THE HOME COUNTRY EFFECT REVISITED: THE ROLE OF CONTEXT IN FOREIGN SUBSIDIARY PERFORMANCE

1.0 INTRODUCTION

International business (IB) research has long maintained that the home country plays a key role in the strategy, capabilities, and performance of the multinational enterprise (MNE). Country-of-origin effects touted by consumer psychology research (e.g., Balabanis & Diamantopoulos, 2004; Verlegh, 2007), internationalization patterns driven by cognitive imprinting and home country conditions (e.g., Dunning, 1993; Witt & Lewin, 2007), and performance differentials underpinned by industrial factors (e.g., Porter, 1990; Kogut, 1991, Ghemawat, 2003), as well as broad institutional heterogeneity (Peng et al., 2009), exemplify this rich body of work and the widely held consensus that the home country plays an important role in the international success of MNEs.

The extant literature demarcates a home-country effect along two dimensions, namely its comparative advantages and brand image (Cuervo-Cazurra, 2006; Cuervo-Cazurra & Genc, 2008; Cuervo-Cazurra et al., 2018). "Whereas the comparative advantages affect the firm's performance via the inputs the firm uses in the creation of its products and services, the country-of-origin advantage and liability affect performance through the image that is associated with the firm and its products in foreign markets" (Cuervo-Cazurra et al., 2018: 594). Although there is some empirical support for a home country effect across a multitude of studies, such evidence appears underwhelming. Looking at numerous attempts to decompose MNE performance, a rigorous approach to examining a broad home country effect among various factors (McGahan & Porter, 1997; 2002), the home country effect appears to be fairly low and substantially less salient relative to other key performance drivers (Tong et al., 2008; McGahan & Victer, 2010; Goldszmidt, Brito & de Vasconcelos, 2011).

In this paper, we argue that this seeming mismatch between the importance of the home country suggested by IB theory (e.g., Cuervo-Cazurra & Genc, 2008; Cuervo-Cazurra, 2011; Cuervo-Cazurra et al., 2018) and the empirical evidence for the overall effect is rooted in the way the home country effect has been theorized. On the one hand, the extent to which a home country effect brings forth advantages depends on the views and compatibility of the home country characteristics in a particular host country context (Cuervo-Cazurra et al., 2018). MNEs may further accumulate, internalize and deploy home country advantages within their industry context to bolster subsequent performance (McGahan & Victer, 2010). In the absence of a context where the mechanisms may surface, a home country effect may be inadequately captured as its salience is inherently intertwined with the contextual setting in which it manifests (Kostova & Zaheer, 1999).

We compile a large dataset of 37,385 foreign subsidiaries of 5,434 MNEs, located in 40 host countries (30 home countries) from 2008 to 2017. Whereas prior studies examine the role of home country at the corporate parent level (MNE) (Tong et al., 2008; McGahan & Victer, 2010), we focus on foreign subsidiaries to observe the ways in which home country mechanisms are more (less) prevalent in performance differentials across contextual settings (McGahan & Victer, 2010). We use a simultaneous analysis of variance (ANOVA) technique to test the relative importance of the direct home country effect and the interaction effects against a class of performance drivers (McGahan & Victer, 2010; Ma, Tong & Fitza, 2013). In line with our predictions, we find that the interaction of home country with both the subsidiary's host country and industry is a significant determinant of foreign subsidiary performance. Importantly, our results suggest that a home country direct effect is essentially nullified in the presence of the interaction effects.

Our study has one key implication for theory, namely we highlight that the mechanisms underpinning a home country effect have been under-contextualized. By addressing recent calls to examine the role of the MNE's home country in a subsidiary's local industry context, as well as the "interplay between home and host-country influences in the decomposition of variance" (McGahan & Victer, 2010: 162), we offer evidence that suggests an acontextual home country effect concept is problematic. Our study therefore provides a more accurate theory on the role of the home-country, hereby suggesting that its relative salience is context dependent (Teagarden, Von Glinow & Mellahi, 2018). We believe these findings may reinvigorate discussions on country-specific advantages and their effect on performance differentials (Rugman & Verbeke, 2001).

2.0 LITERATURE REVIEW: THE ROLE OF HOME COUNTRY

A home country effect is evident across numerous domains whereby it is positioned as an important driver in the development of MNE competitive advantages and performance differentials (Rugman & Verbeke, 2001; Chacar, Newburry & Vissa, 2010). The underpinnings of a home country effect can be broadly specified as either noncountry-specific or country-specific advantages (CSA). First, noncountry-specific advantages concern those that are similar across multiple country environments such as levels of economic development. Cuervo-Cazzura and Genc (2008: 957) argue that "compared with developed country MNEs, developing-country MNEs tend to be of smaller size… and to possess technology that is less cutting-edge… and resources that are less sophisticated". These disadvantages are further illuminated when MNEs expand internationally, where their inefficient market mechanisms developed in their home country may result in increased liabilities abroad (Zaheer, 1995).

