Multinationality and Performance Patterns in Advanced and Emerging Markets

Thomas Christopher Martin

A dissertation submitted in fulfilment of the requirements for the Degree of Doctor of Philosophy in Business Studies.

Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin
Ollscoil Átha Cliath | The University of Dublin

Thesis Supervisor: Dr. Jenny Berrill

Trinity Business School

February 19th, 2021

Declaration

I hereby certify that this material is entirely my own work and has not been taken from the work of others save to the extent that such work has been cited and acknowledged within the text of my work. It has not been submitted as an exercise for a degree at this or any other university. I agree to deposit this thesis in the University's open access institutional repository or allow the Library to do so on my behalf, subject to Irish Copyright Legislation and Trinity College Library conditions of use and acknowledgement.

Signed: _____

ID number: 13313929

Date: February 19th, 2021

Abstract

This longitudinal research focuses on measuring multinationality of the firm, country, and industry, and estimating the relationship between said level of multinationality, and the firms' performance. My unique dataset consists of sales data from Thompson Reuters' Datastream, and hand collected subsidiary data, enabling the measurement of multinationality using the Alan Rugman's Triad model, and a more recent model by Aggarwal, Berrill, Hutson, and Kearney, the ABHK model. The study of firm level multinationality in the 1990's and 2000's has enforced the hypothesis that firms are regional by nature through Rugman's analysis of Fortune 500 firms. The majority of that dataset is comprised of firms from the United States, Western Europe, or Japan, who record a large portion of their sales to those regions, thus coined the "Triad" regions by Ohmae (1985). This finding still holds true as trading abroad occurs to the continents of North America, Europe, and Asia by a greater number of firms when compared to South America, Africa, and Oceania. Concurrently, firms are both trading and investing at a rapid pace to countries in the latter three continents, concluding the Triad model to once be an accurate multinationality measuring model in the 1990's and early 2000's, an out of date model to measure a firms' multinationality in today's global economy.

I perform an analysis of a 2,427 firms' multinationality using the Triad and ABHK models. I then determine whether a relationship exists between the firms' performance and its multinationality using a regression analysis. The performance-multinationality literature is divided with a wide range of measures being used in the regression model. I use three measures of multinationality; Triad model, ABHK model, and foreign sales percentage, and three measures of firm performance; return on assets, return on equity, and total return index, providing a thorough analysis on the subject matter. The results provide evidence of the ABHK model as the most appropriate measure of multinationality, and total return index as the measure of performance that gives the most significant regression results. Performance and multinationality have a significantly positive relationship when measured by ROA and the ABHK model for South American and African firms, while the remaining four continents of the world measure a significantly negative relationship.

Analyzing the dataset, I select a positivist functionalist approach as the most appropriate for the research. My research objectives are to determine if patterns exist in the multinationality of advanced and emerging market firms and if the performance of the firm increases or decreases as multinationality changes. This research makes an empirical, methodological, and data contribution to academia.

Dedication

I dedicate this thesis with love and gratitude to my parents, Leslie and Yvonne Martin, my wife Cassie, and my son Lucca. My parents support over the last seven years has always steered me in the direction of continuous education and learning, and I would not be where I am today without them. To my wife, her patience and support during the final two years of my thesis has been instrumental to the completion of my research.

Acknowledgements

Firstly, I would like to thank my supervisor, Professor Jenny Berrill, for her support and advice during my tenure at Trinity College Dublin. Secondly, I would like to thank Professor Joseph McDonagh for his guidance throughout the PhD journey and continuous reminding that a light really does exist at the end of the PhD tunnel. Thirdly, I would like to express my gratitude to my Viva examiners, consisting of Professor Frank Barry and Professor Declan Curran, who both provided me with constructive feedback with regards to my thesis. Without the rigorous questioning and advice that took place during Voce Viva, my PhD thesis would not be what it is today.

I would also like to thank my former colleagues in the PhD program, particularly Pearlean Chadha and Derek Brawn for their continuous advice, assistance, and helpful support.

Finally, I would like to thank the people in the postgraduate office in the School of Business at Trinity College for their help, support, and guidance throughout my PhD journey.

Thank you,

Thomas.

Table of Contents

List of Appendices ..... **x**

List of Equations ..... **xi**

List of Figures ..... **xii**

List of Tables ..... **xiii**

Chapter 1: Introduction **1**

1.1 Introduction and Structure of Thesis 1

1.2 Research Questions 2

1.3 Main Research Findings 4

1.3.1 Advanced and Emerging Market Multinationality Patterns 5

1.3.2 Performance-Multinationality Relationship 6

1.3.3 Firm Performance-Multinationality From Multiple Perspectives 7

1.4 Structure of Thesis 9

Chapter 2: Methodology and Data **10**

2.1 Introduction 10

2.2 Dataset: Firm Selection 10

2.2.1 Research Question One 12

2.2.2 Research Question Two 13

2.2.3 Research Question Three 14

2.3 Methodology 15

2.3.1 Triad Model 16

2.3.2 ABHK Model 17

2.3.3 Graphing Multinationality as a Linear Progression 18

2.3.4 Regression Analysis 19

2.3.4.1 Outcome Variables 20

2.3.4.2 Explanatory Variables 22

2.3.4.3 Control Variables 22

2.3.4.4 Dummy Variables 23

2.4 Testing the Data and Model 24

2.5 Conclusion 25

Chapter 3: Literature Review 27

3.1 Introduction 27

3.2 Multinationality in Literature 29

3.2.1 Emerging Market Multinationality 30

3.2.2 Existing Theoretical Multinationality Frameworks 32

3.3 Firm Multinationality - Performance 36

3.3.1 Firm Multinationality – Performance, Early Analysis 36

3.3.2 Firm Multinationality – Performance, S-Shaped 37

3.4 Firm Characteristics in the P-M Equation 38

3.4.1 Firm Size 39

3.4.2 Firm Age 40

3.4.3 Financial Leverage 41

3.5 Multinationality Literature Gaps 41

3.6 Conclusion 42

Chapter 4: Multinationality Models: Triad and ABHK 43

4.1 Introduction 43

4.2 Data 45

4.3 Methodology 47

4.4 Global Dataset: Measures of Multinationality 49

4.4.1 Triad Results 49

4.4.2 ABHK Results 50

4.4.3 Advanced Market and Emerging Market Firms: Triad Results 51

4.4.4 Advanced Market and Emerging Market Firms: ABHK Results 55

4.5 Country Specific Multinationality 57

4.5.1 Region Specific Expansion: Advanced Markets 58

4.5.2 Region Specific Expansion: Emerging Markets 63

4.6 Industry Analysis of Multinationality 68

4.6.1 Triad and ABHK Models 69

4.7 Conclusion 73

Chapter 5: An Alternative Perspective: Firm Performance and Multinationality Relationship 76

5.1 Introduction 76
5.2 Data and Methodology 78
5.3 Statistical Analysis and Model Testing 80
5.3.1 Collinear Testing 81
5.3.2 Determining the Model 84
5.4 Preliminary Statistical Analysis 85
5.4.1 Foreign Sales as a Percent of Net Sales 85
5.4.2 Triad Model 88
5.4.3 ABHK Model 90
5.4.4 Range of Outcomes: Foreign Sales versus Triad and ABHK 91
5.5 Applying the Regression Results 93
5.5.1 Significance of the Control Variables 94
5.5.2 Significance of the P-M Relationship 95
5.5.3 Robustness Checks 96
5.6 ICB Industry Sectors 99
5.6.1 Descriptive Statistics 99
5.6.2 Collinearity Testing and Regression Results 103
5.7 Conclusion 108

Chapter 6: Patterns in the Performance Multinationality Relationship 111

6.1 Introduction 111
6.2 Data and Methodology 113
6.3 Statistical Analysis and Model Testing 115
6.3.1 Descriptive Statistics 115
6.3.2 Correlation of Variables 117
6.4 Analysis and Results of Model Estimations 121
6.4.1 Preliminary Statistical Analysis 121
6.4.1.1 Foreign Sales – Firm Performance Relationship 122
6.4.1.2 Triad Model – Firm Performance Relationship 124
6.4.1.3 ABHK Model – Firm Performance Relationship 125
6.4.2 Regression Analysis 127
6.4.3 Robustness Test A 130

6.4.4 Robustness Test B 132
6.5 Geographic Region-Based Analysis 135
6.5.1 Descriptive Statistics 136
6.5.2 Regression Estimation 137
6.5.3 Significance of P-M Relationship 140
6.5.3.1 Africa and South America 140
6.5.3.2 Triad Regions and Oceania 145
6.5.4 Size Variable Robustness Test 156
6.6 Conclusion 159

Chapter 7: Conclusion 162
7.1 Introduction 162
7.2 Multinationality Model Debate 163
7.3 Firm Performance - Multinationality 165
7.4 Firm Performance – Multinationality by Groupings 169
7.5 Conclusion and Future Research 172

References 173

List of Appendices

Appendix 2.1: FTSE Russell Country Classification....191
Appendix 4.1: Triad Results....191
Appendix 4.2: ABHK Results....192
Appendix 4.3: Advanced Market Triad Results....193
Appendix 4.4: Emerging Market Triad Results....194
Appendix 4.5: Advanced Market ABHK Results....195
Appendix 4.6: Emerging Market ABHK Results....196
Appendix 4.7: Multinationality Measuring....197
Appendix 4.8: Industry Triad Results....199
Appendix 4.9: Industry ABHK Results....203
Appendix 4.10: Advanced Market Industry Level Multinationality Averages....208
Appendix 4.11: Emerging Market Industry Level Multinationality Averages....209
Appendix 5.1: Hausman Test: ICB Industry Sectors....210
Appendix 5.2: Industry Regression Results....212

List of Equations

Equation 2.1: Firm Performance-Multinationality Model 19

Equation 2.2: Firm Performance-Multinationality Model A 20

Equation 2.3: ROA: All Industries 21

Equation 2.4: ROA: Banks 21

Equation 2.5: ROA: Insurance Companies 21

Equation 2.6: ROA: Other Financial Companies 21

Equation 2.7: ROE: All Industries 21

Equation 2.8: Total Return Index 21

Equation 2.9: Total Return Index + Ex-Date of Dividend Payment 22

Equation 2.10: Financial Leverage 23

Equation 2.11: Variance Inflation Factor 24

Equation 6.1: Firm Performance-Multinationality Model B 114

List of Figures

Figure 2.1: Logarithm Function 20

Figure 4.1: Global Dataset: Triad Model 50

Figure 4.2: Global Dataset: ABHK Model 50

Figure 4.3: G7 + Australia: Triad Results 52

Figure 4.4: Emerging Market: Triad Results 53

Figure 4.5: G7 + Australia: ABHK Results 56

Figure 4.6: Emerging Market: ABHK Results 56

Figure 4.7: 18-Year Average Percentage of Firms by Industry 69

Figure 4.8: Triad Score 70

Figure 4.9: ABHK Score 71

Figure 7.1: Firm Performance – Foreign Sales and Triad Model 166

Figure 7.2: Firm Performance – ABHK Model 167

List of Tables

Table 2.1: Firm Selection 11
Table 2.2: ICB Industry Sectors 14
Table 2.3: Research Question Three Sub Groupings 15
Table 2.4: Revised Triad Model 17
Table 2.5: ABHK Multinationality Scoring 18
Table 3.1: Most Cited by Google Scholar Performance-Multinationality Studies 34
Table 3.2: Recent Performance-Multinationality Studies 35
Table 3.3: Firm Size and Performance Relationship 39
Table 4.1: Country Index Selection 46
Table 4.2: Firms Unclassified by Triad Model 54
Table 4.3: G7 + Australia Domestic to Multinational Analysis 59
Table 4.4: Emerging Markets Domestic to Multinational Analysis 63
Table 4.5: Most Multinational Firm 72
Table 4.6: Service and Non-Service Multinationality Results 73
Table 5.1: Descriptive Statistics 80
Table 5.2: Pairwise Correlation Matrix 82
Table 5.3: Variance Inflation Factor Test 83
Table 5.4: Unit Root Test 84
Table 5.5: Hausman Test 84
Table 5.6: Average Incremental Statistical Analysis of Multinationality Measures 87
Table 5.7: ABHK Model Sub Groupings 90
Table 5.8: Firm Performance – Multinationality Relationship 91
Table 5.9: Regression Analysis 93
Table 5.10: Robustness Test A 96
Table 5.11: Robustness Test B 97
Table 5.12: 18-Year Industry Variable Averages 99
Table 5.13: 18-Year Multinational Category-Based Industry Sector Averages 101
Table 5.14: Unit Root Test on Logarithm of Market Capitalization 103

