G. (2000). The paradox of success: An archival and a laboratory study of strategic persistence following radical environmental change. *Academy of Management Journal*, 43(5), 837-853.

Bankruptcy Data – A Division of New Generation Research. (2012). Bankruptcy Filings by Business and Non-Business 1985 – 2011. http://www.bankruptcydata.com/Research/Bus_Non-Bus_Web.pdf (Accessed 1 December 2012).

Bapuji, H., Hora, M., & Saeed, A. M. (2012). Intentions, intermediaries, and interaction: examining the emergence of routines. *Journal of Management Studies*, 49, 1586-1607.

Barnett, C. K., & Pratt, M. G. (2000). From threat-rigidity to flexibility-Toward a learning model of autogenic crisis in organizations. *Journal of Organizational Change Management*, 13(1), 74-88.

Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management*, 36(1), 256-280.

Baum, J. A., & Oliver, C. (1991). Institutional linkages and organizational mortality. *Administrative Science Quarterly*, 36, 187-218.

Ben-David, N. (2010). Is the Israeli economy controlled by a tiny group of common interest members?. *International Journal of Social Economics*, 37, 537-540.

Blass, A., Yafeh, Y., & Yosha, O. (1998). Corporate Governance in an Emerging Market: The Case of Israel. *Journal of Applied Corporate Finance*, 10, 79-89.

Blesa, A., & Ripollés, M. (2008). The influence of marketing capabilities on economic international performance. *International Marketing Review*, 25(6), 651-673.

Blyler, M., & Coff, R. W. (2003). Dynamic capabilities, social capital, and rent appropriation: Ties that split pies. *Strategic Management Journal*, *24*(7), 677-686.

Bradley, S. W., Aldrich, H., Shepherd, D. A., & Wiklund, J. (2011). Resources, environmental change, and survival: asymmetric paths of young independent and subsidiary organizations. *Strategic Management Journal*, *32*(5), 486-509.

Carmeli, A., & Markman, G. D. (2011). Capture, governance, and resilience: strategy implications from the history of Rome. *Strategic Management Journal*, 32(3), 322-341.

Cepeda, G., & Vera, D. (2005). Knowledge management and firm performance: examining the mediating link of dynamic capabilities. In *4th International Meeting of the Iberoamerican Academy of Management, Lisbon, Portugal.*

Cepeda, G., & Vera, D. (2007). Dynamic capabilities and operational capabilities: A knowledge management perspective. *Journal of Business Research*, *60*(5), 426-437.

Chakravarthy, B. S. (1982). Adaptation: A promising metaphor for strategic management. *Academy of Management Review*, 7, 35-44.

Chatterjee, A., & Hambrick, D. C. (2007). It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly*, *52*(3), 351-386.

Claessens, S., & Klapper, L. F. (2005). Bankruptcy around the world: Explanations of its relative use. *American Law and Economics Review*, 7(1), 253-283.

Clark, K. B., & Fujimoto, T. (1991). *Product development performance: Strategy, organization, and management in the world auto industry*. Harvard Business Press.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative science quarterly*, 35, 128-152.

Collins, J. C., & Hansen, M. T. (2011). *Great by Choice: Uncertainty, Chaos, and Luck--Why Some Thrive Despite Them All*. New York: Harper-Collins Publishers.

Cyert, R. M., & March, J. G. (1963). A behavioral theory of the firm. *Englewood Cliffs, NJ*, *2*.

Danneels, E. (2008). Organizational antecedents of second-order competences. *Strategic Management Journal*, 29(5), 519-543.

Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of knowledge management*, *9*(3), 101-115.

Djelic, M. L., & Ainamo, A. (1999). The coevolution of new organizational forms in the fashion industry: a historical and comparative study of France, Italy, and the United States. *Organization Science*, 10(5), 622-637.

Drnevich, P. L., & Kriauciunas, A. P. (2011). Clarifying the conditions and limits of the contributions of ordinary and dynamic capabilities to relative firm performance. *Strategic Management Journal*, 32(3), 254-279.

Dunning, J. H., & Lundan, S. M. (2010). The institutional origins of dynamic capabilities in multinational enterprises. *Industrial and Corporate Change*, 19(4), 1225-1246.

Easterby-Smith, M., & Prieto, I. M. (2008). Dynamic Capabilities and Knowledge Management: an Integrative Role for Learning?. *British Journal of Management*, *19*(3), 235-249.

Eddleston, K. A., Kellermanns, F. W., & Sarathy, R. (2008). Resource configuration in family firms: Linking resources, strategic planning and technological opportunities to performance. *Journal of Management Studies*,*45*(1), 26-50.

Eggers, J. P., & Kaplan, S. (2009). Cognition and renewal: Comparing CEO and organizational effects on incumbent adaptation to technical change. *Organization Science*, *20*(2), 461-477.

Eisenhardt, K. M., & Martin, J. (2000). Dynamic capabilities: What are they?. *Strategic Management Journal*, 21 (special issue), 1105-1121.

Evans, S. J. (1991). Strategic Flexibility for High Technology Maneuvers: A Conceptual Framework. *Journal of Management Studies*, 28, 69-89.

Fainshmidt, S. (2012). Corporate governance and initial public offerings in Israel, In: Zattoni A & Judge W. (Eds.): *Global Perspectives on Corporate Governance and Initial Public Offerings*. Cambridge University Press.

Fang, E. E., & Zou, S. (2009). Antecedents and consequences of marketing dynamic capabilities in international joint ventures. *Journal of International Business Studies*, 40(5), 742-761.

Flier, B., Bosch, F. A., & Volberda, H. W. (2003). Co-evolution in Strategic Renewal Behavior of British, Dutch and French Financial Incumbents: Interaction of Environmental Selection, Institutional Effects and Managerial Intentionality*. *Journal of Management Studies*, *40*(8), 2163-2187.

Forbes, D. P., Manrakhan, S., & Banerjee, S. (2004). Strategic Responses to an Environmental Jolt. *The Journal of Private Equity*, *8*(1), 63-69.

Garelli, S. (2009). *IMD World Competitiveness Yearbook 2009*. Lausanne: International Institute for Management Development.

Gibson, C. B., & Birkinshaw, J. (2004). The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity. *Academy of Management Journal*, *47*(2), 209-226.

Goll, I., & Rasheed, A. A. (2011). The effects of 9/11/2001 on business strategy variability in the US air carrier industry. *Management Decision*, 49(6), 948-961.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic management journal*, *17*, 109-122.

Grant, R. M., & Baden-Fuller, C. (2003). A knowledge accessing theory of strategic alliances. *Journal of Management Studies*, *41*(1), 61-84.

Grewal, R., & Tansuhaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *The Journal of Marketing*, 67-80.

Guillén, M. F., & García-Canal, E. (2009). The American model of the multinational firm and the "new" multinationals from emerging economies. *The Academy of Management Perspectives*, *23*(2), 23-35.

Hair, Jr. J.F., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). *Multivariate data analysis*. New Jersey: Prentice-Hall.

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., & Winter, S. G. (2007). *Dynamic Capabilities: Understanding Strategic Change in Organizations*. London: Blackwell.

Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: capability lifecycles. *Strategic management journal*, 24(10), 997-1010.

Hooley, G. J., Greenley, G. E., Cadogan, J. W., & Fahy, J. (2005). The performance impact of marketing resources. *Journal of Business Research*, 58(1), 18-27.

Hsu, L. C., & Wang, C. H. (2012). Clarifying the effect of intellectual capital on performance: The mediating role of dynamic capability. *British Journal of Management, 23,* 179-205.

Inkpen, A. C., & Tsang, E. W. (2005). Social capital, networks, and knowledge transfer. *Academy of management review*, *30*(1), 146-165.

Ireland, R. D., Hitt, M. A., & Vaidyanath, D. (2002). Alliance management as a source of competitive advantage. *Journal of management*, *28*(3), 413-446.

Jarratt, D. (2004). Conceptualizing a relationship management capability. *Marketing Theory*, *4*(4), 287-309.

Jones, N. B., & Mahon, J. F. (2012). Nimble knowledge transfer in high velocity/turbulent environments. *Journal of Knowledge Management*, *16*(5), 774-788.

Kaplan, S. (2008). Cognition, capabilities, and incentives: assessing firm response to the fiber-optic revolution. *Academy of Management Journal*, *51*(4), 672-695.

Kim, L. (1998). Crisis construction and organizational learning: Capability building in catching-up at Hyundai Motor. *Organization science*, *9*(4), 506-521.

King, D., D. Dalton, C. Daily, & J. Covin (2004). Meta-analyses of post acquisition performance indications of unidentified moderators. *Strategic Management Journal*, 25, 187-200.

Kor, Y. Y., & Mahoney, J. T. (2005). How dynamics, management, and governance of resource deployments influence firm-level performance. *Strategic Management Journal*, *26*(5), 489-496.

Kraatz, M. S., & Zajac, E. J. (2001). How organizational resources affect strategic change and performance in turbulent environments: theory and evidence. *Organization Science*, 12(5), 632-657.

Kunc, M., & Bandahari, R. (2011). Strategic development processes during economic and financial crisis. *Management Decision*, 49(8), 1343-1353.

Lee, C. H., Venkatraman, N., Tanriverdi, H., & Iyer, B. (2010). Complementarity-based hypercompetition in the software industry: Theory and empirical test, 1990–2002. *Strategic Management Journal*, *31*(13), 1431-1456.

Lee, S. H., Beamish, P. W., Lee, H. U., & Park, J. H. (2009). Strategic choice during economic crisis: Domestic market position, organizational capabilities and export flexibility. *Journal of World Business*, *44*(1), 1-15.

Lengnick-Hall, C. A., & Beck, T. E. (2005). Adaptive fit versus robust transformation: How organizations respond to environmental change. *Journal of Management*, *31*(5), 738-757.

Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. (2011). Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3), 243-255.

Li, J. J., Poppo, L., & Zhou, K. Z. (2008). Do managerial ties in China always produce value? Competition, uncertainty, and domestic vs. foreign firms. *Strategic Management Journal*, 29(4), 383-400.

Licht, A. (2003). Cross-listing and corporate governance: bonding or avoiding?. *Chicago Journal of International Law*, 4, 141-163.

Mahmood, I. P., Zhu, H., & Zajac, E. J. (2011). Where can capabilities come from? Network ties and capability acquisition in business groups. *Strategic Management Journal*, *32*(8), 820-848.

Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic management journal*, *22*(5), 387-401.

Mark, C. R. (2005). Israel: US Foreign Assistance. Library of Congress Washington DC Congressional Research Service.

Markman, GD, Gianiodis PT, & Buchholtz AK. (2009). Factor-market rivalry. *Academy of Management Review,* 34, 423–441.

Menguc, B., & Auh, S. (2006). Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Journal of the Academy of Marketing Science*, 34(1), 63-73.

Meyer, A. D. (1982). Adapting to environmental jolts. *Administrative science quarterly*, 27, 515-537.

Miller, K. D., Pentland, B. T., & Choi, S. (2012). Dynamics of performing and remembering organizational routines. *Journal of Management Studies*, 49, 1536–1558.

Moliterno, T. P., & Wiersema, M. F. (2007). Firm performance, rent appropriation, and the strategic resource divestment capability. *Strategic Management Journal*, 28(11), 1065-1087.

Nystrom, N. C., & Starbuck, W. H. (1984). To Avoid Organizational Crisis, Unlearn. *Organizational Dynamics,* 13, 53–65.

Park, N. K., & Mezias, J. M. (2005). Before and after the technology sector crash: the effect of environmental munificence on stock market response to alliances of e-commerce firms. *Strategic Management Journal*, 26(11), 987-1007.

Paruchuri, S., & Eisenman, M. (2012). Microfoundations of firm R&D capabilities: a study of inventor networks in a merger. *Journal of Management Studies*, 49, 1509-1535.

Pearson, C. M., & Mitroff, I. I. (1993). From crisis prone to crisis prepared: a framework for crisis management. *The academy of management executive*, *7*(1), 48-59.

Peteraf, M., & Reed, R. (2007). Managerial discretion and internal alignment under regulatory constraints and change. *Strategic Management Journal*, *28*(11), 1089-1112.

Pouder, R., & St. John, C. H. (1996). Hot spots and blind spots: geographical clusters of firms and innovation. *Academy of Management Review*, 1192-1225.

Raudenbush, S., Bryk, A., Cheong, Y., Congdon, R., & Toit, M. (2004). *HLM 6: Hierarchical Linear and Nonlinear Modeling.* Scientific Software, Lincolnwood, IL.

Ren, Y., Carley, K. M., & Argote, L. (2006). The contingent effects of transactive memory: when is it more beneficial to know what others know?. *Management Science*, 52, 671–682.

Rothaermel, F. T., & Deeds, D. L. (2006). Alliance type, alliance experience and alliance management capability in high-technology ventures. *Journal of business venturing*, *21*(4), 429-460.

Ruthenberg, D., & Landskroner, Y. (2008). Loan pricing under Basel II in an imperfectly competitive banking market. *Journal of Banking & Finance*, *32*(12), 2725-2733.

Short, J. C., Ketchen Jr, D. J., Palmer, T. B., & Hult, G. T. M. (2007). Firm, strategic group, and industry influences on performance. *Strategic Management Journal*, 28(2), 147-167.

Sirmon, D. G., & Hitt, M. A. (2009). Contingencies within dynamic managerial capabilities: interdependent effects of resource investment and deployment on firm performance. *Strategic Management Journal*, *30*(13), 1375-1394.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource Orchestration to Create Competitive Advantage Breadth, Depth, and Life Cycle Effects. *Journal of Management*, *37*(5), 1390-1412.

