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Introduction

In recent decades, developing countries (DCs) have become increasingly important destinations for developed country MNCs. Market liberalization, emergence of mass consumer markets, rapid GDP growth, improvements in the workforces' skill levels, and institutional and political reforms create huge opportunities for MNCs. Consequently, more than half of global foreign direct investment (FDI) is invested in DCs, mainly in the BRIC countries, increasingly in the Next 11, and recently in the less-developed countries in Africa and Asia. However, just as the opportunities in DCs are high, so are the risks. Poor quality of market supporting institutions and infrastructures, widespread corruption, non-transparent business networks, unpredictability of policies and regulations, and underdeveloped input and service provider industries all creates a high level of risk and uncertainty for MNCs.

In light of the growing MNC presence in DCs and considering the specificities of DC locations, there is an undisputable need for understanding what determines success and failure of MNCs in DCs. In recent years, a substantial and dynamic International Business (IB) literature has emerged, analysing the performance of MNC subsidiaries. Through statistical analysis of large data sets, this literature examines variations in subsidiary performance and its determinants. The literature essentially debates whether variations in subsidiary performance are caused by idiosyncratic aspects of MNC strategies and capabilities or by environmental factors related to industry and location. However, relatively few studies examine subsidiary performance in DCs specifically in spite of the fact that MNCs increasingly are operating in DCs.

The paper in hand will review, consolidate and extend the literature on the performance of developed-country MNC subsidiaries in DCs. This will be done by: 1. developing an

analytical framework adapted to examine the specificities of subsidiary performance in DCs; 2. employing this framework to structure an empirical analysis of subsidiary performance in DCs; and 3. utilizing the findings to corroborate, question and/or extend the received literature on subsidiary performance in DCs. The analysis will be based on a database of more than 800 Danish subsidiaries in DCs. This database is unique in terms of its scope (it covers more than 50 DCs), breadth (it measures subsidiary performance and its determinants on more than 100 dimensions over four decades), and depth (it includes precise measurements of financial and managerial performances and their drivers).

The literature on subsidiary performance

The performance literature has traditionally aimed to identify sources of firm performance in industry factors (as in the Industrial Organization perspective (Bain 1956; Porter 1980)), in firm specific factors (as in the resource/capability based perspective (Barney 1991; Peteraf, 1993)), or in factors related to market exchange (as in the transaction cost perspective (Williamson, 1975)). Much of this literature analyzes firm performance in a single country context. Hence, we must turn to IB to find inspiration for understanding MNC performance.

The IB performance literature can be roughly divided into two groups, parent level and subsidiary level studies. The parent level studies examine how internationalization/multinationality correlates with parent performance measures such as shareholder value, financial performance or competitive performance [1]. The subsidiary level studies focus specifically on the performance of subsidiaries and seek to understand the causes of variation in subsidiary performance. In this paper we focus exclusively on the subsidiary level studies.

While it has been argued that performance should be at the heart of any IB enquiry (Brouthers, 2002; Peng, 2004), until recently little was known about performance at the subsidiary level (Delios and Beamish, 2001; Venaik *et al.,* 2005). In recent years however, a

substantial quantitative literature focusing on subsidiary performance has emerged [2]. This literature often draws on data from very large samples of MNC subsidiaries and examines the state and evolution of subsidiary performance and/or how specific factors interact with performance.

This emerging literature has provided important and novel insights into the issue of subsidiary performance. However, it has limitations in several respects: The subsidiary performance studies typically rely on relatively crude proxies of performance, such as sales or survival, as more exact performance measures, such as return on investment (IRR) are very difficult to access. These studies further tend to adopt different analytical methodologies, which complicate accumulation of knowledge [3]. They typically focus on individual drivers of subsidiary performance (e.g. entry mode, experience, institutions, industry, or motive) rather than providing holistic pictures of the relative importance of various performance determinants [4]. A disproportionate share of performance studies are based on data from subsidiaries of Japanese (and to a lesser extent, US) MNCs [5] and they often are based on data covering limited time periods [6]. Finally, and most importantly in relation to our study, only a relatively small group of studies explicitly focus on subsidiary performance in DCs [7], and those that do often focus on subsidiaries in a limited number of DCs (typically China [8]). All these characteristics leave us with the impression of a rather fragmented subsidiary performance literature that is difficult to draw generalizations from, especially in regards to drivers of performance in DC subsidiaries. Our aim in the following will be to contribute to the literature on subsidiary performance in DCs by developing an analytical framework that will allow for a holistic analysis of subsidiary performance in DCs and by applying this framework to our unique database of 800+ Danish subsidiaries in DCs.

Analytical framework

Measuring subsidiary performance

Several authors argue that performance should be treated as the ultimate dependent variable in subsidiary research (e.g. Brouthers, 2002; Glaister and Buckley, 1999; Venaik *et al.,* 2005; Hult *et al.,* 2008). However, measuring performance is an inherently difficult undertaking for two main reasons. First, comparable performance data are difficult to access. This is partly because different countries follow different accounting and reporting conventions, partly because MNCs are reluctant to make performance data public, and partly because MNCs simply do not have precise performance data for their subsidiaries (Anderson *et al.,* 2002). Second, the performance data that can be accessed are unreliable as it is not uncommon for MNCs to manipulate subsidiary performance data for tax purposes (Christmann *et al.,* 1999). Furthermore, reliable performance data are especially hard to obtain in DCs (Hoskisson *et al.,* 2000).

Given these difficulties, it is not surprising that methods for measuring performance are highly contested (Chakravarthy, 1986; Venkatraman and Ramanujam, 1986; Anderson *et al.,* 2002). Some studies use financial measures, such as IRR, ROA/ROS, or capital market measures, while others use non-financial proxies, such as employment, survival, market share or productivity. Moreover, where some studies use 'objective' measures such as financial or accounting data, others use 'subjective' measures such as managers' perception of performance (Trapczynski, 2013).