Table 5.15: Significant P-M Relationship Regression Results by Multinationality Measures 104
Table 5.16: Significant P-M Relationship: Foreign Sales Percentage 106
Table 5.17: Significant P-M Relationship: Triad Model 107
Table 5.18: Significant P-M Relationship: ABHK Model 108
Table 6.1: AM and EM Descriptive Statistics 116
Table 6.2: Pairwise Correlation Matrix 117
Table 6.3: Variance Inflation Factor Test 120
Table 6.4: AM and EM Unit Root Test.....120
Table 6.5: AM and EM Hausman Test.....121
Table 6.6 Average Incremental Statistical Analysis of Foreign Sales Percentage and Triad Model ...123
Table 6.7: Average Incremental Statistical Analysis of ABHK Model.....126
Table 6.8: Multinationality and Firm Performance.....127
Table 6.9: Firm Performance-Multinationality Relationship 128
Table 6.10: Robustness Test: Alternate Size Variable.....130
Table 6.11: Sub-Period Hausman Test.....132
Table 6.12: AM Multinationality and Firm Performance 133
Table 6.13: EM Multinationality and Firm Performance 134
Table 6.14: Geographical Regional Descriptive Statistics 136
Table 6.15: Geographic Region-Based Multinationality and Firm Performance 138
Table 6.16: 18-Year Average of Each Variable by Geographic Region.....140
Table 6.17: Africa: Average Incremental Statistical Analysis of Multinational Measures 142
Table 6.18: Africa: Firm Performance – Multinationality Relationship 143
Table 6.19: South America: Average Incremental Statistical Analysis of Multinational Measures....144
Table 6.20: South America: Firm Performance – Multinationality Relationship.....145
Table 6.21: Asia: Average Incremental Statistical Analysis of Multinational Measures 147
Table 6.22: Asia: Firm Performance – Multinationality Relationship 148
Table 6.23: Europe: Average Incremental Statistical Analysis of Multinational Measures 149
Table 6.24: Europe: Firm Performance – Multinationality Relationship 150
Table 6.25: North America: Average Incremental Statistical Analysis of Multinational Measures ...152

Table 6.26: North America: Firm Performance – Multinationality Relationship 153
Table 6.27: Oceania: Average Incremental Statistical Analysis of Multinational Measures 154
Table 6.28: Oceania: Firm Performance – Multinationality Relationship 155
Table 6.29: Hausman Test: Total Employee Count Variable 156
Table 6.30: Robustness Test with Total Employee Count 157
Table 7.1: Continent Comparison 168
Table 7.2: Geographic Regions with Significant P-M Relationships 170
Table 7.3: Geographic Region-Based P-M Relationship Comparison 171

Chapter 1
Introduction

1.1 Introduction and Structure of Thesis

The issue of firm level multinationality has long been debated throughout international business (IB) literature. Measuring the multinationality of firms from advanced market (AM) countries has been conducted most commonly by Alan Rugman using the Fortune 500 (Rugman and Verbeke, 2004) at a static point in time using the Triad model as a tool to measure said firm level multinationality. The Triad model measures multinationality based on the assumption that the economic centers of the world are in one of three areas; North America (United States), Western Europe (United Kingdom), and Asia (Japan) (Ohmae, 1985). When measuring firms from Japan, the United Kingdom, and the United States, the majority of sales, this being the one variable used by the Triad model to measure multinationality, will take place in these three regions. Rugman has found the largest multinational corporations are regional, and not global (Rugman and Brian, 2003). My research will test this non-global assertion with a rigorous analysis of firm level multinationality through the use of the Triad model, and a model introduced by Aggarwal, Berrill, Hutson, Kearney (2011) which I will refer to as the ABHK model, using a large breadth of firms, spanning 19 countries. AM countries are defined by the Financial Times Stock Exchange (FTSE) classification through a process of analyzing six categories; they are high income economies, market and regulatory environment, custody and settlement, dealing landscape, derivatives, and size of market. Once multinational patterns are established from my dataset, my research focuses on the widely debated topic in IB literature, the performance to multinationality (P-M) relationship.

My proposed research measures 2,427 firms from eight AM and 11 EM countries over an 18-year time period (1998-2015), thus building on current IB literature. To measure each of the firms' multinationality, I use firm level geographic sales and subsidiary location data. To measure the P-M relationship, I first reduce my dataset to only include firms that have a multinationality score for all 18 years of my sample period. Along with the Triad and ABHK scores as measures of multinationality, I use foreign sales as a percent of total sales (FS) which has been used as a multinational measure in the first publications on the topic of firm performance and multinationality as seen by Vernon (1971), Horst (1973), Hughes, Logue, and Sweeney (1975), Buckley, Dunning, and Pearce (1978), Siddharthan and Sanjaya, (1982), Kumar (1984), Dunning (1985), and Rugman et al. (1985). FS has also been used recently by Bagheri, (2019) and Tang, Gu, Xie, and Wu (2020) but also this multinationality measure

has appeared in some of the most cited P-M research by Hitt, Hoskisson, and Kim (1997) and Zahra, Ireland, and Hitt (2000). To measure performance, I use two accounting-based measures, return on equity (ROE) and return on assets (ROA), and a market-based measure, total return index (RI). Accompanying these measures are control variables that have been used extensively throughout the P-M literature, those variables being firm size, firm age, and a firms' financial leverage. As measures of firm size, I use market capitalization and a second measure, employee count, as a robustness check. Firm age is taken from the firms first recorded sale and financial leverage is measured by the ratio of total debt to total capital. By using econometric modeling techniques, the significance of the P-M relationship, along with the control variables, are measured and compared across all nine possible iterations of the models' estimations (three multinational measures by three performance measures).

Using the ABHK multinational classification system and the Triad model, more commonly used in literature produced by Alan Rugman, I produce two sets of multinationality model based results, painting a thorough picture of the firm level multinationality landscape that has not been seen in IB literature to date. The two categorical based models of firm level multinationality provide an in-depth investigation into longitudinal firm level multinationality on the world stage. This data allows me to analyse different aspects of internationalization, those being extent, scope, and speed, as advised by Zahra and George (2002) and Casillas and Acedo (2013). Coupling this dataset with foreign sales as a percentage of net sales (FS), my research provides insight on the P-M debate, filling gaps in the current literature by use of an 11 countries EM dataset.

This chapter is an introduction to my thesis and takes on the following structure. Section 1.2 outlines my research questions and the motivations for each. The main findings of my three research questions are presented in section 1.3 followed by the structure of my thesis in section 1.4.

1.2 Research Questions

My thesis conducts an in-depth analysis of firm, country, and industry level multinationality, encompassing a dataset comprised of firms from 19 countries encompassing all habitual continents. I investigate whether multinationality is increasing or decreasing and how using a geographic-based multinationality model with two variables, sales and subsidiary location, can give a different result when compared to the traditional Triad model. 1,575 firms from eight AM countries; Australia, Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States, and 852 firms from 11 EM countries; Argentina, Brazil, China, Colombia, the Czech Republic, Hungary, India, Poland, Russia, Slovakia, and South Africa compile my dataset allowing for a global review of the

multinationality of 2,427 firms. This unique, hand collected dataset allows me to make methodological and empirical contributions to the IB literature through the research conducted to answer the following question.

Research Question 1: To What Degree are Publicly Traded Companies Becoming More or Less Multinational Over Time?

Hypothesis i) Firms are consistently regional-based in their operations over time, with no signs of multinational growth.

Hypothesis ii) Firms are consistently regional-based in their operations over time, with growth in multinationality to other regions.

Hypothesis iii) Firms are becoming less regional-based in their operations over time, with growth in multinationality to other regions.

From the 2,427 firms, I focus my dataset to firms that recorded a Triad and ABHK multinationality score for all 18 years. With the addition of FS as a measure of multinationality, four control variables, and three performance measures, my thesis conducts a global firm performance to multinationality analysis that has not been seen in current literature. The P-M relationship has been described in a variety of forms with various measures of multinationality, performance, and control variables being used in the regression estimations. My second research question aims to bring clarity to this otherwise cloudy debate.

Research Question 2**:** What Relationship/s Exists, if any, Between a Firms' Performance and Their Level of Multinationality?

Hypothesis i) Higher levels of multinationality are associated with positive increments in firm performance.

Hypothesis ii) Higher levels of multinationality are associated with negative increments in firm performance.

Hypothesis iii) Firm performance and multinationality show no significant relationship.

Following the analysis conducted to answer my second research question, I separate the data into AM and EM firms, and geographical-based groupings, in an effort to identify patterns of the P-M relationship from a global perspective. To date the majority of research uses firms from the U.S, Europe, or Japan to measure the P-M relationship while firms from EM countries have not received the same attention. This is likely due to lack of data availability, but also due to the cost of subsidiary data from private databases such as the Bureau Van Dijk database. From this scarcity of global

perspective on the P-M relationship, a gap in the literature exists as no research compares the P-M relationship of AM and EM firms using the same variables and furthermore, how the P-M relationship varies for firms from different geographic regions over time. This leads to my third research question:

Research Question 3: Does the Performance-Multinationality Relationship Vary for Firms from Differing Geographic Regions?

Hypothesis i) Firms from the Triad regions measure a significant P-M relationship and firms from non-Triad regions measure an insignificant P-M relationship.

Hypothesis ii) Firms from the Triad regions measure an insignificant P-M relationship and firms from non-Triad regions measure a significant P-M relationship.

Hypothesis iii) Firms from all geographic regions measure a significant P-M relationship.

1.3 Main Research Findings

My unique dataset, consisting of 1,575 AM firms and 852 EM firms covering 19 countries, with hand collected subsidiary data for 18 years, has the largest geographic breadth to date in the IB literature. My main research findings are outlined in the following three sections.

The most prominent conclusion of my research is with regards to how a firms multinationality is measured. I produce concrete evidence that the Triad model and FS, both capture some aspects of how multinational a firm is but neither provides a robust analysis. The Triad model fails to measure all firms due to arbitrary percentage thresholds and the omission of South America and Africa in the Triad regions themselves. Both of these factors result in a loss of data when measuring a firms multinationality. FS gives advantages to firms that are neighboring large economic centers. For example, in 2010 Canadian firm, Blackberry Ltd., recorded approximately 94 percent of their sales in outside Canada with approximately 57 percent in the United States and 37 percent in the United Kingdom. This makes Blackberry a home region country according to the Triad model, and the ABHK model categorized the firm as Rank-3 in the 16 ABHK categories due to sales existing in the home region and a second region (Europe) with subsidiaries only existing in Canada. Conversely, in 2013 American firm H&R Block recorded only 8.6 percent of sales outside of the United States which is considered a low level of multinationality. However, the ABHK model measured H&R Block to be global as both sales and subsidiaries exist in all six continents. The Triad model, similar to FS, categorizes this firm as home region due to more than 50 percent of their sales taking place in the home Triad region. The ABHK model has the capabilities of measuring a firm from any country in the world due to the categories that are geographic-based. When describing the P-M relationship, the

ABHK model shows differing results to the Triad model and FS. This may be as a result of firms declining in performance when investments abroad reach multiple geographic regions, or all six geographic regions.