Stamp, G. (1981). Levels and types of managerial capability. *Journal of Management Studies*, *18*(3), 277-298.

Sullivan, D. (1994). Measuring the degree of internationalization of a firm. *Journal of International Business Studies*, 325-342.

Sutcliffe, K. M., & Vogus, T. J. (2003). Organizing for resilience. In K. S. Cameron, J. E. Dutton, & R. E. Quinn (Eds.), *Positive organizational scholarship: Foundations of a new discipline,* 94–110. San Francisco: Berrett-Koehler.

Taleb, N. N. (2012). *Antifragile: things that gain from disorder.* New York: Random House Incorporated.

Tallman, S. B. (1991). Strategic management models and resource-based strategies among MNEs in a host market. *Strategic Management Journal,12*(S1), 69-82.

Tang, Y. C., & Liou, F. M. (2010). Does firm performance reveal its own causes? The role of Bayesian inference. *Strategic Management Journal, 31*(1), 39-57.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal*, 28(13), 1319-1350.

Teece, D. J. (2012). Dynamic capabilities: routines versus entrepreneurial action. *Journal of Management Studies*, 49, 1395-1404.

Teece, D., & Pisano, G. (1994). The dynamic capabilities of firms: an introduction. *Industrial and corporate change*, 3(3), 537-556.

Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal,* 18, 509-533.

Tel Aviv Stock Exchange. (2012). http://www.tase.co.il/TASEEng/Homepage.htm (last accessed 1 December 2012).

Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of management Journal*, *41*(4), 464-476.

Tushman, M. L., & Rosenkopf, L. (1996). Executive succession, strategic reorientation and performance growth: A longitudinal study in the US cement industry. *Management Science*, *42*(7), 939-953.

Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative science quarterly*, 42, 35-67.

Venkataraman, S., & Van de Ven, A. H. (1998). Hostile environmental jolts, transaction set, and new business. *Journal of Business Venturing*, *13*(3), 231-255.

Vera, D., & Crossan, M. (2003). Organizational learning and knowledge management: toward an integrative framework. *The Blackwell handbook of organizational learning and knowledge management*, 124-141.

Walrave, B., Van Oorschot, K. E., & Romme, A. G. L. (2011). Getting trapped in the suppression of exploration: A simulation model. *Journal of Management Studies*, *48*(8), 1727-1751.

Walsh, J. P. (1995). Managerial and organizational cognition: Notes from a trip down memory lane. *Organization Science*, 6, 280-321.

Wan, W. P., & Yiu, D. W. (2009). From crisis to opportunity: Environmental jolt, corporate acquisitions, and firm performance. *Strategic Management Journal*, 30(7), 791-801.

Wang, H. M., Huang, H., & Bansal, P. (2005). What determined success during the Asian Economic Crisis?—The importance of experiential knowledge and group affiliation. *Asia Pacific Journal of Management*, *22*(1), 89-106.

Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic management journal*, *24*(13), 1307-1314.

Winter, S. G. (2012). Capabilities: their origins and ancestry. *Journal of Management Studies,* 49, 1402-1406.

World Bank. (2011). http://data.worldbank.org/ (last accessed 1 December 2011).

Yiu, D. W., & Lau, C. M. (2008). Corporate entrepreneurship as resource capital configuration in emerging market firms. *Entrepreneurship Theory and Practice*, *32*(1), 37-57.

Yu, T., Sengul, M., & Lester, R. H. (2008). Misery loves company: The spread of negative impacts resulting from an organizational crisis. *Academy of Management Review*, *33*(2), 452-472.

Zaheer, A., & McEvily, B. (1999). Bridging ties: A source of firm heterogeneity in competitive capabilities. *Strategic management journal*, *20*(12), 1133.

Zollo, M., & Winter, S.G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science,* 13, 339-351.

Zúñiga-Vicente, J. Á., & Vicente-Lorente, J. D. (2006). Strategic Moves and Organizational Survival in Turbulent Environments: The Case of Spanish Banks (1983–97). *Journal of Management Studies*, 43(3), 485-519.

3.8 TABLES AND FIGURES

Table 3.1 Descriptive Statistics and Correlations

	Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Financial Performance	-0.01	0.16	1.00																		
2	Construction	0.09	0.29	0.04	1.00																	
3	Manufacturing	0.47	0.50	-0.10	**-0.31**	1.00																
4	Transportation and Communication	0.08	0.28	0.08	-0.10	**-0.29**	1.00															
5	Services	0.20	0.40	-0.06	**-0.16**	**-0.47**	**-0.15**	1.00														
6	Natural Resources	0.04	0.19	-0.02	-0.06	**-0.18**	-0.06	-0.10	1.00													
7	Retail and Wholesale	0.11	0.32	**0.12**	-0.12	**-0.34**	-0.11	**-0.18**	-0.07	1.00												
8	Firm Size	8.26	0.76	**0.31**	**0.23**	-0.09	0.07	**-0.17**	0.01	0.09	1.00											
9	Firm Age	23.47	17.10	**0.14**	0.08	0.07	-0.02	-0.10	0.09	-0.08	**0.27**	1.00										
10	Prior Jolt Experience	0.88	0.33	-0.12	0.01	-0.04	0.03	0.10	0.01	-0.08	-0.08	**0.51**	1.00									
11	Prior Financial Performance	0.02	0.18	**0.47**	0.01	-0.07	0.06	-0.03	0.03	0.07	**0.28**	0.08	-0.04	1.00								
12	Sales Growth	1.23	16.56	0.00	-0.01	-0.06	-0.02	-0.03	-0.01	**0.17**	-0.02	0.10	0.02	0.01	1.00							
13	Location Advantage	0.17	0.37	0.08	-0.11	-0.01	0.04	**0.15**	-0.04	-0.07	0.09	0.07	0.02	0.06	-0.03	1.00						
14	Leverage	0.46	1.30	**0.14**	**0.17**	-0.12	0.04	-0.09	0.08	0.06	**0.32**	**0.21**	-0.06	-0.08	0.06	-0.05	1.00					
15	Financial Slack	2.71	5.98	-0.08	-0.04	-0.02	-0.04	-0.03	-0.01	**0.16**	**-0.17**	-0.10	0.06	0.01	-0.02	**0.15**	-0.11	1.00				
16	Acquisition Activity	6.48	8.12	0.11	-0.06	-0.05	-0.04	0.05	-0.02	**0.13**	**0.32**	0.08	0.02	**0.16**	0.09	-0.02	-0.04	0.08	1.00			
17	Multinationality	0.24	0.43	0.09	0.02	0.07	-0.02	-0.05	-0.02	-0.04	**0.34**	0.02	-0.04	0.07	-0.03	0.09	-0.11	-0.01	**0.30**	1.00		
18	Dynamic Managerial Capability	0.00	0.74	**0.23**	0.02	-0.02	-0.02	0.00	-0.02	0.04	0.07	0.08	-0.02	**0.15**	0.02	-0.03	0.03	-0.02	0.03	-0.06	1.00	
19	Dynamic Knowledge Management Capability	0.00	1.03	**0.39**	0.05	-0.09	0.02	0.03	0.03	0.03	**0.14**	**0.12**	-0.03	**0.36**	0.01	-0.03	**0.17**	**-0.13**	0.08	-0.01	**0.68**	1.00
20	Dynamic Relationship Management Capability	-0.05	1.29	-0.08	-0.09	-0.02	-0.05	0.05	0.07	0.05	**-0.13**	0.00	0.08	0.03	-0.01	0.09	**-0.15**	0.10	-0.06	0.07	**0.33**	**0.24**

Notes: SD = Standard Deviation. Correlations in bold are significant at least at the .05 level.

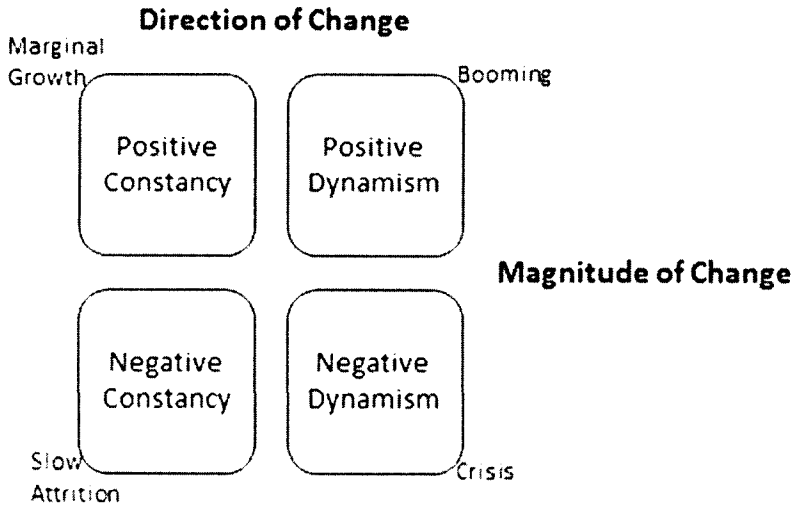
To alleviate discriminant validity concerns, stemming from the rather high 0.68 correlation between dynamic managerial capability and dynamic knowledge management capability, I calculated the standard error of this sample correlation coefficient. The standard error for this correlation was 0.04, indicating an upper bound of 0.72. Since a correlation of 0.72 translates into an R^2 of 0.52, and the VIFs in all models were below acceptable threshold (Hair et al., 1998), I concluded that there is sufficient evidence for discriminant validity between these two dynamic capabilities.

Table 3.2. Hierarchical Moderated Regression Analyses Results

	In-jolt Financial Performance						
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
Constant	-.077(.182)	-.071(.180)	-.115(.177)	-.066(.182)	-.078(.176)	-.087(.176)	-.103(.176)
Controls							
Natural resources	-.074(.148)	-.068(.146)	-.068(.144)	-.070(.148)	-.054(.142)	-.070(.142)	-.073(.143)
Construction	-.036(.144)	-.035(.142)	-.033(.140)	-.038(.144)	-.037(.139)	-.035(.138)	-.033(.139)
Manufacturing	-.095(.142)	-.093(.140)	-.076(.138)	-.097(.141)	-.076(.136)	-.089(.136)	-.081(.136)
Transportation & communication	.020(.144)	.024(.143)	.026(.140)	.018(.144)	.022(.139)	.025(.139)	.017(.139)
Retail & wholesale	.049(.143)	.046(.142)	.054(.139)	.053(.143)	.070(.138)	.042(.138)	.055(.138)
Services	-.047(.143)	-.048(.141)	-.048(.139)	-.045(.143)	-.042(.137)	-.060(.137)	-.061(.138)
Firm size	.059(.015)	.054(.015)	.080(.015)	.051(.015)	.054(.015)	.064(.015)	.075(.015)
Firm age	.154(.001)*	.138(.001)*	.132(.001)	.156(.001)*	.126(.001)	.154(.001)*	.146(.001)*
Prior jolt experience	-.157(.032)*	-.146(.032)*	-.145(.031)*	-.154(.032)*	-.131(.031)*	-.149(.031)*	-.150(.031)*
Prior performance	.422(.049)**	.403(.049)**	.335(.052)**	.425(.049)**	.333(.051)**	.372(.048)**	.336(.052)**
Sales growth	-.030(.001)	-.031(.001)	-.025(.001)	-.031(.001)	-.027(.001)	-.029(.001)	-.023(.001)
Location advantage	.050(.024)	.056(.024)	.056(.023)	.054(.024)	.067(.023)	.089(.023)	.082(.023)
Financial slack	-.059(.002)	-.058(.001)	-.032(.001)	-.056(.002)	-.022(.001)	-.053(.001)	-.035(.001)
Leverage	.103(.007)	.105(.007)	.061(.007)	.098(.007)	.051(.007)	.065(.007)	.047(.007)
Multinationality	.038(.022)	.051(.022)	.038(.021)	.046(.022)	.061(.021)	.086(.022)	.055(.022)
Acquisition activity	.008(.001)	.007(.001)	-.005(.001)	.003(.001)	-.017(.001)	-.017(.001)	-.014(.001)
Main effects							
Dynamic managerial capability (DMC)		.148(.011)**				.305(.014)**	-.105(.018)
Dynamic knowledge management capability (DKC)			.227(.009)**		.291(.010)**		.181(.012)**
Dynamic relationship management capability (DRC)				-.059(.007)	-.174(.008)**	.037(.009)	
Interactions							
DRC x DKM					.069(.002)		
DRC x DMC						-.287(.002)**	
DKM x DMC							-.194(.002)*
Adjusted R^2	.257	.277	.299	.258	.313	.315	.309
ΔR^2 from Model 1	-	.020	.042	.001	.056	.058	.052
Δ Model F statistic	6.928**	7.998**	16.236**	1.204	1.248	8.321**	7.520**

Notes: N = 275. Coefficients are in standardized values. Standard errors are in parentheses.
*p < .05; **p < .01

Figure 3.1. A Graphic Representation of Change in Environmental Conditions



CHAPTER 4

ESSAY III: GLOBAL INDUSTRY CHARACTERISTICS, ASSET MANAGEMENT CAPABILITY, AND FIRM PERFORMANCE DURING A CRISIS

4.1 ABSTRACT

Dynamic capabilities (DCs) is emerging as a central strategic management concept, aimed at understanding how firms maintain their competitive advantage in increasingly volatile environments. Yet our knowledge of how and why firms develop DCs is still nascent. Further, the contribution of DCs to firm performance during environmental jolts remains unclear. Drawing from cognitive imprinting theory and DCs literature, I argue and find support for a positive effect of global industry dynamism on asset management capability among a sample of multinational enterprises. However, results also reveal a negative effect of asset management capability on financial performance during the 2008 economic crisis, though this effect was positive for MNEs operating in munificent global industries. This study contributes to the DCs literature by suggesting that DCs may be an outcome of operating in dynamic task environments, rather than driving performance of firms in dynamic task environments. In addition, the findings suggest that some DCs may have negative performance implications during times of crisis, and that the availability of critical resources in the environment is complementary to DC deployment.