Countries also exhibit different formal institutional systems, or rather, modes of capitalism (Fainshmidt et al., 2016), in which affect the development of competitive advantages (Judge,

Fainshmidt & Brown, 2014), as well as the various modes of wealth creation (Porter, 1990; Fainshmidt et al., 2016). Relatedly, the economic geography literature alludes to the benefits that are derived from the geographic location of the home country, particularly how location-bound advantages may be subsequently leveraged to improve MNE performance (Dunning, 1993; Beugelsdijk, 2007). While location-bound advantages may only be shared by MNEs in a particular country, they also may be regionally-bound (e.g., climate in Central America) which cannot be easily acquired by those from the outside (Rugman & Verbeke, 2001).

Second, there are CSAs which reflect the unique attributes of a country relative to peer nations. A home country may exhibit 'country imprints', a developmental process that has persisting if not lifelong consequences (Hannan, Burton & Baron, 1996) resulting from the cultural, normative and operational routines in the home country (Marquis & Tilcsik, 2013). These imprints subsequently shape the behavior of firms and their managers from specific contextual settings (DiMaggio & Powell, 1983; Kogut, 1991; McGahan & Victer, 2010). Each home country is also associated with a unique country-of-origin effect which influences consumer choice preferences and purchasing behaviors (Elliott & Cameron, 1994). While MNEs may develop their own reputation (Newburry, 2012), they cannot fully disassociate themselves with that of their country-of-origin. Lastly, home countries oftentimes provide MNEs with unique and sustainable resources that result in competitive advantages vis-à-vis external competition (Porter, 1990; Rugman & Verbeke, 2001). Although the disperse nature of foreign subsidiaries enables MNEs to acquire knowledge from various localities (Foss & Pedersen, 2002), there exists codified, tacit knowledge that may be location-bound. In such instances, this knowledge provides advantages to only those MNEs from a particular country (Shan & Hamilton, 1991; Rugman & Verbeke, 2001).

Indeed, CSAs and noncountry-specific advantages may have conceptual overlap. The nonspecific competitive advantages of a nation may be a function of its location, institutional setting, and level of economic development (Porter, 1990). However, to generate unique CSAs, a country may need to have the abovementioned nonspecific advantages in place (Rugman & Verbeke, 2001). For instance, to develop market mechanisms that foster innovation and the generation of tacit codified knowledge, there may need to be liberal modes of capitalism that establishes relatively low barriers to entry and, thus, more competition and knowledge flows (Cuervo-Cazurra & Genc, 2008).

Importantly however are the ways in which CSAs can translate into firm-specific advantages (FSA). Institutions may not only provide direct nonspecific (generic) advantages, "but also constitute a source of competitive advantage that firms with institutional competitive advantage are capable of creating idiosyncratic resources via interaction with their institutional environment" (Landau et al., 2016: 51). For instance, the home country may provide CSAs such as a unique access to human capital (Xu & Meyer, 2013) and, in turn, can be internalized by firms to develop FSAs (ownership advantages) (Rugman & Verbeke, 2001; Cuervo-Cazzura & Genc, 2008). A direct home country effect may therefore exist due to its CSAs and the subsequent generation of FSAs. Yet, these advantages may be contextually bounded such that even if they are noncountry-specific in the sense that you can move them out of the home country, their value may depend on where they are applied (Martin, 2014). In the following section, we unpack the role of home-country in developing CSAs and FSAs and put forth hypotheses addressing the home-country's relative importance in explaining foreign subsidiary performance differentials.

---Insert figure 1 here---

3.0 THEORETICAL DEVELOPMENT: A CONTEXTUALIZED HOME COUNTRY EFFECT

The preceding discussion comes with an implicit assumption that a home country effect operates in an acontextual manner (Tong et al., 2008; McGahan & Victer, 2010), although prior research maintains that by contextualizing the home country mechanisms, we may only then begin to identify the boundary conditions of the effect and resolve the conceptual problems with prior findings (Teagarden et al., 2018). Hence, we suggest that the salience of a home country effect is best (most accurately) reflected through the performance differentials of a foreign subsidiary in its host market.[1]

When a subsidiary's home country is a developing economy, a subsidiary will have access to fewer CSAs that can be leveraged in their local host country market (Porter, 1990). However, the advantages in which the home country may possess can be increasingly salient depending on the market where they surface (Kostova & Zaheer, 1999; Cuervo-Cazurra & Genc, 2008). For instance, the ability to manage around institutional inefficiencies (e.g., systematic corruption) of a host country may be relatively easier for a subsidiary with a home country that is also a developing economy as compared to a developed country counterpart (Zaheer, 1995; Cuervo-Cazurra & Genc, 2008). Alternatively, if the home country is an example of a liberal market environment while the host country is that of a controlled market, the transfer of market-based advantages may be more difficult due to the institutional dissimilarities (Kostova & Zaheer, 1999).