Several authors argue that performance is a multidimensional construct where different performance measures may have different antecedents. Consequently, it is argued, performance studies need to use several measures for performance simultaneously (Ramsey and Bahia, 2013; Venkatraman and Ramanujam, 1986). In line with this, we will measure performance on three dimensions: financial, operational, and organizational (Venkatraman and Ramanujam, 1986). Financial performance will be measured through the Internal Rate of

Return (IRR) on investments. Operational performance, sometimes referred to as 'survival' (Gaur and Lu, 2007), will be measured through 'premature stop of operation' (PSO). PSO denotes the situation where a subsidiary prematurely suspends operations. Organizational performance will be measured through an assessment of subsidiary managerial performance (MP).

Determinants of subsidiary performance

The literature on subsidiary performance identifies a variety of determinants of subsidiary performance. Some studies focus on firm environmental factors such as location and industry (e.g. Chung and Beamish, 2005; Gugler, 2009; McGahan and Porter, 1997), while others focus on firm internal factors, such as the capabilities and strategies of MNCs (e.g. Luo, 2003; Lu and Beamish, 2004; Chan *et al.,* 2008; Birkinshaw *et al.,* 2005; Gaur and Lu, 2007 or Meyer *et al.,* 2009). Several studies employ more holistic models that analyze the relative importance and interaction of a large number of factors (see e.g. Christmann *et al.,* 1999; Delios and Beamish, 2001; Makino *et al.,* 2004; Venaik *et al.,* 2005; Chan *et al.,* 2008; Devinney, 2009; Hermelo and Vassolo, 2012). It is these more holistic studies that will inspire this paper. Generally, these studies identify five clusters of factors that potentially shape and influence subsidiary performance: location factors, industry factors, MNC capability factors, subsidiary role factors, and entry strategy factors. In the following we will discuss how these five clusters of factors may influence the performance of subsidiaries in DCs and how they can be measured.

Location factors

The performance of MNC subsidiaries can be expected to be influenced by a large number of location specific factors, including the level of economic development (Christmann *et al.,* 1999); the institutional environment (Kostova and Zaheer, 1999; Miller and Eden, 2006; Gugler, 2009); the level of economic growth (Kotabe *et al.,* 2002; Chan *et al.,* 2008); the level of regulatory intervention and hazard (Henisz, 2000; Henisz and Zelner, 2010); or the level of

distance (cultural, administrative, geographical and economic) between the home and host country (Ghemawat, 2003 Tihanyi *et al.,* 2005).

In order to examine the influence of location factors, we use four proxies for location, namely development level measured through 'GDP per capita'; economic growth measured through 'GDP growth'; and quality of the institutional environment measured through the World Bank 'Doing Business score'. As proposed by Makino *et al.* (2004), we include regional dummies to account for partly unknown regional characteristics not captured by the above factors, for example colonial history and geography. Other measures such as level of political intervention and hazard (Henisz, 2000) or competitive advantages of countries (Makino *et al.,* 2004) could have been included in the model, however reliable data were not available for more than 50 countries examined in this study. Nevertheless, some of the dynamics that such measures represent may be partly captured by our four location proxies, in particular economic development level (Christmann *et al.,* 1999; Chung and Beamish, 2005; Trapczynski, 2013).

Industry factors

Industrial Organization (IO) holds that variations in the organization, strategy and performance of firms are related to industry structure (Bain, 1956; Scherer, 1980). Hence, factors such as the degree of competition in the industry and the bargaining power of suppliers and customers offer a space within which firms formulate strategy and gain competitive advantage (Porter, 1980). From this perspective, we can expect that subsidiary performance is influenced by structural characteristics of industries such as competitive conditions and entry barriers (Luo, 2003; Makino *et al.,* 2004). In line with several other studies of subsidiary performance, this study will use SIC code based dummies as rough proxies for industry effects. Such proxies can of course only tell us that there are industry based variations at play, not what it is about industries that causes these variations.

The industry factors measured in this study are generic across countries. However, as pointed out by several authors (e.g. Makino *et al.,* 2004; Chan *et al.,* 2008) there are important country specific industry factors in addition to the generic industry factors. For instance, the very active industrial policies pursued by many DCs (Altenburg, 2011) may produce strong industry variation in performance at the country level. It has not been possible to obtain data for such country specific industry factors for the more than 50 countries in our database, but we will argue that such factors are at least partly captured by the location proxies discussed above.

MNC capability factors

In contrast to the location and industry clusters which largely find the determinants of firm performance outside the firm, management and organizational scholars have found performance determinants in idiosyncratic resource configurations and capabilities of firms (Barney, 1991; Wernefelt, 1984; Teece, 2000). The resource/capability based logic has been applied to international business activity (e.g. Peteraf, 1993) and has also inspired studies of subsidiary performance (Caves, 1996; Christmann *et al.,* 1999; Makino *et al.,* 2004; Venaik *et al.,* 2005). According to the resource/capability perspective there are essentially three types of MNC capabilities that impact subsidiary performance. The first type creates superiority over local firms and enables MNCs to overcome 'liabilities of foreignness'. Such capabilities include: company size, branding, design, processes, competencies, technologies, financial and organizational strengths, etc. (Barkema *et al.,* 1996; Lu and Beamish, 2004) and are in this study measured by the parents' 'turnover' and 'number of employees'. The second type of capability is related to the firms' internationalization experience. It has been argued that subsidiary performance is shaped by capabilities associated with experiential knowledge (Johansson and Vahlne, 1977; Barkema *et al.,* 1996; Delios and Beamish, 2001), degree of multinationality (Thomas and Eden, 2004; Lu and Beamish, 2004; Chan *et al.,* 2008), or country specific experience (Barkema *et al.,* 1996). We use 'number of foreign subsidiaries'

and 'experience from DCs' as proxies for internationalization experience. The third type of capability allows firms to benefit from internationalization by integrating and coordinating internationally dispersed operations (Birkinshaw, 1997; Delios and Beamish, 2001). We use the 'quality of the parent's management system' as a proxy for managerial capability.