4.2 INTRODUCTION

Dynamic capabilities – defined by Helfat et al. (2007: 4) as the "capacity of an organization to purposefully create, extend, or modify its resource base" – is emerging as a central strategic management concept, aimed at understanding how firms achieve and maintain their competitive advantage in increasingly uncertain, turbulent and hypercompetitive environments. Such capacity encompasses higher-order routines (Danneels, 2008) by which firms regenerate products, processes, networks, and positions in the marketplace (Eisenhardt and Martin, 2000). Yet, despite the increasing empirical evidence for the contribution of dynamic capabilities to firm performance, existing literature falls short in three important ways.

First, while most scholars focus on antecedents of dynamic capabilities (Barreto, 2010; Di Stefano, Peteraf, and Verona, 2010), our knowledge of how and why firms develop dynamic capabilities is still nascent. Notably, scholars have begun to empirically uncover the micro-foundations of dynamic capabilities (e.g., Argote & Ren, 2012), as well as environmental and firm-level antecedents (Rothaermel & Hess, 2007; Fang & Zou, 2009; Eisenhardt & Martin, 2000; Wang & Ahmed, 2007; Barreto, 2010; Zahra, Sapienza, & Davidsson, 2006). However, they have been surprisingly silent with regards to the role of industry conditions in the evolution of dynamic capabilities and their contribution to firm performance. Thus, because dynamic capabilities emerge over time by means of natural selection as firms respond to their environment (Zollo and Winter, 2002; Winter, 2012), there is a need to specify the role of industry characteristics as theory regarding the origins of dynamic capabilities crystallizes.

Second, even though dynamic capabilities have been posited to result in *sustainable* competitive advantage amid volatile environments [11] (Teece, 2007), empirical evidence to date is equivocal. For instance, while Drnevich and Kriauciunas (2011: 260) found that "firms operating in dynamic environments can gain greater benefits from using dynamic capabilities than in stable environments", Schilke (2013) showed that the relationship between dynamic capabilities and competitive advantage is stronger under intermediate levels of dynamism, but weaker when dynamism is low or high. This discrepancy may well be the result of scholarly inconsistency in assessing environmental dynamism. To date, few studies have examined the relationship between dynamic capabilities and firm performance under extreme, unfavorable, dynamic macro environmental conditions (i.e., crises; for two notable exceptions, please see Makkonen, Pohjola, Olkkonen, and Koponen, 2013 and Nair, Rustambekov, McShane, and Fainshmidt, 2013). Thus, as prior studies may have been capturing only stable and moderately dynamic environments (Eisenhardt and Martin, 2000), actions needed to facilitate resilience to crises remain unclear (Kunc & Bandahari, 2011). As such, this study contributes to emerging theory of organizational resilience as well.

Finally, the role of other industry context dimensions (e.g., munificence) in the dynamic capabilities-firm performance relationship remain largely ignored thus far. Given that dynamic capabilities affect firm performance through altering the resource-base, the lack of research examining the effect of resource-abundance in the task

[11] According to Teece (2007: 1319), "in fast-moving business environments open to global competition, and characterized by dispersion in the geographical and organizational sources of innovation and manufacturing, *sustainable* advantage requires more than the ownership of difficult-to-replicate (knowledge) assets. It also requires unique and difficult-to-replicate dynamic capabilities. These capabilities can be harnessed to continuously create, extend, upgrade, protect, and keep relevant the enterprise's unique asset base."

environment on the dynamic capabilities-performance link is rather surprising. In an attempt to address the aforementioned gaps in the literature, I ask the following research question: what is the role of industry conditions in (a) the development of dynamic capabilities, and (b) the dynamic capabilities-performance relationship?

Drawing from cognitive imprinting theory (Holburn and Zelner, 2010), I argue that dynamic capabilities are partially shaped by a firm's task environment, and thus hypothesize that industry dynamism will serve as a precursor to dynamic capabilities. Nonetheless, I also posit that the dynamic capabilities-performance link is contingent upon the munificence of the task environment.[12] I empirically examine the role of *global* industry conditions mainly because in an increasingly global and interconnected business environment, country and local industry effects are being gradually replaced by global industry influences (Hawawini, Subramanian, and Verdin, 2004; Bhojraj, Lee, and Oler, 2003).

I test my hypotheses using a multinational sample of firms and examine how dynamic capabilities influenced firm performance during the global financial crisis of 2008. Such crises have often been referred to as 'environmental jolts' (Meyer, 1982).[13] The 2008 global financial crisis is a valuable natural experiment to study because commensurate with increasing levels of global interconnectedness is a growing exposure of organizations to environmental jolts worldwide (Park & Mezias, 2005). Such a natural experiment provides a macro-context where environmental decline is sudden and fierce, allowing for a more precise examination of the contribution of dynamic capabilities to

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[12] The industry environment is a multi-dimensional, complex construct, and I discuss the reasoning for focusing on the two central elements of dynamism and munificence further below.

[13] Meyer (1982) defined environmental jolts as "transient perturbations whose occurrences are difficult to foresee and whose impacts on organizations are disruptive and potentially inimical." (p. 515).

performance under extremely dynamic macro-environmental conditions (Wang, Huang, & Bansal, 2005). I advance understanding of the dynamic capabilities-performance link by examining the role of macro-environmental jolts and industry dynamics in this crucial relationship.

4.3 THEORY AND HYPOTHESES

Building on the seminal work of Teece, Pisano, and Shuen (1997), Adner and Helfat (2003: 1012) maintained that a critical organizational dynamic capability is the general capacity, or skill of managers to configure and reconfigure resources to continuously create resource-combinations that extract more value from the firm's resource-pool (Adner & Helfat, 2003). Such asset management capability refers to an orchestration ability by which managers in the firm create fit between resource-decisions and resource-deployments (Sirmon et al., 2011; Sirmon & Hitt, 2009). According to Teece (2012: 1398), such "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."

Ambrosini and Bowman (2009: 33) make the point that "dynamic capability is not an ad hoc problem-solving event or a spontaneous reaction. It must contain some patterned element, i.e. it must be repeatable." Further, Helfat and Winter (2011) noted that a dynamic capability is a systematic, repeated capacity for extending the firm's assets. Therefore, because asset management capability inherently, and intentionally, results in changes to the organizational resource-base and the way assets are combined and deployed, it represents a dynamic capability.[14] Essentially, it is a systematic activity

[14] Operational/substantive/ordinary capabilities are those that allow the firm to make a living in the present (Helfat & Winter, 2011). Zahra et al. (2006: 921) noted that, '. . . new routine for product development is a

by which managers combine and utilize strategic assets (Sirmon & Hitt, 2009), especially as the organization grows and must manage complex bundles of resources (Teece, 2007).

Applying cognitive imprinting theory to dynamic capabilities would imply that firms develop dynamic capabilities as a means to successfully compete in their operating environments through processes of learning and cognitive imprinting of routines (Holburn & Zelner, 2010; Kriauciunas & Kale, 2006; Shinkle & Kriauciunas, 2012; Roth & Kostova, 2003). Holburn and Zelner (2010:1293) argued 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". Cognitive imprinting theory has its roots in the earlier organizational imprinting theory (Stinchcombe, 1965), which argues that organizational structures reflect historical environmental conditions (Romanelli, 1991). However, while organizational imprinting focuses more on the firm-founding phase and organizational structure (Eddleston, 2008), cognitive imprinting theory takes a broader view of the impact of the firm's environment on the way managers think and act (McGahan and Victer, 2010).

Teece, Pisano, and Shuen (1997) suggested that "firms of different national and regional origin may have quite different institutional assets to call upon because their institutional/policy settings are so different" (p. 522). Indeed, organizations that share similar institutional backgrounds tend to exhibit similarities in strategic behavior and capabilities (Dunning & Lundan, 2010; Guillen & Garcia-Canal, 2009; Xia, Tan, & Tan, 2008; Pan, 2002; Johanson & Vahlne, 1977). Similarly, firms from different industries

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new substantive capability but the ability to *change* such capabilities is a dynamic capability.' For instance, strategic decision-making (Eisenhardt & Martin, 2000) and organizational learning (Lichtenthaler, 2009) are notable examples of dynamic capabilities.

exhibit heterogeneity in asset management capability as a result of the differential survival requirements industries pose for firms (Eisenhardt and Martin, 2000).

As firms learn to deal with and interpret their respective markets, cognitive frameworks and decision-making recipes are institutionalized into "mental models" (McGahan and Victer, 2010; Reger and Huff, 1993), resulting in inter-industry variability, yet intra-industry homogeneity (to an extent), in the way firm resources are allocated and utilized (Hitt & Tyler, 1991; Kostova & Roth, 2002; Eisenhardt & Martin, 2000). Further, firms in different industries deal with differential levels of uncertainty, distinct political norms, and idiosyncratic historical circumstances that determine the intensity with which firms must develop asset management capabilities to perform well (McGahan & Victer. 2010; Holburn & Zelner, 2010).

Spender (1989) has referred to this phenomenon as the emergence of "industry recipes" - the core set of beliefs and assumptions, shared by managers in an industry. These recipes guide managers as they make sense of their task environment and consequently develop organizational capabilities to deal with external conditions and remain viable (Brownlie & Spender, 1995). 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".

In this paper, I focus on two central dimensions of the industry context: dynamism and munificence (Dess & Beard, 1984; McNamara, Haleblian, and Dykes, 2008; McNamara, Vaaler, & Devers, 2003). Although Dess and Beard's (1984) framework

included complexity as another dimension of the industry environment, 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., Keats and Hitt, 1988; Sirmon, Hitt, and Ireland, 2007; Subramanian and Youndt 2005; Baum and Wally, 2003; Weerawardenaa, O'Cass, and Julian, 2006).

Dynamism refers to the extent to which the industry is characterized by change and uncertainty (Datta, Guthrie, and Wright, 2005). This dimension of the task environment reflects degrees of innovation, technological change, and mostly supply and demand instability (Henderson, Miller, and Hambrick, 2006). As such, because asset management capability evolves as a means to adapt to change (Winter, 2012), I focus on industry dynamism as an antecedent to asset management capability. Munificence, on the other hand, is the abundance of critical resources, required by firms operating within an industry, usually signified by expanding demand (Castrogiovanni, 1991). As asset management capability affects firm performance through bundling and reconfiguration of resources (Teece, 2012), I focus on industry munificence as enhancing the benefits of asset management capability, allowing greater value extraction from abundant critical resources in the task environment.

Industry Dynamism and Asset Management Capability

Dynamism in an industry creates pressure on firms to innovate and manage resources efficiently (Porter, 1990; Lazonick, 1993). 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 tend to be stronger in dynamic industries. This

is because firms adapt to industry innovations by developing dynamic capabilities (Tripsas, 1997). Similarly, Lampel and Shamsie (2003) found that regulatory shifts in the film-making industry pushed firms to develop transformative capabilities that focus on resource-bundling (Wang and 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."

From a cognitive imprinting perspective, managers operating in dynamic industries will learn how to deal with such volatile settings, consequently developing bigger capacity to continuously reconfigure their firm's assets. In the context of deregulation and increasing dynamism, for instance, Pettus, Kor, and Mahoney (2009: 192) argued that "elimination of these [regulatory] restrictions creates the need for developing dynamic capabilities to cope with the drastically changed competitive environment." As dynamism increases, firms must morph continuously to obtain competitive advantage via generating and deploying new capabilities (Rindova and Kotha, 2001). Consistent with that view, Narayanan, Colwell, and Douglas (2009) demonstrated how instability and uncertainty in the pharmaceuticals industry pressures bio-tech firms to speed up and increase the effectiveness of their product development processes. Therefore, I expect that firms operating in more dynamic industries will respond to their task environment by developing stronger asset management capabilities than firms operating in more stable industries. Otherwise put, the more dynamic the industry is, the stronger asset management capabilities of firms in that industry are. Thus:

Hypothesis 1: Industry dynamism is positively related to asset management capability of firms.

Asset Management Capabilities and Firm Performance amid Environmental Jolts

Asset management capabilities allow firms to adapt to changing environments by adjusting their resource-base (Drnevich and Kriauciunas, 2011). Unlike organizational routines, asset management capabilities are characterized by managerial intent (Martin, 2011; Dosi et al. 2000). Even in the absence of critical resources, firms may sustain environmental jolts by developing asset management capabilities that rapidly reconfigure existing resources (Bradley, Aldrich, Sheperd, & Wiklund, 2011). Further, asset management capability is largely a function of the quality of managers (Adner & Helfat, 2003), or the ability of managers to continuously create resource-combinations that extract more value from the firm's resource-pool (Lahiri, Kedia, & Mukherjee, 2012). Such ability may act as a buffer against environmental jolts because it represents managers' capacity to 'do more with less' (Martin, 2011), an advantage often crucial in times of crisis and resource-scarcity.