1.3.1 Advanced and Emerging Market Multinationality Patterns

When using the Triad model to measure a firms' multinationality, firms from the United Kingdom decline from 2007-15, being the only country to give this collective result. Geographic sales location show firms from all countries, with the exception of Italy, to become less multinational from 2013-15 while geographic subsidiary scores are higher for firms from the United States when compared to their sales scores, signifying a greater commitment to investing abroad than trading abroad. This is also true for firms from Australia, Canada, and France, however the differences from year to year are minimal. Australia and the United Kingdom are the only countries to show no net change overall from 1998-2015 while the other five countries increased their ABHK multinationality score in this time period. Firms from the Utilities sector are collectively the least multinational while firms from the Basic Materials sector are the most multinational. Furthermore, firms from the non-service sector (Basic Materials, Industrials, Oil and Gas, and Technology) are more multinational than service sector firms, driven by the increased multinationality of firms from the Basic Materials sector.

EM firms are collectively becoming more multinational over time. The Triad and ABHK models show mixed results from 1998-2001. However, from 2002-15 there are signs of de-internationalization after the financial crisis in 2008 also, for South African firms, in 2014-15. Furthermore, firms from China, South Africa, South America (Argentina, Brazil, and Colombia), and the Visegrád (The Czech Republic, Hungary, Poland, and Slovakia) countries are shown to be in the early internationalization stage, while Russian and Indian firms are in the second stage of internationalization according to the multi stage theory of internationalization (Contractor, 2007). Five of the six EMs grew in multinationality due to their subsidiary advancement more so than their breadth of trading. This growth took place to regions that are geographically closer to the home country with the exception of South Africa, a country that is geographically the furthest from any other region and the home region does not contain any AMs. This result both agrees and disagree with the theory that firms sell abroad first and invest abroad second as firms from India, Russia, and South Africa collectively break this trend while Chinese, South American, and Visegrád firms strongly follow this trend, thus corroborating with the findings of Luo and Tung (2018) who identify differing levels of aggressiveness among EM multinationals.

The most multinational industry is Technology and while firms from the Utility sector are the least multinational. Firms classified as non-service (Basic Materials, Industrials, Oil and Gas, and Technology) exhibit more multinationality than firms in the service-related industries (Consumer Goods, Consumer Services, Financials, Health Care, Telecommunications, and Utilities). As noted by Ramamurti (2012), there is no richer time than now to study how firms become multinational and through my research, both the rate and path of a firm becoming multinational is investigated for Chinese, Indian, Russian, South African, South American, and Visegrád firms from 1998-2015.

1.3.2 Performance-Multinationality Relationship

Current literature is ambiguous on how to best measure the P-M relationship. This ambiguity exists for both the measure of multinationality and the measure of performance. The relationship between firm performance and multinationality (P-M) has a range of descriptive patterns, dating back to Grant, Jammine, and Thomas's (1988) study of 304 firms from the United Kingdom from 1972-84, finding the relationship to be linear positive. This relationship has since been identified as inverted U-shaped by Gomes and Ramaswany (1999) and Hitt et al. (1997), both studying American firms, both identifying an increase in performance in the early stages of internationalization until a new market is approached and costs exceed the benefits that come with internationalization, leading to a decrease in performance. Shortly after, Lu and Beamish (2001) studied the relationship of 124 Japanese firms from 1986-97 finding it to be U-shaped. Lu and Beamish (2004) repeated their study with 1,489 Japanese firms and then found the relationship to be S-shaped which is an extension to the U-shaped theory. This result was also found by Contractor, Kundu, and Hsu (2003) who observed 103 American firms from 1993-98. More studies have found variations of these observations, those being W-shaped (Fernandez, 2016), an extension again to the S-shaped theory, and the inverse of this, M-shaped (Mendoza, Espinosa-Méndez, and Araya-Castillo 2019). Using my balanced panel dataset of 1,377 firms from 1998-2015, my study on the P-M relationship encompasses the traditional datasets comprised of firms from the United States, United Kingdom, and Japan, with the addition of firms from five other AM countries, and a total of 271 EM firms from 11 EM countries.

I provide a P-M comparison using the traditional multinationality measuring methods (foreign sales percentage and the Triad model), and the ABHK model which incorporates a unique, hand collected subsidiary dataset. To thoroughly analyze the P-M relationship, I use three measures of firm performance: ROA, ROE, and RI, thus creating a three by three matrix of P-M relationships. As identified by Nguyen's (2017) meta-analysis of the P-M literature, a clear gap exists in the datasets

used to measure the relationship. Rarely are firms from multiple countries, and to be more specific, firms from any EM countries, used to measure this relationship. These gaps are addressed with my 1,377-firm dataset, spanning 19 countries.

My model estimation finds the P-M relationship of the entire dataset to be significant at the 10 percent level, however, the Durbin-Watson statistic is closer to 2.0 when using RI as a measure of performance compared to ROA and ROE, indicating serial correlation plays a greater role in describing the P-M relationship for the accounting-based measures compared to RI, the market-based measure. The results of the P-M relationship when measured by RI is described as a U-shaped when using FS and the Triad model but S-shaped when using the ABHK model. Firm age has a significantly positive relationship with performance when measured by RI and ROE but not significant with ROA. The size of the firm as measured by market capitalization also showed a significantly positive relationship but when measured by employee count, the relationship is significantly negative. My final control variable, financial leverage, has a significantly negative relationship with firm performance as previously seen in P-M literature by Hossain and Nguyen (2016) who measured the 10 largest Canadian oil and gas firms from 2004-2013. From an industry perspective, firms in the Basic Materials and Consumer Goods sectors measured a positive firm performance relationship, when measured by ROE, to multinationality, when measured by FS. The remaining eight industry sectors measured a significantly negative P-M relationship.

1.3.3 Firm Performance-Multinationality From Multiple Perspectives

Firms from the United States, the United Kingdom, and Japan have been commonly used for measuring the P-M relationship of firms as these countries provide rich data over extended periods of time. This is not the case for EM firms as data becomes largely scarce the further back one searches. There have been studies on the P-M relationship of EM firms over a short period time with a moderate sample of firms, or over a long period of time, tracking a very small number of firms. Through my research, there are no instances in the P-M literature of research on EM firms across multiple continents, or even multiple countries. Recently, Tang et al. (2020) has studied the P-M relationship of 766 Chinese firms from 2008-15, identifying firm performance to increase when firms increase their total number of subsidiaries abroad (common measures of multinationality) and more specifically, when subsidiaries are established in a country for the first time. This measure of multinationality is commonly used, however, I argue the advantages in multinationality growth are in favor of firms in continents with a large number of neighbouring countries such as a Chinese firm would find itself in

versus a firm from Oceania or South America. Banalieva and Santoro (2009) also produced a study on the geographic orientation and relative financial performance of 701 EM firms from 2000-06 covering four continents using data from the Bureau Van Dijk financial database. The measure of multinationality is a ratio of international sales to total sales which proved a significantly positive P-M relationship when firms reached a global level. When level of investment is included in measuring multinationality through the ABHK model, performance declines across all three measures of performance.

The continent-based geographic branch of firm performance multinational literature has produced varied results as seen in Castellani and Zanfei (2007) and Pangarkar (2008) who observed a linear positive P-M relationship, identifying greater geographic dispersion facilitates the undertaking of domestic ventures that are high-risk but also highly profitable. More recently, the S-shaped curve has been linked to the P-M relationship (Contractor et al., 2003; and Lu and Beamish 2004) identifying three stages, suggesting multinational firms experience a performance downturn at low degree of multinationality, followed by a increasing performance at moderate degree of multinationality, and eventually a second and final performance downturn at high levels of multinationality. To date the analysis of the P-M relationship has rarely featured a dataset that encompasses firms from multiple continents, or multiple countries.

South American firms have not reached the global ABHK categories which requires investing to all six geographic regions, while South African firms have a minimal number of firm year observations (FYO's) in this category. Both of the P-M relationships are significantly positive with a linear progressive U-shape as seen in previous EM literature (Qian, Li, Li, and Qian, 2008; Yang and Driffield, 2012; Yang, Dolar, and Mo, 2014). When measuring multinationality with the ABHK model, these firms are in the second stage of the three stage S-shaped model with the third stage requiring a global presence of subsidiaries. Oceanic firms have the highest proportion of firms in multiple geographic regions however the P-M relationship is significantly negative when measured by the ABHK model showing high levels of performance when trans-regional but decreasing levels when reaching the global category. European firms show a significantly negative P-M relationship with a small coefficient when RI is the measure of firm performance as this market-based measure fits the model with the most accuracy of the three performance measures. North American firms have a significantly positive P-M relationship when measured by FS and the ABHK model but a negative relationship between RI

and the Triad model. Asian firms measure a significantly negative P-M relationship when using ROE, but no significance is measured when using RI or ROA.

1.4 Structure of Thesis

Chapter two explains how my dataset is chosen, followed by a step by step review of the methodologies used to perform an analysis of each research question leading to either accepting or rejection the hypothesis put forward. In chapter three, I review the relevant IB literature on firm-level multinationality as well as the evolution of the P-M literature. Chapter four contains the analysis of AM and EM multinationality and the prevalent patterns that exist, followed by chapter five's analysis of the P-M relationship of my 1,377-firm balanced panel dataset. Chapter six examines the differences in the P-M relationship between EM and AM firms, and between each of the six, continent-based geographic regions. Chapter seven presents my conclusions when taking the empirical analysis into consideration. My conclusion chapter gives a summary of my research by outlining the contributions that are derived from each of my three research questions, concluding by identifying possibilities for future research.

My research outline was presented at the Infiniti conference in Prato Italy (2014), and a section of my results from chapter four were presented at the 43rd AIB UKI conference in London England (2016). Upcoming publication plans include a submission of my EM firm performance-multinationality relationship results from chapter six to the 7th Copenhagen conference on "Emerging Multinationals: Outward Investment from Emerging Economies" on October 8th-9th, with a possibility of publication in the International Business Review journal.

Chapter 2
Data and Methodology

2.1 Introduction

In this chapter, I discuss the methodology used to conduct my research and the dataset used for each research question. Section 2.2 describes the dataset, followed by section 2.3 which describes the models I use to measure firm level multinationality and how the relationship between firm performance and multinationality is measured. Section 2.4 describes how the data is tested using econometric modelling techniques followed by a brief conclusion in section 2.5.

I adopt a positivist philosophic approach for my thesis. In positivism studies, the role of the researcher is limited to data collection and interpretation through objective approach and the research findings are usually observable and quantifiable (Collins, 2010). To take a quantitative pursuit means believing social observations should be treated as entities in much the same way physical scientists' threat physical phenomena (Johnson and Onwuegbuzie, 2004). Therefore, I use a quantitative research methodology and gather empirical data which I use to test hypotheses. My choice of quantitative method is conditional on and appropriate for the nature of my research questions.

