2017

Multinational Foreign Affiliates In The Least Developed Countries: A Multilevel Approach

R. Scott Hibbs
University of South Carolina

MULTINATIONAL FOREIGN AFFILIATES IN THE LEAST DEVELOPED COUNTRIES: A MULTILEVEL APPROACH

by

R. Scott Hibbs

Bachelor of Science
Maranatha Baptist University, 2001

Master of Arts
Maranatha Baptist University, 2010

Submitted in Partial Fulfillment of the Requirements

For the Degree of Master of Science in

Business Administration

Darla Moore School of Business

University of South Carolina

2017

Accepted by:

Andrew Spicer, Director of Thesis

Kathleen Whitcomb, Reader

Cheryl L. Addy, Vice Provost and Dean of the Graduate School

ABSTRACT

Several studies have examined the country-level effects on multinational enterprises that go into the developing countries, including the least developed countries. Few studies have considered the firm-level effects. This study uses the multilevel modeling method as outlined by Klein and Kozlowski (2000), Raudenbush and Bryk (2002), and Bliese and Hanges (2004) to examine whether there are any systemic patterns of multinational enterprises across the least developed countries. This paper uses information on foreign affiliates in the least developed countries to examine the overall trends of multinational firms in the least developed countries. Using data from the United Nations' most recent report on foreign affiliates in least developed countries (UNCTAD, 2011), I apply a multilevel approach to the size variations between foreign affiliates within the least developed countries. I find no significant systemic effects on the variations in firm size at either the country-level or industry-level. These results lead us to conjecture that the variations in size are idiosyncratic rather than systemic.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

This paper uses the multilevel modeling method (also referred to as hierarchical modeling and random coefficient modeling) to examine the link between the multinational enterprises and the least developed countries. In doing so, it adds to our understanding of the nature of multinational enterprises, brings the least developed countries into the broader discussion of developing countries, and bridges the firm level versus country level divide.

Why do multinational enterprises have affiliates in the least developed countries? The answer to that question may seem quite simple: low wages, raw materials, and distance to market. Interestingly, more recent research has examined why multinational enterprises would avoid the least developed countries, and most theories predict just that: least developed countries have few multinational affiliates because of high hazards, large home-host distance, fragile host states, and even managers' personal preferences. Yet, despite the predictions, several multinational enterprises not only do business in the least developed countries, but also have foreign affiliates within these countries.

The least developed countries are also some of the least researched countries when it comes to international business (Ault & Spicer, 2014). Some research has looked at certain phenomenon within the poorest countries. These phenomena include microfinance (Ault & Spicer, 2014), entrepreneurship (Ault & Spicer, 2016), base-of-the-pyramid innovations (Prahalad & Hart, 2002), and advantages of developing-country

multinational enterprises going into the least developed countries rather than into developed countries (Cuervo-Cazurra & Genc, 2008: 22-32).

In contrast, much of international business research has sought to understand the multinational enterprise from many angles: boundaries of the firm (Kogut & Zander, 1993), nature of the multinational enterprise compared to domestic enterprises, for example, border spanning (Kostova, Roth, & Dacin, 2008), and strategic decisions of multinational enterprises, including entry modes into developed and developing countries (Henisz & Delios, 2001).

Furthermore, while much of the research of the least developed countries in economics and sociology is in the areas of economic and political development, a handful of scholars have applied those theories to understanding businesses within the least developed countries. Even then, most theories suggest explanations of why we see so few businesses in the least developed countries (weak institutions, fragile states, political uncertainty, poor markets). A few theories attempt to explain why a multinational enterprise would conduct business in the least developed countries (low wages, access to raw materials, easier entry into market for developing-country multinationals). Much of the international business literature has examined firm level effects of multinational enterprises and country and supra-country level effects of institutions (in a wide variety of types and definitions) on economies and firms within economies.

CHAPTER 2

MULTILEVEL MODELING

This paper uses the multilevel or random-coefficient-modeling methods to examine the link between the multinational enterprises and the least developed countries. In doing so, it adds to our understanding of the nature of multinational enterprises, brings the least developed countries into broader discussion of developing countries, and bridges the firm level versus country level divide.

The hypotheses in this paper span multiple levels: affiliates in multinational firms, firms in industries and countries, and industries in countries. This is important because many calls for research explicitly urge the need for such complex analysis to further interdisciplinary research (e.g. Cheng, Birkinshaw, Lessard, & Thomas, 2014; Cheng, Henisz, Roth, & Swaminathan, 2009).

Several disciplinary fields touching international business have called for interdisciplinary and multidisciplinary research (Ault & Spicer, 2016; Cheng et al., 2014; Cheng et al., 2009; Dunning, 1989; Molloy & Ployhart, 2012). However, due to the complex nature of multidisciplinary research, many have tried while few have succeeded in answering that call (Ault & Spicer, 2016).

One of the most difficult challenges to multidisciplinary work is the need to include analysis at multiple levels (Hitt et al., 2007). This paper looks at multiple levels of analysis from affiliates within multinational firms to firms that operate within industries and span multiple countries. While at first this may seem like a simple task,

understanding why multinational enterprises have affiliates in the least developed countries is a much more nuanced and level-spanning question. Multilevel modeling is useful in multiple disciplines and fields.

As relates to the question here in this paper—why do multinationals do business in the least developed countries? —the general answers have been in a macro framework. For example, the strength of institutions in the host country or the ability of firms to avoid institutional voids allow for firms to conduct business in difficult places (Khanna, Palepu, & Sinha, 2005; Meyer, Estrin, Bhaumik, & Peng, 2009). Others point to the ability of emerging country multinationals having an advantage in doing business in the least developed countries over doing business in the developed countries (Cuervo-Cazurra & Genc, 2008). Still others point to social entrepreneurs or altruistic companies desiring to alleviate poverty, either for profit or for charity (Ault & Spicer, 2014; Bruton, Ketchen, & Ireland, 2013). All the above are reasons multinational enterprises might or might not do business in a least developed country. However, these explanations use macro level (national) influences to predict and explain micro level decisions (firm location).