Grewal and Tansuhaj (2001) found that when competitive intensity is enhanced by an economic crisis, the ability to respond promptly to market opportunities and changing technologies enhances organizational performance. Particularly, they showed that the ability of Thai firms to flexibly manage their resource pool was positively associated with their post-Asian-crisis performance. By developing asset management capabilities, firms extract greater value from resource-pools and thus create organizational slack and agility (Cyert & March, 1963) that are readily available to deploy in times of crisis (Evans, 1991).

Further, asset management capabilities establish a dominant logic within the firm that involves enhancing its absorptive capacity, adaptive capacity, and evolutionary fit (Kor and Mesko, 2013). Thus, failing to build asset management capabilities may result in a competence-trap whereby the firm's over-focus on exploiting core competencies in stable times results in weak ability to renew core competencies in times of major change (Flier, Van Den Bosch, & Volberda, 2003). Overall, prior studies suggest that asset management capability is "especially critical in times of decline, when uncertainty and ambiguity tend to be (unusually) high" (Walrave, van Oorschot, & Romme, 2011: 1739). Thus, I propose the following hypothesis:

Hypothesis 2: Asset management capability is positively related to firm performance during an environmental jolt.

The Complementary Role of Industry Munificence

The value of asset management capability is likely to be enhanced in resource-abundant industries, as the richness of resources in the environment reduces the potential drawbacks of poor resource-configuration (Sirmon, Hitt, and Ireland, 2007). According to Aragón-Correa and Sharma (2003: 81), munificence "provides slack resources for exploration and innovation, facilitates conflict resolution, and helps maintain organizational coalitions." Thus, when the firm's capacity to extract greater value from resources is complemented by greater resource-provision from the industry environment, managers produce enhanced rent-generating services that result in better performance during a crisis. Further, the decline in macro-environmental conditions may be less disruptive for firms operating in growing, fertile industries.

In munificent industries, firms are more likely to find more opportunities for innovative resource-combinations, more resources for the development of new

capabilities, and more incentives to deploy proactive strategies (Rueda-Manzanares, Aragón-Correa, and Sharma, 2008). Consequently, from a cognitive imprinting perspective, firms in munificent industries will benefit more from developing asset management capability as its value increases with the richness of critical resources they can configure. This is consistent with Sirmon, Hitt, Arregle, and Campbell (2010: 1394), who posited that "in munificent environments, all firms could strive to enhance their capability strengths. Furthermore, because capability strengths are critical to firm success (and thereby highly salient), managers are likely aware of rivals' actions to overtake their capability strengths and are motivated to prevent it from happening by taking similar actions, thereby triggering a Red Queen effect among rivals".

Because rent-generation partially depends on the managerial ability to pick the right resources from the environment (Makadok, 2001), the availability of critical resources will complement effective resource-picking activities. Thus, industry munificence should positively moderate the asset management capability-firm performance relationship during an environmental jolt, as firms in munificent industries (a) gain access to abundant pools of critical resources and (b) are more equipped to span these resources, creating more valuable resource-configurations as environmental conditions change drastically. I therefore expect that:

Hypothesis 3: Industry munificence enhances the positive effect of asset management capability on firm performance during an environmental jolt.

In sum, I posit that industry dynamism will act as an antecedent to asset management capability, which then influences firm financial performance during an environmnetal jolt. I also argue that industry munificence will positively moderate the aforementioned relationship. These relationships are presented in Figure 4.1.

[Insert Figure 4.1 about Here]

4.4 DATA AND METHODOLOGY

Data and Sampling Procedure

Data for this study was procured via the Bloomberg database, a well-established, comprehensive data source, which includes information about industries and more than 60,000 companies around the world (Bloomberg, 2012). Bloomberg L.P., a financial data vendor, provides a computer system that allows users to remotely access real-time and historic financial data. I initiated the sampling procedure by screening out private firms, as data pertaining to such firms is largely incomplete. To increase generalizability and avoid country-specific effects, I did not limit the sample to a specific set of countries. Further, I chose to focus on the financial crisis of 2008 as the most recent, global, and large-in-magnitude environmental jolt. Subsequently, due to the global nature of this environmental jolt, I sampled large publicly-traded multinational firms as these global enterprises were at the forefront of the 2008 global economic crisis (Bartram and Bodnar, 2009).

I applied several criteria to further screen the sample. Namely, firms that were included in the top 10^{th} percentile of total assets, market capitalization, and revenue as of 2007 were retained for further analysis. This was done to be consistent with the Forbes Global 1000 list as of 2007, which ranks the largest global firms throughout the world based on their total assets, market capitalization, and total revenue. The sampled enterprises indeed appeared on the Forbes list, an indicator that all were multinational firms. Then, firms that went through mergers, were acquired, or split operations during 2008 were also removed as their performance data for 2008 was not complete. Finally,

after removing several missing data entries, the final sample includes 872 firms from 52 countries.[15] I focus on firm performance during 2008 as this year represented the lion's share of the collapse in capital markets (Bartram and Bodnar, 2009). As can be seen in Figure 4.2, 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. Overall, this study examines global companies dealing with a global crisis.

[Insert Figure 4.2 about Here]

Measurement

Consistent with prior literature (e.g., Wan & Yiu, 2009) I focused on financial performance of firms during an environmental jolt as the dependent variable. I measured financial performance as the return on assets (ROA) during 2008 (Hsu & Wang, 2012). To measure asset management capability I relied on a framework provided by Tang and Liou (2010). As dynamic capabilities are largely unobservable and hard to measure[16], a specifically-related ensemble of financial indicators can serve as a valid proxy for heterogeneity in managerial skills, and specifically in this study, asset management capabilities (see Tang & Liou, 2010 for a detailed discussion). 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 jolt, I obtained data from 2005 to 2007 for each financial indicator (Chatterjee & Hambrick, 2007). This is also

[15] This is based on each firm's country of incorporation. A total of 50 countries were represented when I examined each firm's home country of ultimate parent.

[16] Recently, Stadler, Helfat, and Verona (2013: 1792) have argued that "by using a measure that reflects key underlying attributes of dynamic capabilities, we [can] capture the potential for a firm to obtain and develop new resources." In their study of companies in the upstream oil industry, they measured attributes of dynamic capabilities with a firm's imaging technology sophistication (2D, 3D, or 4D) and found that "firms with more technologically sophisticated capabilities for seismic imaging and well drilling have the potential to undertake a broader range of projects than firms with less sophisticated capabilities."

consistent with Kor and Mahoney (2005), who maintained that a period of three years is required to properly capture dynamic capabilities.

Based on Tang and Liou (2010), I 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, as total assets and depreciation expenses encompass both types (IASPlus, 2013). According to Dietrich and Sorensen (1984: 396), "[l]ow turnover represents an inefficient use of assets-it may indicate that current management has undertaken heavy investment but been unable to generate sales growth, which new management could reverse. Alternatively, high turnover increases cash flows." They also found that low asset turnover is a strong predictor of a company being a likely target for merger. Similarly, Pan and Tse (2000) found that firms with higher asset turnover ratio are more likely to employ an equity-based expansion strategy abroad, probably due to their superior ability to manage such challenging endeavors, while 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 in general, manage their resources with minimal resource value erosion (Liou & Gao, 2011).

I calculated the average for each indicator across the three years examined prior to conducting the exploratory factor analysis because the inclusion of each year separately may bias the results by treating the six indicator-years as separate, rather than a temporal sequence of a single variable (Hair et al., 1998). As expected, the financial indicators of asset management capability exhibited an acceptable single factor solution (variance

extracted = 64%; loadings = 0.80), supporting the notion that "capabilities of firms can be inferred from their observable financial indicators" (Tang & Liou, 2010: 49).

Due to the global nature of my sample, I obtained industry data using the 4-digit[17] Global Industry Classification Standard (GICS), a collaborative project by Standard & Poor's and Morgan Stanley Capital International (MSCI), which categorizes firms into *global* industries (MSCI, 2013). According to Bhojraj, Lee, and Oler (2003), GICS are more stable over time than other commonly used standards (e.g., SIC, NAICS), especially in the context of large multinational firms. Consistent with previous studies (e.g., Anderson and Tushman, 2001; Child, 1975; Dess, Ireland, and Hitt, 1990; Misangyi et al., 2006; McNamara et al., 2008; Subramanian and Youndt, 2005; McNamara et al., 2003), industry dynamism and munificence were obtained by regressing total industry sales on a year-count variable for a period of five years (2003-2007). Then, similar to the abovementioned literature, munificence was measured as the slope coefficient, divided by the mean value of industry sales for the five year; dynamism was measured as the standard error of the regression slope coefficient, divided by the mean value of industry sales for the examined period.

Based on prior studies, I included several control variables at both the industry and the firm levels that were expected to affect asset management capabilities and/or ROA (Wan & Yiu, 2009; Lee et al., 2009; Grewal & Tansuhaj, 2001; Bradley et al., 2011; Zuniga-Vicente & Vicente-Lorente, 2006; Hsu & Wang, 2012; Subramanian and Youndt, 2005; Dess and Beard, 1984). At the firm level, I controlled for prior performance, firm size and leverage. Firm size was calculated as the logarithmic

[17] This is also consistent with the model specification and industry grouping employed in this paper, as described later in the "Analytic Approach and Model Specification" section.

transformation of total assets as of 2007; leverage was measured as total liabilities to total assets as of 2007; prior performance was measured as average ROA during 2005-2007 to partial out potential competitive advantages some companies may have going into the crisis (see generally, Chacar, Newburry, & Vissa, 2010; Mueller, 1990).

At the industry level, I controlled for industry complexity, calculated as the average four-firm concentration ratio in each industry over the examined period (Misangyi et al., 2006; Hay and Morris, 1979); industry capital intensity, calculated as the median fixed assets to sales ratio in each industry over the examined period; industry profitability, calculated as the median ROA in each industry over the examined period; and industry productivity, calculated as the median revenue per employee (also known as "most bang for buck") in each industry over the examined period. I 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 4.1.

[Insert Table 4.1 about Here]

Analytic Approach and Model Specification

I employed two-level (global industry and firm) hierarchical linear modeling (HLM), a powerful 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 independent yet simultaneous estimation of fixed effects and variance (i.e., random) components at each level of analysis, while holding other levels constant (Hoffman & Gavin, 1998; Hoffman, 1997). Because firms are nested within global industries, asset management capabilities and financial performance of firms from the same global industry are expected to exhibit significant within-industry homogeneity

that may violate the independence and homoscedasticity assumptions of OLS regression (Short et al., 2007). The HLM technique, which enables statistical control for a within-group effect on outcome variables, as well as the examination of effects on multiple levels with minimal violation of independence, was therefore well-suited for this study (Raudenbush & Bryk, 2002; Hofmann, 1997).

With regards to grouping at the industry level, while 2-digit and 6-digit groupings are possible, I coded firms into global industries based on 4-digit GICS codes for several reasons. First, grouping into 2-digit industries resulted in only 10 industries at level 2, which poses a major concern when utilizing HLM (Cohen, 1998; Mass & Hox, 2005; Snijders & Bosker, 1994; Hoffman, 1997; Raudenbush & Bryk, 2002; Raudenbush, Bryk, Cheong, Congdon, & Toit, 2011). Further, significant effects may go undetected due to insufficient statistical power. Second, grouping into 6-digit industries (i.e., 165 groups) poses an opposite obstacle, whereby many industries include as few as one, two, or even no firms. This approach renders within-group estimation problematic. Finally, 6-digit grouping may create confounding effects as many of these global firms operate in several related, and often unrelated, industries. Thus, a 4-digit grouping is most appropriate to balance the abovementioned issues. The industry level of our data is comprised of 24 groups; dynamism and munificence of these industries are presented in Figure 4.3.

[Insert Figure 4.3 about Here]

To ensure that the data exhibits sufficient within-group effects, I calculated the intra class correlation coefficient (ICC) for asset management capabilities 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. As a robustness test, and to examine whether a 3-level HLM is required, I also examined a 2-level model where firms were nested in home countries. Not surprisingly with such a global sample (Hawawini et al., 2004), the country effect accounted for less than 0.5 percent ($p>0.1$) of the variance in these variables. Thus, I proceeded with a 2-level model, casting global industry as the grouping variable.

Prior to conducting analyses, I centered all industry variables using the Grand Mean Centering approach (Hofmann and Gavin, 1998). However, I used the Group Mean Centering approach for asset management and other firm-level predictors, especially since a cross-level interaction was of interest in this study (Enders & Tofighi, 2007). Further, group mean centering allowed correcting for inherent, structural differences across industries in financial indicators such as asset turnover ratio. For instance, an organization like Wal-Mart is expected to have a substantially higher asset turnover ratio than other organizations in the software industry due to the stark differences in asset structure and capital requirements between those industries. Thus, my approach allows for a more accurate, comparable examination of an industry-adjusted asset management capability.

4.5 RESULTS

Table 4.2 presents the HLM results for the test of the Hypotheses. Models 1 through 3 examine asset management capability as the dependent variable, while Models 4 through 6 examine firm performance during the 2008 crisis as the dependent variable. Model 1 includes only control variables at the industry level, of which only capital

intensity was marginally significant (B = 0.585, $p < 0.1$). This result implies that firms operating in industries with heavier reliance on fixed assets may tend to exhibit stronger asset management capability. In Model 2, results provide support for Hypothesis 1 as industry dynamism was significantly and positively related to asset management capability ($\beta = 72.862$, $p < .01$). In Model 3, I examined whether this effect holds in the presence of munificence, and results did show that while dynamism remains significant, munificence is not significant ($p > 0.1$).