2.2 Dataset: Firm Selection

An advanced market (AM) is determined by its economic size, wealth, quality of markets, depth and breadth of markets resulting in 26 countries being defined as AMs by the FTSE group (FTSE, 2015). Emerging market (EM) countries are also classified by the FTSE group using a matrix of criteria as seen in Appendix 2.1, resulting in a country being either advanced emerging, secondary emerging, or frontier emerging. Various organizations such as the International Monetary Fund and the Financial Times Stock Exchange, produce a listing of countries that they define as emerging markets (EM). A common set of countries show up in every listing, those being Brazil, Russia, India, China, Mexico, Philippines, South Africa and Turkey. Regardless of what criteria each organization uses to define what an EM is, there are common characteristics that every EM firm displays. These markets have; a lower than average per capita income, rapid growth, high volatility, their capital markets are less mature, and there is a higher than average return for investors (Bekaert, Erb, Harvey, and Viskanta 1998). Brazil, Russia, India, China, and South Africa (BRICS) are widely considered the largest EMs and have been since the early 2000's showing six percent growth in their economies from 2000-10 (Harmer, Folayinka, and Lesong, 2013). Of these five major countries, China and India make up approximately

37 percent of the worlds' population since 2012 (Galli, Kitzes, Niccolucci, Wackernagel, Wada, and Marchettini, 2012), and both countries populations are steadily growing (Jenson, 2020), bringing assurance of a growing EM economy for years to come. Furthermore, EMs comprise the majority of the world's people and land, and they continue to grow more quickly than does the developed world (Kearney, 2012). I define EMs, following Meyer and Grosse's (2018) definition, as an economy with low to middle per capita income with high economic growth potential. Following FTSE's country classification index in 2015, countries are defined in my dataset as AM or EM, with the latter broken into a further three possible categories: advanced, secondary, or frontier (See Table 2.1).

Table 2.1

Firm Selection				
Developed Countries	**Russell Classification**	**Index**	**GDP in Billions (USD)**	**Number of Firms**
Australia	Developed	ASX	1.34	100
Canada	Developed	TSX	1.55	60
France	Developed	SBF	2.42	120
Italy	Developed	HDAX	3.36	110
Germany	Developed	TR Italy	1.82	110
Japan	Developed	Nikkei	4.12	225
United Kingdom	Developed	FTSE	2.86	350
United States	Developed	S&P	18.04	500
Total			**35.51**	**1,575**
Emerging Market Countries	**Russell Classification**	**Index**	**GDP in Billions (USD)**	**Number of Firms**
China	Secondary	SZSE	10.87	178
India	Secondary	Nifty	2.07	100
Russia	Secondary	Micex	1.33	50
South Africa	Advanced	Jalsh	0.31	163
South America				
-Argentina	Frontier	Bolsa	0.58	69
-Brazil	Advanced	IBX	1.77	100
-Colombia	Secondary	CB	0.29	50
Visegrád				
-Czech Republic	Advanced	PX Global	0.18	21
-Hungary	Advanced	DS Index	0.12	32
-Poland	Advanced	WIG	0.47	70
-Slovakia	Frontier	SAX	0.086	19
Total			**18.09**	**852**

***The total constituents listed represents how many firms from 1998-2015 have sales and/or subsidiary during the time period. GDP data obtained from United Nations Statistics Division, December 2016 and classification of each country obtained from FTSE (2015).**

2.2.1 Research Question One

My dataset contains 2,427 companies from 19 countries over an 18-year period from 1998-2015. I use constituent firms of each country's benchmark national stock-market index which were members at any stage during the sample period. I compile my dataset using firms from eight AM countries (Australia, Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) and 11 EM countries (Argentina, Brazil, China, Colombia, the Czech Republic, Hungary, India, Poland, Russia, Slovakia, and South Africa). The first criteria used to select country representation of my dataset is to capture a global representation of multinational firms from each habitable continent. Starting with AM countries, the G7 with the addition of Australia gives representation from four of the six continents while the 11 EM countries begin with five countries that make up the BRICS EM grouping. Brazil and South Africa now give representation across all six habitable continents. An additional two countries (Argentina and Colombia) are included from South America and four countries (Czech Republic, Hungary, Poland, and Slovakia) from Eastern Europe, known as the Visagrád region (Schmidt, 2016). These additions now increase my dataset's EM presence to five of the six continents, apart from North America. The firms that comprise my dataset are chosen through the largest and most liquid companies on each national stock-market index as shown in Table 2.1. My dataset is also divided into industry sectors as defined by FTSE International's Industry Classification Benchmark System (ICB). The ICB classifies over 75,000 securities worldwide into 10 industries, 19 supersectors, 41 sectors and 114 subsectors, and is extensively used in the literature (Bekaert, Harvey, Lundblad, and Siegel 2011; Bai, Green, and Leger, 2012; Marcelo, Quirós, and Martins, 2013; Donadelli and Persha, 2014; and Berrill, 2015).

The size of my dataset is chosen with the practical time-barrier in mind. Manually collecting a firms' geographic subsidiary location, using Dun & Bradstreet's Who Owns Whom subsidiary location listing from Trinity College's libraries, from 1998-2015 for 2,427 firms, created 36,558 observations (a loss of 7,128 observations due to data not reported by firm for a specific year). The Dun & Bradstreet subsidiary listings provide the physical address for each parent company's subsidiaries where a binary recording is made, "1" if a firm has a subsidiary present in a geographical region, and "0" if a subsidiary is not present. This variable of my research represents the level of foreign direct investment (FDI) a firm makes to another country, however, differentiating between horizontal versus vertical FDI, is level of specificity that is not within the scope of my research due to the size of my dataset and the modes of collecting the data, Dun & Bradstreet's Who Owns Whom subsidiary listing, provides an

address only. With this in mind, what makes this dataset unique from existing multinationality/internationalization research in which firm level subsidiary data is used, is the fact my subsidiary data spans 19 countries. In current IB literature, datasets are comprised of firms from AM countries, mostly the United States, United Kingdom, or Japan, and rarely from multiple countries across multiple years. I theorize the reason for this is due to the availability of a firms' subsidiary information. The electronic versions of Dun & Bradstreet's subsidiary listing can be purchased per volume, or subsidiary data can be found in any publicly traded companies SEC filings under Form 1: Exhibit C. Due to the size of my dataset and scope of my overall research, further analysis of the subsidiary data to determine what is brick and mortar versus what is brass plate is not possible.

2.2.2 Research Question Two

Following previous studies of the P-M relationship, I use my dataset from chapter four as a starting point and firms with missing data, due to data not being reported on Thompson Reuters' Datastream, or results not being recorded due to the thresholds of the Triad model, are removed resulting in a balanced 1,377 firm panel dataset, covering 19 countries from 1998-2015. From all existing firm performance effects on internationalization literature, my longitudinal dataset is the first to measure firms originating from all six continents across 19 countries, most notably 271 EM firms across 11 countries, over 18 years.

To measure firm performance, I use a market-based performance measure, total return index, and two accounting-based performances measures, return on assets (ROA) and return on equity (ROE). All three performance measures are collected from Thompson Reuters' Datastream. Firm performance is measured against multinationality through the ABHK and Triad models, and foreign sales as a percentage of net sales (FS) with net sales defined as gross sales and other operating revenue subtract discounts, returns and allowances. Furthermore, additional accounting variables (Depreciation, Net Assets, Capital Expenditure, Net Profit, and Operating Income) has shown in the past (Berrill, 2009) to have almost identical results as sales, as a measure of multinationality, thus excluding these variables from the analysis. Following recent firm performance literature (Coad, Segarra, and Teruel, 2016), my control variables are chosen with the acknowledgement that firm size, age, and leverage influence firm growth. The size variables I control for in my model are total employee count (Dias, Rossi, Silva, and De Camargos, 2020) which I use as a robustness test, and market capitalization (Mullen and O'Hagan Luff, 2018). My second control variable is firm age, measured from the first year of recorded sales to the year of measurement (Shrivastava and Tamvada,

2019) and my third control variable is financial leverage (Kyan, 2011; Hossain and Nguyen, 2016; and Mullen and O'Hagan Luff, 2018), measured by taking a ratio of total debt to total capital. I also use time-based dummy variables, separating the 18 years into four intervals: 1998-2001, 2001-06, 2007-09, and 2010-15. The P-M relationship is then estimated from an industry perspective by separating the data set into 10 ICB industry sectors as seen in Table 2.2.

Table 2.2

ICB Industry Sectors										
Oil & Gas	**Basic Materials**	**Industrials**	**Consumer Goods**	**Health Care**	**Consumer Services**	**Telecommunications**	**Utilities**	**Financials**	**Technology**	**Total**
65 (4.7%)	118 (8.6%)	289 (21.0%)	182 (13.2%)	93 (6.8%)	171 (12.4%)	32 (2.3%)	67 (4.9%)	276 (20.0%)	84 (6.1%)	**1,377 (100%)**

***Total firm count for each industry sector is shown with the percent of the total in brackets.**

2.2.3 Research Question Three

Using the balanced panel dataset from research question two, the firm performance to multinationality analysis shifts to AM and EM differences. The dataset is then further divided into a sub-period analysis, by basing the time periods on the dot-com crash period (1998-2001), a pre-financial crisis period (2002-06), a financial crisis period (2007-09), and a post-financial crisis period (2010-15), as seen in recent literature (Hossain and Nguyen, 2016; Bhagat and Bolton, 2019; Ryu, Kim, and Ryu, 2019). I complete my analysis of firm level multinationality by grouping firms by their continent-based geographic home region and the P-M relationship is compared across regions. The econometric modelling techniques used in research question two are followed using outcome variables ROA, ROE, and RI to analyse firm performance. Explanatory variables are the measures of multinationality; ABHK model results, Triad model results, and FS, and the control variables are market capitalization, employee count, firm age, and financial leverage. The total number and percentage of firms from each continent is shown in Panel A in Table 2.3. This data is further divided into AM firms in Panel B, and EM firms in Panel C.

Table 2.3

Research Question Three Sub Groupings											
Panel A: Dataset by Continent-Based Regions											
Africa		**Asia**		**Europe**		**North America**		**Oceania**		**South America**	
74 (5.4%)		266 (19.3%)		458 (33.3%)		443 (32.2%)		53 (3.8%)		83 (6.0%)	
Panel B: Advanced Markets by Continent and Country											
North America		**Asia**		**Oceania**	**Europe**						
Canada	**United States**	**Japan**		**Australia**	**France**	**Germany**	**Italy**	**United Kingdom**	**Firm Total**		
45 (4.1%)	398 (36.0%)	187 (16.9%)		53 (4.8%)	84 (7.6%)	78 (7.0%)	56 (5.1%)	205 (18.5%)	**1,106 (100%)**		
Panel C: Emerging Markets by Continent and Country											
South America			**Asia**			**Africa**	**Europe**				**Firm Total**
Argentina	**Brazil**	**Colombia**	**Russia**	**India**	**China**	**South Africa**	**Czech Republic**	**Hungary**	**Poland**	**Slovakia**	
32 (11.8%)	37 (13.7%)	14 (5.2%)	7 (2.6%)	53 (19.5%)	19 (7.0%)	74 (27.3%)	7 (2.6%)	10 (3.7%)	12 (4.4%)	6 (2.2%)	**271 (100%)**

***Advanced Market firms comprise approximately 80 percent of my dataset with 1,106 firms. The total firms for each country are shown with the percentage of the total grouping in bracket.**

2.3 Methodology

Firms removing their operations from foreign countries and focusing on their home region (Benito and Welch, 1997) can characterize a period of de-internationalization. Vissak and Francioni (2013) examine serial non-linear internationalization, firms with several subsequent exits and re-entries in international markets or considerable foreign involvement fluctuations. They propose that de- and re-internationalizations are normal for firms. It is important to use various measures of multinationality, not just foreign sales percentages. Multinationality models with criteria in place for firms to advance from one category to the next can show various levels of re-entry or re-internationalization and de-internationalization, thus giving a longitudinal picture of firm multinationality. This leads to development of a multinationality model and the most important questions asked are 1) what variable is being measured and 2) what constitutes a categorical change in the model. Grouping countries into clusters has been a work in progress for over 60 years, beginning with Cattell's (1950) basing of cultural patterns by measuring groups, and is ever changing. Multiple determinants have been studied to create country clusters in the past; ethnicity (Portes and Zhou, 1994), geography (Furnham, Kirkcaldy, and Lynn 1994, Aggarwal et al., 2011), religion/language (Cattell, 1950), and work-related values and attitudes (Haire, Ghiselli, and Porter, 1966; Ronen and Shenkar, 2013). The multinationality models used in my thesis focuses on the geographic clustering of countries as this method offers the least ambiguity in what cluster a country is placed, and the there is no change in cluster over time my 18-year time period.