CHAPTER 3

THEORETICAL APPLICATIONS AND HYPOTHESES

Since multilevel modeling can help us deal with complex, emergent phenomena, this paper will look at how micro-level theories of interactions between firms leads to a macro-level economic benefit at the country level. First, imitation and mimetic isomorphism are well developed theories that help us understand the actions of firms (DiMaggio & Powell, 1983; Haveman, 1993). Second, theories of knowledge flows within country borders and theories of industry clusters give us a clearer picture of how the imitation among firms may occur (Henisz & Delios, 2001; Kogut, 1991; Kogut & Zander, 1993, 1995). Finally, theories of poverty, especially, base-of-the-pyramid, question whether businesses can make a profit while serving the world's poorest regions (Kolk, Rivera-Santos, & Rufin, 2014; Prahalad & Hart, 2002).

The theories related to imitation and knowledge transfers give us a micro-level picture of firm actions and performance. In the following sections, I use these theories as a starting point to move between firm and country levels of analysis.

3.1 IMITATION

People tend to wait for someone else to make the first move. The same goes for businesses. DiMaggio and Powell (1983) first addressed the issue of isomorphism into the sociological theories of business activities. Isomorphism is a sociological idea (or phenomenon) that explains how individuals (people, organizations, teams, firms) within groups (any collective) tend to show similar characteristics. The idea is that most

members in any group will change over time to be more similar than different. DiMaggio and Powell (1983) applied this logic to organizational fields, claiming that businesses also show the same tendencies towards becoming more similar as individuals do within groups.

Levitt and March (1988, in Henisz & Delios, 2001) showed that firms imitate trail-blazing firms. Haveman (1993) demonstrated an inverted-U pattern of isomorphism among firms, showing that firms will follow leaders' entry moves into a certain location up to some point and then begin to taper off. Late-comers generally see the market as overcrowded, thus fewer entries into a location once the market seems saturated (Haveman, 1993). Haveman (1993) also found that smaller firms followed the strategies of larger firms, and all firms (small and large) followed the strategies of profitable firms.

Henisz and Delios (2001) expanded the DiMaggio and Powell (1983) organizational field isomorphism theory and the Levitt and March (1988) follow-the-leader theory to demonstrate how the entry mode choice of first-movers among Japanese manufacturers influenced other manufacturers to follow. Henisz and Delios (2001) found that imitation helped reduce uncertainty when choosing foreign plant locations; once one business made the first move into a certain location, other businesses followed.

Extending the empirical findings and theoretical ideas of imitation (DiMaggio & Powell, 1983; Haveman, 1993; Henisz & Delios, 2001), this paper pushes those theories into the least developed countries to explain why multinational enterprises do business in those countries.

Furthermore, the knowledge-based view of the firm originally brought up the argument that firms expanded into foreign locations for knowledge, both because the

firms had knowledge that was marketable in the new region and because firms could gain knowledge about the region (Kogut & Zander, 1993).

Given that imitation and isomorphism have a time component, the number of multinational affiliates within a country could be related to the founding date of the first multinational enterprise affiliation. Given that multinational firms expand to gain and sell knowledge (Kogut & Zander, 1993), and that firms then imitate each other (Henisz & Delios, 2001), we would expect that, once one firm entered a country, other firms would also enter the same country. Therefore,

Hypothesis 1. The longer any one multinational enterprise has an affiliate in the least developed country, the greater the total number of multinational affiliates will be in that country.

3.2 KNOWLEDGE FLOWS WITHIN COUNTRIES

Kogut and his co-authors (Kogut, 1991; Kogut & Zander, 1993) argued that knowledge was one of the main reason firms existed. Furthermore, as Kostova (1999) points out, multinational enterprises must, above all else, manage the knowledge flows within the business to somehow capitalize on the economies of scale associated with crossing national boundaries.

However, Kogut (1991) argued that knowledge flows more readily within a country's borders than across borders. Yet, multinational enterprises exist and are profitable. Again, the mere fact that multinational enterprises are profitable would encourage other multinational enterprises to follow (Haveman, 1993). The question then is not whether other multinational enterprises will follow profitable trail-blazers, but which multinational enterprises will follow the trail-blazers. According to the

permeability-of-borders argument (Kogut, 1991), we would expect to see more multinational enterprises from similar countries entering a particular market than multinational enterprises from other countries.

Because the permeability of knowledge flows for firms is greater within a home country's borders than across country borders (Kogut, 1991), imitation within home country borders would be faster than imitation across borders. This could happen for two reasons, perhaps even at the same time. First, multinational enterprises that are close in distance to each other would put more isomorphic pressure on each other, intentionally or not, to expand to similar regions (DiMaggio & Powell, 1983; Henisz & Delios, 2001). Second, multinational enterprises from the same home country would be better positioned to observe the first-movers from their home countries. At the very least, knowledge flows would happen through observation. Furthermore, knowledge flows could happen directly between firms in home countries (Kogut, 1991), whether by cross-contact between employees of competing firms within the same social circles or by deliberate contact amongst firms within coordinated market economies (Hall & Soskice, 2001; Jackson & Deeg, 2008; McDermott, Corredoira, & Kruse, 2009; Witt & Redding, 2009).

As a simple extension of the various arguments above, once one multinational enterprise entered one of the least developed countries, other multinational enterprises of the same national origin as the first should enter the same least developed country. At any given point in time, the number of multinational firms from one home country doing business in a least developed country should be somewhat correlated with the date of the earliest mover. Furthermore, the multinational enterprises from the same home country

should show similar entry modes (greenfield, joint venture, acquisition) to each other. In other words:

Hypothesis 2. The longer any one multinational enterprise from a particular home country has an affiliate in a least developed country, the greater the total number of multinational affiliates from that particular home country will be in that particular least developed country.