[Insert Table 4.2 about Here]

Model 4 includes only control variables at both the industry and the firm levels. As expected, prior performance was positively and significantly ($p < 0.01$) related to in-jolt performance. Additionally, industry productivity was negatively and significantly related to in-jolt performance ($p < 0.05$). Hypotheses 2 and 3 posited that asset management capability would be positively related to in-jolt firm performance, and that industry munificence would positively moderate this relationship. As can be seen in Model 5, support was not found for Hypothesis 2. In fact, asset management capability was negatively and significantly related to in-jolt performance (B= -0.005, $p < 0.05$), counter to Hypothesis 2. However, Hypothesis 3 was supported as the interaction between asset management capability and industry munificence was positively and significantly (B= 0.15, $p < 0.01$) related to in-jolt performance in Model 6.

To gain further insight into the nature of the moderating effect, I plotted 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). Figure 4.4 shows the relationship between asset management capability, industry

munificence, and in-jolt firm performance. Indeed, consistent with Hypothesis 3, increasing levels of asset management capability are associated with better in-jolt firm performance in more munificent environments. However, in low munificence industries, counter to my expectations, increasing levels of asset management capability are associated with lower in-jolt firm performance. These results support Hypothesis 3, but are partially counter to Hypothesis 2. Further, Figure 4.4 reveals that firms operating in munificent industries systematically exhibited lower performance than firms operating in more resource-scarce industries.

[Insert Figure 4.4 about Here]

4.6 DISCUSSION AND CONCLUSIONS

What do these results tell us about existing theory? How do they change what we know about dynamic capabilities and firm resilience to crises? First, dynamic capabilities may not be simply for dynamic environments, but rather *from* dynamic task environments. This may point to a possible mis-positioning of environmental dynamism in existing theory, or at least a failure to incorporate the role of dynamism in its entirety. Even though managers have agency in determining how much to invest in developing and deploying dynamic capabilities (Sirmon & Hitt, 2009), past research has indeed suggested that dynamic capabilities evolve as a response to change in the environment (Winter, 2012). Eisenhardt and Martin (2000) proposed that dynamic capabilities in dynamic environments are simple, experiential routines, while dynamic capabilities in moderately dynamic environments are more complicated, crystallized routines. Thus, the findings of this study highlight the notion that the rate of change and uncertainty in the task environment can act as a driver of the firm's capacity for change.

Second, during a macro-economic jolt, a resource-configuration capacity may still be effective if resources in the task environment are more abundant, combining with an asset management capability in a complementary way (Makadok, 2001). Munificent industries enable embedded firms to build bigger resource-capacities against jolts (Dess & Beard, 1984), and as such, combine with the dynamic capability to manage asset bundles in a synergistic way (Shepherd, Patzelt, & Baron, 2013). However, an asset management capability may be less effective (i.e., too costly) in resource-scarce environments where more simple, *ad-hoc* problem solving may be more beneficial (Winter, 2003). According to Schilke (2013: 3), "dynamic capabilities are not always an adequate means of change, even if there is a significant need for resource configurations". The path-dependent, evolutionary nature of dynamic capabilities might render them less effective when the organization encounters disruptive, unforeseen, "black-swan" like events that require novel, revolutionary reorientations (Schilke, 2013).

With that said, these findings may be an important first step toward resolving some contradictions in the dynamic capabilities literature, such as the one surrounding the efficacy of dynamic capabilities in generating competitive advantage in the face of rapid change (Peteraf, Di Stefano, & Verona, 2013). It is possible that, specifically in the face of rapid change (or highly dynamic settings), dynamic capabilities may or may not result in competitive advantage, depending on other factors such as industry munificence. Thus, more attention is needed to examine the multi-contingent contribution of dynamic capabilities to performance (e.g., dynamic capabilities-dynamism-munificence).

Further, while the capacity to change the resource-base may yield new resource-configurations, these configurations do not guarantee fit with the new environmental

conditions (Ambrosini & Bowman, 2009). If many parameters in the external environment change concurrently, as is usually the case with environmental jolts, managers may experience difficulties in understanding the new business landscape, subsequently inhibiting the reshaping of cognitive frames and managers' ability to configure productive resource-bundles (Teece & Pisano, 1994). That is, during jolts the frequency and magnitude of change create more randomness and uncertainty regarding the rent-generating potential of various resource-combinations.

In addition, results indicate that in-jolt performance of firms operating in resource-scarce industries was systematically higher than performance of firms in munificent industries. It could be that faster-growing industries are more attractive to potential entrants, consequently enhancing competition (Tang, Kreiser, Marino, & Weaver, 2010) and reducing firm profits (Castrogiovanni, 1991). Further, such industries are often characterized by stronger focus on exploration, rather than on exploitation, which is more common is slower-growth industries. This in turn may mean the sacrifice of current profitability, or efficiency, for other goals such as seizing a bigger market share. Slower-growing industries are also more likely to be mature industries, which have undergone a "selection" process, leaving only the most successful firms to exploit existing demand in the competitive arena.

This study also shows that the concept of environmental dynamism, at least as it relates to dynamic capabilities, may be more a complex and multi-faceted construct than initially thought. For instance, while dynamism in the task environment was found to be an antecedent, positively affecting asset management capability, extreme dynamism in the macro-environment created a context in which asset management capability had a

negative effect on firm performance. These findings may warrant a more nuanced approach to the role of dynamism in dynamic capabilities theory. For instance, Barrales-Molina, Bustinza, and Gutiérrez-Gutiérrez (2013) found that dynamic capability generation is positively influenced by managers' perceptions of environmental dynamism. This also implies that dynamism at the organizational level may play a role in the development of dynamic capabilities.

Finally, it appears that dynamic capabilities, with their influence on competitive advantage through a patterned change of ordinary capabilities, indeed are not always a useful means of change. Thus, organizational resilience may take various shapes and have distinct requirements in different environments. In resource-scarce environments, for example, resilience to crisis 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. While these findings and inferences are tentative, I believe that they make a notable contribution to the literature on organizational resilience and crisis management.

As with any study, this study has several limitations that may provide fruitful avenues for future research. First, while the focus of the study was on 2008 as the year of the economic crisis, it would be interesting to learn how asset management capability affected performance of firms in 2009 and 2010, the "upswing" years (Nair et al., 2013). Second, while this study employs ROA as the proxy for performance (e.g., Wan and Yiu, 2009), other performance metrics may be affected by asset management capability in heterogeneous ways during a crisis. Thus, examining other performance metrics, such as

stock performance and sales growth, may uncover new insights as well. In a similar vein, asset management is one among many dynamic capabilities MNEs may possess. Therefore, since other capabilities may prove effective during a crisis (e.g., Park and Mezias, 2005), there is a need to investigate how various types of dynamic capabilities affect organizational resilience to crises.

Third, my sample consisted of large MNEs, which may influence the results as well. For instance, Fainshmidt et al. (2013) found that smaller firms benefit from dynamic capabilities significantly more than larger firms. An examination of a sample of smaller-scale organizations is thus warranted. Fourth, our sample included MNEs from the global financial services and real-estate industries. Given the unique role these industries played in the 2008 crisis, I must acknowledge the potential influence of having such MNEs in the examined sample as well.

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 (i.e., good past performance leads to good present performance). Further, higher turnover ratio generally means higher revenues, which should lead to higher profits and thus higher ROA. However, that is not the case for our sample as can be seen from the negative correlation ($r = -0.14$; $p < 0.05$) between asset management capability and in-jolt performance in Table 4.1, as well as from the HLM analyses results. Other than the time lag between measuring asset turnover ratio (i.e., 2005-2007) and in-jolt performance (i.e., in 2008), representing substantially different competitive conditions, there are other factors to consider as well when interpreting this link.

First, I 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. This factor score represents an underlying condition driving both ratios to be higher or lower, a condition I label asset management capability in this paper. Second, while a firm can have a strong asset management capability that yields it higher revenues, there could be inefficiencies and weaknesses in other - for instance operational or relationship management - capabilities that erode the value created by a strong asset management capability, resulting in poor performance. With that said, while other studies have often used archival data to measure dynamic capabilities (e.g., Stadler, Helfat, & Verona, 2013), I acknowledge the potential inaccuracy in such practices as they relate to my measures as well.

Several other opportunities for future research stem from this paper as well. For instance, while I found that industry dynamism is a precursor to asset management capability, it would be interesting to examine why some firms diverge from industry norms. Similarly, my initial analyses indicate that home country did not matter for performance or asset management capability of MNEs examined in this study. This finding is rather surprising, given that the financial crisis had, arguably, variable impacts on economies, and by that extension companies, around the world. This begs the question of whom, or what, does home country matter for? Do high degrees of firm multinationality decrease organizational dependence on any single economy? Clearly, different organizations are affected to variable degrees by their home country's national institutions (Kostova and Zaheer, 1999; Kostova, Roth, & Dacin, 2009) and this variability is an interesting topic of inquiry.

From a complexity perspective, it could also be that contextual factors configure, rather than linearly interact with or affect, dynamic capabilities to influence firm outcomes. Additionally, survey and field research, followed by qualitative analyses, may help pry-open the black box of dynamic capabilities as well as their influence on firm performance and resilience. This study's findings indicate that the dynamic capabilities-dynamism-competitive advantage interface may be more complex and nuanced than initially conceptualized, whereby environmental dynamism may serve a dual role – an antecedent to dynamic capabilities and, under certain contingencies, a boundary condition of their contribution to competitive advantage as well.

In sum, the results of this study specify an important antecedent to dynamic capabilities, and do demonstrate the nuanced effects of dynamic capabilities, specifically asset management capability, on organizational performance during an environmental jolt. I hope that the results will encourage researchers to pursue these and other investigations into the role of dynamic capabilities in organizational success.

4.7 REFERENCES

Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, *24*(10), 1011-1025.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage: Newbury Park, CA.

Almor, T. (2011). Dancing as fast as they can: Israeli high-tech firms and the Great Recession of 2008. *Thunderbird International Business Review*, *53*(2), 195-208.

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management?. *International Journal of Management Reviews*, *11*(1), 29-49.

Anderson, P., & Tushman, M. L. (2001). Organizational environments and industry exit: The effects of uncertainty, munificence and complexity. *Industrial and Corporate Change*, *10*(3), 675-711.

Aragon-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *The Academy of Management Review*, 71-88.

Argote, L., & Ren, Y. (2012). Transactive memory systems: a microfoundation of dynamic capabilities. *Journal of Management Studies*, 49, 1375-1382.

Barnett, C. K., & Pratt, M. G. (2000). From threat-rigidity to flexibility-Toward a learning model of autogenic crisis in organizations. *Journal of Organizational Change Management*, *13*(1), 74-88.

Barrales-Molina, V., Bustinza, Ó. F. and Gutiérrez-Gutiérrez, L. J. (2013). Explaining the Causes and Effects of Dynamic Capabilities Generation: A Multiple-Indicator Multiple-Cause Modeling Approach. *British Journal of Management*, 24, 571–591.

Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of Management*, 36(1), 256-280.

Bartram, S. M., & Bodnar, G. M. (2009). No place to hide: The global crisis in equity markets in 2008/2009. *Journal of International Money and Finance*, 28(8), 1246-1292.

Baum, J. R., & Wally, S. (2003). Strategic decision speed and firm performance. *Strategic Management Journal*, *24*(11), 1107-1129.

Bhojraj, S., Lee, C., & Oler, D. K. 2003. What's my line? A comparison of industry classification schemes for capital market research. *Journal of Accounting Research*, 41(5), 745-774.

Bloomberg, L.P. 2013. Company data, using the equity screening interface, as of May, 2013, retrieved from the Bloomberg Terminal. Accessed 1 May, 2013.

Bradley, S. W., Aldrich, H., Shepherd, D. A., & Wiklund, J. (2011). Resources, environmental change, and survival: asymmetric paths of young independent and subsidiary organizations. *Strategic Management Journal*, *32*(5), 486-509.

Castrogiovanni, G. J. (1991). Environmental munificence: A theoretical assessment. *Academy of Management Review*, 19(3), 542-565.

Chacar, A. S., Newburry, W., & Vissa, B. (2010). Bringing institutions into performance persistence research: Exploring the impact of product, financial, and labor market institutions. *Journal of International Business Studies*, 41(7), 1119-1140.

Chatterjee, A., & Hambrick, D. C. (2007). It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly*, *52*(3), 351-386.

Child, J. (1975). Managerial and organizational factors associated with company performance, Part II. *Journal of Management Studies, 12:* 12-27.

Cohen, M. P. 1998. Determining sample sizes for surveys with data analyzed by hierarchical linear models. *Journal of Official Statistics*, 14(3): 267-275.

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, *NJ*, *2*.

Danneels, E. (2008). Organizational antecedents of second-order competences. *Strategic Management Journal*, 29(5), 519-543.

Datta, D. K., Guthrie, J. P., & Wright, P. M. (2005). Human resource management and labor productivity: does industry matter?. *Academy of management Journal*, *48*(1), 135-145.

Dess, G. G., & Beard, D. W. (1984). Dimensions of organizational task environments. *Administrative science quarterly*, *29*, 52-73.

Dess, G. G., Ireland, R. D., & Hitt, M. A. (1990). Industry effects and strategic management research. *Journal of management*, *16*(1), 7-27.

Di Stefano, G., Peteraf, M., & Verona, G. (2010). Dynamic capabilities deconstructed: a bibliographic investigation into the origins, development, and future directions of the research domain. *Industrial and Corporate Change*, *19*(4), 1187-1204.