The P-M relationship has been described as linear positive, linear negative, U-shaped, inverted U-shaped, J-shaped, inverted J-shaped, S-shaped, inverted S-shaped, and those with no relationship observed at all. When comparing studies that use the same methodology that I outline in this chapter, Tsai and Ren (2019), Mullen and O'Hagan (2018), and Shin et al. (2017) have found the P-M relationship to be non-linear. A U-shaped relationship emerged from Tsai and Ren's and Shin et al.'s analysis while Mullen and O'Hagan found various shapes in the P-M relationship, a few to highlight were S-shaped, W-shaped, and sigmoid shaped. These three studies used a fixed effects model, panel data, and ROA as the accounting-based performance measure as I do in my methodology. However, only Mullen and O'Hagan used the same measures of multinationality, Triad and ABHK models, while Tsai and Ren used exports to total sales ratio and Shin et al. used number of foreign subsidiaries and number of countries with subsidiaries. To compare data, Mullen and O'Hagan used a dataset of 803 firms across 11 advanced European markets while Tsai and Ren used 225 Taiwanese firms, and Shin et al. used 1,082 Spanish firms. More dated studies have shown a non-linear P-M relationship using a similar methodology as seen by Lu and Beamish's (2001) U-Shaped P-M results of 164 Japanese firms across 12 years using ROA as the measure of firm performance and total number of subsidiaries as the measure of multinationality. A thorough review of this literature is performed in the literature review in chapter three.

2.3.1 Triad Model

Using the Triad model, Ohmae's method of determining a firms' level of globalization divided the world into three geographic areas; the United States, Western Europe, and Japan, which share a number of common features with Rugman's current Triad approach (Rugman and Verbeke, 2004). Rugman and Verbeke (2004, 2007, and 2008) use a modified version of this 1985 Triad model which uses a firm's sales to define its level of globalization but expanded each region to include more geographic space. For example, the Asia region now includes the countries located in the Oceania grouping of countries. Furthermore, following Mullen and Berrill (2015), I use a version of the Triad model that includes the original four categories (home region, bi-regional, host region, and global) but adds a category 'domestic' to distinguish purely domestic firms from those that are home region oriented. To determine the level of multinationality using the Triad model, geographic sales location data is analysed. A firm is categorized as home-based if 50 percent of its sales are in the home Triad region, bi-regional if between 20 percent and 50 percent of sales are in the home Triad region and a second Triad region, host region if more than 50 percent of its sales are in a Triad region that is not the home Triad region, and global if at least 20 percent of its sales are in all three Triad regions (See

Table 2.4). A multinationality score is then assigned as follows: a score of one is given to domestic firms, two to home-based firms, three to bi-regional firms, four to host region firms, and five to global firms.

Table 2.4

Revised Triad Model					
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**
Home Country	100 Percent of Sales	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Home Triad Region	None	Greater than 50 Percent	Between 20-50 Percent	Less than 20 Percent	Between 20-50 Percent
Second Triad Region	None	Less than 50 Percent	Between 20-50 Percent	Greater than 50 Percent	Between 20-50 Percent
Third Triad Region	None	Less than 50 Percent	Less than 20 Percent	Less than 20 Percent	Between 20-50 Percent

***Percentage of sales in each of the three Triad regions is what determines Multinationality. The Domestic category is an addition to the Rugman Triad Model. Home Country is within the Home Triad Region.**

2.3.2 ABHK Model

Aggarwal et al. (2011) suggest an alternative classification system to the Triad model. They categorize the world into six regions incorporating the entire geography of the world (North America, South America, Europe, Africa, Asia and Oceania). My adaptation of the ABHK model categorizes firms using two dimensions, breadth of sales and depth of investment, to measure multinationality. The depth of market engagement is measured by the contractual arrangements that firms engage in as they internationalize. Depth ranges from the 'shallow' engagement associated with sales while subsidiaries involve a deeper penetration of markets and a stronger commitment to that market. Geographic sales (Rugman and Verbeke, 2014; Berrill, 2015; and Mullen and O'Hagan Luff, 2018) and subsidiary (Lu and Beamish, 2001, 2004, and 2006; Hutzschenreuter and Matt, 2017) location has been used in the most recent research conducted to measure firm level multinationality. When breadth of sales or depth of investment takes place entirely within their home country, breadth and/or depth is defined as domestic (D). When the activity takes place in other countries within that region, the firm is defined as regional (R), and when in more than one region, it is defined as trans-regional (T). This category is further subdivided into T2 (two regions), T3 (three regions), T4 (four regions) and T5 (five regions). Firms are classified as 'global' (G) if there is activity in all six regions of the world. Both the breadth of sales and depth of investment data give a multinationality score on a scale of 1-7 as follows: one is domestic, two is regional, three is Transregional-2, four is Transregional-3, five is Transregional-4, six is Transregional-5 and seven is global. The ABHK model combines both sales and subsidiary scores to

create 16 multinationality categories (Table 2.5) ranging from a purely domestic firm, having both sales and subsidiaries only in the firms' home country, to a truly global firm which has sales and subsidiaries in all six geographic regions (Aggarwal et al., 2011). The geographic sales location data is obtained from Thompson Reuters' Datastream, an accumulation of publicly traded companies financial statement records. Each company must disclose a geographic segment that accounts for over 10 percent of its total assets, profit or revenue.

Table 2.5

ABHK Multinationality Scoring	
Score	**Purely Domestic Firm**
1	Domestic Trading, Domestic Investments
	Regional and Trans-Regional Firms
2	Regional Trading, Domestic Investments
3	Trans-Regional Trading, Domestic Investments
4	Domestic Trading, Regional Investments
5	Regional Trading, Regional Investments
6	Trans-Regional Trading, Regional Investments
7	Domestic Trading, Trans-Regional Investments
8	Regional Trading, Trans-Regional Investments
9	Trans-Regional Trading, Trans-Regional Investments
	Global Firms
10	Global Trading, Domestic Investments
11	Global Trading, Regional Investments
12	Global Trading, Trans-Regional Investments
13	Domestic Trading, Global Investments
14	Regional Trading, Global Investments
15	Trans-Regional Trading, Global Investments
	Purely Global Firms
16	Global Trading, Global Investments

***Trading and Investment is determined by the geographic location of a firms' sales and subsidiaries.**

Using Thompson Reuters' Datastream, each company is allocated to the sector that most closely represents the nature of its business, based on its source of revenue. The firm level multinationality results for the Triad model and the ABHK model are divided into the 10 ICB industry sectors: Basic Materials, Industrials, Oil and Gas, and Technology are non-service sectors and Consumer Goods, Consumer Services, Financials, Health Care, Telecommunications, and Utilities and service sectors.

2.3.3 Graphing Multinationality as a Linear Progression

Following previous P-M relationship studies, (Mullen and O'Hagan Luff, 2018), I will first graphically show the relationship between performance (ROA, ROE, and RI) and multinationality (FS, Triad, and

ABHK). This 3x3 matrix of results will provide a preliminary, linear progression analysis, determining whether the relationship is positive or negative. These relationships can show slight variations along the linear positive or linear negative trend, taking the form of various shapes, which I review in length in the Literature Review chapter. The regression analysis then follows this linear progression analysis, providing significance or non-significance to the linear P-M relationships.

2.3.4 Regression Analysis

From the results of research question one, the ABHK and Triad model results are used as measures of multinationality along with FS. These multinationality measures are analysed using a generalized linear model (See Equation 2.1), incorporating heterogeneity between firms and serial correlations between years, to determine if multinationality affects firm performance. My balanced panel data combines cross-sectional firm level data (age, financial leverage, size, and performance measures) across 18 years, creating a robust dataset that is unique to current firm performance literature. Existing studies on the P-M literature by Yang and Driffield (2012) and more recently by Nguyen (2017), identify a common model used across the literature which is presented as follows in Equation 2.1:

Equation 2.1 – Firm Performance-Multinationality Model

$$Y_{it} = \beta M_{it} + \lambda X_{it} + \gamma_t + e_{it}$$

Y_{it} is the accounting-based or market-based firm performance of firm i for a given period t. M_{it} refers to the degree of firm multinationality over the same period. The equation may also include other control variables, such as firm characteristics (X_{it}), and/or controls for business cycle effects (γ_t). Variations of this model have been used in the literature for many years with various measures of firm performance as the outcome variable, a measure of multinationality as the explanatory variable, and control variables to describe firm characteristics such as age, size, and financial leverage. No studies exist that use an identical set of variables to my research due to the multinationality measure taken from chapter four's ABHK results which uses two variables of multinationality to arrive at a firm's multinationality score, thus making my model unique to firm performance literature. As seen in Equation 2.2, I add the time-based dummy variables with the omission of 2010-15 to avoid the dummy variable trap. The following three sections describe the outcome variables, explanatory variables, control variables, and the tests performed on my dataset to verify the model used in chapters five and six of my thesis.

Equation 2.2 – Firm Performance-Multinationality Model A

$$ln\_fp_{it} = \alpha + \beta_1 ln\_mcap_{it} + \beta_2 ln\_age_{it} + \beta_3 ln\_lev_{it} + \beta_4 ln\_mul_{123it} + \beta_5 98\_01_{it} + \beta_6 02\_06_{it} + \beta_7 07\_09_{it} + u_{it}$$

***Model is estimated nine times. First, using each outcome variable; ROA, ROE, and RI, and for each outcome, the explanatory variables; ABHK, Triad, and FS.**

Where i is each firm, t is each period (denominated in years), and β denotes the coefficients. fp = Firm Performance; RI = Total Return Index; ROA = Return on Assets; ROE = Return on Equity; age = firm's age in years; ln_emp = logarithm of employee count; ln_mcap = logarithm of market capitalization; lev = financial leverage; mul_1 = ABHK results; mul_2 = Triad results; mul_3 = foreign sales as a percent of net sales; α = Constant; u = Error term. Microsoft Excel has been used for arranging the data and the statistical package programme EVIEWS (Student Lite Version) is used to conduct my econometric analysis.

All variables, with the exception of FS and financial leverage, are normalized to bring to scale. This process reduces the effects outliers will have on the results as different variables are measured using different parameters. The normalization process is performed by taking the logarithm of the variables with a base *e*. As shown in Figure 2.1, Argentinian firm Fiplasto reported a market capitalization of 10,117,000 USD in 2006 but after taking the logarithm of this number, the normalized market capitalization is 16.187.

Figure 2.1 - Logarithm Function

$$\underline{Ln10{,}711{,}000 = Ln e^{16.187}} = \text{Normalized Market Cap.} = 16.187$$

***Rounded to 3 decimal places. All log calculations are performed on excel before exporting to EVIEWS, therefore, all decimal places are included.**

The regression analysis in chapter six first separates the data into the AM (1,106 firms) and EM (271 firms) groupings, and each of the six geographical-based groupings. Each of the groupings follow the same econometric model as Equation 2.2.

