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How dimensions of internationalization shape the MNE's renewal capability: Multidimensional and
Multilevel Considerations

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ABSTRACT

We investigate the theoretical and empirical implications of internationalization as a multidimensional and multilevel construct and its relationship to the renewal capability of the firm. Theoretically, internationalization describes a diverse range of cross-border activities by the multinational enterprise (MNE), and thus carries with it multiple dimensions of depth, breadth, and speed. Empirically, internationalization contains both within- and between-MNE variance, each with potentially different effects on the MNE's renewal capability. Using a unique, longitudinal dataset of 94 MNEs, we find support that each dimension and level of internationalization relates differently to the renewal capability of the MNE. At the within-level, the MNE internationalization breadth is negatively related to the its renewal capability, yet internationalization speed is positively related to renewal. At the between-level, the depth of internationalization is positively related to the MNE's renewal capability. In concert, our results suggest that the effects of internationalization on important outcomes cannot be simplified into general relationships. Rather, attention to the nuances of internationalization, especially as related to the MNE's capabilities, is needed.

Keywords: Capabilities and Capability Development; Hierarchical Linear Modeling (e.g., multi-level analysis, RCM, etc.); Internationalization Theories and Foreign Market Entry; Multinational Corporations (MNCs) and Enterprises (MNEs); Renewal Capability

Multidimensional and Multilevel Considerations of Internationalization and the Renewal Capability of the MNE

Introduction

Internationalization is a pillar of International Business (IB) research. Viewed as a complex, dynamic phenomenon, it describes the ways in which multinational enterprises (MNEs) engage in a diverse range of cross-border activities (Welch and Luostarinen, 1988; Zhou et al., 2007).

Internationalization is central to multiple theoretical approaches including the international new ventures framework (Oviatt and McDougall, 1994), the regionalization hypothesis (Rugman and Verbeke, 2007), and the internationalization process model (Johanson and Vahlne, 2009). In parallel, internationalization is increasingly important to the firm's strategy, and particularly the firm's ability to learn, unlearn, and thrive over time, or otherwise, to renew its capabilities and align with complex and changing environments (Forsgren, 2013; Lessard et al., 2016a, b; Schilke, 2014; Schmitt et al., 2016; Zollo et al., 2016).

Given its importance to both IB and strategy, decades of research in major journals such as *Long Range Planning* have been devoted to the measurement and estimation of this complex phenomenon, arguing for its multidimensional nature (Ramaswamy et al., 1996; Sullivan, 1994; Volberda et al., 2001; Welch and Luostarinen, 1988). In large, multi-unit firms, strategic renewal is achieved through multiple interactions "between levels within the firm and between the firm and its environment" (Turner, 2012; Volberda et al., 2001: 159). This strategy argument points to both the co-evolutionary nature of interactions between the firm and its environment and the multilevel nature of these interactions. Recent progress in IB parallels this trend suggesting that internationalization is not a unidimensional phenomenon, but rather has multiple dimensions (including depth, breadth, and speed) that relate to important firm outcomes (Casillas and Moreno-Menéndez, 2014; Eden, 2009; Forsgren, 2013; Yang et al., 2017). Thus, internationalization is viewed as increasing involvement in foreign markets (depth) via a process of growing dispersion (breadth) that takes place over time (speed); all of which may shape the MNE's ability to strategically renew.

Given that many phenomena in IB and strategy research involve multiple levels of analysis, a series of recent editorials focus on helping scholars develop and interpret robust multilevel models to advance theory (Toyne and Nigh, 1998). For example, Peterson et al. (2012: 455, 452) suggest multilevel models be “attuned to the increasing conceptual sophistication” of research on firms to more “accurately model context and lower-level effects.” Similarly, Anderson et al. (2014: 1067–1068) point to the promise of multilevel theorizing and analysis, arguing that “multilevel theorizing provides ample opportunities for cross-fertilization of theories.” Taken together, both the development of internationalization measurement and use of multilevel models move away from aggregation of constructs and models toward sensitivity of dimensionality and levels of analysis in research. This theorization is promising in that it offers a more nuanced view on how various dimensions of internationalization and various level of analysis (within firm and between firms) may impact a firm’s renewal capability. Yet, in spite of the growing evidence that internationalization is a multidimensional and multilevel construct, only scant empirical research considers its multiple facets and how these facets may shape the capabilities of the MNE (Casillas and Moreno-Menéndez, 2014; Yang et al., 2017).

Aiming to build on this multidimensional and multilevel movement effort (Forsgren, 2013; Luostarinen, 1979; Luostarinen and Welch, 1990; Peterson et al., 2012), our purpose is to empirically investigate how internationalization depth, breadth, and speed shape the MNE’s capability to renew. Capabilities are an increasingly important part of the MNE literature (Honen et al., 2014), and as a dynamic capability, the renewal capability describes the MNE’s capacity to reconfigure or transform its resources and strategy to adjust and adapt to changes in its home and host countries (Teece, 2014). The renewal capability affords the MNE the ability “to replace or refurbish existing product lines, existing markets, existing structural relationships, and/or existing resource configurations” (Verbeke et al., 2007: 587) by emphasizing the MNE’s processes, its ability to capitalize on opportunities, and its use of internal and external partners (Schmitt et al., 2016). We advance this implication to understand how the MNE can better adapt to changing business environments both at home and abroad (Riviere et al., 2018; Verbeke et

al., 2007) by understanding how each dimension of internationalization advances the MNE's ability to renew.

To this end, we adopt multilevel modeling (MLM) to understand the relationship between each dimension of internationalization—depth, breadth, and speed—and the renewal capability in terms of both the MNE's past internationalization (Level-1, within effects) as well as its internationalization relative to other MNEs (Level-2, between effects). By adopting a multilevel approach, we quantify and predict variance at multiple levels within a data structure (i.e., within and between effects) (Raudenbush and Bryk, 2002) and account for dependency across hierarchical levels (Hoffman, 2015; Raudenbush et al., 2000). Our findings indicate that each dimension of internationalization is differently related to the renewal capability of the MNE. Though at the within-MNE level (Level-1) internationalization breadth is negatively related to the renewal capability, internationalization speed is positively related to renewal. Additionally, at the between-level, the depth of internationalization is positively related to the MNE's renewal capability. Our study makes a compelling case for the link between internationalization and the renewal capability and provides an illustration of dimensionality of constructs and levels of analysis to “help advance the state-of-the-art of strategy practices of different actors who contribute to the strategies of their organizations” (Laamanen, 2017: 1), particularly in the internationalization process.

Theory and hypothesis development

Internationalization as a multidimensional construct

Internationalization as a multidimensional construct dates back to the 1970s to the pioneering work of Luostarinen (1979) and the 1980s and 1990s with Welch and Luostarinen's (1988) *Internationalization: Evolution of a concept*, and the work of Luostarinen and Welch (1990) and Korhonen (1999). This work opened a new inspirational era towards an overall concept of internationalization that had “yet to be clearly developed as a research objective” (Welch and Luostarinen, 1988: 54). Within this view, increased attention is given to market patterns of

internationalization, to which the Nordic gradual internationalization model (also known as the Uppsala model belongs introduced by Johanson and Vahlne (1977)).