Subsidiary role factors

It is argued that the strategic role of the subsidiary is an important influence of subsidiary performance (Birkinshaw *et al.,* 2005; Anderson *et al.,* 2002). The greater the strategic importance of a subsidiary, the more likely it will be to receive support and resources from the parent and thereby improve its performance (Luo, 2003; Birkinshaw *et al.,* 2005; Subranmaniam and Watson, 2006). For instance, we will expect relatively high performance if the subsidiary is relatively large compared to the parent, and/or if the subsidiary plays a dedicated role in the parent firms' global value chain. To capture subsidiary role factors, we use the following two proxies: the importance of the subsidiary measured through employment of subsidiary relative to the parent, and the parent's investment motive, categorised as efficiency seeking, market seeking, natural resource seeking or strategic asset seeking (Dunning and Lundan, 2008). We expect that especially efficiency seeking subsidiaries will have important roles as they often provide specialized and dedicated inputs to the MNCs' global value chains (Luo and Peng, 1999).

Entry strategy factors

There is a strong tradition within IB theory to explain subsidiary performance in terms of the entry strategy characteristics. In particular, it is discussed how the choice between acquisition or greenfield entry and/or the choice between fully controlled or joint venture (JV) entry correlate with performance (Woodcock *et al.,* 1994; Meyer and Estrin, 2001). On the one hand, JVs and acquisitions are expected to affect performance positively when compared to other entry strategies as such entry strategies provide access to local networks and resources and help the subsidiary overcome political hazards (Henisz, 2000). On the other hand, JVs/

acquisitions may contribute to lower performance in the longer run due to potential lack of strategic, organizational, cultural and organizational fit between the MNC and the local firm and due to costs associated with coordination and integration of hitherto separate business entities (Geringer and Hebert, 1989). We will examine the influence of two main aspects of entry strategy, namely, whether the subsidiary is an acquisition or a green-field investment, and whether it is a JV or fully controlled operation.

The relative importance of factors

The literature debates whether firm environmental factors related to location and industry or firm internal factors related to capability and organization are more important for subsidiary performance in DCs (see e.g. Makino *et al.,* 2004; Christmann *et al.,* 1999; Hoskisson *et al.,* 2000; Peng *et al.,* 2009; Hermelo and Vassolo, 2012). A plausible hypothesis is that locational factors will play a relatively large role for performance of subsidiaries in DC contexts, whereas firm-specific factors such as capabilities and organization will play a relatively lesser role. This is because relatively high political, institutional and market related risks as well as relatively rapid market growth can be expected to exert a strong positive or negative influence on subsidiary performance (Chan *et al.,* 2008; Henisz and Zelner, 2010; Kotabe *et al.,* 2002). Moreover, subsidiary performance in DCs may be relatively strongly influenced by country-specific government regulation (Christmann *et al.,* 1999; Chan *et al.,* 2008) as governments in DCs will often closely monitor and regulate the entry of foreign firms, for example, through tariffs, import licenses and ownership requirements, and as activist industrial policies generally are more widespread in DCs (Altenburg, 2011). By contrast, in developed contexts, relatively well functioning infrastructure, institutions and markets for related and supporting industries mean that locational factors to a lesser extent are performance differentiators and that capability and industry factors become relatively important (Hoskisson *et al.,* 2000; Makino *et al.,* 2004).

We also expect the choice of entry strategy to be relatively strongly related to subsidiary performance in a DC context, although we cannot unequivocally predict the direction of this relationship. On the one hand, MNCs need to access local networks and knowledge through JVs/ acquisitions due to the relatively difficult market and institutional environments (Inkpen and Beamish, 1997; Meyer *et al.,* 2009). In this case we will expect a positive relationship between JVs/acquisitions and performance. On the other hand, the performance of JVs/ acquisitions may be hampered by relatively high transactions costs related to weak capabilities of local firms and weak contractual environments (Gaur and Lu, 2007; Hoskisson *et al.,* 2000). In this case we will expect a negative relationship between JVs/ acquisitions and performance.

Subsidiary role factors are expected to be relatively less important in DCs, as subsidiaries in DCs generally can be assumed to play relatively minor roles in the strategies of the investing MNCs. This is partly due to the limited market sizes of most DC economies which make it less likely that they become key markets for the MNCs, partly due to underdeveloped supply industries and deficient infrastructures in many DCs which make it difficult to assign key global mandates to subsidiaries there (Birkinshaw, 1996). We also expect that industry effects – here defined as generic industry effects – will be relatively small in DCs as industry based competition in the DC industries that MNCs typically enter is relatively low (Chan *et al.,* 2008). The relatively low competition levels can be attributed to the fact that local industries in DCs historically have been intensely protected through 'infant' industry policies and that local markets in DCs typically are relatively small (Caves, 1996).

Methodology

Sample and data collection

This study draws on a database of 818 Danish subsidiaries operating in DCs supported by the Danish state owned outward investment promotion agency IFU. IFU is a co-investor in subsidiaries (always a minority shareholder) together with Danish MNCs. IFU carefully

appraises its co-investor and the project idea before it commits equity. Moreover, IFU continuously monitors the management, conduct and performance of the subsidiaries on a large number of dimensions.

The database represents approximately one third of Danish investments in emerging markets and is considered to be fairly representative of Danish MNCs in DCs (IFU, 2012). Most subsidiaries are located in Asia and Eastern Europe with relatively few in Latin America and Africa; a reflection of the general orientation of Danish industry. The database includes both large and small investors. In terms of industry, subsidiaries are predominantly involved in manufacturing with little involvement in natural resources; a reflection of the Danish industry structure (see Table I).

Table I about here

Compared to other studies of subsidiary performance, our study has a number of data strengths. First, instead of relying on financial performance proxies, such as return on sales collected at arbitrary moments in a subsidiary's lifecycle, our study uses IRR numbers measured at the institutional investor's time of exit. Second, where most existing studies are based on Japanese and US MNCs, our study provides insights from a small but highly outward oriented European country, Denmark. Third, where other studies tend to analyse influences on performance based on a limited number of variables, our study includes a larger number of variables, enabling more extensive controls. Fourth, where existing databases provide performance measures for a relatively short time span, the database we use includes data from almost 40 years of investment in DCs, allowing for more robust controls for the influence of time. Finally, where most existing studies focus on one specific region or country, this study encompasses all developing regions, which allows for a more nuanced picture of performance variation across DCs. The main limitations of the data are that all

subsidiaries are from one home country (Denmark) potentially creating a home country bias, and that all subsidiaries have IFU as a partner which may lead to a certain level of 'adverse selection' as IFU may screen out bad projects and/or as MNCs with very good projects may avoid sharing the upside with IFU.