2.3.4.1 Outcome Variables

Accounting-based variables are likely to be related to the existing size of firms and capture short-term performance, while market-based indicators are related to valuation of the firm by the market according to long-term performance. Following firm performance literature (Keats, 1990; Hoskisson and Hitt, 1990 and 1993; Tallman and Li, 1996; Hitt et al., 1997; Lu and Beamish, 2001 and 2004; Beiner, Drobetz, Markus, and Zimmermann 2006; Chen, Jiang, Wang, and Hsu, 2014; and Mullen and O'Hagan Luff, 2018), the accounting-based variables, ROA and ROE, are my outcome variables, measuring the annual performance of each firm. From Thompson Reuters' Datastream, firms from all

industry sectors, with the exception of firms from the Financials sector, calculate ROA using Equation 2.3. Firms from the Financials sector calculate ROA using Equations 2.4-2.6, and ROE using Equation 2.7.

Equation 2.3 – ROA: All Industries

$$\frac{\text{(Net Income + ((Interest Expense on Debt-Interest Capitalized) * (1-Tax Rate)))}}{\text{Average of Last Year's and Current Year's Total Assets}} * 100$$

Equation 2.4 – ROA: Banks

$$\frac{\text{(Net Income + ((Interest Expense on Debt-Interest Capitalized) * (1-Tax Rate)))}}{\text{Average of (Last Year's and Current Year's Total Assets - Customer Liabilities on Acceptances)}} * 100$$

Equation 2.5 – ROA: Insurance Companies

$$\frac{\text{(Net Income + ((Interest Expense on Debt-Interest Capitalized) *(1-Tax Rate))) + Policyholders' Surplus)}}{\text{Average of Last Year's and Current Year's Total Assets}} * 100$$

Equation 2.6 – ROA: Other Financial Companies

$$\frac{\text{(Net Income + ((Interest Expense on Debt-Interest Capitalized) * (1-Tax Rate)))}}{\text{Average of (Last Year's and Current Year's Total Assets - Custody Securities)}} * 100$$

Equation 2.7 – ROE: All Industries

$$\frac{\text{(Net Income - Preferred Dividend Requirement)}}{\text{Average of Last Year's and Current Year's Common Equity}} * 100$$

A third measure of firm performance is a market-based measure, Total Return Index (Mullen and O'Hagan Luff, 2018). A return index (RI) is available for individual equities and unit trusts. This shows a theoretical growth in value of a share holding over a specified period, assuming that dividends are re-invested to purchase additional units of an equity or unit trust at the closing price applicable on the ex-dividend date. RI is constructed using the annualised dividend yield. This method adds an increment of $1/260^{th}$ part of the dividend yield to the price each weekday. There are assumed to be 260 weekdays in a year, market holidays are ignored. To calculate RI, Thompson Reuters' Datastream assumes the following variables for Equations 2.8 and 2.9: P_t = price on ex-date; P_{t-1} = price on previous date; DY_t= Dividend Yield Percent on day t; N = Number of days in a year; D_t = dividend payment associated with ex-date *t*. Gross dividends are used where available and the calculation ignores tax and re-investment charges. Adjusted closing prices are used throughout to determine price index and hence, return index.

Equation 2.8 – Total Return Index

$$RI_t = RI_{t-1} * P_t / P_{t-1} * (1 + DY_t / 100 * 1/N)$$

Equation 2.9 – Total Return Index + Ex-Date of Dividend Payment

$$RI_t = RI_{t-1} * (P_t + D_t)/P_{t-1}$$

As described by Thompson Reuters' Datastream, where the detailed dividend payment data contains a mixture of dividends marked as net and gross. The net/gross markers can be identified using the datatype tax market (DTAX) or can be displayed in the dividend payment report in Datastream Advance. To display the total return using the 'ex-date' method in these cases, the alternative total return datatype return index as paid (RZ) may be used. RZ uses the 'ex-date' method (Equation 2.9) irrespective of the tax markers. For companies from the United Kingdom, RI includes a tax credit on the dividend until it was removed in April 2004. Prior to that time, dividends as announced by the company are grossed up to include to the credit in the RI calculation. The rate used varies over time, the last rate being 10 percent in the period April 1999 until April 2004.

2.3.4.2 Explanatory Variables

To identify if a firm's multinationality affects its performance, I use the Triad model (Rugman and Verbeke, 2004; and Mullen and O'Hagan Luff, 2018), the ABHK taxonomy applied to geographic sales (Mullen and O'Hagan Luff, 2018) and geographic subsidiary data to arrive at a multinationality score, and FS. Foreign sales percentage has been used to represent a firms' internationalization for many years now. According to a meta-analysis performed by Yang and Driffield (2012), from 1997-2008 this ratio is used as a measure of multinationality in 26 out of 51 papers. More recently, this measure is still a common explanatory variable used to measure the relationship between firm performance and multinationality (Hennart, 2011; Rugman and Oh, 2013; and Mullen and O'Hagan Luff, 2018).

2.3.4.3 Control Variables

To isolate the impacts of multinationality on firm performance, it is important to include other variables likely to affect performance in which I incorporate three control variables; size, age, and financial leverage. According to Botosan (1997), higher firm size receives higher market value and enjoys lower external capital cost. Following this stance, I use two measures of firm size, one measure used in the model and the second measure used as a measure of robustness. Both size measures are widely used in firm performance literature, those measures being total employee count (Bharadwaj, Bharadwaj, and Konsynski, 1999; Wolff and Pett, 2000; Yasuda, 2005; Rugman and Oh, 2011; Clegg, Lin, Voss, Yen, and Shih, 2016; and Girod and Whittington, 2017) and market capitalization (Shumway, 2001; Dang, Li, and Yang, 2018; and Mullen and O'Hagan Luff, 2018). Employee count includes both

seasonal and part-time employees but excludes emergency employees. Market capitalization is derived from the firms' stock price divided by total outstanding shares. My second control variable is firm age, a firms' first year of business recorded as the first recorded sale plus one to avoid firms' with an age of zero (George, 2005; Anderson and Eshima, 2013; Vallone, Elia, Greve, Longoni, and Marinelli, 2019). This count is complied from each company's annual report or corporate website (Yasuda, 2005; and Carr, Haggard, Kmieleski, and Zahra et al., 2010). My third control variable is financial leverage, measured by the ratio of total debt to total capital as shown in Equation 2.10. Past studies have shown firm profitability can be influenced by leverage (Soumadi and Hayajneh, 2012; Hossain and Nguyen, 2016), specifically when using ROE as a firm performance measure. As the firm's leverage increases, so does the agency cost. The conflict between debt owners and equity holders increases because shareholders are likely to adopt riskier projects at the expense of debtholders. This creates a negative relationship between higher leverage and firm performance (Soumadi and Hayajneh, 2012). However, leverage can positively affect firms' performance as more debts lead to more interest expense, it creates higher risk of bankruptcy; as a result, managers have to perform better to avoid bankruptcy and associated costs, which in turn improves firm performance. Thus, as seen in recent P-M literature (Mendoza et al., 2019), it is important to use financial leverage as a control variable.

Equation 2.10 – Financial Leverage

$$\frac{\text{(Long Term Debt + Short-Term Debt and Current Portion of Long-Term Debt)}}{\text{(Total Capital + Short-Term Debt and Current Portion of Long-Term Debt)}} * 100$$

2.3.4.4 Dummy Variables

Research question two will incorporate time-based dummy variables into the regression model. In recent literature (Ryu et al., 2019; Yang et al., 2014), the financial crisis is used as a dummy variable, separating datasets into a pre-crisis period (Beginning Year – 2007) and post crisis period (2008 – Ending Year). This structural time break is based on a number of events: the dot-com bubble that saw the NASDAQ Composite stock market index peak on March 10th, 2000 followed by online companies filing for bankruptcy and the market hitting a low shortly after the September 11th 2001 attacks, marking the first structural break from 1998-2001. The acknowledgement of the financial crisis start date of August 9th, 2007 (Laeven and Valencia, 2008), triggered by the interbank market freezing and money market rates spiking (Baglioni, 2010) marks the second structural break from 2002-06 and 2007-09. Following previous studies of the financial crisis by Hossain and Nguyen (2016), Ryu et al. (2019) and Bhagat and Bolton (2019), who analysed the relationship between firm performance and corporate governance of the 100 largest financial institutions from 1998-2016, I implement a financial

crisis structural time break, creating the third and fourth sub-periods from 2007-09, and 2010-15. As is the case with incorporating any set of dummy variables, one of the sub-periods will be dropped from the model to avoid what is known as the "dummy variable trap", causing the model to run a singular matrix thus making the regression impossible to estimate. My final sub-period dummy variable (2010-2015) will be excluded from the model.

2.4 Testing the Data and Model

Following recent studies (Agyemang-Mintah, 2015; and Mullen and O'Hagan Luff, 2018) I construct a pairwise correlation matrix along with descriptive statistics of my variables. Correlations among the explanatory variables can serve as a warning regarding multicollinearity and against simultaneous inclusion of heavily correlated explanatory variables in the same regression. A correlation of 80 percent or more existing between variables is considered severe and will result in removal from the model. A secondary test to compliment a correlation matrix is a Variance Inflation Factor (VIF) test (Pouraghajan Malekian, E., Emamgholipour, M., Lotfollahpour, V., and Bagheri, 2012; and Hanck, Arnold, Gerber, and Schmelzer, 2019). I performed this test using Microsoft Excel by running each of my explanatory and control variables against each other in a regression. From the statistics derived from the regression, the R^2 is used in the VIF calculation shown in Equation 2.11. Values greater than five signify a strong correlation between explanatory variables.

Equation 2.11 - Variance Inflation Factor

$$VIF_{var1,2,..x} = 1/(1- R^2)$$

Due to the time-series nature of my data, using EVIEWS software, I perform the Augmented Dicky-Fuller (ADF) test which is commonly used in firm performance literature (Abbasi and Malik, 2015; Kang, Germann, and Grewal, 2016; Peter and Nelson, 2019). The ADF test is performed on my outcome and explanatory variables to determine if each variable is stationary or non-stationary. If the p-value is less than five percent, the null hypothesis can be rejected, meaning the variable does not have a unit root and does not suffer from serial correlation, therefore, the variable is considered stationary. If the null hypothesis is accepted due to a p-value higher than five percent for any variable, a first order difference is taken of each variable and the unit root test is run again at the first level difference. After the second iteration of the ADF test and the p-values are less than five percent at the first order difference, the variables are considered stationary. The result of this will be seen in the Durbin-Watson (DW) statistic which measures the level of serial-correlation in the data, thus measuring how reliable the R^2 statistic is in describing the relationship the explanatory and control

variables have with the outcome variables. A DW statistic ranges from 0-4; 0 implies the R^2 is 100 percent positively affected by serial correlation and a score of 4 implies the R^2 is 100 percent negatively affected by serial correlation. A score of 0 or 4 indicate a spurious regression which can result in a high R^2 even though the variables tested are in fact highly uncorrelated. A DW statistic between 1.5-2.5 is generally considered a reliable range as seen in prior studies of the P-M relationship studies (Niresh and Velnampy, 2014; and Pouraghajan et al., 2012) and from a pure statistics standpoint, a range of 1.0-3.0 is considered acceptable (Field, 2009). Within this range, the R^2 and adjusted R^2 results are accurate representations of the relationships between the variables tested.