3.3 KNOWLEDGE FLOWS WITHIN INDUSTRIES

Along with the debates of knowledge flows between firms within countries, there is much debate over how knowledge flows within industries (Henisz & Delios, 2001; McDermott et al., 2009). Several industrial cluster studies have examined how clusters form (McDermott et al., 2009) and how industries become isomorphic (DiMaggio & Powell, 1983). This paper applies the general idea that knowledge does flow, however it does, between firms within industries. Furthermore, we would expect knowledge flows to be even greater amongst firms within industries within the same country (Henisz & Delios, 2001; Kogut, 1991). Even at the most basic level of knowledge flow—observation—we would expect a higher level of imitation amongst firms within the same industry and the same country.

Within countries, firms in industry clusters imitate one another (Henisz & Delios, 2001). Extending this imitation logic directly to multinational enterprises in the least developed countries, we would expect more foreign affiliates from similar industries and similar home countries in any particular country. When we look at the least developed countries, the compound theories of knowledge flows, imitation, and isomorphism

predict that there would be more multinational firms in the least developed countries due to early-movers from similar countries within similar industries. Therefore,

Hypothesis 3. The longer any one multinational enterprise from a particular industry in a particular home country has an affiliate in a least developed country, the greater the total number of multinational affiliates in that industry from that particular home country will be in that particular least developed country.

3.4 SERVING THE POOR PROFITABLY

Can multinational businesses make a profit while also serving the poorest areas of the world? This question is at the heart of a debate among researchers and practitioners, both social and business (Kolk et al, 2014). Kolk et al. (2014) summarized a decade of research on the topic of base-of-the-pyramid or bottom-of-the-pyramid. The original argument posed by Prahalad and co-authors was that 4 billion people lived on less than $1,000 annually. In a Harvard Business Review article, Prahalad and Hart (2002) illustrated three economic levels—high-income, middle income, and low income—using a pyramid. They referred to the poorest 4 billion people as the base of the world's economic pyramid (Prahalad & Hart, 2002).

Despite the original suggest that large multinationals could have a tremendous impact on global poverty while still making a profit, the base-of-the-pyramid literature took many divergent paths (Kolk et al, 2014). On one side of the debate is Prahalad's original suggestion in the business research literature that large multinational businesses could (and, perhaps, should) consider serving the poorest of the world, the "base of the pyramid," and that they could do so profitably (Kolk et al, 2014; Prahalad & Hart, 2002; Prahalad & Lieberthal, 1998).

On the opposite side of the debate is Karnani's view that the most basic needs of the poor can only be met through proper governmental reforms and programs (Karnani, 2008; Kolk et al, 2014). Karnani's main arguments revolved around alleviating the deplorable conditions under which the poor lived, including access to clean water and the abysmal lack of any kind of sanitary method for dealing with raw sewage in the streets (Karnani, 2008). Others in the social literature have pointed to violent entrepreneurism and the lack of governments to maintain law and order (Ault & Spicer, 2016). The issues of poverty alleviation are enormous. However, we must leave that debate aside for now.

In between the seemingly extreme and irreconcilable views of Prahalad and Karnani, research quickly moved on to smaller and medium sized firms, local entrepreneurial ventures, and microlending (Kolk et al, 2014). All but forgotten was Prahalad's original question: can multinational enterprises profitably serve the world's poor?

In this paper, we return to the original question of multinationals serving the poorest areas of the world while still being profitable. In doing so, I add two dimensions to this debate. First, using data from the United Nations (UNCTAD, 2011), I examine multinational affiliates within the least developed countries. These multinationals can be large, small, or medium. The UN defines a multinational affiliate as doing business within a least developed country and being at least fifty percent owned by an entity outside of the host country. These affiliate owners come from the most advanced countries, developing countries, and even other least developed countries. Using the employment numbers reported by the UN, we find that the affiliates themselves can range in size from one employee to thousands of employees, thus we have a full range of large,

small, and medium sized firms (UNCTAD, 2011). Second, I use a multilevel, hierarchical, random coefficient modeling to examine whether systematic conditions at the firm, industry, and country levels explain the variation in the employment numbers of these multinational affiliates.

CHAPTER 4

SAMPLE AND METHOD

Several researchers have pointed out that it is mathematically impossible to understand the underlying individual correlations by only looking at aggregated data. There are just too many combinations of individual data that can add up to an aggregate total. Only by examining individual data, along with aggregate data, can researchers begin to make inferences about individual behaviors (Robinson, 1950; Thorndike, 1939; Bliese & Hanges, 2004; Diez-Roux, 1998).

This study uses a random coefficient model (also known as multi-level modeling modeling) to study as prescribed by Bliese & Ployhart, 2002, and Singer & Willet, 2003.

4.1 SAMPLE

My sample is 717 foreign affiliates in the least developed countries as of 2010 from the 2011 United Nations Conference on Trade and Development (UNCTAD) report on foreign investment in the least developed countries (UNCTAD, 2011). The United Nations (UN) defines Least Developed Countries as those countries which have "low income," "human assets weakness," and "economic vulnerability" (UNCTAD, 2010: *iii*). A foreign affiliate is any operation that is at least fifty-percent owned by a resident in another country than the host country. The resident could be an individual, family, or organization. Of the forty-nine least developed countries in 2010, forty-one had at least one foreign affiliate. The foreign affiliates represent 190 industries and fifty-eight home countries. Foreign affiliates in the least developed countries have parent companies

around the world, including four of the least developed countries. This sample is of foreign affiliates, including joint ventures, acquisitions, and green-field investments (UNCTAD, 2011).

The UN data includes several key pieces of information at the affiliate level within the least developed countries: affiliate name, home and host countries, industry, revenues, number of employees, and year of first entry into the host country (UNCTAD, 2010). I then add country level variables from various sources: economic (World Bank, 2016a) and institutional (Ault & Spicer, 2014, 2016; World Bank, 2016b). Table 4.1 shows the country-level variables by country for the least developed countries in this sample. Number of firms per country (717 total firms) is as reported by the United Nations (UNCTAD, 2011). GNI Per Capita is the Gross National Income per capita for 2010 using the Atlas method, as reported by the World Bank (2017a). State Fragility Index is an average of World Governance Indicators (Ault & Spicer, 2014, 2016; World Bank, 2016b). Means of GNI per capita and State Fragility Scores as well as spread also shown. Countries listed are Least Developed Countries with foreign affiliates as defined in the United Nations report (UNCTAD, 2011).