Analytical methodology

Drawing on LeBreton *et al.* (2004), we adopt a two-pronged approach that reveals the total as well as the partial effects of the predictor variables on performance. First, we examine the total contribution of each of the five clusters of independent variables while controlling for all other factors. Second, we examine the individual clusters of factors in order to determine which specific factors are most relevant for explaining performance and how they interact with each of the three performance proxies.

Our model is derived in the following way:

$$P = \alpha_0 + C\alpha_1 + I\alpha_2 + F\alpha_3 + S\alpha_4 + E\alpha_5\ T\alpha_6 + \varepsilon \qquad (1)$$

where P is a matrix for our measures of performance as defined above, namely, positive IRR (dummy), premature stop (dummy) and managerial performance. C, I F, S and E are matrixes of location, industry, MNC (firm) capability, subsidiary role and entry strategy factors. T is a matrix of control variables, here the project start year. ϵ is a matrix of idiosyncratic error terms, and the α's are the coefficients to be estimated. Equation (1) is estimated using ordinary least squares or probit – depending on the nature of the dependent variable. A Breusch-Pagan test indicated heteroskedasticity and we corrected this by estimating robust standard errors through clustering by country.

Figure 1 about here

First, we examined the influence of each category of factors (location, industry, capability, subsidiary role and entry-strategy) on performance by estimating the explained variance in performance of each of these categories of factors while controlling for the influence of the other factor categories. Secondly, we estimated the effect of the entire model (including all factors) on each of the performance measures. For all estimations, we used the same sample for each dependent variable, i.e. the sample of the full model for each performance measure was also used for the estimations for each category of factors [9]. This ensured comparability of the regression analyses across the various categories.

Obviously, the factors employed in this model may be related which may impair interpretations of coefficients. For instance, one factor's ability to explain variance in performance may be moderated by another factor. The literature on subsidiary performance outlines various possible correlation effects between the five categories of independent factors used in our model (Hermelo and Vassolo, 2012; Trapzcinsky, 2013; Gaur and Lu, 2007). We partly dealt with this problem by testing for multicollinearity using the variance inflation factor analysis (VIF). The test showed that multicollinearity remained below 3 on all variable pairs, which normally is considered acceptable.

Findings and discussion

Subsidiary performance

It has been shown that MNC investments in DCs tend to generate relatively high revenues (McKinsey, 2003). This is also true of Danish investment in DCs, where according to the Danish National Bank, the revenue on direct investments in DCs, between 2004 and 2008, was more than twice that of revenue from investment in developed economies (21 per cent compared to 9 per cent (IFU, 2012). However, the risks of DC investments are also considerably higher. This is evident from our sample, where 43 per cent of the subsidiaries ended up with a negative IRR, 21 per cent ended with a 'premature stop of operation' (PSO) and 24 per cent had poor or critical management performance (MP). This high return – high

failure profile of investment in DCs possibly reflects the tendency of foreign investors to offset the risk by engaging exclusively in projects with prospects of relatively high returns.

As evidenced by Table II, our three performance measures were strongly correlated, displaying correlations of 0.3 - 0.5 which suggeststhat we are measuring closely related but not completely identical phenomena (Gaur and Lu, 2007).

Table II about here

Explaining subsidiary performance

Model robustness

Overall, we find that our model is quite robust in regard to explaining the variance in performance measured through IRR and PSO. Thus, as shown in Table III, the model explains 17 per cent of total variance in IRR and 21 per cent of total variance in PSO. The model appears less effective in explaining MP, with 5 per cent of variation explained and this not at a statistically significant level, possibly due to the far fewer observations of MP than IRR and PSO.

Which clusters of factors explain variance?

According to our study, all five clusters of factors have some level of explanatory power, when controlling for all other factors. That being said, there are however important variations. We expected that location and entry strategy factors would be relatively important in DCs; however, we find that MNC capability factors and to a lesser extent subsidiary role factors are more important. Although the literature is ambiguous regarding the relative importance of various performance drivers [10], our findings echo at least some studies. Luo (2003) for instance, found that strong parent capabilities in management and interaction with subsidiaries reduced the negative impact of DC locations by minimizing the subsidiaries' dependence on

the local context and by enhancing their ability to exploit opportunities. Also, other studies from DCs find that firm-specific capability and management factors are relatively important (see e.g. Brito and Vasconcelos, 2006; Hermelo and Vassolo, 2012). In contrast, there are other studies that find location and industry factors to be relatively important (e.g. Christmann *et al.,* 1999; Makino *et al.,* 2004; Venaik *et al.,* 2005) [11].

Table III about here

It is somewhat surprising that capability factors are shown to be more important than locational factors, given the challenging and rapidly changing business environments of DCs. One interpretation is that firm specific capabilities moderate the influence of location so that resourceful MNCs will be able to counter the adversities of locations (Hermelo and Vassolo, 2012). Another related interpretation is that MNCs with strong capabilities are better at screening out difficult locations prior to investing.

Subsidiary role factors are also found to be relatively important. We consider these to be closely related to capability factors. Hence, strong parent-subsidiary links will typically imply greater resource transfer and interaction between parent and subsidiary. These resource transfers and interactions in turn reduce subsidiaries' dependence on location (Luo, 2003).

In line with our initial expectations, we found that industry factors explain variations in performance only to a limited degree. As we hypothesized in the Analytical Framework section, this could be attributed to relatively low, industry specific competition in DCs. In assigning less importance to industry factors, our findings support those from several studies (e.g. Makino *et al.,* 2004; Brito and Vasconcelos, 2006; Hermelo and Vassolo, 2012), while conflicting with others (e.g. Christmann *et al.,* 1999; Venaik *et al.,* 2005). The discrepancy might be attributed to the fact that the latter studies do not focus on DCs. As previously discussed, an important caveat in regard to our conclusions regarding industry is that our SIC

code based measurement of industry may lead us to underestimate the importance of industry factors as industry influences on performance in DCs to some extent may be country specific (e.g. related to relatively aggressive industrial policies in DCs) and therefore partly captured by our location controls.