To measure if the regression coefficients under both the random and fixed effect models are statistically different, I perform the Hausman (1978) test for endogeneity. This tests for differences between the Ordinary Least Squares (OLS) (or one-stage robust regressions) and variable estimates. The test statistic normalizes the differences in coefficients by the differences in standard errors. Large differences between OLS and model variables will result in large test statistics and low p-values, suggesting that endogeneity is a problem and that the model variable results are more consistent than OLS results. A P-value less than five percent is considered significant and leads to a rejection of the null hypothesis and therefore acceptance of the alternate hypothesis. The null hypothesis confirms the regressors are not correlated and can be written as: Null hypothesis, preferred model is random effects; Alternate hypothesis, preferred model is fixed effects. To conclude, I perform a robustness check of the regression results. A random effects and fixed effects comparison are conducted by estimating the model with each effects iteration as conducted in past firm performance literature (Zagorchev and Gao, 2015). This comparison will prove the consistency or inconsistency of the results. An ideal result will show very little change in the variable, coefficient, and significance level using either model. I conduct a second test of robustness by replacing the market capitalization size variable with employee count and estimating the regression. A third and final test of robustness is conducted by estimating the model for each of the four sub-periods.

2.5 Conclusion

This chapter has outlined the specifics of the data used in each research question, and the relevant methodologies and tests to be performed throughout my thesis. My first research question compares the firm level and industry level results of two geographic-based multinationality models using statistical analysis commonly used in IB literature, performed on a unique dataset due to the addition

of the firm specific subsidiary geographic location data. My second research question defines the relationship between firm performance and multinationality using three commonly used control variables; firm size, age, and financial leverage, and dummy variables controlling for time intervals recently used in studies of firm performance post financial crisis. My data from chapter four is refined in chapter five to a balanced dataset of 1,377 firms. This dataset is tested by a series of commonly used methods, those being the Hausman test for model specification, a correlation matrix measuring correlations between variables along with a variance inflation factor test, and unit root test to identify the level of serial correlation. The model is estimated nine times followed by a series of robustness tests. Chapter five concludes with a focus on the effect industries play on firm performance. The econometric techniques used in chapter five are applied in chapter six with the data separated into AM and EM groupings as well as a separation into continent-based geographical regions.

The analysis and modelling methods applied to my dataset give an encompassing picture of the relationship between a firms' performance and the firms' level of multinationality. To conclude, I will reiterate the importance of my dataset to my overall thesis as mentioned in Section 2.2.2. My 1,377-firm longitudinal dataset is the first to measure firm and industry performance with a balanced panel of firms originating from all six continents, across 19 countries (eight AM and 11 EM), over 18 years. The following chapter will examine the literature surrounding firm level multinationality, the relationship between multinationality and firm performance, and the role each of my variables being tested in my methodology plays in determining both a firms' multinationality and a firms' performance in the market.

Chapter 3
Literature Review

3.1 Introduction

Internationalization/Multinationality have been used interchangeably throughout international business (IB) literature, both referring to the same process of firms expanding operations beyond their home country/market while globalization is the process impacting multinationality of firms (Knight, 2003). This branch of research entered IB literature in the early 1980s when the traditional process of internationalization was referred to as "internationalization process theory" as outlined by the Uppsala model (Johanson and Vahlne, 1977). The summarization of this theory is firms gradually become international through the expansion into neighbouring markets. However, the 1980s saw a dramatic increase in takeover (Gregor and Kaplan, 1998) and restructuring activities among firms, distinguished by its use of leverage and hostility. The use of leverage was so great that from 1984-90, more than 500 Billion USD of equity was retired on net, as corporations repurchased their own shares, borrowed to finance takeovers, and were taken private in leveraged buyouts. Deregulation, both nationality and internationally, along with improved communication technologies, increases shareholder value and expansion of firm operations.

Through the analysis of advanced markets (AM), many theories of internationalization have occurred in the IB literature. The monopolistic advantage theory (Hymer, 1976) first coined "liability of foreignness" predicts the P-M relationship to be linear negative. High risk due to barriers of internationalization such as high coordination/management costs caused by a high degree of complexity. The product life cycle theory (Vernon, 1966 and 1979) suggests that early in a product's life cycle all the parts and labor associated with that product come from the area where it was invented (Hill, 2007). After the product becomes adopted and used in the world markets, production gradually moves away from the point of origin creating an overall inverted U-shape P-M relationship. The eclectic or ownership-locational-internalization (OLI) paradigm (Buckley and Carson (2002) and Dunning (1979, 1980, and 1988)) specifies that firm-specific factors, host country-specific (locational) factors, and product/industry factors may play a crucial role in determining a firm's first entry choice. The OLI paradigm predicts a positive linear P-M relationship as firms benefit from operation flexibility, economies of scale and scope, and there is an overall diversification of risk through expanded operations. The internationalization process model (Johanson and Vahlne, (1977 and 2009); Meyer and Gelbuda, (2006)), and the multi-stage theory of internationalization (Contractor, 2007). The latter

divides a firms' internationalization into three stages, early internationalizers, mid-stage internationalizers, and highly internationalized firms. Firms slightly decline in degree of multinationality in stage one, rapidly increase in multinationality in stage two, and gradually decline in multinationality in stage three. More recently, experiential learning by the firm is theorized to lead to incremental internationalization due to learning from past experiences and knowledge gained from those experiences. There are periods of positive benefits followed by periods of high costs of internationalization creating an inverted U-shape and J-shape P-M relationship. A further progression of experiential learning is the organizational evolution of the firm known as contingency view. Costs of internationalization are followed by benefits as a result of the organization evolving through innovation and knowledge development. This P-M relationship is S-shaped and inverted S-shaped, depending on the initial performance in the early stages of multinationality. An emerging market (EM) specific multinationality theory was purposed by Mathews (2002), named the OLI framework, differing from Dunning's OLI framework as "O" standing for outward orientation, "L" standing for linkages/leverage and "I" standing for integration. Mathews argues EM firms do not possess large domestic assets that can be exploited abroad, therefore, these firms embrace an outward orientation strategy by forming linkages with foreign companies to secure access to resources. These linkages can be used to leverage the firms' resources, gaining a cost advantage while learning about new sources of competitive advantages on how to operate internationally. This framework has been argued more recently by Ramamurti (2012) who argues EM firms do possess ownership advantages, but these advantages are unique when compared to IB literature.

Due to the time frame of my analysis, 1998-2015, a sub-period analysis is conducted, specifically with a focus on the financial crisis. Dolenc, Grum, and Laporsek (2012) examined the effects of the global financial crisis on return on equity (ROE), finding the global financial crisis affected ROE negatively. Also, Akbar, Rehman, and Ormrod (2013) and Zeitun and Saleh (2015) found the financial crisis to have a negative impact on accounting performance. Vissak and Francioni (2013) examined serial non-linear internationalization, firms with several subsequent exits and re-entries in international markets, or considerable foreign involvement fluctuations. They propose that de- and re-internationalizations are normal for firms.

This chapter describes the relevant existing literature that builds towards the research areas of my thesis. Section 3.2 describes firm level multinationality in literature, primarily dominated by Alan Rugman's regional-based view of firm internationalization and the growing debate of what is a global

firm. Section 3.3 describes the firm performance-multinationality (P-M) relationship and section 3.4 describes the firm specific variables that have been prominent in past and recent literature. Section 3.5 details the gaps that exist in current multinationality and firm P-M IB research and how my thesis fills those gaps. Section 3.6 concludes the literature review.

3.2 Multinationality in Literature

Alan Rugman has produced 400 articles on the topic of globalization, making him the most renowned scholar in IB literature. Rugman and Verbeke (2004) along with Rugman and Brian (2003) use a static measure that analyses the firms that comprise the Fortune 500 from 2001. The findings concluded that only one (LVMH) of 49 retail multinational corporations in the Fortune 500 are considered global while nine of a possible 380 firms are considered to be truly global (Greater than 20 percent of sales to all three Triad regions and less than 50 percent of sales in all three regions). Furthermore, while still using a static approach, Rugman and Brian (2003) found of the top 20 transnational firms as identified by the United Nations World Investment Report in 2002, only one (Philips) is considered global. More recently, Oh and Rugman (2014) measured 655 firms listed in the Fortune 500 over a ten-year (1999-2008) and eight year (2000-07) time span, using asset and sales information. These studies were the first to conduct longitudinal research on the multinationality of firms using both asset and sales data with both studies finding no signs of globalization among the worlds largest 500 firms with only four percent classified as global using the Triad model. The general conclusion made by Oh and Rugman is economic geography is less relevant for business strategy at country and global levels.

There have been differing views regarding the regionalization view expressed by Rugman. Dunning, Fujita, and Yakova (2007) demonstrate three dimensions to firm-level analysis of the geography of firm activity as determined by their findings. Inward firm activity as part of the regionalization/globalization debate, normalized data on foreign direct investment (FDI) to take account of the size of gross domestic product (GDP) of the regions identified, and extend the Rugman/Verbeke analysis to include an additional measure that helps shed light on the debate, namely a revealed comparative FDI index (RICA). The regions identified by Dunning, such as Anglo, Orthodox, and Confucian are based on their common cultural characteristics rather than geographical advantage. Osegowitsch and Sammartino (2007 and 2008) alter the percentage thresholds used from 20 to 15 percent, and again to 10 percent, to create differing thresholds defining the home region category. The results show weaknesses in the Triad model resulting in more firms becoming classified

as bi-regional and global, finding the regionalization of firms is not as strong as Rugman claims. They conclude that Rugman's results are sensitive to the thresholds used to categorize firms.

A noticeable differing opinion of Rugman's Triad multinationality model and the regionalization stance is from Aggarwal et al. (2011) who produced an alternative model, the ABHK model, which classifies the multinationality of firms by incorporating the entire geography of the world. Using this model, Berrill (2015) classifies 1,289 G7 and Fortune 500 firms using the ABHK model (2011) and again, concludes that the evidence in favour of regionalization is not overwhelming. Berrill (2015) argues that this approach provides a more robust classification in that it better represents the vast transition economies that are not included in the Triad model and it does not use arbitrary sales percentages to categorize firms (Berrill (2013), Mullen and Berrill (2015), Chadha and Berrill (2016), O'Hagan Luff and Berrill (2016)). Furthermore, when Rugman measures the Fortune 500 firms with the Triad model, a total of 127 firms had insufficient data and no data resulting in 27 percent of the firms included in the study not having enough data to be conclusively categorized in one of the four Triad categories (Rugman, 2005). Flores and Aguilera (2007) measured 100 U.S. multinationals at two points in time, 1980 and 2000 and their findings revealed the foreign expansion of these firms has gone beyond the original Ohmae (1985) Triad regions (United States, Western Europe, and Japan), and even beyond the new Rugman and Verbeke (2004) regional Triad regions (Asia-Pacific, Europe, North America). This study further points out the need for a better conceptualization of regional classification while also identifying the need for research to be longitudinal in order to garner a better scope of whether firms are becoming more global or regional over time.