A subsidiary may also be 'stamped' with home country imprints, thus, displaying characteristics derived from its home country profile. However, the extent to which these imprints

[1] We acknowledge that the examples provided in the text are not exhaustive of all of the ways in which the home country may affect the performance of a foreign subsidiary. We follow prior works that provide a meaningful guideline of how to theorize around a few salient mechanisms in explaining an effect's relative salience (McGahan & Porter, 2002; McGahan & Victer, 2010).

are well received in the local context may depend on, for example, cultural distance and linguistic similarity (Kostova & Zaheer, 1999; Ghemawat, 2003). To similar ends, the extent to which a country-of-origin effect positively manifests will be dependent on the consumer attitudes towards the home country. Makino and Tsang (2011) argue that positive historical ties between the two nations can impact subsequent subsidiary performance, yet, ongoing tensions may hinder a subsidiary's legitimacy and reputation in the host market, thereby dampening subsequent performance (Newburry, 2012; Mallon & Fainshmidt, 2017). This potential synergistic relationship will ultimately depend on the directional nature of the home-host country pair, i.e., where the mechanisms originate and surface. By establishing directionality, a United States home country effect in Colombia becomes distinct from a Colombia home country effect in the United States. For the above reasons, we make the following hypotheses:

> **Hypothesis 1:** *A home country-host country interaction effect will explain a significant portion of the variance in foreign subsidiary performance.*

Operating in a similar manner, the inherent value of a developed home country economy may depend on, for example, its compatibility or lack thereof with the local industry context of the foreign subsidiary. For dynamic innovative industries, subsidiaries will oftentimes benefit more from a developed economy, which has skilled labor and unique intangible assets, as opposed to a home environment with relatively weaker institutions (Bartlett & Ghoshal, 2000). Relatedly, a liberal home market economy is also more likely to support dynamic industrial settings as the level of competition at home serves as a learning mechanism for MNEs and their subsidiaries in local host country environments (Peng, Wang & Jiang, 2008).

The potential for country imprinting effects are also salient whereby the home country environment shapes the behavior of subsidiary managers (Marquis & Tilcsik, 2013). If the behavioral imprints align with the subsidiary's industry context, the foreign subsidiary may exhibit

improved performance differentials, although misalignment may yield contrasting results. As may the country-of-origin effect be industry-specific where, for example, a German home country can signal the quality of a subsidiary in an automobile industry, whereas a similar subsidiary with an Ecuadorian corporate parent likely renders conflicting signals, perhaps of lower quality. Hence, taking a home country in combination with the industry may add important nuance to help "determine the international success and failure of firms" (Peng et al., 2008: 932). For the above reasons, we make the following hypotheses:

> **Hypothesis 2:** *A home country-industry interaction effect will explain a significant portion of the variance in foreign subsidiary performance.*

4.0 METHODOLOGY

4.1 DATA AND SAMPLE [2]

The empirical analysis is based on a global sample of foreign subsidiaries operating in a diverse set of host countries and industries. In total, we use data on 37,385 foreign subsidiaries of 5,434 MNEs, located in 40 different host countries and 30 different home countries. The subsidiaries operate in 169 different 4-digit NAICS industries. The data spans from 2008 to 2017 and is an unbalanced dataset of 307,085 subsidiary-year observations. Table 1 presents the descriptive statistics of the data in our final sample.

---Insert Table 1 About Here---

4.2 VARIABLES AND MEASURES

In line with prior variance decomposition studies (e.g., McGahan & Victer, 2010; Ma et al., 2013), we use return on assets (ROA) to measure foreign subsidiary performance. There are six additional variables used in our analysis: year effect (i.e., from 2008 to 2017), home country effect, host country effect, industry effect (4-digit NAICS code), parent effect, and subsidiary effect. We

[2] Additional information regarding the sample and data cleaning processes can be found in Appendix A.

further include interaction effects between home country-industry and home country-host country to test our hypotheses, as well as a host country-industry interaction for comparative purposes. A summary of our variables and effects is presented in table 2.