Dietrich, J. K., & Sorensen, E. (1984). An application of logit analysis to prediction of merger targets. *Journal of Business Research*, 12(3), 393-402.

Dosi, G., R. Nelson, and S. G. Winter, (eds). 2000. *The nature and dynamic of organizational capabilities*. Oxford/New York: Oxford University Press.

Drnevich, P. L., & Kriauciunas, A. P. (2011). Clarifying the conditions and limits of the contributions of ordinary and dynamic capabilities to relative firm performance. *Strategic Management Journal*, 32(3), 254-279.

Dunning, J. H., & Lundan, S. M. (2010). The institutional origins of dynamic capabilities in multinational enterprises. *Industrial and Corporate Change*, 19(4), 1225-1246.

Eddleston, K. A. (2008). Commentary: The prequel to family firm culture and stewardship: The leadership perspective of the founder. *Entrepreneurship theory and practice*, *32*(6), 1055-1061.

Eisenhardt, K. M., & Martin, J. (2000). Dynamic capabilities: What are they?. *Strategic Management Journal*, 21 (special issue), 1105-1121.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: a new look at an old issue. *Psychological methods*, 12(2), 121-138.

Evans, S. J. (1991). Strategic Flexibility for High Technology Maneuvers: A Conceptual Framework. *Journal of Management Studies*, 28, 69-89.

Fainshmidt, S., Pezeshkan, A. Frazier, M.L., Markowski, E., & Nair, A. (2013) Dynamic capabilities and performance: A meta-analysis. Paper presented at the Southern Management Association Annual Meeting in New Orleans, Louisiana.

Fang, E. E., & Zou, S. (2009). Antecedents and consequences of marketing dynamic capabilities in international joint ventures. *Journal of International Business Studies*, 40(5), 742-761.

Flier, B., Bosch, F. A., & Volberda, H. W. (2003). Co-evolution in Strategic Renewal Behavior of British, Dutch and French Financial Incumbents: Interaction of Environmental Selection, Institutional Effects and Managerial Intentionality*. *Journal of Management Studies*, *40*(8), 2163-2187.

Grewal, R., & Tansuhaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *The Journal of Marketing*, 67-80.

Guillén, M. F., & García-Canal, E. (2009). The American model of the multinational firm and the "new" multinationals from emerging economies. *The Academy of Management Perspectives*, *23*(2), 23-35.

Hair, Jr. J.F., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). *Multivariate data analysis*. New Jersey: Prentice-Hall.

Hawawini, G., Subramanian, V., & Verdin, P. 2004. The home country in the age of globalization: how much does it matter for firm performance?. *Journal of World Business*, 39(2): 121-135.

Hay, D. A., & Morris, D. J. 1979. *Industrial Economics: Theory and Evidence*. Oxford University Press, Oxford.

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M. A., Singh, H., Teece, D. J., & Winter, S. G. (2007). *Dynamic Capabilities: Understanding Strategic Change in Organizations*. London: Blackwell.

Helfat, C. E., & Winter, S. G. (2011). Untangling Dynamic and Operational Capabilities: Strategy for the (N) ever-Changing World. *Strategic Management Journal*, 32(11), 1243-1250.

Henderson, A. D., Miller, D., & Hambrick, D. C. (2006). How quickly do CEOs become obsolete? Industry dynamism, CEO tenure, and company performance. *Strategic Management Journal*, *27*(5), 447-460.

Hitt, M., & Tyler, B. 1991. Strategic decision models: Integrating different perspectives. *Strategic Management Journal*, 12(5): 327-352.

Hoffman, D. 1997. An overview of the logic and rationale of hierarchical linear models. *Journal of Management,* 23(6): 723-724.

Hofmann, D. A., & Gavin, M. B. 1998. Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management*, 24(5): 623–641.

Holburn, G. L., & Zelner, B. A. (2010). Political capabilities, policy risk, and international investment strategy: Evidence from the global electric power generation industry. *Strategic Management Journal*, *31*(12), 1290-1315.

Hsu, L. C., & Wang, C. H. (2012). Clarifying the effect of intellectual capital on performance: The mediating role of dynamic capability. *British Journal of Management, 23,* 179-205.

IASPlus. 2013. IAS 38 – Intangible Assets, by Deloitte. http://www.iasplus.com/en/standards/ias38 [accessed 14 May 2013].

Johanson, J., & Vahlne, J. E. 1977. The internationalization process of the firm-A model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies*, 8: 22-32.

Keats, B. W., & Hitt, M. A. (1988). A causal model of linkages among environmental dimensions, macro organizational characteristics, and performance. *Academy of management journal*, 570-598.

Kor, Y. Y., & Mahoney, J. T. (2005). How dynamics, management, and governance of resource deployments influence firm-level performance. *Strategic Management Journal*, *26*(5), 489-496.

Kor, Y. Y., & Mesko, A. (2013). Dynamic managerial capabilities: Configuration and orchestration of top executives' capabilities and the firm's dominant logic. *Strategic Management Journal*, *34*(2), 233-244.

Kostova, T., Roth, K., & Dacin, M. T. (2009). Theorizing on MNCs: A promise for institutional theory. *Academy of Management Review*, 34(1), 171-173.

Kostova, T., & Roth, K. (2002). Adoption of an organizational practice by subsidiaries of multina-Adoption of an organizational practice by subsidiaries of multinational corporations: Institutional and relational effects. *Academy of Management Journal*, *45*(1), 215-233.

Kostova, T., & Zaheer, S. (1999). Organizational legitimacy under conditions of complexity: The case of the multinational enterprise. *Academy of Management review*, 24(1), 64-81.

Kriauciunas, A., & Kale, P. (2006). The impact of socialist imprinting and search on resource change: A study of firms in Lithuania. *Strategic Management Journal*, *27*(7), 659-679.

Kunc, M., & Bandahari, R. (2011). Strategic development processes during economic and financial crisis. *Management Decision*, 49(8), 1343-1353.

Lahiri, S., Kedia, B. L., & Mukherjee, D. (2012). The impact of management capability on the resource–performance linkage: Examining Indian outsourcing providers. *Journal of World Business*, *47*(1), 145-155.

Lampel, J., & Shamsie, J. (2003). Capabilities in Motion: New Organizational Forms and the Reshaping of the Hollywood Movie Industry. *Journal of Management Studies*, *40*(8), 2189-2210.

Lazonick, W. (1993). Industry clusters versus global webs: organizational capabilities in the American economy. *Industrial and Corporate Change*, *2*(1), 1-24.

Lee, S. H., Beamish, P. W., Lee, H. U., & Park, J. H. (2009). Strategic choice during economic crisis: Domestic market position, organizational capabilities and export flexibility. *Journal of World Business*, *44*(1), 1-15.

Lichtenthaler, U. (2009). Absorptive capacity, environmental turbulence, and the complementarity of organizational learning processes. *Academy of Management Journal*, 52(4), 822-846.

Liou, F-M., & Gao, Y-C. (2011). Competitive advantage in the online game industry in Taiwan. *Journal of Strategy and Management*, 4(2): 136 – 154.

Liou, F. M., Tang, Y. C., & Huang, C. P. (2008). Asset-light business model: A theoretical framework for sustained competitive advantage. *Journal of Business & Policy Research*, 4(1), 104-115.

Maas, C., & Hox, M. 2005. Sufficient sample sizes for multilevel modeling. *Methodology*, 1(3): 86-92.

Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic management journal*, *22*(5), 387-401.

Martin, J. A. (2011). Dynamic managerial capabilities and the multibusiness team: the role of episodic teams in executive leadership groups. *Organization Science*, *22*(1), 118-140.

McGahan, A. M., & Victer, R. 2010. How much does home country matter to corporate profitability. *Journal of International Business Studies*, 41(1): 142-165.

Mcnamara, G. M., Haleblian, J. J., & Dykes, B. J. (2008). The performance implications of participating in an acquisition wave: Early mover advantages, bandwagon

effects, and the moderating influence of industry characteristics and acquirer tactics. *Academy of Management Journal*, *51*(1), 113-130.

McNamara, G., Vaaler, P. M., & Devers, C. (2003). Same as it ever was: The search for evidence of increasing hypercompetition. *Strategic Management Journal*, *24*(3), 261-278.

Meyer, A. D. (1982). Adapting to environmental jolts. *Administrative science quarterly*, 27, 515-537.

Misangyi, V. F., Elms, H., Greckhamer, T., & Lepine, J. A. (2006). A new perspective on a fundamental debate: a multilevel approach to industry, corporate, and business unit effects. *Strategic Management Journal*, *27*(6), 571-590.

MSCI. 2013. An overview of GICS. http://www.msci.com/products/indices/sector/gics/ [accessed 12 April, 2013].

Mueller, D. C. (1990). The dynamics of company profits: Profits and the process of competition. In D.C. Mueller (Ed.) The dynamics of company profits: 1–15. Cambridge: Cambridge University Press.

Nair, A., Rustambekov, E., McShane, M. and Fainshmidt, S. (2013). Enterprise Risk Management as a Dynamic Capability: A test of its effectiveness during a crisis. *Managerial and Decision Economics*. doi: 10.1002/mde.2641

Narayanan, V. K., Colwell, K., & Douglas, F. L. (2009). Building organizational and scientific platforms in the pharmaceutical industry: a process perspective on the development of dynamic capabilities. *British Journal of Management*, *20*(s1), S25-S40.

Pan, Y. 2002. Equity ownership in international joint ventures: the impact of source country factors. *Journal of International Business Studies*, 33(2): 375–384.

Pan, Y., & Tse, D. K. (2000). The hierarchical model of market entry modes. *Journal of International Business Studies*, 31(4), 535-554.

Park, N. K., & Mezias, J. M. (2005). Before and after the technology sector crash: the effect of environmental munificence on stock market response to alliances of e-commerce firms. *Strategic Management Journal*, 26(11), 987-1007.

Peteraf, M., Di Stefano, G., & Verona, G. (2013). The elephant in the room of dynamic capabilities: Bringing two diverging conversations together. *Strategic Management Journal*, 34(12), 1389-1410.

Pettus, M. L., Kor, Y. Y., & Mahoney, J. T. (2009). A theory of change in turbulent environments: the sequencing of dynamic capabilities following industry deregulation. *International Journal of Strategic Change Management*, *1*(3), 186-211.

Porter, M. E. 1990. *The Competitive Advantage of Nations*. New York: Free Press.

Raudenbush, S. W., & Bryk, A. S. 2002. *Hierarchical Linear Models*. Thousand Oaks, CA: Sage Publications

Raudenbush, S. W., Bryk, A. S., Cheong, Y. F., Congdon, R. T., & du Toit, M. 2011. *HLM 7*. Scientific Software International: Scientific Software, Lincolnwood, IL.

Reger, R. K., & Huff, A. S. (1993). Strategic groups: A cognitive perspective. *Strategic Management Journal*, *14*(2), 103-123.

Rindova, V. P., & Kotha, S. (2001). Continuous" morphing": Competing through dynamic capabilities, form, and function. *Academy of Management Journal*, 1263-1280.

Romanelli, E. (1991). The evolution of new organizational forms. *Annual review of sociology*, 17, 79-103.

Roth, K., & Kostova, T. (2003). Organizational coping with institutional upheaval in transition economies. *Journal of World Business*, *38*(4), 314-330.

Rothaermel, F. T., & Hess, A. M. (2007). Building dynamic capabilities: Innovation driven by individual-, firm-, and network-level effects. *Organization Science*, *18*(6), 898-921.

Rueda-Manzanares, A., Aragón-Correa, J. A., & Sharma, S. (2008). The Influence of Stakeholders on the Environmental Strategy of Service Firms: The Moderating Effects of Complexity, Uncertainty and Munificence*. *British Journal of management*, *19*(2), 185-203.

Schilke, O. (2013). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*. doi: 10.1002/smj.2099

Shepherd, D. A., Patzelt, H., & Baron, R. A. (2013). "I care about nature, but …": Disengaging values in assessing opportunities that cause harm. *Academy of Management Journal,* 56(5), 1251.

Shinkle, G. A., & Kriauciunas, A. P. (2012). The impact of current and founding institutions on strength of competitive aspirations in transition economies. *Strategic Management Journal*, *33*(4), 448-458.

Short, J. C., Ketchen Jr, D. J., Palmer, T. B., & Hult, G. T. M. (2007). Firm, strategic group, and industry influences on performance. *Strategic Management Journal*, 28(2), 147-167.

Sirmon, D. G., & Hitt, M. A. (2009). Contingencies within dynamic managerial capabilities: interdependent effects of resource investment and deployment on firm performance. *Strategic Management Journal*, *30*(13), 1375-1394.

Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, *32*(1), 273-292.

Sirmon, D. G., Hitt, M. A., Arregle, J. L., & Campbell, J. T. (2010). The dynamic interplay of capability strengths and weaknesses: investigating the bases of temporary competitive advantage. *Strategic Management Journal*, *31*(13), 1386-1409.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource Orchestration to Create Competitive Advantage Breadth, Depth, and Life Cycle Effects. *Journal of Management*, *37*(5), 1390-1412.

Snijders, T.A.B., & Bosker, R. J. 1994. Standard errors and sampling sizes for two-level research. *Journal of Educational Statistics,* 18: 237-261.