While the UN report tried to collect revenue and employment information on each multinational affiliate, the report gives sales revenue of only 142 of the affiliates. Out of the 717 affiliates, 431 had employee numbers, and 416 had the year established. To maximize the effect of the analysis, I used the employment numbers and year established to assess firm-level effects. Then, using missing data methods prescribed by Cohen & Cohen (1983), I include the full sample of 717 affiliates to examine country-level effects. Table 4.2 shows summary statistics of the sample.

In addition to employment information, the UN also reported the specific, four-digit industry codes for each foreign affiliate (UNCTAD, 2011). I broke down these industry codes by industry, industry group, industry major group, and industry division. Table 4.3 shows a breakdown of the number of firms and number of employees per industry major group and industry division. Table 4.3 also shows percentages of the total number of firms and employees by division with additional breakdown by major group classification.

4.2 METHODS

Multilevel modeling (or mixed-effects modeling) allows researchers to study nested data—data that contains biased errors due to non-independence. Most individuals (or groups) live within a particular context; that context may influence the actual data—for example, school children grouped within a classroom, employees within a department, or businesses within industries. Each of the larger group contexts (classrooms, departments, industries) may influence the individuals (school children, employees, businesses). Grouped data or group characteristics are Level-2 predictors. Multilevel modeling methods enable analysts to calculate which group characteristics are influencing the individual (Level-1) data. These methods estimate what amount of standard error variance in a regression analysis is attributable to the group as distinguished from the individual (Raudenbush & Bryk, 2002; Bliese & Hanges, 2004; Bliese & Ployhart, 2002).

4.3.1 Analysis

This study will follow the multilevel modeling procedures (Bliese, 2014). Bliese and Ployhart (2002) document a specific step-by-step sequence; the authors lay out a

succinct outline (2002, 380). Other publications also list slightly altered sequences (Singer & Willett, 2003; Bliese, McGurk, Thomas, Balkin, & Wesensten, 2007; Bliese, Wesensten, & Balkin, 2006; Lang & Bliese, 2009; Rupp, Wesensten, Bliese, & Balkin, 2009; Kim & Ployhart, 2014).

I conducted the analysis on the data using the open-sourced R statistical program (R Foundation for Statistical Computing), the *nlme* library developed by Pinheiro and Bates (Pinheiro & Bates, 2000), and the *multilevel* package as described in Bliese (2013). Some graphical modeling was created using the *lattice* library.

4.3.2 Standard Regression

Starting with very simple models, this study adds complexity one step at a time and compares the statistical outcomes, looking for a best model fit. When the significance is clear, the analysis continues with the next step. When outcomes suggest two possible directions to proceed, this paper gives reasoning for continuing in each direction and logic for why one model should be selected over another model. The goal is to find an empirical regression model that explains the most variance in standard error while still allowing for the predictability of the model (Singer & Willett, 2003; Bliese, et al., 2007; Bliese, et al., 2006; Lang & Bliese, 2009; Rupp, et al., 2009).

The general outline followed here includes two phases. The first is the Level-1 phase. In this phase, we check whether multinational affiliate employment numbers differ significantly from each other, building in various tests for errors. The second phase incorporates country characteristics that are specific to the country regardless of the firm's presence. This is the Level-2 phase (Bliese & Ployhart, 2002).

Prior to beginning the multilevel model using random coefficients, we should look at a standard regression. First we must make sure that the data is in a format that allows for analysis, or univariate form (Singer & Willet, 2003). Then we look at a basic regression. Once those results are confirmed, we can move on to the mixed effects modeling.

4.3.3 Mixed Effects Modeling

A mixed effects model, using both fixed and randomized effects, may help to create a better model. The final model should take into account several factors, such as differences between countries and industries, non-idependence of data, and autocorrelation of data (Bliese & Ployhart, 2002; Singer & Willett, 2003).

Step 1: The first step is to find the Inter-class Correlation for the individuals, what the literature refers to as the ICC (1). The ICC is an estimate of how much of the total variance we can attribute to the variance within the countries individually (Bliese, 2002). We create a null model using only number of employees and allowing for a random intercept for each country; then we look at the variance correlation of the null model. By dividing the variance of the intercept by the total variance (intercept variance + residual variance), we can estimate what percent of the total variance is attributable to variance within the individuals.

Step 2: Once we know that some percentage of the total variance is explained by the variance within countries, we can go ahead with a fixed effects model that regresses employment on other variables, allowing for random intercepts by country.

Step 3: We can test to see if allowing the slopes to vary by country will also help us get a better fit. We want to use as simple of a model as possible. So, we use the best

significant model in step 2 and add another variable as a random effect. Once we run the models, we compare -2 log-likelihoods to see if there is a significant difference from a model with a fixed effect variable and a random intercept to a model with that variable as both a fixed effect and a random effect.

Step 4: Accounting for Error: The fourth step, and final Level-1 step, is where we check for other possible errors, such as autocorrelation and heteroscedacity (Bliese & Ployhart, 2002). First, a quick check for heteroscedacity reveals that there is sufficient variance across the variable in question (see Figure 4). After that, we move on to autocorrelation.

Phase 2: Level-2 Effects: According to Bliese and Ployhart, the most difficult part is now done (Bliese & Ployhart, 2003). We now look to add the Level-2, country characteristics. First, we add any variables as fixed effects and check the ANOVA. We then check for any interaction between the variables.

Table 4.1 Country Level Variables: Least Developed Countries.