---Insert Table 2 About Here---

4.3 ANALYTICAL MODEL [3]

To account for both a previously established class of effects as well as our additional interaction effects we follow prior studies and use a simultaneous analysis of variance (ANOVA) technique. Compared to a nested ANOVA (e.g., Makino, Isobe & Chan, 2004; Chan, Makino & Isobe, 2010), a simultaneous ANOVA allows for the covariance between effects. When a nested ANOVA is used, the variables are included in a 'stepwise fashion' which assumes no covariance among effects (Ma et al., 2013). Furthermore, a simultaneous ANOVA is based on a fixed-effects model. Whereas a random-effects model assumes the individual effects are independent of each other, a fixed-effect models assumes the opposite such that if there is strong covariance between any two effects (e.g., industry and host country). Accordingly, a fixed-effects model is most appropriate for our analysis (McGahan & Porter, 1997; McGahan & Victer, 2010; Ma et al., 2013). We follow prior studies (McGahan & Victer, 2010; Ma et al., 2013) and estimate the following equation: [4]

$$(1) \quad ROA_{s,y} = pROA_{s,y-1} + (1-p)\mu + (1-p)\alpha_y + (1-p)\beta_h + (1-p)\gamma_k + (1-p)\theta_i + (1-p)\delta_p + (1-p)\varsigma_{h,k} + (1-p)\xi_{h,i} + (1-p)\nu_{k,i} + (1-p)\tau_s + \varepsilon_{o,y}$$

5.0 RESULTS

[3] Additional information regarding the analytical technique can be found in Appendix B.

[4] Because of the size of our dataset, we are unable to run our entire model at once. We follow Fitza (2014) and Fitza and Tihanyi (2017) and employ a random sampling procedure. We draw ten random samples of 5% of our sample, approximately 15,000 observations per subsample. Our random subsamples are based on clusters of MNEs, meaning that if one MNE is drawn, all of its associated subsidiaries are also used in the analysis. We then take the output of the ten samples and average them while accounting for the weighted subsample size.

Table 3 displays our main results. In column 1 we decompose the variance in parent firm performance for comparative purposes and use a class of effects consistently present in prior analyses. Our results suggest that a home country direct effect explains 4.76% of variance in firm performance. Column 2 is our baseline model where we decompose foreign subsidiary performance, excluding interaction effects. We find that a home country direct effect explains 4.50% of performance variance. To test our hypotheses, we then introduce column 3 which includes all of the interaction effects in the model. The contribution of variance from the interaction effects explain a significant portion of the variance in foreign subsidiary performance. In particular, a home country-host country interaction explains 8.57% and a home country-industry 6.52%, thereby confirming H1 and H2. In our complete model, we also observe that a home country direct effect explains only 0.77% and an industry direct effect explains 3.56% of performance variance. Therefore, the home country-host country and home country-industry interaction explain more variance than a direct home country and industry effect. We then address the possibility of serial correlation (McGahan & Victer, 2010; Ma et al., 2013) in column 4 and show the difference between the two models in column 5. The values in column 5 are comparable to prior studies accounting for persistence in the dependent variable (e.g., Fitza & Tihanyi, 2017). Table 4 displays the results of comparable studies (columns 6-9) as well as the results of our four-separate analyses (columns 10-13)

---Insert Table 3 and 4 About Here---

6.0 DISCUSSION AND CONCLUSION

We set out to advance a more contextualized theory on the role of the home country, particularly in the performance of foreign subsidiaries. We leveraged literature on country specific advantages to argue that an acontextual home country effect is problematic such that observing a home country

effect without context may hide important nuance. In particular, we implied that existing studies only partially observe a home country effect's relative salience across a group of performance drivers. By utilizing a variance decomposition analytical technique and data on over 35,000 foreign subsidiaries, we find that home country-host country and home country-industry interaction effects explain a significant portion of variance in foreign subsidiary performance. We also show that a direct home country effect is essentially nullified in the presence of the interaction effects. In other words, the relative salience of any given home country is context dependent – i.e., where the country specific advantages surface. In the proceeding section we discuss the theoretical implications of our findings.

6.1 IMPLICATIONS FOR THEORY

First, we demonstrate that a home country effect is best captured at the foreign subsidiary level of analysis rather than through the lens of the corporate parent. Whereas prior variance decomposition analyses examine home country effects at the aggregate MNE level, our study highlights that the mechanisms underpinning a home country effect are context dependent. In particular, the mechanisms necessitate a need for both a sender (home country) and receiver (host country) such by testing the salience of the home country acontextually, it will mask important nuance and construe its relative importance. Therefore, by shifting the focus to foreign subsidiaries, we more actually demonstrate the importance of home country in MNE's global competitive advantage.