Stadler, C., Helfat, C. E., & Verona, G. (2013). The impact of dynamic capabilities on resource access and development. *Organization Science*. Published Online: February 28, 2013. http://pubsonline.informs.org/doi/abs/10.1287/orsc.1120.0810

Stamp, G. (1981). Levels and types of managerial capability. *Journal of Management Studies*, *18*(3), 277-298.

Stinchcombe, A. 1965. Social structure and organizations. In J. March (Ed.), *Handbook of organizations*: 260-290. Chicago: Rand McNally.

Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, *48*(3), 450-463.

Tang, Y. C., & Liou, F. M. (2010). Does firm performance reveal its own causes? The role of Bayesian inference. *Strategic Management Journal*, *31*(1), 39-57.

Tang, Z., Kreiser, P. M., Marino, L. and Weaver, K. M. (2010), Exploring Proactiveness as a Moderator in the Process of Perceiving Industrial Munificence: A Field Study of SMEs in Four Countries. *Journal of Small Business Management*, 48, 97–115.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic management journal*, 28(13), 1319-1350.

Teece, D. J. (2012). Dynamic capabilities: routines versus entrepreneurial action. *Journal of Management Studies*, 49, 1395-1404.

Teece, D., & Pisano, G. (1994). The dynamic capabilities of firms: an introduction. *Industrial and corporate change*, 3(3), 537-556.

Teece, D., Pisano, G. & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal,* 18, 509-533.

Tripsas, M. (1997). Unraveling the process of creative destruction: Complementary assets and incumbent survival in the typesetter industry. *Strategic Management Journal*, *18*(s 1), 119-142.

Walrave, B., Van Oorschot, K. E., & Romme, A. G. L. (2011). Getting trapped in the suppression of exploration: A simulation model. *Journal of Management Studies*, *48*(8), 1727-1751.

Wan, W. P., & Yiu, D. W. (2009). From crisis to opportunity: Environmental jolt, corporate acquisitions, and firm performance. *Strategic Management Journal*, 30(7), 791-801.

Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31-51.

Wang, H. M., Huang, H., & Bansal, P. (2005). What determined success during the Asian Economic Crisis?—The importance of experiential knowledge and group affiliation. *Asia Pacific Journal of Management*, *22*(1), 89-106.

Weerawardena, J., O'Cass, A., & Julian, C. (2006). Does industry matter? Examining the role of industry structure and organizational learning in innovation and brand performance. *Journal of Business Research*, *59*(1), 37-45.

Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic management journal*, 24(10), 991-995.

Winter, S. G. (2012). Capabilities: their origins and ancestry. *Journal of Management Studies,* 49, 1402-1406.

Xia, J., Tan, J., & Tan, D. (2008). Mimetic entry and bandwagon effect: the rise and decline of international equity joint venture in China. *Strategic Management Journal*, *29*(2), 195-217.

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: a review, model and research agenda*. *Journal of Management studies*, *43*(4), 917-955.

Zollo, M., & Winter, S.G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization Science,* 13, 339-351.

Zúñiga-Vicente, J. Á., & Vicente-Lorente, J. D. (2006). Strategic Moves and Organizational Survival in Turbulent Environments: The Case of Spanish Banks (1983–97). *Journal of Management Studies*, 43(3), 485-519.

4.8 TABLES AND FIGURES

Table 4.1. Descriptive Statistics and Correlations

Variable		Mean	SD	1	2	3	4	5	6	7	8	9	10
1	In-jolt performance	0.03	0.09	1.00									
2	Prior performance	0.05	0.04	**0.22**	1.00								
3	Asset management capability	0.00	1.00	**-0.14**	-0.04	1.00							
4	Firm Size	24.36	1.25	0.02	**-0.26**	0.00	1.00						
5	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**

Note: N= 872. Correlations in bold are significant at least at the 0.05 level

Table 4.2. Results of HLM Analyses

	Asset Management Capability (AMC)			In-jolt Firm Performance		
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Intercept	-0.124 (0.130)	-0.124 (0.106)	-0.126 (0.104)	0.034 (0.008)**	0.033 (0.008)**	0.033 (0.008)**
Control variables						
Industry complexity	0.491 (1.527)	1.261 (1.329)	1.242 (1.279)	-0.011 (0.082)	-0.012 (0.082)	-0.014 (0.081)
Industry profitability	-0.018 (0.059)	0.024 (0.058)	0.022 (0.059)	-0.003 (0.003)	-0.003 (0.003)	-0.004 (0.003)
Industry productivity	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)*[a]	0.001 (0.001)*	-0.001 (0.001)*
Industry capital intensity	0.585 (0.330)†	0.649 (0.255)*	0.605 (0.265)*	0.021 (0.011)†	0.018 (0.011)	0.018 (0.010)
Firm size				0.002 (0.001)	0.002 (0.001)	0.002 (0.001)
Leverage				0.003 (0.002)	0.003 (0.002)	0.003 (0.002)
Prior performance				0.492 (0.136)**	0.486 (0.135)**	0.486 (0.136)**
Industry predictors						
Industry dynamism		72.862 (18.798)**	64.983 (22.418)*	-0.993 (1.320)	-0.898 (1.314)	-0.956 (1.312)
Industry munificence (MUN)			2.420 (3.243)	-0.180 (0.146)	-0.171 (0.145)	-0.188 (0.144)
Firm level predictors						
AMC					-0.005 (0.002)*	-0.007 (0.002)**
Interactions						
AMC x MUN						0.150 (0.045)**
Deviance	2178.41	2167.7	2167.2	1941.9	1945.2	1918.0

Note: N = 872. Values represent unstandardized coefficients with corresponding robust standard errors in parentheses.
†p < .10; *p < .05; **p < .01 (two-tailed significance tests).
[a] = this coefficient was indeed significant at the 0.05 level. Values in the table were rounded up to conserve space.

Figure 4.1. Industry Characteristics, Asset Management Capability, and Firm Performance during Environmental Jolts

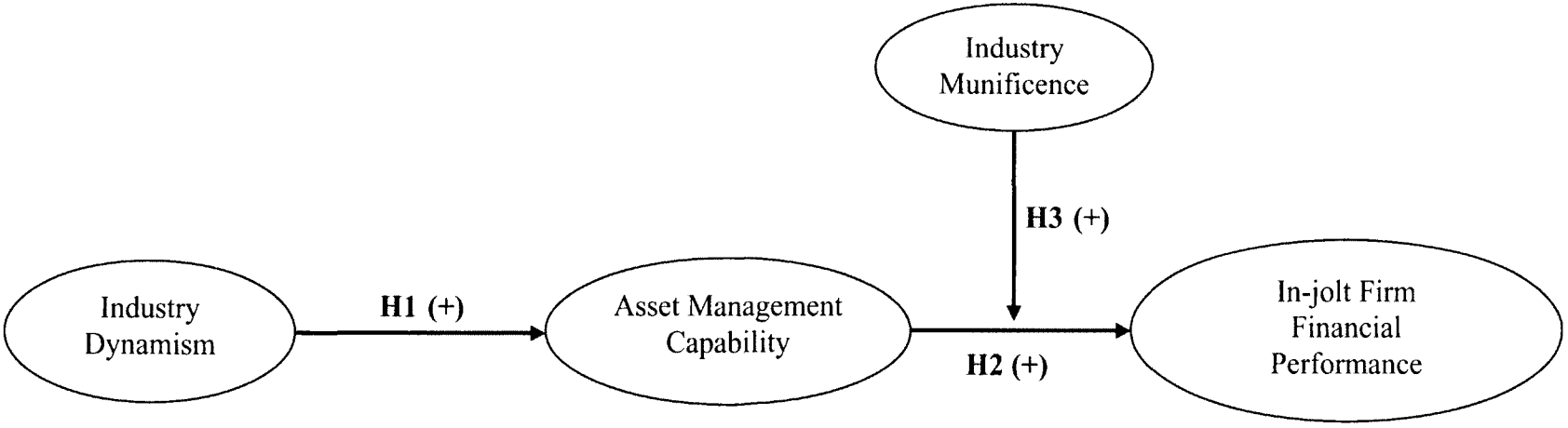


Figure 4.2. Standard and Poor's 500 Index Before, During, and After the 2008 Economic Crisis