Country	Foreign Affiliates	GNI Per Capita	State Fragility Index
Afghanistan	16	500	-1.75863
Angola	28	3,240	-1.00941
Bangladesh	16	780	-0.84504
Benin	15	310	-0.30483
Burkina Faso	22	2,690	-0.28281
Burundi	5	780	-1.17341
Cambodia	27	780	-0.86264
Central African Republic	4	780	-1.30123
Chad	8	910	-1.36653
Congo, Democratic Republic of	24	310	-1.66988
Djibouti	3	380	-0.60504
Equatorial Guinea	14	310	-1.24419
Eritrea	4	380	-1.40115
Ethiopia	19	380	-0.94244
Gambia	9	590	-0.51915
Guinea	29	400	-1.25527
Guinea-Bissau	4	350	-1.02275
Haiti	11	400	-1.16096
Lao People's Democratic Republic	11	400	-0.98484
Lesotho	7	1,330	-0.11656
Liberia	15	250	-0.76341

Table 4.1 Country Level Variables: Least Developed Countries (continued).

Country	Firms	GNI Per Capita	State Fragility Index
Madagascar	29	420	-0.75116
Malawi	26	430	-0.29093
Mali	16	690	-0.41417
Mauritania	9	1,130	-0.89216
Mozambique	59	460	-0.27204
Myanmar	30	780	-1.74353
Nepal	23	540	-0.88964
Niger	10	350	-0.70135
Rwanda	6	560	-0.26264
Senegal	41	1,050	-0.44477
Sierra Leone	9	910	-0.68144
Solomon Islands	23	780	-0.46726
Somalia	1	N/A	-2.32977
Sudan	13	1,250	-1.60564
Togo	16	450	-0.88976
Uganda	30	2,690	-0.57967
United Republic of Tanzania	20	2,690	-0.36147
Vanuatu	24	540	0.24257
Yemen	17	1,180	-1.26775
Zambia	24	1,320	-0.36100

Table 4.2 Summary Statistics.

Variables	Obs.	Mean	Median	Min	Max	Std. Dev.
Employees	431	939	100	1	86,900	5,747
Year of Establishment	416	1985	1993	1865	2010	21
2010 GNI per Capita, Atlas Method	716	948	575	250	3,240	820
State Fragility Index	717	-0.7710612	-0.7511598	-2.3297680	0.2425688	0.4973517

Table 4.3 Industry Divisions and Major Groups.

	Firms	Percent	Employees	Percent
Construction				
Building Construction General Contractors and Operative Builders	11	1.53%	3,213	0.79%
Construction Special Trade Contractors	4	0.56%	169	0.04%
Heavy Construction Other Than Building Construction Contractors	8	1.12%	2,730	0.67%
Construction Total	**23**	**3.21%**	**6,112**	**1.51%**
Finance, Insurance, and Real Estate				
Depository Institutions	26	3.63%	94,117	23.26%
Holding and Other Investment Offices	5	0.70%	2,184	0.54%
Insurance Agents, Brokers, and Service	1	0.14%	125	0.03%
Insurance Carriers	9	1.26%	139	0.03%
Non-depository Credit Institutions	2	0.28%	4	0.00%
Real Estate	4	0.56%	207	0.05%
Security and Commodity Brokers, Dealers, Exchanges, and Services	2	0.28%	38	0.01%
Finance, Insurance, and Real Estate Total	**49**	**6.83%**	**96,814**	**23.93%**

Table 4.3 Industry Divisions and Major Groups (continued).

	Firms	Percent	Employees	Percent
Manufacturing				
Apparel and Other Finished Products Made from Fabrics	6	0.84%	10,210	2.52%
Chemicals and Allied Products	23	3.21%	6,759	1.67%
Electronic and Other Electrical Equipment and Components, Except Computer	1	0.14%	220	0.05%
Fabricated Metal Products, Except Machinery and Transportation Equipment	4	0.56%	319	0.08%
Food and Kindred Products	28	3.91%	60,175	14.87%
Industrial and Commercial Machinery and Computer Equipment	4	0.56%	6,501	1.61%
Leather and Leather Products	1	0.14%	200	0.05%
Lumber and Wood Products, Except Furniture	3	0.42%	1,700	0.42%
Measuring, Analyzing, and Controlling Instruments;	1	0.14%	1,850	0.46%
Miscellaneous Manufacturing Industries	1	0.14%	.	.
Paper and Allied Products	1	0.14%	171	0.04%
Petroleum Refining and Related Industries	4	0.56%	503	0.12%
Primary Metal Industries	5	0.70%	214	0.05%
Printing, Publishing, and Allied Industries	4	0.56%	360	0.09%
Rubber and Miscellaneous Plastics Products	5	0.70%	1,170	0.29%
Stone, Clay, Glass, and Concrete Products	8	1.12%	4,790	1.18%
Textile Mill Products	6	0.84%	6,725	1.66%
Tobacco Products	7	0.98%	7,504	1.85%
Transportation Equipment	3	0.42%	1,715	0.42%
Manufacturing Total	**115**	**16.04%**	**111,086**	**27.46%**

Table 4.3 Industry Divisions and Major Groups (continued).

	Firms	Percent	Employees	Percent
Mining				
Coal Mining	2	0.28%	.	.
Metal Mining	15	2.09%	9,655	2.39%
Mining and Quarrying of Nonmetallic Minerals, Except Fuels	3	0.42%	640	0.16%
Oil and Gas Extraction	28	3.91%	10,690	2.64%
Mining Total	**48**	**6.69%**	**20,985**	**5.19%**
Public Administration				
Administration of Environmental Quality and Housing Programs	1	0.14%	60	0.01%
Administration of Human Resource Programs	1	0.14%	.	.
Public Administration Total	**2**	**0.28%**	**60**	**0.01%**
Retail Trade				
Automotive Dealers and Gasoline Service Stations	5	0.70%	295	0.07%
Building Materials, Hardware, Garden Supply, and Mobile Home Dealers	1	0.14%	86	0.02%
Eating and Drinking Places	2	0.28%	215	0.05%
Food Stores	2	0.28%	1,800	0.44%
Home Furniture, Furnishings, and Equipment Stores	1	0.14%	20	0.00%
Miscellaneous Retail	6	0.84%	68	0.02%
Retail Trade Total	**17**	**2.37%**	**2,484**	**0.61%**

Table 4.3 Industry Divisions and Major Groups (continued).