Contrary to our initial expectation we found that entry strategy factors were of lesser importance. This finding is in line with some studies (e.g. Trapzinsky, 2013) but seems to contradict others (e.g. Zhao and Luo, 2002). One explanation for the apparent contradictory findings of the literature could be that while entry strategy factors were previously very important, they become less so with time (see below under 'controlling for time' for an elaboration of this argument). Another explanation could be that entry strategy most likely is closely related to both location factors (DCs may disproportionally adopt MNC entry mode requirements), and to capability factors (capability-weak MNCs may disproportionally seek to access local networks and competencies through JVs and acquisitions). Such interaction effects may lead us to underestimate the importance of entry strategy (Gaur and Lu, 2008).

Controlling for time

Overall we found that performance of projects has improved significantly over the years so that 'only' 32 per cent of exited projects, which started between 1992 and 2008, showed negative IRR, compared to more than 62 per cent between 1979 and 1991. Moreover, only 15 per cent experienced PSO in the last period compared to 39 per cent in the earlier period. To our knowledge, no other study provides such strong evidence that subsidiary performance improves over time. One explanation could be that investors have become better at organizing international activities in general and in particular activities in DCs. This explanation is consistent with the above observation that capability and subsidiary role factors are relatively important in DCs.

Makino *et al.* (2004) call for studies that examine the evolution over time in the relative importance of factors driving subsidiary performance. In response to this call we examined if

the model interacted with performance in different ways at different times. We estimated the full model stratified by the time periods 1969−1994 and 1995−2008. In Table IV we seek to unravel whether and how the model's explanatory power changes over time.

Table IV about here

We note that MNC capability factors are significant for both IRR and PSO regardless of which period we look at and that these factors' significance is increasing. This confirms our overall finding that capability factors are essential to performance however measured. However, generally we find that the five clusters of factors interact differently with the dependent variables over time. This confirms the above observation that the antecedents of IRR and PSO are partly different. In relation to IRR specifically, we find that location factors become less important over time and that capability factors gain importance. This could suggest that, over time, increasingly capable MNCs have been able to level out IRR performance variance across locations. In relation to PSO specifically, location factors are shown to become more important over time, rather than less important as was the case with IRR. One interpretation is that as, over time, more MNCs are able to avoid PSO due to improved capabilities, the location-specific influences of PSO.

What are the specific factors explaining performance?

A major strength of this study is that it presents a fine-grained account of the specific factors within the five clusters of factors that may influence variation in performance. In the following we will discuss in more detail which aspects of location, industry, MNC capabilities, subsidiary roles and entry strategy explain variance in subsidiary performance. It should be noted that when we assess the importance of individual factors, we have controlled for the influence of all other factors in the model. The findings are summarized in Table V.

Table V about here

MNC capabilities: The key dimension for explaining variance in performance is MNC capabilities. We measured MNC capabilities through firm size, managerial capacity and international experience. We find that MNCs with a strong management capacity are less likely to experience PSO. The explanation could be that well managed parent firms are better able to deal with a crisis in a subsidiary should it occur. We also find that international experience explains variance in IRR. This corroborates several other studies and suggests that experiential learning is a key success component in DCs (Dikova, 2009; Trapczynski, 2013). Possibly the most surprising finding in regard to MNC capability factors is that the size of parent companies (measured in number of employees and turnover) is a poor predictor of variance in performance when we control for other factors. This finding corroborates some studies (e.g. Biggs, 2002), but questions others (e.g. Lu and Beamish, 2004; Vega-Cespedes and Hoshino, 2001).

Subsidiary role: The second most important cluster of factors was subsidiary role measured by the subsidiary's size and strategic intent. We find, in line with Chiao *et al.,* (2008) that subsidiary size is positively related to performance measured through IRR and MP. The explanation for this could be that large subsidiaries possess relatively more capabilities to deal with problems should they arise. We also find that PSO is associated with subsidiaries that are large compared to their parents. The explanation could be that in cases of high parent exposure to the subsidiary, the parent has relatively fewer additional resources to mobilize if the subsidiary experiences a crisis.

In terms of motives, our findings show that the investment motive (strategic intent) has only limited influence on IRR and MD. This is contrary to Luo and Peng (1999), for example, who find that efficiency-seeking subsidiaries perform better than subsidiaries with other

investment motives. However, our findings corroborate Luo and Peng's study when we look at PSO, where efficiency-seeking subsidiaries are less likely to experience PSO. The interpretation could be that as efficiency seeking subsidiaries frequently play a key role in the global value chain of the parent MNCs, the parent is more likely to devote additional resources to prevent the subsidiary from failing.

Locational factors: As argued by Chan *et al.,* (2008), while several studies examine the relative importance of different clusters of factors, little is known about the specific locational factors influencing subsidiary performance. We find that the level of economic development measured through GDP per capita does not explain variation in performance. This suggests that MNCs can succeed (or fail) irrespective of the development level of the host economy. However, we find that GDP growth rates significantly explain variation in performance of subsidiaries (see Kotabe *et al.,* (2002) for a similar finding). A possible explanation is that high GDP growth may offset the kinds of problems experienced in a stagnant economy. Surprisingly, the quality of the host country institutional environment (measured through World Bank Doing Business indicators) fails to explain variation in the performance across all performance measures. This is a notable finding given the fact that several similar studies find that institutional factors are important for subsidiary performance (see e.g. Makino *et al.,* 2004; Chan *et al.,* 2008; Ma *et al.,* 2013) [12]. Our interpretation is, as previously mentioned, that strong firm capabilities and parent-subsidiary coordination allow MNCs to overcome locational challenges such as those related to institutions.