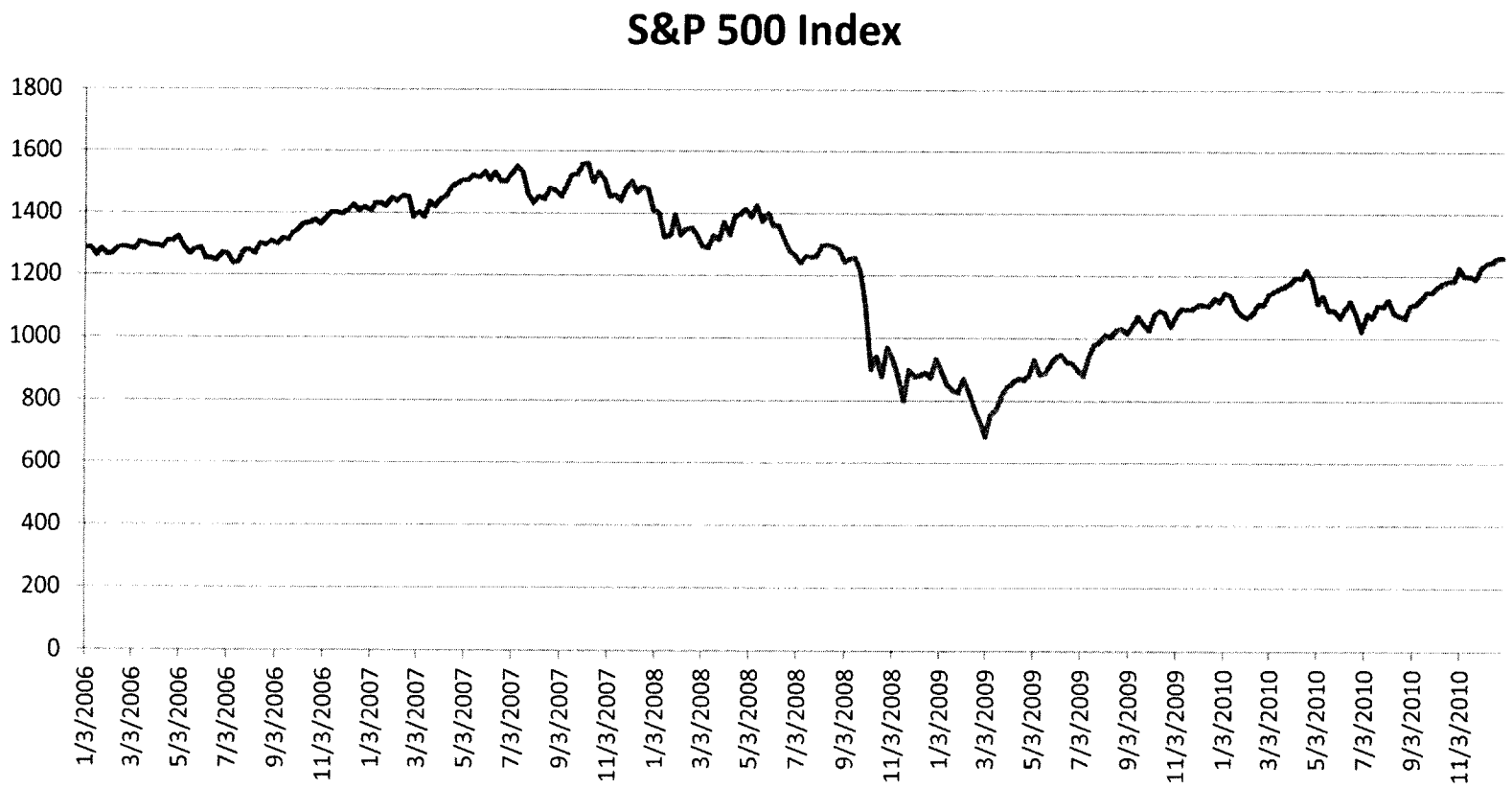


Figure 4.3. Global Industry Dynamism and Munificence Statistics

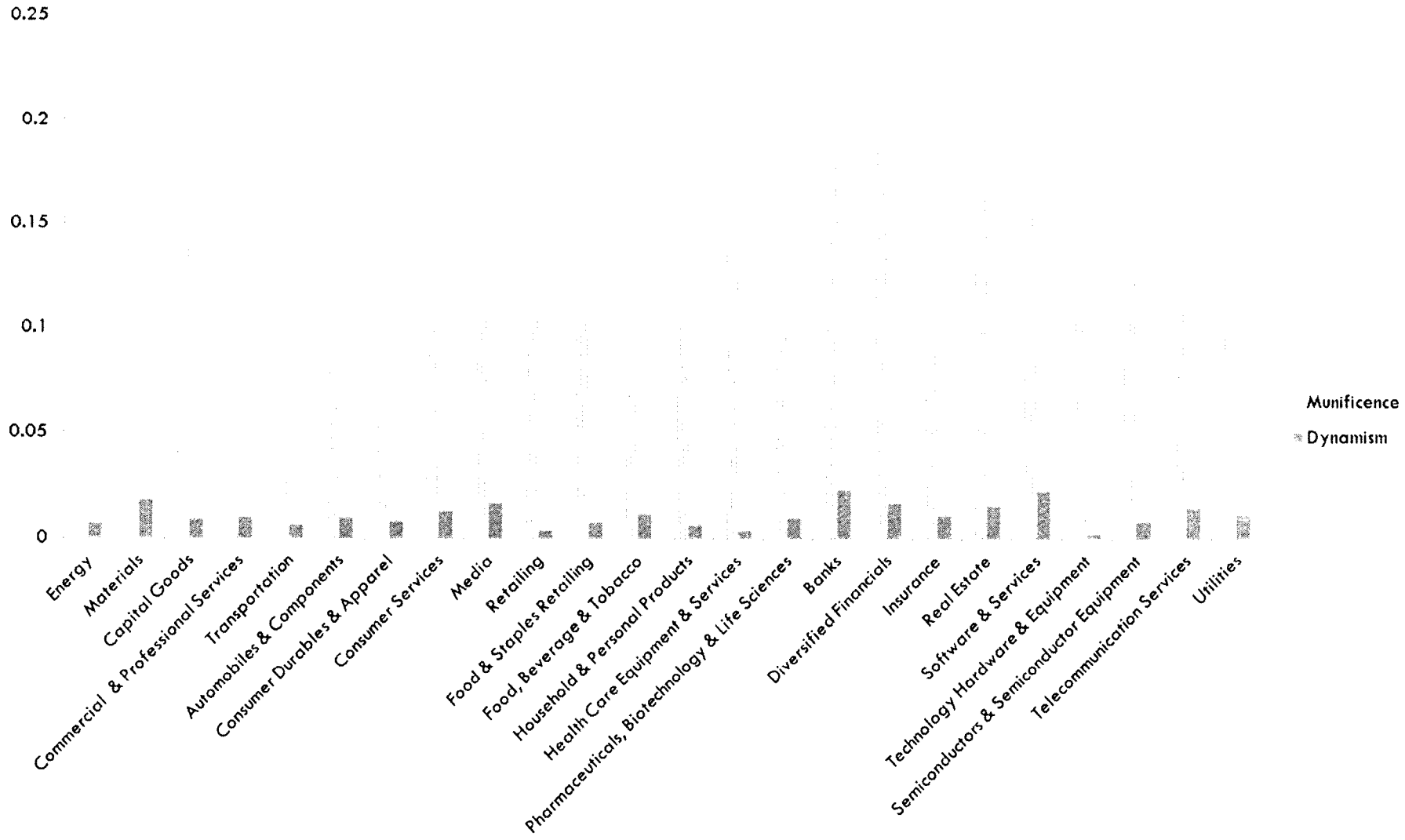
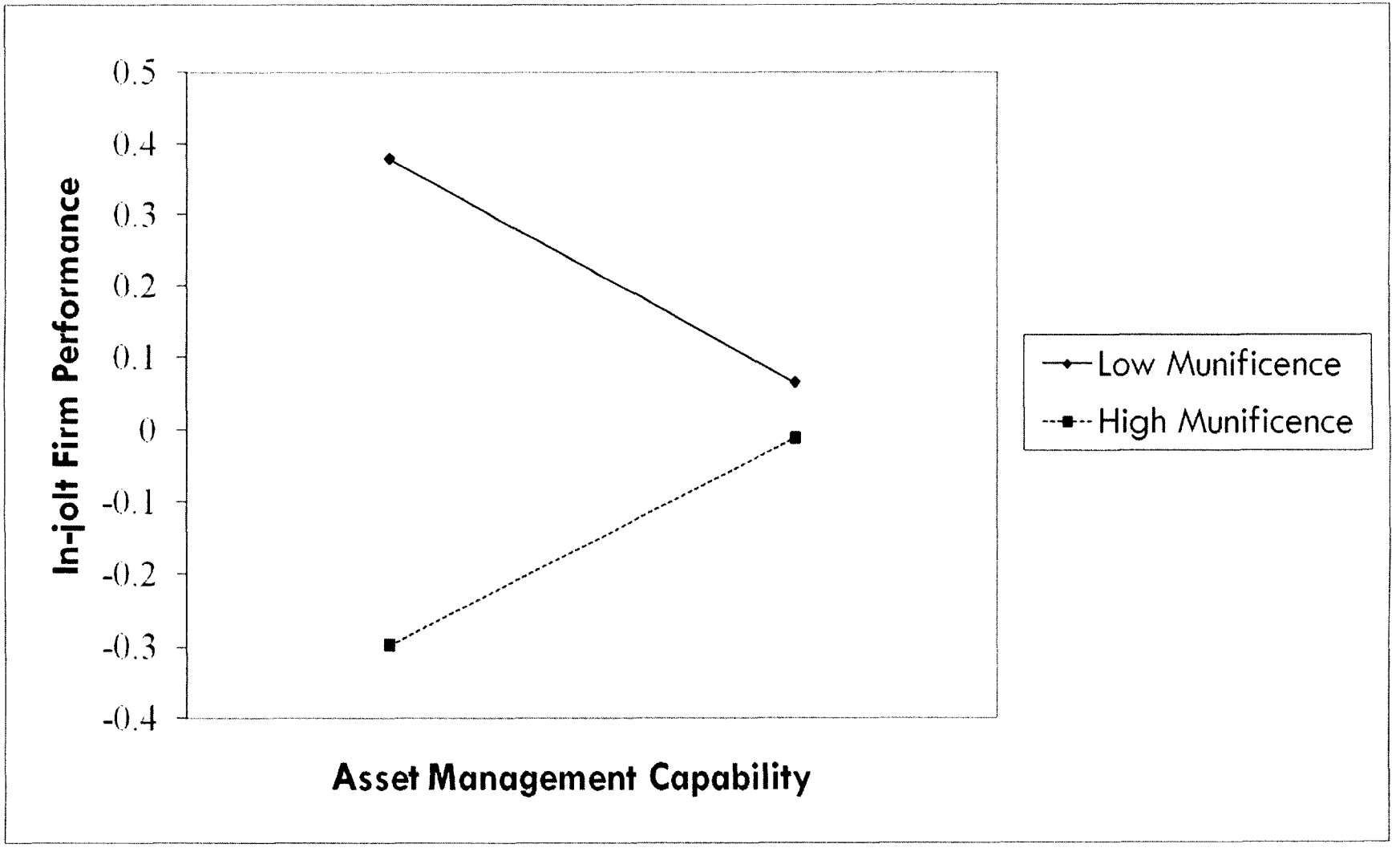


Figure 4.4. The Moderating Role of Global Industry Munificence


0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
In-jolt Firm Performance
Asset Management Capability
Low Munificence
High Munificence

CHAPTER 5

CONCLUSION

The two main purposes of Essay I were to (a) provide more clarity to the DCs-performance link and by doing so, move literature on DCs forward toward resolving the ongoing theoretical debate regarding the contribution of DCs to performance; and (b) provide a systematic empirical analysis of the substantive and methodological contingencies in the DC-performance relationship. In general, empirical evidence supports an overall positive contribution of DCs to performance. However, results also provide strong evidence for several contingencies substantially affecting the DCs-performance link. These contingencies might have been the underlying cause for ongoing debates in the DCs literature. Integrating these findings together, we are able to see a more complete and nuanced picture of the crucial yet complex contribution of DCs to performance.

I found a stronger positive relationship between DCs and performance as environmental dynamism increases to a certain point. Namely, this relationship is strongest in moderate environments. This finding may be partially at odds with theoretical work suggesting that DCs allow the firm to address rapidly changing environments. In high-velocity contexts, DCs may be too costly to implement and maintain as their value is quickly eroded. In such environments, organizations may benefit more from improvising and experimenting. It could be that the additional benefits accrued due to possessing strong DCs in dynamic environments match the extensive resources needed to build and maintain DCs in rapidly changing business settings. It could also be that organizations in highly-dynamic environments possess stronger DCs to

begin with, positioning them at par with their counterparts in stable environments. Nevertheless, the positive contribution of DCs to performance in stable environments suggests that organizations operating under steadier circumstances may benefit from initiating change.

In Essay II, I hypothesized that three dynamic capabilities, namely, dynamic managerial capability, dynamic knowledge-management capability, and dynamic relationship-management capability, independently and in combination, will enhance financial performance of firms during the 2008 financial crisis. Utilizing a sample of firms operating in Israel, I found that dynamic managerial capability and dynamic knowledge-management capability are positively related to performance, while dynamic relationship management capability is not related to performance during an environmental jolt. Further, I found that interactions between pairs of these capabilities produce negative influence on performance.

These findings have several theoretical and practical implications. First, the negative synergies arising from interactions of these capabilities point to the possibility of their being substitutable rather than complementary. That is, because these capabilities require extensive investment of resources, they may impede each other's utility because resources within the firm are not unlimited. From that perspective, firms are better off investing in the development of either a dynamic managerial capability or a dynamic knowledge-management capability. This finding points to the need to reconsider how different dynamic capabilities configure within firms to affect organizational outcomes.

Second, the findings bolster the importance of knowledge in increasingly knowledge-based economies. Some Israeli companies were more successful during the

crisis due to what they knew rather than who they knew. In an increasingly knowledge-based economy, firms may not reap rewards from networks during times of decline. This may be due to the reluctance of firms strongly embedded in a network to stay vigilant to changes in the external environment. Finally, the above results and discussion bring about the need to consider a contextualized resilience theory. That is, organizations embedded in dissimilar institutional contexts may employ different means to thrive during times of crisis. Because results of this dissertation show that some dynamic capabilities are critical to the resilience of firms under conditions of environmental jolts, there is a need to examine the effect of dynamic capabilities across various institutional domains. Prior literature has suggested that dynamic capabilities have an unavoidable institutional component. This implies that a theory explaining how dynamic capabilities configure with environmental factors to affect organizational resilience to crisis is warranted.

For managers, these findings point to the need to invest and maintain dynamic capabilities as a mean to not only persevere but also thrive during times of adverse conditions. Overall, results highlight the importance of building dynamic capabilities to one of the most important organizational outcomes manager direct attention to: financial performance. Yet, in Essay III, I provide insights not only regarding the contribution of DCs to performance during a crisis, but also regarding the origins of dynamic capabilities. I summarize these important finding below.

First, dynamic capabilities may not be simply for dynamic environments, but rather *from* dynamic task environments. This may point to a possible mis-positioning of environmental dynamism in existing theory, or at least a failure to incorporate the role of dynamism in its entirety. Even though managers have agency in determining how much

to invest in developing and deploying dynamic capabilities, past research has indeed suggested that dynamic capabilities evolve as a response to change in the environment. For instance, dynamic capabilities in dynamic environments are simple, experiential routines, while dynamic capabilities in moderately dynamic environments are more complicated, crystallized routines. Thus, the findings of this study highlight the notion that the rate of change and uncertainty in the task environment can act as a driver of the firm's capacity for change.

Second, during a macro-economic jolt, a resource-configuration capacity may still be effective if resources in the task environment are more abundant, combining with an asset management capability in a complementary way. Munificent industries enable embedded firms to build bigger resource-capacities against jolts, and as such, combine with the dynamic capability to manage asset bundles in a synergistic way. However, an asset management capability may be less effective (i.e., too costly) in resource-scarce environments where more simple, *ad-hoc* problem solving may be more beneficial. The path-dependent, evolutionary nature of dynamic capabilities might render them less effective when the organization encounters disruptive, unforeseen, "black-swan" like events that require novel, revolutionary reorientations.

These findings may be an important first step toward resolving some contradictions in the dynamic capabilities literature, such as the one surrounding the efficacy of dynamic capabilities in generating competitive advantage in the face of rapid change. It is possible that, specifically in the face of rapid change (or highly dynamic settings), dynamic capabilities may or may not result in competitive advantage, depending on other factors such as industry munificence. Thus, more attention is needed

to examine the multi-contingent contribution of dynamic capabilities to performance (e.g., dynamic capabilities-dynamism-munificence).

Finally, it appears that dynamic capabilities, with their influence on competitive advantage through a patterned change of ordinary capabilities, indeed are not always a useful means of change. Thus, organizational resilience may take various shapes and have distinct requirements in different environments. In resource-scarce environments, for example, resilience to crisis may be enhanced by developing "tight" networks and customized strategies; in munificent environments, a more patterned process of initiating pre-adaptations may be more effective as the task environment provides abundant resources for experimentation that in turn facilitates flexibility. While these findings and inferences are tentative, I believe that they make a notable contribution to the literature on organizational resilience and crisis management.

From a complexity perspective, it could also be that contextual factors configure, rather than linearly interact with or affect, dynamic capabilities to influence firm outcomes. This study's findings indicate that the dynamic capabilities-dynamism-competitive advantage interface may be more complex and nuanced than initially conceptualized, whereby environmental dynamism may serve a dual role – an antecedent to dynamic capabilities and, under certain contingencies, a boundary condition of their contribution to competitive advantage as well. In sum, the results of this Essay specify an important antecedent to dynamic capabilities, and do demonstrate the nuanced effects of dynamic capabilities, specifically asset management capability, on organizational performance during an environmental jolt.

To conclude, this dissertation consists of three empirical essays that, together:

- Provide more clarity to the DCs-performance relationship by addressing the Teece et al. (1997) vs. Eisenhardt and Martin (2000) debate (Essay I).
- Evaluate, reposition, and expand the theoretical boundary conditions in the DCs-performance link (Essays I through III).
- Contribute to the understanding of the origins of DCs (Essay III).
- Examine the independent and combined effect of various DCs on performance during crises (Essays II and III).
- Contribute to the resilience and jolts literatures in explaining what enhances (or diminishes) organizational resilience (Essays II and III).
- Help understand MNE operations in global industries and the performance outcomes of their resource-allocation decisions (Essay III).

I hope that the results will encourage researchers to pursue these and other investigations into the role of dynamic capabilities in organizational success.

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