Important research avenues relative to the multidimensional nature of internationalization emerged from Luostarinen's (1979) observation that that the evolutionary development of firms going abroad is not solely related to the depth of operational mode, i.e., from export to local market commitment, but is also related in terms of diversity of modes and markets attained, as well as product offerings. Welch and Luostarinen (1988) discuss the multilevel nature of internationalization in terms of the variety of questions this concept can answer: how (relating to operating modes based on commitment), what product(s), where (markets, distance, and what organizational functions are involved, such as finance and human resource management). Luostarinen and colleagues (Korhonen et al., 1996; Luostarinen and Welch 1990; Welch and Luostarinen 1988; Welch and Welch, 2009) also observed a connection between the inward and outward internationalization patterns of firms and cooperative activities. They suggest that a firm's outward and inward international steps are related, and consequently cannot be analyzed separately. In 1994, Sullivan furthered the view of internationalization as a multidimensional phenomenon, possessing multiple attributes to capture or reflect the multiple attributes of the MNE's activities abroad.

We build on these fundamental arguments and consider internationalization on "where" MNEs expand in terms of diversity of markets and the distance involved and "how" MNEs expand in terms of market commitment. In line with relatively recent calls for theorizing of internationalization in the IB literature, we also consider the role of time (Eden, 2009). Altogether, we expand on the view of the dimensions of internationalization, including its depth, breadth, and speed (Casillas and Moreno-Menéndez, 2014; Yang et al., 2017; Zahra and George, 2002), pointing to its multidimensional nature.

In addition to being a multidimensional construct, internationalization can be viewed as multilevel as well. If viewed as the way an MNE increases its involvement in a variety of foreign markets over time (Casillas and Acedo, 2013), internationalization is influenced by the MNE's existing internationalization (within-MNE internationalization) but also the internationalization of other MNEs

(between-MNE internationalization). The multilevel theorizing of internationalization has been previously discussed. For example, Turner (2012) explained the MNE de-internationalization process as a strategic move aimed at maintaining the MNE's fit with (1) changes in business environment (macro-co-evolution) via its subsidiaries' local interactions and (2) the MNE's dynamic organizing (micro-co-evolution). By viewing internationalization in terms of these three dimensions (depth, breadth, and speed) at these two levels (between and within), it allows for a richer understanding of how the MNE's pattern of internationalization develops and unfolds over time (Benito, 2005; Casillas and Acedo, 2013, Turner, 2012; Welch and Welch, 2009; Yang et al., 2017;). However, as already noted, albeit ample evidence that internationalization is a multidimensional and multilevel construct, few empirical studies consider its multiple facets and fewer incorporate the temporal, and at times complex, pattern of the MNE's expansion (Casillas and Moreno-Menéndez, 2014; Yang et al., 2017; Eden, 2009).

In this way, the MNE's internationalization suggests a more dynamic view of each dimension of internationalization such that the depth, breadth, and speed of internationalization can change over time. This maps well onto anecdotal evidence that MNEs such as Microsoft International, Toyota, or Petrobras, go through periods of increased (and decreased) investment and presence in foreign markets, as well as times of rapid expansion (followed by times of more conservative expansion or retraction). Similar and more detailed examples are provided by Vissak and Francioni's (2013) case of an Italian producer of machinery and by Welch and Welch (2009) in their discussion on the re-internationalization concept. Thus, the internationalization might shape the MNE's capability to adjust and adapt to changes in its home and host countries by renewing its resources and strategy (Teece, 2014). Changing patterns of internationalization may signal the MNE's capability to refresh or replace its attributes "that have the potential to substantially affect its long-term prospects" (Agarwal and Helfat, 2009: 282). As such, internationalization may influence the MNE's ability to renew its products and processes.

Therefore, our conceptual model is grounded in early research on internationalization, which suggests that internationalization can lead MNEs to either expand with existing or new product lines or change entire products to meet the demands of the host country (Welch and Luostarinen, 1988). We argue

that the renewal capability of the MNE, or the MNE's capacity to reconfigure its resources and strategy, is critical in its ability to adjust and adapt to environmental changes in both the home and host countries (Luo, 2000; Teece, 2014). This is because the renewal capability affords the MNE the ability to replace product lines, exit existing markets or existing relationships, and alter its resource base (Verbeke et al., 2007). In the following paragraphs we theorize how each dimension of internationalization, at both levels of analysis, shapes the MNE's renewal capability.

The dimensions of internationalization and the renewal capability

Internationalization breadth is defined as the MNE's scope of international operations, often conceptualized as the number of countries in which the MNE operates (Casillas and Acedo, 2013; Welch and Luostarinen, 1988). Most of the studies that consider the breadth of internationalization point to its utility in managing risk by diversifying operations across geographic locations as well as increasing the MNE's productivity and facilitating the returns of innovation (Kafouros et al., 2012).

More recent studies, however, suggest that internationalization breadth (acting in multiple geographic environments) is important for accessing locally-bound knowledge and capabilities (Lessard et al., 2013) and critical for entrepreneurial opportunity recognition (Hoenen et al., 2014).

Internationalization breadth serves as a gateway to explore and access complementary knowledge and capabilities from foreign markets (Teece, 2007, 2014) via foreign subsidiaries (Asakawa et al., 2018). This gateway may improve a firm's sensing ability (Feinberg and Gupta, 2004; Hoenen et al., 2014), facilitate its continuous learning, and develop new competencies for the MNE via a combination of knowledge and capabilities with the MNE's existing resource base (Zahra et al., 2000). Through this combination, the MNE is better able to renew itself by replacing or refurbishing its existing facets of operation including business lines, markets, and relationships (Verbeke et al., 2007). Thus, the greater the MNE's internationalization breadth, the greater access the MNE will have to new knowledge and capabilities, and therefore the greater the MNE's capability to use this knowledge to renew. We therefore

expect that within-MNE internationalization breadth (years in which the MNE has more geographical expansion) will be positively related to the renewal capability.

Internationalization breadth serves as a gate to explore (March, 1991), access complementary knowledge and capabilities (Teece, 2007), and combine them within the firm in order to maintain competitiveness. Katila and Ahuja (2002) suggest that by always combining the same knowledge sets, a firm eventually reaches its limits to the creation of new ideas. In a competitive business environment where the product life cycle is constantly decreasing, limited creativity will likely negatively affect competitiveness so that firms that are exposed to fewer new sources of knowledge are less competitive than those that are exposed to more sources. Operating in different countries gives an MNE the necessary exposure to unique capabilities that can be acquired and opportunities that can be developed. Combining knowledge from different contexts may lead to technological innovation, especially in light of a country's specialization in different scientific domains (Kafouros et al., 2012; Tallman and Phene, 2007). Experiential internationalization knowledge improves the MNE's ability to address different markets and to increase internationalization process performance (Eriksson et al., 1997) through knowledge transfer across local units (Fletcher et al., 2013).

Finally, since internationalization breadth opens up new horizons for exploring knowledge sources and, since these broader horizons have been associated with successful innovation and entrepreneurial capabilities (Hoenen et al., 2014; Leiponen and Helfat, 2010), we expect that between-MNE internationalization breadth (operating in more geographic areas than competitors) to positively affect a firm's renewal capability. Thus, we propose:

Hypothesis 1a. Within-MNE internationalization breadth is positively related to the MNE's renewal capability.