Entry strategy: We find that entry strategy, understood as entry mode and entry form, is less powerful in explaining variation in subsidiary performance. One interpretation is that while entry strategy factors previously may have had a large influence on subsidiary performance in DCs because MNCs often were more or less forced into JVs and acquisitions, this factor is today less important as MNCs in growing numbers of sectors and countries are free to choose

their entry form. In support of this interpretation, we find that entry strategy factors exerted a stronger influence on PSO in the early sample (up to 1995) than after 1995 (see Table IV).

Industry factors: We find that industry factors largely fail to explain variations in performance. One exception is that the food industry is more likely to avoid PSO than the base line natural-resource dependent industries (agriculture, fisheries, forestry, etc.). An explanation for this could be that natural-resource dependent industries are highly susceptible to adverse institutional environments due to their relatively high dependence on approvals and certifications from local, regional and national authorities (Moran, 2011).

Contributions and implications

This study is unique in several respects. It provides data on the evolution of subsidiary performance in DCs over almost 40 years based on a dataset of more than 800 subsidiaries. It analyzes how five key clusters of factors explain variance in subsidiary performance measured on three dimensions. As the study adopts a methodology akin to those adopted by other studies, it is possible to relate its findings to the received literature.

A key finding is that MNC subsidiaries in DCs were shown to improve their performance significantly over time. Where investments in DCs were previously an exceptionally risky undertaking for MNCs, such investments appear to have been 'mainstreamed' over time. This is indicated by increases in average return on investments (IRR) and improved management performance (MP), as well as by reduced levels of 'premature stop of operation' (PSO). To our knowledge, no other studies have presented such strong evidence of improved performance of foreign investors in DCs over time. Moreover, our study has documented that the drivers of performance change significantly over time. The implication of this observation is that we should be cautious when generalizing about antecedents of performance across time periods.

A key discussion in the subsidiary performance literature concerns the relative importance of different factors in explaining variation in performance. A main finding in this regard is that

MNC capability and subsidiary role factors are relatively important in explaining variations in subsidiary performance in DCs and that location, industry and entry strategy factors are relatively less important. Thus, experienced and well-managed MNCs and/or MNCs with strong links to their subsidiaries can be profitable and succeed, even in difficult locations. These findings feed into the IB debate on whether MNC performance is mainly driven by environmental or idiosyncratic firm level factors (Christmann *et al.,* 1999).

The study further provides insights into which specific factors related to the five clusters of factors influence subsidiary performance and how. These insights challenge the received literature in a number of ways. For instance, the study suggests that it is not the size of the MNC but its experience and management quality that shape subsidiary performance. By the same token, it is suggested that it is not the development level of the host country or its institutional quality that influences subsidiary performance, but rather its level of GDP growth.

In spite of these insights, our study also displayed some limitations that point to a need for further theoretical and empirical work: 1. The study showed that our three performance measures to some extent have different antecedents, however we had no satisfactory theoretical explanation for this. This finding suggests that further development of the theoretical model is needed in order to account for the specificities of individual performance measures (see Delios and Beamish, 2001 for a similar argument). 2. The study showed that the drivers of performance changed significantly over time but did not offer an adequate explanation as to why this occurred. Hence, there is a need to explore why and how the drivers of subsidiary performance change over time (see Makino *et al.,* 2004 for a similar argument). 3. While the study had access to comprehensive and unique data regarding subsidiary performance, some dimensions were more accurately measured than others. Hence, it is evident that further work on modeling and measuring dimensions such as industry and location is needed. 4. The study provided novel insights into the relative importance of

various factors and attempted to account for interaction effects and multicollinariety issues in various ways. Nevertheless, it is also evident that more in-depth statistical and theoretical work is needed to further explore interaction effects between the variables in the model (see Gaur and Lu, 2007 for a similar argument).

The study may have important implications for managers. One key managerial implication is that investments in developing countries are far less risky than they used to be. All industries can succeed in developing countries, whether the countries are large or small, rich or poor. However, to succeed, it will be an advantage to invest in high growth countries (whenever they can be identified). Moreover, investors must focus on developing managerial capabilities (including international experience) and have a robust management system in place before they invest. A strong commitment to the subsidiary and a clear mandate for the subsidiary in relation to the overall operation of the MNC will increase the likelihood of success. In sum, understanding the country context is important, but the key preparatory ground work for MNCs contemplating entry into DCs is to carefully scrutinize their own capabilities and organization in light of the specific locational characteristics of the DCs in question.

Conclusion

This study examined the performance of approximately 800 subsidiaries operating in DCs. It was documented that the performance of these subsidiaries has improved significantly over the last 40 years. Inspired by the IB literature on subsidiary performance, a model consisting of five clusters of potential drivers of subsidiary performance was developed. The model was employed to explain variance in subsidiary performance. It was found that MNC capabilities and subsidiary roles in particular were relatively strong predictors of variation in performance. The findings of the paper contribute to the literature on subsidiary performance by providing novel insights into the antecedents of subsidiary performance in DCs specifically. The findings may have important implications for on-going debates in IB regarding the relative

importance of external and internal factors for MNC performance as well as for managers contemplating investment in DCs.

Notes

1. See e.g. Tallman and Li, (1996); Brouthers, (1998); Delios and Beamish, (1999); McGahan and Victer, (2010).

2. See e.g. McGahan and Porter, (1997); Christmann *et al.,* (1999); Isobe *et al.,* (2000); Delios and Beamish, (2001); Anderson *et al.,* (2002); Luo, (2003); Makino *et al.,* (2004); Birkinshaw *et al.,* (2005); Delois *et al.,* (2008); Lu and Beamish, (2004); Venaik *et al.,* (2005); Chung and Beamish, (2005); Miller and Eden, (2006); Gaur and Lu, (2007); Chan *et al.,* (2008); Chiao *et al.,* (2008); Devinney, (2009); McGahan and Victer, (2010); Ma *et al.,* (2013); Hermelo and Vassolo, (2012); Trapczynski, (2013).

3. For instance, Christmann *et al.* (1999) used hierarchical regression analysis to test for the relative contribution of the different sets of independent variables. This presupposes a theoretically founded hierarchy of independents, in this case moving from high determinism to low determinism. Venaik *et al.* (2005) is more interested in conduct's influence on performance and therefore they examine the performance effects of conduct after having controlled for location, firm and industry factors. Following other performance studies (e.g., McGahan and Porter, (1997); Makino *et al.* (2004) employed a variance component analysis where all the independents were treated as random effect variables.