Further, our results suggest that a home country-host country interaction explains a significant portion of variance in foreign subsidiary performance. This finding illuminates recent work in which suggests that the value of any particular home country depends on where such trait is being evaluated (Cuervo-Cazurra & Genc, 2008). In addition, we reveal that a home country-industry interaction is similarly a key determinant of variance in foreign subsidiary performance.

This suggests that CSAs may be leveraged (internalized) by a local foreign subsidiary in order to develop unique competitive advantages in their local industry context (Rugman & Verbeke, 2001). Interestingly, our results suggest that in the presence of the two interaction effects, a direct home country effect is essentially nullified. Accordingly, simply being from any given country may not be an advantage, rather it matters where your home country advantages surface and how they interact with the local operating context of a foreign subsidiary.

Lastly, we add to the variance decomposition literature by detailing our multistep analytical process which allows for meaningful and parsimonious comparability across prior studies. Specifically, we first replicate the methods of prior studies to highlight the underlying similarity of our techniques. We then introduced a decomposition analysis on parent MNE performance to demonstrate comparability in findings. Once we established the similarity in findings, we examined the interaction effects and found that a direct home country effect is nullified. By presenting our findings in a stepwise approach, we are able to demonstrate the shortcomings of prior studies and highlight the underlying importance of our findings vis-à-vis theoretical assumptions. Applying such a process may enhance the value of variance decomposition as a tool to address grand phenomena in a given field of study (McGahan & Porter, 2002).

6.2 CONCLUSION

This study advances theory by contextualizing a home country effect and demonstrating its salience as a source of foreign subsidiary performance variance. We develop hypotheses that suggest that a home country-host country and home country-industry interaction are two important drivers of performance variance. Specifically, we argue that the two interaction effects will explain a significant portion of subsidiary performance variance. We leverage a variance decomposition technique to test our hypotheses and we find support for our hypotheses. We hope that our study

moves forward the theoretical discussion on the role of home country in for foreign subsidiary performance and other relevant outcomes.

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Figure 1. Country-specific and Firm-specific Advantages