Hypothesis 1b. Between-MNE internationalization breadth is positively related to the MNE's renewal capability.

Internationalization depth is defined as the MNE's commitment to foreign activity, often conceptualized as the extent of its foreign operations and investments (Casillas and Acedo, 2013; Kafouros et al., 2012). Internationalization depth increases the MNE's embeddedness with the host country environment (Honen et al., 2014). This can increase the MNE's ability to recognize opportunities that are not evident to firms with limited local presence, assist organizational learning and performance, and increase understanding of the host market (Johanson and Vahlne, 2009; Kafouros et al., 2012).

Detecting or creating host market opportunities complements the MNE's ability to develop strong relationships in foreign markets and show commitment to local partners (Vahlne and Johanson, 2013). Increased commitment in the host country decreases the risk of cultural misinterpretation and as such, increases the MNE's ability to co-develop with the host market (Katila and Ahuja, 2002). Internationalization depth not only helps MNEs recognize complementary sources of knowledge or create new ones, but also assists MNEs in building and maintaining partnerships with local players. Thus, by increasing its internationalization depth, the MNE has more opportunities to refresh or replace partnerships that are critical to the MNE's ability to understand the host market and adjust or adapt to its contingencies (Agarwal and Helfat, 2009; Verbeke et al., 2007). In the Uppsala model of the evolution of the multinational enterprise, learning and increasing commitment is an ongoing process allowing MNEs to exploit local market potential and local opportunities via ongoing interactions in dyadic relationships (Johanson and Vahlne, 2006, 2013). That is, "when new knowledge is learned or created, it will have an impact on the continued learning and creation as well as on the commitment decisions. Correspondingly, the commitment decisions will have an impact on subsequent knowledge development." (Johanson and Vahlne, 2013: 199-200). We therefore expect that the within-MNE internationalization depth (increased commitment) will positively impact its renewal capability.

Drawing on local knowledge and learning new competencies helps local adaptation, but also increases innovation likelihood (Kafouros et al., 2012; Laursen and Salter, 2006). Since innovation is a result of knowledge recombination (Kogut and Zander, 1992), complementary sources of knowledge

increase the likelihood of innovation output and has been related to entrepreneurial initiative (Andersson et al., 2002; Birkinshaw, 1997; Hoenen et al., 2014), and therefore supports the MNE's competitiveness. That is, MNEs with greater internationalization depth may be better able to draw on local knowledge via market commitment and thus be better able than competitors to generate. This is mainly possible if the MNE, via its subsidiaries, "understands the nexus within which the local knowledge resides" (Meyer et al., 2011: 242). The renewal capability is therefore linked to greater internationalization depth (Katila and Ahuja, 2002; Laursen and Salter, 2006) in the sense that it allows the development of relationship capital and joint strategizing with local counterparts and so consequently "enhances competitiveness by making network ties difficult to imitate" (Kano, 2018: 693). Considering the importance of local learning, commitment, and relationship capital to MNE competitiveness, we expect that MNEs with greater internationalization depth than competitors also have a greater renewal capability. Thus, we propose:

Hypothesis 2a. Within-MNE internationalization depth is positively related to the MNE's renewal capability.

Hypothesis 2b. Between-MNE internationalization depth is positively related to the MNE's renewal capability.

Internationalization speed is the dimension that has received growing attention in the literature in recent years and is defined as the pace of the MNE's internationalization process. Just as breadth and depth, use of static measures of speed (time lapsed to the first move abroad) fail to capture the dynamism of speed in particular, and internationalization in general. Recent interest in this issue has called for more direct consideration of time in measuring speed (Casillas and Acedo, 2013; Casillas and Moreno-Menéndez, 2014; Yang, et al. 2017). That is, the speed of internationalization captures the MNE's process of expansion abroad in time. This view is consistent with the literature that looks at MNE growth through internationalization as a "process of increasing involvement in international operations (Welch and Luostarinen, 1988:36). This process can be linear, gradual (Johanson and Vahlne, 1977, 2009) or leapfrog

(Oviatt and McDougall, 1994), and often implicitly considers incremental and unidirectional expansion. Growth through internationalization has expanded to consider fluctuations in international involvement including exits and re-entries, described as de-internationalization (Turcan, 2013; Turner, 2012) and re-internationalization (Korhonen et al., 1996; Welch and Welch, 2009).

De-internationalization, as discussed by Turner (2012: 98) reflects a managerial “deliberate decision to reconfigure the MNE to facilitate a better fitness with its environment.” As our study looks at the ability of the MNE to strategically renew as to adapt to environmental changes (Luo, 2000), we integrate this thinking and consider the speed of internationalization as capturing the MNE’s reaction to market stimuli and potential negative feedback to maintain what Turner (2012: 93) refers to as “macro-coevolution”, as well as stimuli from different parts of the MNE to maintain “micro-coevolution”. Thus, we focus on the rate of change in the internationalization process as to more accurately account for the MNE’s efforts to adapt to environmental changes through micro- and macro-coevolution efforts via geographic expansion or market commitment (Johanson and Vahlne, 2006; Turner, 2012).

As such, while access to new knowledge, capability sources, and partnerships in host markets provides an MNE with a large pool of choices and possibilities, it might also make an MNE reach its limits to expediently assimilate and make use of the new information (Yang et al., 2017). Information overload may thwart the MNE’s ability to effectively access and use information, as noted by (Barkema et al., 1996: 154), “learning is inherently incremental and the speed with which the organizations expand internationally is subject to diminishing returns from efforts to speed up the adjustment process.” Thus, as a dynamic capability, the renewal capability requires the MNE to do “the right things at the right time” (Teece, 2014: 23). To the extent that the MNE is able to make sense of its own limits related to internationalization speed and at the same time is able to translate shifts in its knowledge to dynamically adjust for the “best” configuration (Turner, 2012: 98), the MNE is also able to renew and adapt. That is, we expect that within-MNE internationalization (years with greater internationalization speed) will be positively related to the MNE’s renewal capability.

Greater internationalization speed relative to competitors does benefit the MNE. Being quicker

than rivals can help the MNE exploit first-mover advantages such as spatial preemption, opportunity discovery and exploitation (Sarkar et al., 1999). If the MNE is able to internationalize quicker than competitors are, it has the potential to achieve and exploit first-mover advantages. Though internationalization speed may provide first-mover advantages and greater successive entries, it may also create challenges in accessing resources, capabilities, and partners that might weaken the renewal capability. However, MNEs that face these challenges might still be better able to learn than competitors (Korhonen et al, 1996; Welch and Welch, 2009), and thus adapt to these challenges in the external environment such as, crises, nationalization, economic factors or low foreign market readiness (Turcan, 2013; Vissak and Francioni, 2013). In sum, although greater internationalization speed may create both opportunities and threats to the MNE, we anticipate that both opportunities and threats enable the MNE to learn and adapt, thus strengthening the renewal capability. Thus, we expect the MNE's internationalization speed (relative to competitors) to be positively related to the renewal capability of the firm. In sum:

Hypothesis 3a. Within-MNE internationalization speed is positively related to MNE's renewal capability

Hypothesis 3b. Between-MNE internationalization speed is positively related to MNE's renewal capability.