	Firms	Percent	Employees	Percent
Services				
Automotive Repair, Services, and Parking	3	0.42%	80	0.02%
Business Services	41	5.72%	12,596	3.11%
Educational Services	2	0.28%	.	.
Engineering, Accounting, Research, Management, and Related Services	29	4.04%	15,852	3.92%
Health Services	2	0.28%	.	.
Hotels, Rooming Houses, Camps, and Other Lodging Places	10	1.39%	1,129	0.28%
Legal Services	3	0.42%	160	0.04%
Membership Organizations	1	0.14%	.	.
Miscellaneous Repair Services	1	0.14%	580	0.14%
Miscellaneous Services	36	5.02%	493	0.12%
Motion Pictures	1	0.14%	50	0.01%
Social Services	1	0.14%	21	0.01%
Services Total	**130**	**18.13%**	**30,961**	**7.65%**

Table 4.3 Industry Divisions and Major Groups (continued).

	Firms	Percent	Employees	Percent
Transportation, Communications, Electric, Gas, and Sanitary Services				
Communications	26	3.63%	84,760	20.95%
Electric, Gas, and Sanitary Services	7	0.98%	1,375	0.34%
Local and Suburban Transit and Interurban Highway Passenger Transport	1	0.14%	30	0.01%
Motor Freight Transportation and Warehousing	1	0.14%	200	0.05%
Railroad Transportation	1	0.14%	878	0.22%
Transportation by Air	3	0.42%	.	.
Transportation Services	36	5.02%	9,147	2.26%
Water Transportation	17	2.37%	588	0.15%
Transportation, Communications, Electric, Gas, and Sanitary Serv Total	**92**	**12.83%**	**96,978**	**23.97%**
Wholesale Trade				
Wholesale Trade-durable Goods	81	11.30%	28,672	7.09%
Wholesale Trade-non-durable Goods	57	7.95%	4,214	1.04%
Wholesale Trade Total	**138**	**19.25%**	**32,886**	**8.13%**
Unknown	**103**	**14.37%**	**6,191**	**1.53%**
Grand Total	**717**	**100.00%**	**404,557**	**100.00%**

CHAPTER 5

RESULTS

To conduct this multilevel analysis, I first used an ANOVA to verify the level of variation that existed among and between the countries. Interestingly, when I examined the firm size (based on employment) variations, there was no variation attributable to the host countries at large. A multilevel analysis splits the total variation into multiple levels, both between groups and within groups. The between-group variation shows how much variation in employment is attributable to the country-level conditions. The within-group variation shows much variation in employment is attributable to the firm-level conditions. However, if no little to no variation exists between groups, then there is no reason to look for conditions of non-variation. I group the affiliate firms by host country and, separately, by home country. There was no significant variation of employment due to the either host or home countries.

Finally, some industries might have higher employment than others. I grouped the foreign affiliates by industry at four different levels: industry, industry group, industry major group, and industry division, as defined by the UN Report (UNCTAD, 2011). Table 4.3 shows the breakdown of employment numbers by the industry major groups and the industry divisions. I then created null models to see how much variation in employment could be attributable to the industries. None of the industry groupings showed significant between-group variation.

Table 5.1 shows the variance results of the above null models, both between-group and within-group variances for each model. I also show the two intraclass-correlation coefficients (ICC) for each grouping model. ICC (1) is the percentage of total variance attributable to the between-group variance; ICC (2) is a measure of the group means (Bliese, 2000; Bryk & Raudenbush, 1982). For each null model above, the between-group variance is extremely small compared to the within-group variance especially in the null models for host country, home country, industry, and industry group. The between-group variances for industry major group and industry division are much larger than the other four models. Yet, the largest ICC (1) estimate is just over half of a percentage. I reported the ICCs as decimals to the ninth decimal place to show just how small these estimates are. An ICC (1) should be above 0.2, and an ICC (2) should be above 0.5 (Bliese, 2014).

Because there is no significant variation between the least developed countries, the multinational enterprises' home countries, or industries, there is no reason to move on to the more complex multilevel modeling. Multilevel modeling allows us to look at the possible causes of variation of a lower-level variable which are attributable to higher-level groupings. If the groupings have no significant bearing on the lower level variable under examination, then an ordinary least squares or general least squares regression is best (Bliese & Ployhart, 2002).

Since the multilevel groupings showed no indication of having any influence on the variation in the number of employees of affiliates of multinational enterprises, I ran an ordinary least squares regression of employment on year established, host country indicators, home country indicators, and industry indicators. The results were non-

significant. A few models had intercepts that were significantly different than zero. Table 5.2 shows the results of seven different models. Models 5-7 include host country indicator variables. The other four models included no other indicator variables. I also ran other models with indicator variables for home countries and for the various industry groupings. None were significant.

These results point one possible conclusion: businesses are so idiosyncratic that some multinationals can have profitable affiliates in even poorest countries of the world. I discuss this and other possibilities in the next chapter.

Table 5.1 Null Model Between and Within-Group Variances and ICC Estimates.

Group	Between-Group Variance	Within-Group Variance	ICC (1) Estimate	ICC (2) Estimate
Host Country	0.27	33,030,040	0.000000008	0.000000087
Home Country	0.30	33,030,040	0.000000009	0.000000073
Industry	4.73	34,501,890	0.000000137	0.000000384
Industry Group	4.50	34,501,890	0.000000130	0.000000489
Industry Major Group	185,424.00	34,325,886	0.005372847	0.035212560
Industry Division	112,827.90	34,410,149	0.003268197	0.121601300

Table 5.2 Multivariate Analysis: Employment

					Host Country Indicators		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Year of Establishment	-5.1960	-6.1619			-10.4354		
	(-0.428)	(-0.517)			(-0.872)		
GNI per Capita, 2010 (Atlas Method)	-0.1983		-0.1733			0.2685	
	(-0.766)		(-0.813)			(0.469)	
State Fragility	140.0160			138.2704			157.5579
	(0.253)			(0.306)			(0.468)
Constant	11,634.5271	13,237.6986	1,117.7888**	1,046.4220*	20,945.4897	432.7266	844.0863**
	(0.492)	(0.559)	(2.350)	(1.897)	(0.874)	(0.742)	(2.027)
Observations	377	377	430	431	377	430	431
Adjusted R-squared	-0.007	-0.002	-0.002	-0.002	-0.088	-0.075	-0.077

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

CHAPTER 6

DISCUSSION

This paper takes a multilevel approach to examine possible reasons why multinational enterprises have affiliates in the least developed countries. Several literature streams in international business have looked at the macro influences on firms' choices to enter or avoid the least developed countries.