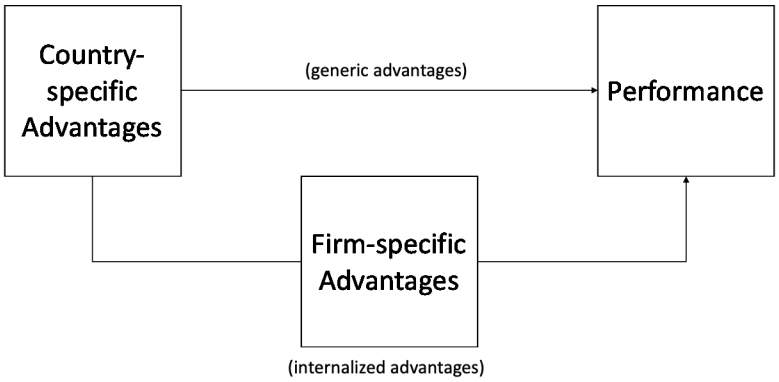

Table 1. Descriptive Statistics by Country

Country	No. of Observations	No. of Subsidiaries	No. of Parent Firms	No. of Industries	No. of Home Countries	Min. Subsidiary ROA	Max. Subsidiary ROA	Avg. Subsidiary ROA
Australia	6537	977	138	106	27	-98.61	86.61	-0.80
Austria	3816	472	48	104	26	-92.01	98.88	8.19
Belgium	17944	2072	61	150	29	-99.79	99.19	2.56
Brazil	-	-	31	-	-	-	-	-
Bulgaria	2138	237	-	83	25	-94.12	95.99	7.08
Canada	-	-	129	-	-	-	-	-
China	16414	2306	113	105	28	-99.92	98.95	5.52
Colombia	4100	491	-	99	25	-98.10	100.00	2.76
Croatia	1973	214	-	71	21	-95.51	98.83	4.24
Czechia	8492	977	-	135	28	-97.07	92.60	7.00
Denmark	6685	927	61	126	28	-99.01	99.70	5.46
Estonia	1863	204	-	75	20	-95.15	99.60	6.59
Finland	5295	624	91	113	24	-99.53	86.19	4.89
France	30874	3605	284	156	28	-98.99	97.64	1.89
Germany	13214	1696	281	146	29	-98.81	100.00	3.76
Greece	1795	207	34	64	20	-94.52	81.20	-0.78
Hong Kong	-	-	58	-	-	-	-	-
Hungary	5952	685	-	123	28	-99.05	99.28	3.75
Iceland	252	29	-	20	9	-98.11	79.91	4.18
India	4055	564	131	93	27	-97.14	96.72	-0.19
Ireland	3679	454	47	84	21	-97.71	93.39	5.82
Israel	-	-	55	-	-	-	-	-
Italy	19172	2238	130	155	28	-99.58	94.91	0.25
Japan	-	-	927	-	-	-	-	-
Latvia	1457	159	-	65	18	-98.40	77.40	6.89
Lithuania	833	102	-	48	16	-48.90	57.15	7.21
Malaysia	6574	791	48	121	25	-98.83	98.12	6.43
Morocco	1164	146	-	61	19	-97.78	94.51	1.51
Netherlands	5583	749	104	118	27	-99.62	91.33	5.38
Norway	7720	891	71	120	27	-99.80	93.42	3.58
Philippines	2370	287	-	83	21	-89.98	89.14	3.53
Poland	12432	1441	64	151	27	-99.29	99.96	5.78
Portugal	6088	677	-	119	26	-99.81	86.76	2.80
Romania	6130	685	-	122	25	-95.87	96.93	3.19
Russia	6505	754	-	115	27	-99.85	99.95	4.16
Serbia	1670	186	-	75	22	-90.79	96.20	3.98
Singapore	4369	632	139	95	25	-92.08	97.30	7.49
Slovakia	4017	451	-	113	28	-98.66	83.64	3.79
Slovenia	1397	154	-	64	18	-70.56	68.80	7.33
South Africa	-	-	38	-	-	-	-	-
South Korea	5567	710	71	94	26	-98.47	73.08	7.04
Spain	18087	2085	73	157	29	-99.69	99.38	2.51
Sweden	11250	1310	181	142	26	-99.72	98.54	4.20
Switzerland	-	-	127	-	-	-	-	-
Taiwan	-	-	255	-	-	-	-	-
Thailand	9231	1203	-	133	25	-99.52	98.73	5.12
Turkey	580	76	-	47	17	-53.24	44.52	4.30
United Kingdom	39811	4917	376	165	29	-99.75	100.00	4.60
United States	-	-	1268	-	-	-	-	-
TOTAL	307085	37385	5434	-	-	-	-	-
AVERAGE	7677	935	181	105	24	-94.58	91.11	4.33

Table 2. Description of Variables and Effects

Variable/Effect	Symbol	Description
Return on Assets (ROA) [A]	$ROA_{s,y}$	Profitability (ROA) of subsidiary 's' in year 'y'
Constant	μ	Grand mean of ROA across the entire sample
Year Effect	α_y	Differences in years 2008 to 2017
Home Country Effect	β_h	Portion of variance explained by home country differences
Host Country Effect	γ_k	Portion of variance explained by host country differences
Industry Effect	θ_i	Portion of variance explained by industries (4-digit NAICS)
Parent Effect	δ_p	Portion of variance explained by differences in parent firms
Home Country – Host Country Effect	$\varsigma_{h,k}$	Captures a home country effect in a given host country
Home Country – Industry Effect	$\xi_{h,i}$	Captures a home country effect in a given industry
Host Country – Industry Effect	$\nu_{k,i}$	Captures a host country effect in a given industry
Subsidiary Effect	τ_s	Portion of variance explained by differences in subsidiaries
Error [A]	$\varepsilon_{o,y}$	Portion of variance unexplained by all of the effects

Notes:
A = denotes the dependent variable

Table 3. ANOVA Variance Decomposition Results (ROA)

Source	This Study				
	Parent Firm ROA [A, E, F]	Subsidiary ROA [B, E, F]	Subsidiary ROA [C, E, F]	Subsidiary ROA [D, E, F]	Difference between (3) & (4)
	(1)	(2)	(3)	(4)	(5)
Year	0.79	0.32 [n.s.]	0.05 [n.s.]	0.04 [n.s.]	0.01
Home Country	4.76	4.50	0.68	0.77	0.09
Host Country	-	6.32	0.88	0.98	0.10
Industry	20.62	12.48	3.24	3.56	0.32
Parent Firm	16.17	2.73	6.80	7.50	0.70
Home Country – Host Country	-	-	7.70	8.57	0.87
Home Country – Industry	-	-	5.93	6.52	0.59
Host Country – Industry	-	-	8.67	9.47	0.81
Subsidiary	-	18.12	7.64	8.39	0.75
Error	40.37	48.55	46.07	41.52	4.56
p (Persistence)	-	-	-	0.18	-

Notes:
All results significant at $p < 0.05$ unless denoted "n.s." which suggests insignificant findings
All values are percentage (%) of ROA
A = results based on a sample of only parent firm ROA;
B = results based on subsidiary ROA without interaction effects;
C = results based on subsidiary ROA with interactions and without serial correlation correction;
D = results based on subsidiary ROA with interactions and serial correlation correction
E = results based on ROA as the dependent variable
F = due to large sample size, results are based on a weighted average of ten subsample analyses