Methods

Sample and data sources

We complement previous studies that have adopted a qualitative approach to better understand the multidimensionality of internationalization (Forsgren, 2013; Johanson and Vahlne, 1977; Luostarinen, 1979; Teece, 2014; Turner, 2012; Welch and Luostarinen, 1988) by providing a quantitative approach in this study similar to that of Casillas and Moreno-Menéndez (2014) and Yang et al., (2017). To test the relationships in this study, we collected data on 250 US MNEs from the Bureau van Dijk (BVD) and Compustat databases. We selected MNEs whose primary activity was in knowledge-intensive and technologically focused industries because these industries are driven by the search for new solutions and

new services at a faster pace. In order to be able to respond to rapid environmental shifts through strategic renewal (Eisenhardt and Martin, 2000), MNEs operating in dynamic industries expand in other countries where they scan the environment and tap into local knowledge and talents.

We first selected US MNEs from the following industry classifications: SIC: 357 - Computer and office equipment; SIC: 366 - Communications equipment; SIC: 737 - Computer programming, data processing, and other computer related services; and SIC: 738 - Miscellaneous business services. We then compiled a dataset of foreign subsidiaries for each US (parent) MNE from 2004 to 2009. We also collected parent firm data including historical financial data from Orbis (BVD), international acquisitions from Zephyr (BVD), and R&D investments from Compustat. Where necessary, we searched for information on the webpage of the MNE (e.g., MNE age data) as well. Because of missing data on various variables, our final dataset consisted of 94 parent MNEs and 592 observations.

Renewal capability

A firm's renewal can be captured by changes in attributes that have the potential to affect the future of the business (Agarwal and Helfat, 2009). These changes need to reflect adaptations to environmental changes (Luo, 2000). In strategy research, firms must align their capabilities with the environment. Crossan and Berdrow (2003: 1090) suggest that "as the alignment shifts over time, a firm must be capable of reinterpreting its environment and incorporating its understanding into new products, processes, strategy and structure."

Therefore, one way to look at a firm's dynamics is through the new products the firm brings to market over time. Leiponen and Helfat (2010) use the percent of sales from product innovations (new and technologically improved product versions) to look at a firm's innovation success, or the ability to meet customers' (evolving) needs with new products. However, this way of looking at a firm's dynamics in aligning with market expectations is limited in that it only captures a firm's innovation efforts. A firm may be flexible in aligning its strategy with the environment through capability additions or deletions and/or through capability recombination (Agarwal and Helfat, 2009; Wiersema and Bantel, 1992). Those

may be captured by the dispersion of business activities (business lines) and differences in the emphasis put on certain activities against others, as the market is re-interpreted.

In this vein, the renewal capability can be captured by the dispersion of business activities (business lines) and differences in the emphasis of certain business activities over others in response to market changes (Riviere et al., 2018). Thus, we adopt a business lines diversity index (BLDI) (Wiersema and Bantel, 1992) to capture the renewal capability, calculated by the following formula:

$$BLDI = \sum_i [BLS_i \times \ln(BLS_i)].$$

Here, BLS_i is the proportion of sales attributed to business line i , and $\ln(1/BLS_i)$ is the weight given to each business line (Sukpanich and Rugman, 2007). The index captures both an MNE's business lines numbers and the proportion of sales corresponding to them. This is an entropy index (Wiersema and Bantel, 1992) that is sensitive to both the number of business lines and the concentration (distribution) of sales by business line. The index not only reflects the MNE's product/service diversification but also signals fluctuations in sales across different business lines that can occur because of redistribution of activities and foci of the MNE. Therefore, a higher BLDI index reflects an MNE's capability to sense and seize opportunities across markets and transform the business through either product additions or deletions or capability reconfigurations that result in overall sales increases. This follows previous research that associates sales and product line changes to strategic renewal, and by extension, is indicative of the renewal capability (Basu and Wadhwa, 2011; Dougherty, 1992).

Independent variables

Internationalization breadth (between and within). Internationalization breadth has been traditionally defined and calculated as the range of locations (countries) in which the MNE operates (Casillas and Acedo, 2013; Kafouros et al., 2012; Zahra and George, 2002). Consistent with this view, we calculate internationalization breadth by the number of countries in which the MNE operates and the geographical distance between the home country and the host countries for each MNE, for each year (Berry et al., 2010). Only operations that were cross-border were included in this variable and only one

subsidiary / country was included in the calculation. The reason we only included one subsidiary / country / year is twofold. First, because internationalization breadth is a measure of the number of countries in which the MNE operates, more than one subsidiary in a given country does not change the measure. Second, to capture the significance of the presence (the concentration of investment) in a market versus other market(s) or region(s), we measure the depth of expansion (see below).

International breadth was calculated using group-mean centering by calculating each MNE's average internationalization breadth over the course of our sample, 2004-2009. This is a time-varying, continuous variable.

To calculate within-MNE internationalization breadth, we subtracted each MNE's mean internationalization breadth from the MNE's internationalization breadth for each year, as:

$$\text{InternationalizationBreadth}_{MNEt} - \frac{\text{InternationalizationBreadth}_{MNE}}{t}$$

To calculate between-MNE internationalization breadth, we subtracted the MNE's mean internationalization breadth from the mean internationalization breadth across all MNEs in our sample, as:

$$\frac{\text{InternationalizationBreadth}_{MNE}}{t} - \frac{\text{InternationalizationBreadth}}{t}$$

Internationalization depth (between and within). Internationalization depth defines the level of commitment to foreign activity (Casillas and Acedo, 2013; Kafouros et al., 2012). The measure captures an MNE's embeddedness in certain foreign markets relative to others. We measured internationalization depth as the ratio between the number of foreign subsidiaries to the number of foreign countries. The "within" and "between" variations were calculated similar to internationalization breadth. This is also a time-varying, continuous variable.

First, we calculated each MNE's average internationalization depth over the course of our sample, 2004-2009. We then subtracted the MNE mean internationalization depth from the MNE internationalization depth:

$$\text{InternationalizationDept}_{MNEt} - \frac{\text{InternationalizationDept}_{MNE}}{t}$$

To account for the between variation in internationalization depth, we subtracted the MNE mean internationalization depth from the mean internationalization depth across all MNEs in our sample:

$$\frac{\text{InternationalizationDept}_{MNE}}{\text{InternationalizationDept}}$$

Internationalization speed (between and within). We measured internationalization speed as the rate of change in the number of countries in which the MNE had operations every year, compared to the previous year of observation. This variable captures the dynamics of the internationalization process by mapping internationalization activities over time through the change in number of subsidiaries for each MNE, measured annually (Casillas and Acedo, 2013; Yang et al., 2017). The within-MNE and between-MNE variations were calculated similar to internationalization breadth and depth. This is also a time-varying, continuous variable.