This paper is the next step towards understanding business in the context of the least developed countries. Further research may include understanding spill-over effects of foreign multinationals presence in the least developed countries. Does the presence of foreign multinational enterprises have a positive influence on the surrounding economic development where they do business? Do the firms use local employees? Does the employment of local employees help spur local economic growth? Do local entrepreneurial ventures rise because of multinational enterprises being present? Do knowledge transfers and spillovers from foreign multinationals foster new developing-country multinational enterprises?

One especially important aspect of international business in the least developed countries that needs further study is whether multinational enterprises have any local effects on local economies and any national effect on national economies. This is the logical next step.

It is possible that these foreign enterprises are locating only in business-friendly locations, such as port cities, as Karnani suggested. However, the UN data available for

this analysis is missing location information. A more advanced dataset could include specific affiliate location within a country. Then, further analysis could connect that information to within-country population data to test that assumption.

Additional work still needs to link affiliates within the dataset to parent companies, thus identifying multinational enterprise experience across several countries. In some instances, this connection is simply to achieve since affiliates share parent company names, such as Maersk Oil Angola and Toyota Uganda Ltd. Finding the parents of other affiliates is a bit more challenging. Yet, this information would help us understand more idiosyncratic nature of multinational firms' experiences conducting business across borders, even into the least developed countries.

For example, CFAO Motors is a division of the CFAO Group, a French multinational enterprise. CFAO Motors claims to be the largest sales and service network in Africa with "about 6,100 employees, 133 sales and service locations in 33 African countries, 3 French overseas territories (French Guiana, New Caledonia and Reunion), Vietnam and Cambodia" (CFAO, 2017). According to the UN's 2010 report, CFAO Motors was in seven of the least developed countries, while the CFAO Group was in eleven of the least developed countries (UNCTAD, 2011).

CFAO Motors sells a variety of vehicle brands: Chevrolet, Toyota, Suzuki, Mitsubishi, and Yamaha, to name a few. Their website shows pictures of pristine, state-of-the-art show rooms, showcasing brand new vehicles, even in the poorest countries. According to the World Bank's World Development Indicators, Burkina Faso's gross national income per capita (GNI, Atlas method) was $589.70 in 2010 (World Bank, 2016a). How could people within such a poor country afford a new Toyota vehicle?

Perhaps, Karnani (2008) was right: the multinationals are locating in large urban areas and are catering to the wealthiest residents.

Yet, a closer look at the Burkina Faso webpage on CFAO's website shows another clue to the story:

CFAO Motors Burkina was set up in 1973 and is the exclusive Burkinabe distributor for four internationally renowned brands: Toyota, Peugeot, Suzuki and Yamaha. It sells a broad range of new passenger and commercial vehicles as well as motorcycles and electricity generators manufactured by Yamaha. CFAO Motors Burkina also operates a car rental service in partnership with Avis (CFAO, 2017, italics added).

Yes, CFAO Motors may indeed sell vehicles to the wealthiest residents. However, it also sells motorcycles and generators. New vehicle dealers in the United States sell new and used vehicles, but not motorcycles and certainly not generators. Another item of note is that even the showcase images on CFAO's website show only a few models in stock. Compare that to vehicle dealers in the United States with hundreds of vehicles on their lots.

The CFAO Motors story is also further idiosyncratic: they sell multiple vehicle brands and even vary their brand choices depending on the country. CFAO Motors is a specialty international distributor with unique experience doing business in underserved countries. And, the CFAO story seems more than just a case study. Several multinational enterprises serve specific, underserved markets.

And, that is probably the real story: people succeed at doing business all around the world. Unique people, creating unique firms to serve unique populations.

REFERENCES

Ault, J. K. & Spicer, A. 2014. The institutional context of poverty: State fragility as a predictor of cross-national variation in commercial microfinance lending. Strategic Management Journal, 35(12): 1818-1838.

Ault, J. K. & Spicer, A. 2016. State Fragility as a Multi-Dimensional Institutional Context for Entrepreneurship: Advancing a Developing Country Research Agenda. University of South Carolina.

Bliese P. D. (2002). Multilevel random coefficient modeling in organizational research: Examples using SAS and S-PLUS. In F. Drasgow & N. Schmitt (Eds.), Measuring and Analyzing Behavior in Organizations: Advances in Measurement and Data Analysis. San Francisco, CA: Jossey-Bass, Inc.

Bliese, P. D. (2013). Multilevel Modeling in R: A Brief Introduction to R, the Multilevel Package, and the nlme package. (http://cran.r-project.org/). Documentation / Contributed / Documents with fewer than 100 pages.

Bliese, P. D. (2014). Multi-Level Modeling. Unpublished notes.

Bliese, P. D., & Hanges, P.J. (2004). Being both too liberal and too conservative: The perils of treating grouped data as though it is independent. Organizational Research Methods, 7, 400-417.

Bliese, P. D., & Ployhart, R. E. (2002). Growth modeling using random coefficient models: Model building, testing, and illustrations. Organizational Research Methods, 5, 362-387.

Bliese, P. D., McGurk, D., Thomas, J. L., Balkin, T. J., & Wesensten, N. (2007). Discontinuous growth modeling of adaptation to sleep setting changes: Individual differences and age. Aviation, Space, and Environmental Medicine, 78, 485-492.

Bliese, P. D., Wesensten, N., & Balkin, T. J. (2006). Age and individual variability in performance during sleep restriction. Journal of Sleep Research, 15, 376-385.