Table 3. Comparison of Variance Decomposition Results

Source	Tong et al. (2008) [A, I]	McGahan & Victer (2010) [B, I]	Goldszmidt et al. (2011) [C, I]	Ma et al. (2013) [D, I]	This Study			
					Parent Firm ROA [E, I, J]	Subsidiary ROA [F, I, J]	Subsidiary ROA [G, I, J]	Subsidiary ROA [H, I, J]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	0.12	1.04	-	0.04 n.s.	0.79	0.32 n.s.	0.05 n.s.	0.04 n.s.
Home Country	8.63	3.05	3.20	0.90	4.76	4.50	0.68	0.77
Host Country	-	-	-	-	-	6.32	0.88	0.98
Industry	4.56	10.10	2.54	5.65	20.62	12.48	3.24	3.56
Parent Firm	48.68	17.68	32.66	5.28	16.17	2.73	6.80	7.50
Home Country – Host Country	-	-	-	-	-	-	7.70	8.57
Home Country – Industry	-	-	-	-	-	-	5.93	6.52
Host Country – Industry	-	-	-	-	-	-	8.67	9.47
Subsidiary	-	-	-	8.87	-	18.12	7.64	8.39
Error	22.66	37.26	58.72	57.07	40.37	48.55	46.07	41.52
p (Persistence)	-	0.26	-	0.22	-	-	-	0.18

Notes:
All results significant at $p < 0.05$ unless denoted "n.s." which suggests insignificant findings
All values are percentage (%) of the dependent variable explained by the complete model
A = results based on a sample of all firms;
B = results based on a sample of only MNEs;
C = results based on a sample of all firms;
D = results based on a sample of all firms;
E = results based on a sample of only parent firm ROA;
F = results based on subsidiary ROA without interaction effects;
G = results based on subsidiary ROA with interactions and without serial correlation correction;
H = results based on subsidiary ROA with interactions and serial correlation correction
I = results based on ROA as the dependent variable
J = due to large sample size, results are based on a weighted average of ten subsample analyses

Appendix A.

We follow prior studies (Bhaumik, Driffield & Pal, 2010; Chacar et al., 2010; Cui & Jiang, 2012) and use Orbis by Bureau van Dijk (BvD), a rich database that provides comprehensive financial and ownership data on parent MNEs and foreign subsidiaries. For the purpose of our study, we leverage four sections of Orbis: industry and activities, company financials, mergers and acquisitions, and corporate ownership information. To be specific, Orbis allows us to identify a global sample of foreign subsidiaries, their parent MNE, financial data, industry classification, possible acquisition history, and home and host country affiliation. Our initial download resulted in approximately 1.4 million recorded subsidiaries and 51,000 parent MNEs. We undertook a number of subsequent cleaning steps to further refine our data.

First, upon downloading all of the listed subsidiaries, we removed those entities whom are not foreign subsidiaries. If a subsidiary has the same listed country of domicile as the parent company, we removed it. This reduces our original sample to 190,735 foreign subsidiaries. Next, we removed all foreign subsidiaries who show less than 98% ownership by a single entity (Kalemli-Ozcan et al., 2015). In doing so, we restrict our sample to only those subsidiaries who are wholly owned by one parent MNE because otherwise, it is difficult to discern the exact home country of the parent MNE. Third, if a parent MNE had less than five listed subsidiaries then it was removed from our sample. Because variance decomposition is designed to examine both within and between-group variation, it is necessary to have sufficient representation in each group in order to ensure the validity of results (Fitza, 2014). We explore this point later.

Orbis provides a variable in which classifies all entities as either a bank, financial company, foundation, hedge fund, industrial company, insurance company, mutual fund, private equity firm, public entity, research institute, or venture capital firm. We follow prior studies and removed all

subsidiaries except for industrial companies (Ma et al., 2013). Next, because some MNEs create shell companies for taxation purposes, we remove all home and host countries that are known tax havens (e.g., Cayman Islands) (Erkan, Fainshmidt & Judge, 2016). Our sample is then reduced to 38,823 foreign subsidiaries.

We then removed any foreign subsidiary who has less than five years of our outcome variable (McGahan & Victer, 2010), return on assets (ROA), between 2007 and 2018 to allow for variation within each entity. Had we created a balanced panel (i.e., every subsidiary has 'x' number of years), the "exclusion would dampen aggregate variability in performance" (McGahan & Victer, 2010: 151) because we would not observe important cases where subsidiaries fall out of the sample which may be for a number of reasons such as subsidiary closure or merging with another entity. If ROA values were below the 1st percentile or above the 99th percentile, we removed them in order to prevent the possibility of skewed data (Fitza, 2014). Our final resulting sample consists of 37,385 foreign subsidiaries from 40 host countries with 5,434 parent MNEs from 30 different home countries. The subsidiaries operate in 169 different 4-digit NAICS industries. Our data spans from 2008 to 2017 resulting in unbalanced panel of 282,527 subsidiary-year observations.