First, within-MNE internationalization speed was calculated using each MNE's average internationalization speed over the course of our sample, 2004-2009. We then subtracted the MNE mean internationalization speed from the MNE's internationalization speed for each year:

$$\text{InternationalizationSpeed}_{MNEt} - \frac{\text{InternationalizationSpeed}_{MNE}}{\text{InternationalizationSpeed}}$$

To account for between-MNE variation, we subtracted the MNE mean internationalization speed from the mean internationalization speed across all MNEs in our sample:

$$\frac{\text{InternationalizationSpeed}_{MNE}}{\text{InternationalizationSpeed}} - \frac{\text{InternationalizationSpeed}}{\text{InternationalizationSpeed}}$$

Control variables

We controlled for a number of additional factors possibly affecting the internationalization—renewal capability relationship: *MNE size* in terms of both assets and number of employees, the *MNE's profitability*, the *MNE's R&D investment*, and the *MNE's age*. We also controlled for the host country's foreign direct investment, or *FDI attractiveness*, measured as a yearly composite index of FDI inflow across the various subsidiary locations of the MNE. Given the importance of both production and R&D activity abroad (Colovic and Mayrhofer, 2011) for accessing and deploying knowledge (Kafouros et al.,

2012), we control for the MNE's FDI as related to its internationalization and renewal capability. Finally, we controlled for *MNE's international acquisitions* for each year of observations. Acquisitions, "an obvious avenue for strategic renewal," (Agarwal and Helfat, 2009: 284) are recognized in the strategic renewal literature as a way to maintain competitiveness through external development (Capron and Mitchel, 2009; Meyer et al., 2009). For all of these variables (except MNE age because it is directly related to time and within-MNE variance), we calculated both within-MNE and between-MNE variance following the same method employed for calculation of the independent variables.

Analytical model

We used MLM for analyses, which allows for quantification and prediction of variance at multiple levels of our dataset and permits the use of both fixed and random effects (Raudenbush and Bryk, 2002). MLM appropriately accounts for the dependency across the data (Raudenbush et al., 2000). By separating the time-varying predictors of between-MNE variance (via deviation from the mean across all MNEs) from their within-MNE variance (via the deviation from the MNE mean), the model predictors are uncorrelated (Hoffman, 2015). We included a random intercept for MNE to account for systematic differences between MNEs (i.e., some MNEs have greater strategic renewal capabilities than others). All the hypotheses were tested using `-xtmixed` for multilevel mixed effects linear regression in Stata 12.

As the model for variance accounts for each level of analysis, "each predictor is tested against the most relevant sources or outcome variance" (Hoffman, 2015: 20). In general, linear models only account for one source of error variance. Moreover, "although general linear models distinguish between [firm] variation in the mean outcome over time, from within-[firm], there is no direct way to test the effect of a continuous predictor that varies over time (i.e., covariates are only allowed as time-invariant predictors)" (Hoffman, 2015: 20). In our model, the three continuous predictors vary over time captured via the following formula:

$$\text{Level 1: } Y_{ti} = \beta_{0i} + \beta_{1i} + \beta_{1i} (\text{wf_Ibreadth}) + \beta_{2i} (\text{wf_Idepth}) + \beta_{1i} (\text{wf_Ispeed}) + \epsilon_{ti}$$

$$\text{Level 2: } \beta_{0i} = \gamma_{00} + \gamma_{01}(\text{bf_Ibreadth}) + \gamma_{02}(\text{bf_Idepth}) + \gamma_{03}(\text{bf_Ispeed}) + U_{0i}$$

$$\beta_{1i} = \gamma_{10} + U_{1i}$$

$$\beta_{2i} = \gamma_{20} + U_{2i}$$

$$\beta_{3i} = \gamma_{30} + U_{3i}$$

where U_{0i} represents constant dependency (covariance) due to mean differences in Y across MNEs.

In the within-MNE, Level-1 model, the renewal capability is a function of a MNE $_i$ intercept (β_{0i}), the within-MNE effect of internationalization breadth (β_{1i}), internationalization depth (β_{2i}) and internationalization speed (β_{3i}), and a residual renewal capability for year t for MNE $_i$. In the between-MNE, Level-2 model, the MNE $_i$ intercept (β_{0i}) is a function of a fixed intercept (γ_{00}), the main effects of between-MNE internationalization breadth, depth, and speed and a MNE-specific random intercept (U_{0i}). The firm effects of within-MNE internationalization breadth (β_{1i}), depth (β_{2i}) and speed (β_{3i}) are a function of the fixed effects (γ_{10} , γ_{20} , and γ_{30}) and firm-specific random effects of within-MNE internationalization breadth, depth and speed (U_{1i} , U_{2i} , and U_{3i}). Maximum likelihood estimation (ML) was used to compare models differing in fixed effects. The main effects of our 3x2 predictors have been examined in separate models (at both levels) prior to examining their effects in a combined model. This allowed us to assess if a predictor's lack of effect in a combined model is due to a lack of any effect at all, or a result of potential collinearity between predictors.

Results

Descriptive statistics and correlations

Tables 1 and 2 provide the means, standard deviations, and correlations of the variables by level of analysis. Given the high correlation between assets and employees (both which measure MNE size), we decided to only keep employees as a measure of MNE size because the renewal capability has a human resource dimension in the sense that knowledge is acquired and recombined in the MNE through the internationalization process, and thus employees may be more pertinent to the renewal capability than assets.

Insert Tables 1 and 2 About Here

Unconditional models

To evaluate the extent of the dependency in the data, an empty means MLM was tested to evaluate the sources of variation within our dependent variable. Table 3 shows the unconditional models without predictors, only with the effect of time. A fixed quadratic, random linear time model was the best fitting model ($-2\Delta LL = 112.33$, $p < 0.001$) confirming that during the six years of observation, the slope of the renewal capability was not linear.

Insert Table 3 about here

To appropriately estimate our conditional models, we included the effect of time in our conditional model as year (centered at 2004, the first year of observation) and year*year for the quadratic effect. We included a random linear effect to account for systematic differences in the renewal capability over time for each MNE. We calculated an empty model (no predictor) interclass correlation (ICC)—an estimate of the proportion of outcome variance due to between-MNE differences in the intercept. The corresponding empty model ICCs indicated that between-MNE mean differences were the source of 77% of the variance in the renewal capability. The ICC for our three independent variables shows that significant variance exists both within- and between-MNEs: between-MNE mean differences were the source of 66% of the variance in internationalization breadth; between-MNE mean differences were the source of 65% of the variance in internationalization depth; and between-MNE mean differences were the source of 55% of the variance in internationalization speed. We conducted a series of likelihood ratio tests for the independent variables, all suggesting that the random intercept variance was significantly different from zero.

Conditional models

Results of our conditional models are presented in Table 4. Model A only accounts for the control variables. Results show that the between-MNE variables *R&D intensity* ($b = 786.57, p < 0.05$) and *profit* ($b = 4.81, p < 0.05$) are significantly related to the renewal capability of the MNE. Model B includes the within- and between-MNE independent variables for *internationalization breadth*, *internationalization depth*, and *internationalization speed*.