4. For instance, Luo (2003) examines the performance of 196 MNC subsidiaries in China from a capability perspective. Zhao and Luo (2002) examine 319 Chinese subsidiaries to see how product diversification and ownership affect performance. Zhang *et al.* (2007) examines the effects of R&D activity on performance in Chinese joint ventures. McGahan and Porter (1997) examine the influence of industry factors, and Birkinshaw *et al.* (2005) look at subsidiary role factors. Gaur and Lu (2007) focus on entry mode and performance when controlling for institutional context, and Lu and Beamish (2004) focus on multinationality and performance. Finally, Chan *et al.* (2008) looks at the influence of institutions on performance.

5. For studies based on Japanese data, see e.g. Makino *et al.,* (2004); Chan *et al.,* (2008); Delios and Beamish, 2001; Lu and Beamish, (2004); Delios and Henisz, (2000); Gaur *et al.,* (2007); Gaur and Lu, (2007); Delios *et al.,* (2008).

6. Among the studies focusing on relatively short time spans (e.g. 0-3 years) are Christmann *et al.,* 1999; and Veniak *et al.,* (2005). Others have data over 3-9 years, e.g. Makino *et al.,* (2004); Chan *et al.,* (2008). Finally, some studies provide longer term perspectives on performance, e.g. Delios and Beamish, (2001); Hermelo and Vasselo, (2012); Gaur and Lu, (2007).

7. Among those, see Luo and Peng, (1999); Delios and Henisz, 2000; Isobe *et al.,* (2000); Zhao and Luo, (2002); Luo, (2003); Makino *et al.,* (2004); Gaur and Lu, 2007; Zhang *et al.,* (2007); Ma *et al.,* (2013); Hermelo and Vassolo, (2012). Other studies mention DCs in passing (see e.g. Delios and Beamish, (2001); Chan *et al.,* (2008), while others yet again provide performance studies from DCs but do not focus specifically on MNC subsidiaries (see e.g. Gaur and Kumar, (2009). See also Wright *et al., (*2005) and Hoskisson *et al.,(*2000) who review studies related to emerging markets and developing countries that examines specific influences of subsidiary performance in DCs, e.g. entry mode, principal-agent dynamics, or capabilities factors.

8. For studies focusing on China, see e.g. Luo, (2003); Luo and Peng, (1999); Zhang *et al.,* (2007); Ma *et al.,* (2013).

9. The statistical procedure depends on the nature of the dependent variable. We do a probit for the binary variables IRR-cat and PSO and ordinary least squares (OLS) with clustered standard errors (by country) for management performance.

10. The ambiguity of conclusions on what drives performance most likely derives from the fact that, as argued above, the literature is methodologically heterogeneous in terms of e.g. choice of home and host countries, time spans, controls, and statistical methods.

11. Christmann *et al.* (1999) in a cross sectional study of 76 subsidiaries of four US MNCs found that country factors were by far the most important determinants of performance, followed by industry structure, subsidiary strategy and firm characteristics. In line with this, Venaik *et al.* (2005) in a study based on a survey of 126 subsidiaries of Japanese, UK and US MNCs found the most important determinants of subsidiary performance was industry factors. Makino *et al.* (2004) found that in general corporate effects were most important, however in DCs industry and country effects were relatively important.

12. However, a recent evaluation of 450 partnerships between Danish and local firms corroborated our findings. It was found that "there was not a higher rate of sustained partnerships in projects taking place in countries considered having a good business environment according to the World Bank's Doing Business Index (such as South Africa) than in countries with a poor environment (such as Bolivia)" (Danida, 2014, p.65).

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Figure 1: Drivers of subsidiary performance

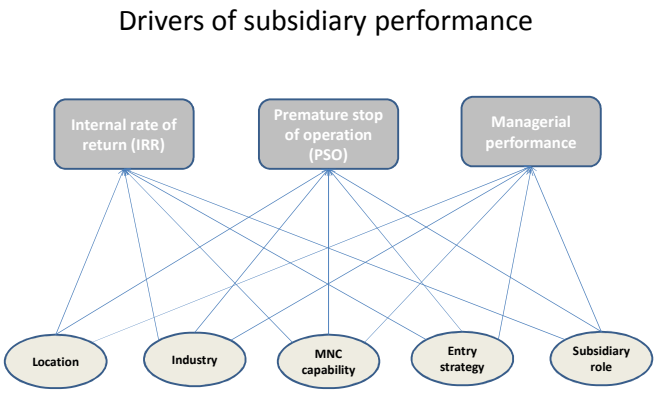

Table I: Profile of sample

		Number of subsidiaries IRR calculation	Number of subsidiaries PSO calculation	Number of subsidiaries MP calculation
Industry	Agriculture, forestry and fishing	25	24	5
	Chemicals	72	62	34
	Finance	22	24	6
	Light manufacturing	86	80	41
	Manufacture food	64	60	23
	Metals, machinery	54	52	23
	Other services	65	73	35
	Utilities and construction	29	33	6
Region	Africa and Middle East	70	74	21
	East Asia	52	39	19
	Eastern Europe (advanced)	133	140	70
	Eastern Europe (other)	20	12	8
	Latin America	50	59	18
	South Asia	43	46	28
	South East Asia	49	38	9
Total		417	408	173

Table II: Correlation between dependent variables

		IRR Profitability of investment (Dummy)	Premature stop of operation (PSO)	Management performance (MP)
IRR Profitability of investment (Dummy)	R	1		
	Sig			
	Obs.	760		
Premature stop of operation (PSO)	R	-.322***	1	
	Sig	.000		
	Obs.	542	818	
Management performance (MP)	R	.498***	-.460***	1
	Sig	.000	.000	
	Obs.	276	316	319