Appendix B.

Testing our hypotheses requires a variance-based method as we must attribute levels of variance explained in our outcome to individual effects (e.g., parent MNE effect). We therefore employ variance techniques consistent with prior studies who use a simultaneous analysis of variance (ANOVA) method and estimate equation 1 as follows:

$$(1) \qquad ROA_{s,y} = \mu + \alpha_y + \beta_h + \gamma_k + \theta_i + \delta_p + \varsigma_{h,k} + \xi_{h,i} + \nu_{k,i} + \tau_s + \varepsilon_{o,y}$$

In this equation, Eq. (1), $ROA_{s,y}$ represents the ROA of subsidiary 's' in year 'y'. Subsidiary 's' is then identified in year 'y' as operating in host country 'k' and industry 'i' with a parent 'p' from home country 'h'. Further, we capture home country-host country 'h,k', home country-industry 'h,i' and host country-industry 'k,i' interaction effects. The variable μ (*hereafter*, the constant term) is equal to the grand mean of ROA for the complete sample of subsidiaries. The residual (error) term $\varepsilon_{s,y}$ is the excess return of subsidiary 's' in year 'y' that is unexplained by the preceding effects in the model (McGahan & Victer, 2010). However, because our data is longitudinal, McGahan and Victer (2010: 155) argue that the residual term "may be serially correlated over time because of persistent shocks at any level with influence over successive years." That is, if a shock occurs in year one ('y') it is likely to persist into year two ('y+1') thus making the residual terms in 'y' and 'y+1' correlated. Furthermore, this concern of serial correlation may similarly occur within other effects such as host country, industry and parent MNE effect. While predicting the residual from regressing ROA in year 'y-1' on ROA in year 'y' may correct for some of the error, prior research suggests this does not entirely capture the rate of persistence in a model. Accordingly, we follow Fitza et al. (2009), McGahan and Victer (2010) and Ma et al. (2013) and introduce equation 2:

$$(2) \qquad \varepsilon_{s,y} = p\varepsilon_{s,y-1} + \omega_{s,y}$$

In Eq. (2), p is the coefficient for the rate of persistence across the included variables, $\varepsilon_{s,y-1}$ is the previous residual term at year 'y-1', and $\omega_{s,y}$ is the 'new' residual term that is the normally distributed portion of the residual (McGahan & Victer, 2010). When a p coefficient value is large, this suggests that there is intertemporally persistent influence on foreign subsidiary performance. To then determine the portion of the effects that are not influenced by the rate of persistence p, we use algebraic substitution and introduce equation 3:

$$(3) \quad ROA_{s,y} = pROA_{s,y-1} + (1-p)\mu + (1-p)\alpha_y + (1-p)\beta_h + (1-p)\gamma_k + (1-p)\theta_i + (1-p)\delta_p + (1-p)\varsigma_{h,k} + (1-p)\xi_{h,i} + (1-p)\nu_{k,i} + (1-p)\tau_s + \varepsilon_{o,y}$$

In Eq. (3) the left-hand side is the ROA for subsidiary 's' in year 'y', similar to Eq. (1). We then include the first term on the right $pROA_{s,y-1}$ which is the rate of persistence p multiplied by ROA for subsidiary 's' in the previous year 'y-1'. We then algebraically restrict the rest of Eq. (3) to be a null model, turning all of the remaining effects to be zero. In doing so, this then assumes that the ROA for subsidiary 's' in year 'y' is explained only by persistence p and the grand mean ROA. After running Eq. (3), we then take the residual term $\varepsilon_{s,y}$ and use it as the dependent variable of our final model as shown in equation four:

$$(4) \quad \varepsilon_{s,y}^{*} = \mu + \alpha_y + \beta_h + \gamma_k + \theta_i + \delta_p + \varsigma_{h,k} + \xi_{h,i} + \nu_{k,i} + \tau_s + \varepsilon_{o,y}$$

We use an asterix to denote the difference in the two error terms, whereby the asterix represents the error from Eq. (3). Our final model Eq. (4) therefore reads that the unexplained portion of persistence in performance is explained by a constant term, year 'y', home country 'h', host country 'k', industry 'i', parent MNE 'p', subsidiary 's' and the interactions between home country-host country 'h,k', home country-industry 'h,i' and host country-industry 'k,I', as well as the (new) remaining error.