Our results do not support hypothesis 1. Surprisingly, hypothesis 1a is significant, but shows a negative relationship between the within-MNE *internationalization breadth* variable ($b = -47.43, p < 0.05$) and the MNE's renewal capability, indicating that in years in which the MNE internationalizes more broadly geographically, the MNE also has a lower renewal capability. One explanation might reside in the limited ability of the MNE to adjust and adapt to host countries and renew its resources, capabilities, and strategy at the same time. Teece (2014:25) suggests sensing, seizing, and transforming are, in most cases, "sequential over time and across different markets." Though hypothesis 1b is not significant, the coefficient is also negative for between-MNE *internationalization breadth*, which is again the opposite of what was hypothesized. Hypothesis 2a is not supported; however, hypothesis 2b is, suggesting that the between-MNE *internationalization depth* is significantly related to the MNE's renewal capability. This indicates that the more the MNE concentrates its internationalization activity at the country level (more market commitment) relative to peers, the greater the MNE's renewal capability. Hypotheses 3a is also supported indicating within-MNE *internationalization speed* is positively related to the renewal capability ($b = 0.27, p < 0.01$). That is, in years in which the MNE makes international moves more quickly, its renewal capability is stronger. But Hypotheses 3b is not supported, that is, being quicker than competitors does not guarantee the ability to strategically renew. These findings might seem counterintuitive, and in contrast with studies that draw on the organizational learning perspective. Given the limited ability of the firm to assimilate large amounts of information in short periods of time (Dierickx and Cool, 1989) an expected theorizing might have been to draw a curvilinear, inverted-U relationship, between the speed of expansion and the renewal capability of the firm (Yang et al., 2017). However, our

focus here is on the rate of change in market entries and exits. Thus, the better able the MNE to adjust to international stimuli via entries and exits, the more able it is to renew.

Putting all findings together in a single conclusion, our analysis suggests the following: increased reactivity in the internationalization process (increased paced) is beneficial to renewal, yet, when the MNE is increasing its breadth with more distant markets, the renewal capability suffers. An agile yet, more geographically close expansion, with special consideration on market commitment (Hoenen et al., 2014), increases the MNE's ability to renew itself. This conclusion neither excludes nor discourages opportunity-based expansion, nor implies that MNEs should follow a steady growth path from neighbor countries to neighbor continents. Rather, it suggests that the MNE's ability to renew might be limited during periods in which MNE expands to markets that are a greater distance from the home country.

Post-Hoc analysis: Interactions among internationalization dimensions

As noted above, the focus of our study is specifically on how each of the dimensions of internationalization relate to the MNE's renewal capability. However, of empirical interest to us is also how each of the dimensions of internationalization interact with each other and affect the MNE's renewal capability. Thus, we conducted a post-hoc analysis using our full conditional model (i.e., all independent and control variables) to uncover some of these interaction effects. Level 2 interactions (between-MNEs) are offered in Table 4: Model C.

First, we examined the interaction of internationalization breadth and internationalization speed (both for within- and between-MNE effects). The reason we considered this interaction relevant is that both internationalization dimensions (at high levels) compete for a firm's learning and adjusting capabilities. For example, in a recent study, geographical distance is acknowledged as weakening the transfer of knowledge from the subsidiaries to the headquarters (Asakawa et al., 2018). Moreover, in the process of internationalization, the MNE needs to learn both market specificities and potential new alternatives (Forsgren, 2002) in order to achieve both local adaptation and global integration (Luo, 2000). Yet, there is a limited quantity of information that can be digested in a certain period of time (Cohen and Levinthal, 1990; Eisenhardt and Martin, 2000).

The interaction at Level-1 (within-MNE) is not significant, yet internationalization breadth remains negatively related to renewal as a main effect. This supports our initial finding that geographically distant expansions have an immediate effect on the ability of the MNE to renew itself and supports Asakawa's et al. (2018) findings that geographical distance impacts the relationship between the headquarters and subsidiaries and so the effectiveness of knowledge sourcing overseas. The interaction effect at Level-2 (between-MNE) was also non-significant, yet, interestingly with a negative effect ($b = -0.55$, $p = 0.85$). There are two ways this can be interpreted: internationalization breadth matters less for renewal at high levels of internationalization speed or that speed matters less for geographically expanded MNEs. Our results might suggest that at the beginning of a general industry recession (around 2009) MNEs that did not expand geographically far at high speed did "less worse" than other firms. We acknowledge that our results are not statistically significant here, yet we see in this initial indication an interesting avenue for further exploration.

Second, we examined the interaction of internationalization depth and internationalization speed. The Level-1 (within-MNE) interaction is significant and negative while the speed main effect remains positive ($b = -0.95$, $p < 0.06$). The Level-2 (between-MNE) interaction effect was significant at $p < 0.07$ ($b = 3.38$, $p = 0.07$) while predictors are not, hence indicating a potential crossover interaction (i.e., the effect of depth is opposite depending on speed). The two interactions suggest that the MNE's ability to benefit from market commitment via the renewal capability decreases with the speed of expansion. This is consistent with the view that at high speeds of internationalization the firm reaches its limited managerial capability to deal with change. Penrose's (1959) theory of the growth of the firm, and particularly the view on the limits to the rate of growth is relevant here. Penrose contends that a critical constraint for the firm's rate of the growth stems in the capacities of its existing management to effectively work as a team (known as Penrose effect). Note that the interaction between Level-1 internationalization speed and Level-2 internationalization depth is not significant while both main effects remain significant, thus not altering our initial finding.

The results of our post-hoc analysis indicate that, in some cases, the different dimensions of internationalization interact to affect the MNE’s renewal capability. Though these results are empirically driven, they do provide unique insights as future research directions that we discuss in more detail in the discussion section below.

Insert Table 4 about here

Discussion and conclusion

To our knowledge, our study is the first to theorize the various dimensions of internationalization and their relation to the important renewal capability of MNEs. As dynamic capabilities play an increasingly important role in strategy and IB theorizing, understanding how internationalization connects to capabilities of the MNE is warranted. Our empirical investigation of internationalization and the renewal capability of the MNE contributes to our understanding of how MNEs adapt to environmental changes while facing the complexities of the global arena (Luo, 2000; Teece, 2014). In this vein, we fail to find a uniform effect for all dimensions or across levels of a single dimension of internationalization. This highlights not just the complexity of this construct, but also that failure to measure and model the multiple dimensions and levels of this construct may produce mixed or inconclusive results. Thus, we contribute to the discussion of measurement of internationalization in research and provide evidence that unidimensional or single-level measures of internationalization may contribute to more studies with mixed results, creating more questions than answers for internationalization strategy theorizing.

The results of this study open a dialogue for discussion of the relationship between internationalization and the renewal capability of the MNE. Our results, though perhaps viewed as a “mixed bag” by some, in fact provide empirical evidence that supports previous theorizing that cautions against oversimplifying this construct. Our sensitivity to the complex nature of internationalization allows us to investigate the varied ways in which internationalization influences important outcomes for MNEs.

By isolating each dimension of internationalization at multiple levels, we are able to uncover how it positively and negatively affects the MNE's renewal capability. We find that within-MNE internationalization breadth negatively affects the MNE's renewal capability, yet within-MNE internationalization speed positively affects the MNE's renewal capability. Further, we find that between-MNE internationalization depth positively affects the MNE's renewal capability. In concert, our results suggest that the effects of internationalization on important outcomes cannot be simplified into general relationships. Rather, attention to the nuances of internationalization is needed.