Bruton, G. D., Ketchen, D. J., & Ireland, R. D. 2013. Entrepreneurship as a solution to poverty. Journal of Business Venturing, 28(6): 683-689.

CFAO, 2017. CFAO Automotive. www.cfao-automotive.com. Accessed 13 July 2017.

Cheng, J. L. C., Birkinshaw, J., Lessard, D. R., & Thomas, D. C. 2014. Advancing interdisciplinary research: Insights from the JIBS special issue. Journal of International Business Studies, 45(6): 643-648.

Cheng, J. L. C., Henisz, W. J., Roth, K., & Swaminathan, A. 2009. From the Editors: Advancing interdisciplinary research in the field of international business: Prospects, issues and challenges. Journal of International Business Studies, 40(7): 1070-1074.

Coleman, J. S. 1986. Social Theory, Social Research, and a Theory of Action. American Journal of Sociology, 91: 1309-1335.

Coleman, J. S. 1994. Foundations of Social Theory: Harvard University Press.

Cuervo-Cazurra, A. & Genc, M. 2008. Transforming disadvantages into advantages: developing-country MNEs in the least developed countries. Journal of International Business Studies, 39(6): 957-979.

Diez-Roux, A. V. (1998). Bringing context back into epidemiology: Variables and fallacies in multilevel analyses. American Journal of Public Health, 88, 216-222.

DiMaggio, P. J. & Powell, W. W. 1983. The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. American Sociological Review, 48: 147.

Dunning, J. H. 1989. The Study of International Business: A Plea for a More Interdisciplinary Approach. Journal of International Business Studies, 20: 411-436.

Hall, P. A. & Soskice, D. 2001. Varieties of capitalism: The institutional foundations of comparative advantage: OUP Oxford.

Haveman, H. A. 1993. Follow the Leader: Mimetic Isomorphism and Entry Into New Markets. Administrative Science Quarterly, 38: 593-627.

Henisz, W. J. & Delios, A. 2001. Uncertainty, Imitation, and Plant Location: Japanese Multinational Corporations, 1990-1996. Administrative Science Quarterly, 46: 443.

Hitt, M. A., Beamish, P. W., Jackson, S. E., & Mathieu, J. E. 2007. Building theoretical and empirical bridges across levels: Multilevel research in management. Academy of Management Journal, 50: 1385–1399.

Jackson, G. & Deeg, R. 2008. Comparing capitalisms: understanding institutional diversity and its implications for international business. Journal of International Business Studies, 39(4): 540-561.

Karnani, A. 2008. Help, don't romanticize, the poor. Business Strategy Review, 19(2), 48-53.

Khanna, T., Palepu, K. G., & Sinha, J. 2005. Strategies that fit emerging markets. Harvard Business Review, 83(6): 4-19.

Kim, Y., & Ployhart, R. E. (2014). The effects of staffing and training on firm productivity and profit growth before, during, and after the great recession. Journal of Applied Psychology, 99, 361-389.

Kogut, B. & Zander, U. 1993. Knowledge of the Firm and the Evolutionary Theory of the Multinational Corporation. Journal of International Business Studies, 24: 625-645.

Kogut, B. & Zander, U. 1995. Knowledge, market failure and the multinational enterprise: A reply. Journal of International Business Studies: 417–426.

Kogut, B. 1991. Country capabilities and the permeability of borders. Strategic Management Journal, 12: 33–47.

Kostova, T. 1999. Transnational Transfer of Strategic Organizational Practices: A Contextual Perspective. Academy of Management Review, 24: 308.

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

Lang, J. W. B., & Bliese, P. D. (2009). General mental ability and two types of adaptation to unforeseen change: Applying discontinuous growth models to the task-change paradigm. Journal of Applied Psychology, 92, 411-428.

Levitt, B. & March, J. G. 1988. Organizational Learning. Annual Review of Sociology, 14: 319-340.

McDermott, G. A., Corredoira, R. A., & Kruse, G. 2009. Public-private institutions as catalysts of upgrading in emerging market societies. Academy of Management Journal, 52: 1270–1296.

Meyer, K. E., Estrin, S., Bhaumik, S. K., & Peng, M. W. 2009. Institutions, resources, and entry strategies in emerging economies. Strategic Management Journal, 30(1): 61-80.

Pinheiro, J. C., & Bates, D. M. (2000). Mixed-effects models in S and S-PLUS. New York: Springer.

R Development Core Team. (2014). R: A Language and Environment for Statistical Computing (Version 3.1.1) [Computer software]. Vienna: R Foundation for Statistical Computing.

Raudenbush, S. W., & Bryk, A. S. (2002). Hierarchical Linear Models: Applications and Data Analysis Methods. Newbury Park, CA: Sage.

Robinson, W. S. (1950). Ecological correlations and the behavior of individuals. American Sociological Review, 15, 351-357.

Rupp, T. L., Wesensten, N. J., Bliese, P. D., & Balkin, T. J. (2009). Banking sleep: Realization of benefits during subsequent sleep restriction and recovery. Sleep, 32, 311-321.

Singer, J. D., & Willett, J. B. (2003). Applied longitudinal data analysis: Modeling change and event occurrence. New York, NY: Oxford University Press.

Thorndike, E. L. (1939). On the fallacy of imputing the correlations found for groups to the individuals or smaller groups composing them. American Journal of Psychology, 52, 122-124.

UNCTAD. 2010. The Least Developed Countries Report 2010: Towards a New Internaonal Development Architecture for LDCs. New York and Geneva: United Nations.

UNCTAD. 2011. Foreign Direct Investment in LDCs: Lessons Learned from the Decade 2001–2010 and the Way Forward. New York and Geneva: United Nations Conference on Trade and Development.

Witt, M. A. & Redding, G. 2009. Culture, meaning, and institutions: Executive rationale in Germany and Japan. Journal of International Business Studies, 40: 859-885.

World Bank. 2017a. Worldwide Development Indicators: World Bank.

World Bank. 2017b. Worldwide Governance Indicators: World Bank.