Table III: Results of regressions' summary statistics

	Stats	Location	Industry	MNC capabilities	Subsidiary role	Entry strategy	Total
IRR (dummy)	Pseudo R2	.059	.037	.081	.067	.040	.171
	Obs.	447	447	447	447	447	447
	Wald X^2	54.27	17.53	59.63	22.10	20.29	556.49
	(p-value)	.000	.025	.000	.009	.002	.000
PSO	Pseudo R2	.055	.093	.093	.096	.058	.206
	Obs.	429	429	429	429	429	429
	Wald X^2	45.63	17.07	29.04	44.38	40.22	5465.91
	(p-value)	.000	.029	.000	.000	.000	.000
MP	R2	.000	.000	.033	.082	.010	.048
	Obs.	179	179	179	179	179	179
	F-value	1.95	3.93	1.75	3.52	1.94	1.25
	(p-value)	.064	.001	.089	.002	.106	.180

Table IV: Regression coefficients for full models on IRR (dummy), PSO and PM (by time)

IRR Dummy							
1969-1994							
		Location	Industry	MNC	Subsidiary role	entry strat	full model
	Pseudo R2	.082	.051	.059	.119	.008	.299
	Obs.	169	169	169	169	169	169
	Wald X2	93.19	12.98	15.33	26.20	2.04	325.38
	(p-value)	.000	.073	.004	.000	.564	.000
1995-2008							
		Location	Industry	MNC	Subsidiary role	entry strat	full model
	Pseudo R2	.049	.011	.076	.041	.021	.204
	Obs.	278	278	278	278	278	278
	Wald X2	15.85	5.86	48.04	8.90	4.31	55.73
	(p-value)	.070	.556	.000	.351	.506	0.003
PSO							
1969-1994							
		Location	Industry	MNC	Subsidiary role	entry strat	full model
	Pseudo R2	.017	.048	.077	.096	.038	.220
	Obs.	210	210	210	210	210	210
	Wald X2	4.19	7.73	16.65	17.22	7.55	53.75
	(p-value)	.898	.357	.002	.016	.056	0,004
1995-2008							
		Location	Industry	MNC	Subsidiary role	entry strat	full model
	Pseudo R2	.139	.028	.101	.080	.029	.367
	Obs.	219	219	219	219	219	219
	Wald X2	24.39	1,355.63	24.52	32.90	10.58	64.17
	(p-value)	.004	.000	.000	.000	.032	.001

Table V: Regression coefficients for full models on IRR (dummy), PSO and MP (full sample)

	IRR_cat	PSO	MP
Country-specific factors			
Region: Africa and Middle East (REF)			
Region: East Asia	-.797*	.846**	-1.460
	-.401	-.328	-1.483
Region: Eastern Europe (EU)	.241	.580	.193
	-.405	-.381	-1.489
Region: Eastern Europe (non-EU)	-.514	1.126**	.028
	-.478	-.435	-1.469
Region: Latin America	.188	.242	-.123
	-.329	-.270	-1.301
Region: South Asia	-.526	.449	-1.132
	-.292	-.307	-.993
Region: South East Asia	.037	.387	1.158
	-.385	-.480	-1.491
GDP per capita (1,000 US $)	-.010	-.028	-.016
	-.024	-.029	-.114
GDP growth	.092**	-.129***	.160
	-.036	-.033	-.105
World Bank Doing Business Score	.002	-.001	-.007
	-.003	-.004	-.009
Industry-specific factors			
Industry: agriculture, forestry and fishing (REF)			
Industry: chemicals	.718*	-.392	.816
	-.327	-.418	-2.401
Industry: finance	.128	-.497	-.128
	-.439	-.406	-2.524
Light manufacturing	.201	-.393	-.131
	-.378	-.359	-2.627
Industry: manufacture food	.434	-.811*	.467
	-.337	-.403	-2.270
Industry: metals, machinery	.390	-.377	-.912
	-.313	-.430	-2.372
Industry: other services	.430	-.127	.769
	-.343	-.400	-2.492
Industry: utilities and construction	.473	-.335	1.881
	-.400	-.431	-2.671
MNC capabilities			
Turnover (1,000 US $)	.067	-.094	-.006
	-.060	-.055	-.031
Employees (1,000)	.053	.032	.077
	-.035	-.027	-.070
Capital intensity of parent	.007	-.1936**	.000
	-.004	-.067	-.007
Experience: Number of foreign subsidiaries	.019	-.0524*	.057
	-.018	-.023	-.069
Experience from DCs: high (REF)			
Experience: missing	-.358	-1.287*	2.480
	-.471	-.547	-2.448
Experience: low	1.266*	n/a	n/a

	-.602		
Experience: medium	.457	n/a	n/a
	-.416		
Management experience: high (REF)			
Management: missing	.810	13.005***	-4.717
	-.433	-.672	-3.532
Management: low or medium	.165	9.062***	-.871
	-.429	-.466	-3.107
Subsidiary role			
Project: actual employment	.001***	-.001	.002**
	.000	.000	-.001
Project: actual investment (1,000 US $)	-.000*	.000	.000
	.000	.000	.000
Relative importance: employees	.000	.007*	-.015
	-.004	-.003	-.010
Relative importance: turnover	.000	.000	.000
	.000	.000	.000
Motive: natural resources (REF)			
Motive: missing information	.450	-.295	1.885
	-.334	-.489	-1.869
Motive: local and regional access	-.137	-.940*	1.643
	-.332	-.392	-1.671
Motive: low labour costs	.277	-.764*	1.920
	-.332	-.385	-1.649
Motive: other	.142	8.171***	.304
	-.537	-.680	-2.735
Entry strategy			
Type: greenfield (REF)			
Type: missing	-0,325	n/a	2,945
	-0,439		-1,663
Type: miscellaneous	0,521	n/a	n/a
	-0,570		
Type: acquisition	0,511	-0,241	0,486
	-0,366	-0,455	-1,949
Type: brownfield	0,199	0,167	0,114
	-0,269	-0,348	-0,638
Danish ownership	-0,051	-0,159	0,538
	-0,094	-0,136	-0,350
Obs.	447	429	179
adj R2/ pseudo R2	.171	.206	.048

Note: standard errors in parentheses are clustered by country, control variable is start year, reference categories presented in italics
* p ≤ .05, ** p ≤ .01, *** p ≤ .001