In addition to the significant results identified in our study, we do offer some non-significant results that we believe have both theoretical and managerial implications. In terms of within-MNE effects, internationalization depth is not significantly related to the renewal capability of the MNE. This indicates that increased market commitment in a given year does not necessarily enable the MNE to refresh or replace its existing resources, capabilities, or strategies, a finding we believe could be both theoretically and empirically explored. Thus, when considering the relationship between internationalization depth and strategic renewal, increasing market commitment in a given year does not effectively alter the MNE's ability to renew, but as indicated by support for hypothesis 2b, increasing market commitment relative to competitors (between-MNE) does. Additionally, in considering the between-MNE effects, neither internationalization breadth nor internationalization speed relative to competitors have a significant effect on the MNE's ability to strategically renew. From these findings, we infer that within-MNE internationalization breadth and speed are much more important to the renewal capability. We caution MNEs from using competitors as benchmarks for internationalization breadth and speed, and instead suggest benchmarking against the MNE's history of breadth and speed that may strategically enable the MNE to renew.

Our study produces interesting managerial implications related to internationalization and the renewal capability of the MNE. For MNEs operating in dynamic environments that must remain agile in order to compete, internationalizing quicker than prior years can facilitate the MNE's renewal. For these MNEs, continued efforts to be agile in the internationalization pace can facilitate the MNE's renewal and

adaptation to the environment's dynamism. Further, we find evidence that the greater the MNE's expertise in a particular country (internationalization depth), the greater the MNE's capability to adapt relative to its counterparts. However, we caution managers from internationalizing too broadly, especially related to the MNE's existing internationalization breadth. Our findings suggest that when MNEs expand too broadly (in terms of geographic distance), the renewal capability suffers, meaning the MNE may be less able to replace its existing product lines, markets, or relationships (Verbeke et al., 2007), reducing the overall agility of the MNE.

Limitations and future research

We acknowledge several limitations of our study. First, as an initial study of the relationship between the dimensions of internationalization and the renewal capability of the MNE, several methodological considerations could be expanded upon for future research. For this study, we chose to focus on MNEs from similar industries. Replication of the analysis with MNEs from other industries would help confirm our results and/or build on them. Additionally, we based our calculation of our dependent variable, the renewal capability, on the dynamic of yearly sales by business lines. This measure could be further developed to include changes in activities, as reported through changes in the names of the business lines that might shed additional light on the relationship between the MNE's internationalization and strategic renewal. Renewal is one type of change, meaning that, while "change can include capability refreshment or replacement," it does not need to (Agarwal and Helfat, 2009: 282). Instead, change can be reflected by extensions, additions, or deletions of a MNE's capabilities or products. In addition, we did not control for the MNE's international experience. MNEs with more international experience might be better able to screen opportunities abroad and thus have a better renewal capability, and thus future studies could include this variable as an additional consideration to the relationship between internationalization and strategic renewal.

Our study adopts a multilevel approach to understand within- and between-MNE differences as related to internationalization and the renewal capability. Our level of analysis in this study is the MNE, and thus it is appropriate to account for within and between variations specifically for each MNE.

However, there are additional levels of analysis that could be included in future research. For example, considerations of the functional level could aid with understanding alignment within the MNE (Welch and Luostarinen, 1988), and how that shapes the relationship between internationalization and renewal. Alternatively, incorporating country-level factors can facilitate better understanding of the nuances in the relationship between internationalization and the renewal capability across geographic areas (Ketkar, 2012). Thus, we suggest future research continues to adopt a multilevel approach and includes additional levels to augment the findings of this study.

The focus of our study is on better understanding of the relationships between the dimensions of internationalization and the renewal capability of the MNE. We augment our findings with a post-hoc analysis of the interactions among these dimensions of internationalization, and the subsequent effects on the renewal capability. Although our study provides compelling results related to the nuances of the relationships, we do not formally hypothesize how the interactions among the dimensions of internationalization impact renewal. Thus, future research might consider how one or more of the dimensions of internationalization serve as boundary conditions to the relationship between other dimensions of internationalization and the renewal capability. We believe exploring one or more dimensions of internationalization as boundary conditions could provide a fruitful avenue for future research. Additionally, future research may examine these relationships and incorporate a dimension of time. For example, though we find some support for the relationships between the dimensions of internationalization and the renewal capability within the current year, future research could explore these same relationships using lagged explanatory variables.

Finally, we found support for the positive relationship between within-firm speed and renewal. Our hypothesis builds on the benefits for agility to renewal as suggested by the dynamic capability perspective. But as this literature also suggests, renewal does not guarantee higher performance nor long term survival. For example, Eisenhardt and Martin (2000) and Zahra, Sapienza and Davidsson (2006), among others, argue that the dynamic capabilities do not have a direct effect on firm's competitiveness. Rather they affect the reconfiguration of a firm's resources and capabilities. As such, dynamic capabilities

are deemed of less importance when the resulted reconfiguration or restructuring did not generate the expected outcomes (Girod and Whittington, 2017). In this light, future research can build on this study to introduce an organization learning perspective under which a curvilinear relationship between speed and performance measure might be expected. That is, is there an optimal level of speed that enables the MNE to learn and, as a result, renew itself? Additionally, are there contingencies to this relationship, for example, the MNE's experience or the industry in which it operates?

Our study provides evidence that internationalization depth, breadth, and speed shape the MNE's capability to renew vis-à-vis itself and other MNEs in varied ways. We hope our study prompts more exploration of the renewal capability of the MNE from various levels of analysis, prompting more theoretical and empirical research into the dynamic capabilities of the MNE.

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Table 1
Descriptive Statistics

| Descriptive Statistics | Obs. | Mean | Std. Dev. | Min | Max |
|---|------|-----------|------------|--------|------------|
| Total subsidiaries per MNE | 592 | 72.75 | 162.64 | 1.00 | 1,379.00 |
| Foreign subsidiaries per MNE | 592 | 33.88 | 76.68 | 0.00 | 899.00 |
| Countries per MNE | 592 | 12.33 | 15.27 | 1.00 | 83.00 |
| Internationalization breadth | 592 | 93,376.26 | 129,721.60 | 0.00 | 731,968.00 |
| Internationalization depth | 592 | 1.91 | 1.62 | 0.00 | 12.00 |
| Internationalization speed (growth rate in %) | 451 | 43.865 | 86.113 | 0.00 | 620 |
| Employees (size) | 592 | 15,062.33 | 45,484.37 | 92.00 | 399,409.00 |
| Assets (size) (millions) | 592 | 5,821.43 | 17,300.00 | 32.91 | 120,000.00 |
| Profitability | 592 | 7.41 | 17.93 | -89.25 | 71.46 |
| R&D Investment | 592 | 0.11 | 0.08 | 0.00 | 0.37 |
| International Acquisitions | 592 | 1.67 | 3.15 | 0.00 | 25.00 |
| FDI | 515 | 3.86 | 2.19 | -0.19 | 14.71 |
| MNE Age | 592 | 23.49 | 22.06 | 0.00 | 163.00 |

Table 2
Correlations

| Level-1 (within-MNE) | | | | | | | | | | | |
|---------------------------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|------|
| Variable | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | |
| 1. Renewal Capability | 1.00 | | | | | | | | | | |
| 2. Internationalization Breadth | 0.07 | 1.00 | | | | | | | | | |
| 3. Internationalization Depth | 0.00 | -0.02 | 1.00 | | | | | | | | |
| 4. Internationalization Speed | 0.05 | 0.33 | -0.07 | 1.00 | | | | | | | |
| 5. Employees (size) | 0.01 | 0.16 | 0.23 | -0.01 | 1.00 | | | | | | |
| 6. Assets (size) | 0.03 | 0.20 | 0.20 | -0.03 | 0.64 | 1.00 | | | | | |
| 7. Profitability | -0.03 | -0.12 | -0.05 | 0.02 | 0.01 | -0.02 | 1.00 | | | | |
| 8. International Acquisitions | 0.01 | -0.14 | 0.00 | -0.02 | -0.14 | -0.23 | 0.10 | 0.12 | 1.00 | | |
| 9. R&D Investment | -0.01 | 0.04 | -0.06 | 0.03 | -0.03 | -0.01 | -0.15 | -0.12 | -0.08 | 1.00 | |
| Level-2 (between-MNE) | | | | | | | | | | | |
| Variable | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
| 1. Renewal Capability | 1.00 | | | | | | | | | | |
| 2. Internationalization Breadth | 0.33 | 1.00 | | | | | | | | | |
| 3. Internationalization Depth | 0.33 | 0.45 | 1.00 | | | | | | | | |
| 4. Internationalization Speed | 0.04 | 0.17 | -0.02 | 1.00 | | | | | | | |
| 5. Employees (size) | 0.39 | 0.44 | 0.58 | -0.06 | 1.00 | | | | | | |
| 6. Assets (size) | 0.45 | 0.48 | 0.54 | -0.10 | 0.89 | 1.00 | | | | | |
| 7. Profitability | 0.32 | 0.25 | 0.12 | 0.11 | 0.15 | 0.26 | 1.00 | | | | |
| 8. FDI Attractiveness | 0.01 | 0.02 | 0.30 | 0.19 | -0.01 | 0.01 | 0.01 | 1.00 | | | |
| 9. International Acquisitions | 0.40 | 0.53 | 0.46 | -0.07 | 0.58 | 0.79 | 0.37 | 0.03 | 1.00 | | |
| 10. R&D Investment | 0.05 | 0.02 | -0.10 | 0.04 | -0.18 | -0.10 | -0.10 | 0.09 | 0.05 | 1.00 | |
| 11. MNE Age | 0.17 | 0.26 | 0.39 | -0.12 | 0.43 | 0.37 | 0.19 | 0.00 | 0.17 | -0.27 | 1.00 |

Bold = $p < 0.05$.

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Table 3
Unconditional Models

| Renewal Capability | #Variance Parameters | (-2LL) | AIC | BIC |
|--------------------------------------|----------------------|------------------|---------|---------|
| Empty means, random intercept | 3 | 8,148 | 8154.28 | 8162.84 |
| Fixed linear time, random intercept | 4 | 8,139 | 8147.79 | 8159.20 |
| Random linear time | 6 | 8,027 | 8039.47 | 8056.58 |
| Fixed quadratic, random linear time | 7 | 8,015 | 8029.16 | 8049.12 |
| Random quadratic time | 10 | 8,008 | 8028.85 | 8057.37 |
| Deviance Difference Tests | Δ DF | (-2 Δ LL) | $p <$ | |
| Random linear vs. Fixed linear | 2 | 112.33 | 0.00 | |
| Random quadratic vs. Fixed quadratic | 1 | 6.31 | 0.10 | |

Table 4
Multilevel Analysis Results for the Effect of Internationalization Breadth, Depth, and Speed on the MNE's Renewal Capability

| | Model A | | Model B | | Model C | |
|--|----------|------------|-----------|------------|-----------|------------|
| | b | Std. Error | b | Std. Error | b | Std. Error |
| Linear Time | 26.78 | 15.61 | 4.14 | 30.97 | 4.48 | 30.97 |
| Quadratic Time | -2.98 | 2.55 | 1.99 | 4.86 | 1.84 | 4.86 |
| Level-1 (Within-MNE) Main Effects | | | | | | |
| Internationalization Breadth | | | -47.43** | 22.32 | -45.79** | 22.34 |
| Internationalization Depth | | | 4.32 | 34.65 | 4.50 | 34.67 |
| Internationalization Speed | | | 0.27*** | 0.11 | 0.26** | 0.11 |
| Level-2 (Between-MNE) Main Effects | | | | | | |
| Internationalization Breadth | | | -7.19 | 36.32 | 1.24 | 37.28 |
| Internationalization Depth | | | 165.27** | 85.30 | 124.97 | 86.22 |
| Internationalization Speed | | | -0.58 | 0.73 | 0.70 | 0.86 |
| <u>Covariates</u> | | | | | | |
| Level-1 (Within-MNE) Main Effects | | | | | | |
| Employees (size) | 0.00 | 0.01 | 0.00 | 0.01 | -0.00 | 0.01 |
| International Acquisitions | 1.76 | 4.26 | 8.05 | 5.53 | 7.82 | 5.54 |
| Profitability | 0.22 | 0.60 | 0.31 | 0.73 | 0.32 | 0.73 |
| R&D Investment | 485.02 | 302.22 | 366.89 | 393.01 | 357.35 | 392.89 |
| MNE Assets | | | 0.001 | 0.001 | 0.001* | 0.00 |
| Level-2 (Between-MNE) Main Effects | | | | | | |
| Employees (size) | 0.00 | 0.00 | 0.00 | 0.00 | -0.01 | 0.00 |
| International Acquisitions | 5.07 | 19.15 | -16.81 | 20.47 | -8.10 | 20.63 |
| Profitability | 4.81* | 2.18 | 7.09*** | 2.42 | 5.59*** | 2.52 |
| MNE Assets | | 0.00 | 0.00 | 0.00 | 0.00* | 0.00 |
| FDI Attractiveness | -16.00 | 18.37 | -34.87 | 22.47 | -38.97* | 22.96 |
| R&D Investment | 786.57* | 416.33 | 923.67* | 473.15 | 785.28** | 499.15 |
| MNE Age | 0.21 | 2.68 | 0.47 | 2.84 | 1.89 | 2.87 |
| (Level 1) Int. Breadth * Int. Speed | | | | | 0.44 | 0.17 |
| (Level 1) Int. Depth * Int. Speed | | | | | -0.95* | 0.51 |
| (Level 2) Int. Breadth * Int. Speed | | | | | -0.55 | 0.85 |
| (Level 2) Int. Depth * Int. Speed | | | | | 3.38* | 2.03 |
| <u>Variance Components</u> | | | | | | |
| Time Variance | 4211.73 | 895.64 | 5777.34 | 1305.05 | 5734.60 | 1295.69 |
| Level-2 (Between-MNE) Random Intercept Variance | 96545.7 | | | | | |
| Covariance Level-2 (Between-MNE) Intercept, Time | 0 | 17139.02 | 110660.60 | 22959.00 | 104881.1 | 22229.78 |
| Level-1 (Within-MNE) Residual Variance | -8563.00 | 3079.37 | -14491.54 | 4674.00 | -14076.31 | 4664.29 |
| | 13631.00 | 1214.23 | 12112.70 | 1341.79 | 12135.26 | 1345.23 |
| Number of Observations | 420 | | 306 | | 306 | |

| | | | |
|------------------|--------|--------|--------|
| Number of Groups | 94 | 84 | 84 |
| Prob>F | 0.00 | 0.00 | 0.00 |
| R ² | 0.33 | 0.38 | 0.41 |
| -2LL | 365.50 | 199.90 | 104.26 |

* p<.1
** p<.05
*** p<.01
**** p<.001

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