3.2.1 Emerging Market Multinationality

There has been a growing stream of literature on EMs since the late 1980's (Fischer, Sahay, and Vegh, 1996) and more specifically, the mid 1990's when Eastern European countries became liberalized through major political reforms aimed at transitioning toward a market economy (Musteen, Datta, and Francis, 2014). Transitioning economy firms have been internationalizing at a greater rate than AM firms for some time now (Merchant, 2016) and as outlined by Meyer and Peng (2015), in the last decade "multinationals from emerging economies" is now considered a type of organizational form, along with foreign entrants, local incumbents, and entrepreneurial firms. This is not surprising since EMs made up four percent of global market capitalization in 1985 (Morrow, 1996), increasing to eight percent in 1995, and once again to 12.6 percent in 2012 (Bekaert, Ehrmann, Fratzscher, and Mehl 2014). Furthermore, the early stages of firms investing in EMs showed eight of the 10 largest hosts of

FDI to be the following EMs; Argentina, Brazil, China, India, Egypt, Mexico, South African, and Russia (Wilkins, 1994). These EMs have garnered attention as of late (Coyocaru, 2016; Rugman, 2016; Tang et al., 2020) due to their relatively high rate of internationalization when compared to developed economies (Kiss, Danis, and Cavusgil, 2012). In 2014, 128 EM firms were listed on the Fortune Global 500 list compared to only 20 making this list in 2004 (Tan, 2017). This is exceptional when taking into consideration the barriers that hold back EMs and transition economies such as the liability of origin effect (Bartlett and Ghoshal, 2000), where a negative country image translates into its products being viewed as inferior in foreign markets (Erem et al., 2010).

The internationalization of EMs is no longer disputed but is this momentum slowing down or speeding up? In 2016, Rugman used the Triad model to measure 34 EM firms using data from 2004, and determined only one firm to be global, Flextronics from Singapore, with 19.8 percent of its sales in its home region, 44.0 percent in North America, and 36.2 percent in Europe. Rugman concludes the largest EM firms are near entirely home-region based. As outlined in chapter two, the thresholds of the Triad model create a rather difficult percentage of sales target in each Triad region in order for a firm to be classified as global. As demonstrated in previous methodological studies of firm-level multinationality measuring (Osegowitsch and Sammartino, 2008), the definition of what is a global firm is not agreed on in IB literature and this calls for further investigation. There is much debate on what exactly is an EM and it is generally accepted that what defines a market to be emerging is a definition that is ever changing. What is an EM exactly and when did these markets become a focus for academics? The International Finance Corporation's Emerging Market Database initiated in 1976 (Bekaert and Harvey, 2002) and the development of the EM definition has grown ever since. Arnold and Quelch (1998) define EMs as countries that satisfy two criteria: a rapid pace of economic development, and government policies favouring economic liberalisation and the adoption of a free market system. A more recent definition by Meyer and Grosse (2018), defines an EM economy as an economy with low to middle per capita income with high economic growth potential. For my research I classify firms as EM based on the FTSE classification report (2015). EMs have a lower than average per capita income, rapid growth, high volatility, their capital markets are less mature, and there is a higher than average return for investors.

The majority of research on how EM multinational corporations internationalize and evolve has been case based (Young, Huang, and McDermott, (1996); and Cuervo-Cazurra and Ramamurti (2014)), or cross sectional at a single point in time (Boston Consulting Group, (2006)). Cuervo-Cazurra and Dua

(2009) analysed the top 500 Latin American firms, taken from the America Economic annual compilation of information on the 500 largest Latin American firms, from 1989-2005 finding domestic firms to be the main beneficiaries of pro-market reforms in developing countries. This study focuses on one continent, South America, and the firms that are prevalent in those markets. In 2005, a survey was conducted to study the location-specific drivers for post entry subsidiaries' sub-national regional development using a sample of 91 firms operating in Poland (Chidlow, 2015). There is a clear gap in the literature for a longitudinal multi-country analysis of the multinationality of advanced emerging, secondary emerging, and frontier emerging market firms.

3.2.2 Existing Theoretical Multinationality Frameworks

There are many classification schemes in the area of business, those being Hambrick's (1984) classification of strategy, Greenberg's (1987) organisational structure, Archibugi and Michie's (1995) technology globalisation, Law, Wong, and Moveley (1998) multidimensional constructs, Earl's (2001) knowledge management, and Marks, Mathieu, and Zaccaro's (2001) team processes. A classification scheme to measure firm level multinationality has only recently received attention in literature with the ABHK model being introduced in 2011, measuring Irish firms in 2009. Prior to this model, singular measures have been used to form a relationship between financial performance and the degree of internationalization (DOI). Firstly, FS has been used as a measure in the early multinationality literature, as seen by Vernon (1971), Horst (1973), Hughes et al. (1975), Buckley et al. (1978), Siddharthan and Sanjaya (1982), Kumar (1984), Dunning (1985), Rugman et al. (1985), Yoshihara (1985), Shaked (1986), Michel and Shaked (1986), Buhner (1987), Grant (1987); Grant et al. (1988); Daniels and Bracker (1989), Geringer, Beamish, and DaCosta (1989), and Collins (1990). FS as a measure of multinationality is still considered to be an appropriate gauge of multinationality as seen in Table 3.1 which lists the most cited multinationality-performance publications, FS is used by both Hitt et al. (1997) and Zahra et al. (2000). Table 3.2 lists the most recent publications in which both Tsai and Ren (2019), and Lee (2019) use FS as the measure of multinationality. Chapter four of my thesis focuses on multinational classification systems, in particular, a comparison of the Triad model as proposed by Rugman (2001), and the ABHK model as proposed by Aggarwal et al. (2011). Rugman has produced a plethora of articles on the topic of globalization and approximately 49,588 citations since 2015 on Google Scholar making him the most renowned scholar on this topic, thus making the Triad model the most revered category-based model used to measure a firms' multinationality. Rugman's research revolves around the Triad powers framework, which was originally suggested by Ohmae (1985). Rugman and Verbeke (2004, 2005, 2007, and 2008) expand the original Triad regions to create

North America, Europe, and Asia. Most studies by Rugman and his co-authors analyse the Fortune 500 firms at one point in time (Rugman (2001), Rugman and Brian (2003), Rugman and Verbeke (2004)). Rugman (2003) concludes that only nine of a possible 380 Fortune 500 firms are global in 2002, and Gupta, Govindarajan, and Wang (2002) find only one of 49 retail firms to be global. By comparing a classification system put forward by Aggarwal et al. (2011), which has only been seen sparsely in multinationality measuring literature, to the Triad model, my research contributes to the evolution of frameworks used in IB research. This contribution is brought forward in chapter four and further solidified in chapters five and six.

Table 3.1

Most Cited by Google Scholar Performance – Multinationality Studies												
No. citations on Google Scholar	**Year**	**Authors**	**Journal**	**M-P relationship**	**Source of data**	**Measure of Performance (Accounting Based)**	**Measure of Performance (Market Based)**	**Measure of Multinationality**	**Sample size**	**Country of sample**	**Cross-section versus panel**	**Pooled cross-section, fixed or random effects**
3,487	1997	Hitt, Hoskisson, and Kim	Academy of Management Journal	Inverted U-shaped	S&P COMPUSTAT database	ROA	None	FS	295 firms	USA	Cross-section	N/A
3,333	2000	Zahra, Ireland, and Hitt	Academy of Management Journal	Positive	Survey administered to firms	Sales Growth & ROE	None	FS	1,388 firms	USA	Cross-section	N/A
2,575	2001	Lu and Beamish	Strategic Management Journal	U-Shaped	NIKKEI NEEDS tapes database and Japan Company Handbook	ROA & ROS	None	Total # of subsidiaries & # of countries with subsidiaries	164 firms	Japan	Panel (12 years) - Total n. of observations not reported	Pooled cross-section/ timeseries
1,435	1996	Tallman and Li	Academy of Management Journal	Insignificant	Directory of Multinationals database	ROS	None	FS & # of countries with subsidiaries	192 firms	USA	Cross-section	N/A
1,409	2004	Lu and Beamish	Academy of Management Journal	S-Shaped	NIKKEI NEEDS tapes database and Japan Company Handbook	ROA	Tobin's Q	# of countries with subsidiaries	1,489 firms	Japan	Panel (12 years) - Total n. of observations not reported	Random effects
1,352	2000	Palich, Cardinal, and Miller	Strategic Management Journal	Inverted U-shaped	Meta-analysis of 82 studies	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,254	2003	Contractor, Kundu, and Hsu	Journal of International Business Studies	S-Shaped	Directory of the World's Largest Service Companies	ROA and ROS	None	FS, # of foreign employees, # of foreign offices	103 firms	USA & 9 other countries	Panel (6 years) - Total n. of observations=364	Pooled cross-section/ timeseries
1,172	1989	Geringer, Beamish, and Dacosta	Strategic Management Journal	Positive	World Directory of Multinational Enterprises	ROS	None	FS	200 firms	USA and European countries	Cross-section (Tests of mean differences)	N/A
995	1988	Grant, Jammine, and Thomas	Academy of Management Journal	Positive	Not Reported	ROA	None	FS	304 firms	UK	Panel (13 years)	Pooled cross-section
952	1999	Gomes and Ramaswamy	Journal of International Business Studies	Inverted U-shaped	Not Reported	ROA	None	FS, Foreign assets to total assets, # of countries with subsidiaries	95 firms	USA	Panel (6 years) - Total n. of observations=570	Pooled cross-section/ timeseries

***Literature is listed by most citations on Google Scholar. Foreign sales as a percentage of total sales (FS), Return on assets (ROA), Return on sales (ROS).**

Table 3.2

Recent Performance-Multinationality Studies											
Year	**Authors**	**Journal**	**M-P relationship**	**Source of data**	**Measure of Performance (Accounting Based)**	**Measure of Performance (Market Based)**	**Measure of Multinationality**	**Sample size**	**Country of sample**	**Cross-section versus panel**	**Pooled cross-section, fixed or random effects**
2020	Tang, Gu, Xie, and Wu	International Business Review	Linear Positive	China Stock Market Accounting Research & WIND database	None	Tobin's Q	# of foreign subsidiaries	766 firms	China	Panel 2008-15	Fixed Effects
2019	Bagheri, Mitchelmore, and Bamiatzi	Journal of International Management	Inverted U-Shaped	Survey	Sales and Foreign Sales	None	Five-point Likert-scale	116 firms	United Kingdom	Cross-section 2015	Pooled cross-section/ timeseries
2019	Tsai and Ren	Technology Analysis & Strategic Managements	U-Shaped	Taiwan Economy Journal	ROA	None	Exports to total sales	225	Taiwan	Panel 2008-12	Fixed Effects
2019	Lee, Park, and Namgung	Journal of Korea Trade	Negative	KIS-value Database	ROA and ROS	None	Exports to total sales	91	Korea	Unbalanced Panel 2017	Fixed Effects
2018	Hosseini, Brege and Nord	Forest Policy and Economics	Negative	Questionnaire	ROC	None	Overseas sales to total sales	240	Sweden	Cross section 2001-2014	Pooled cross-section/ timeseries
2018	Mullen and O'Hagan	Transnational Corporations Review	Various	Thompson's Reuters' Datastream	ROA	Total Return Index	Triad and ABHK model	803	11 Advanced Market European Countries	Panel 1998-2016	Fixed Effects
2017	Shin, Mendoza, Hawkins, and Choi	International Business Review	Inverted U-Shaped & U-Shaped	Analysis System of Iberian Balance Sheets	ROA and ROE	None	# of foreign subsidiaries and # of countries	1.082	Spain	Unbalanced Panel 2005-2012	Fixed Effects
2016	Cantele and Campedelli	International Journal of Business and Social Sciences	Inverted U-Shaped	Bureau Van Dijk Database	ROS	None	Exports to total sales	1,231	Italy	Panel 2009-2011	Fixed Effects
2016	Clegg, Lin, Yoss, Yen, and Shih	International Business Review	Linear Positive	Taiwan Economic Journal	Annual Sales/Capital	None	# of countries a firm has invested in	261	China	Panel 1991-2011	Fixed Effects
2016	Benito-Osorio et al.	International Business Review	S-Shaped and U-Shaped	Survey on Business Strategies	ROA	None	Exports to total sales	2,748	Spain	Unbalance Panel 1994-2008	Fixed Effects
2015	Noni and Apa	Journal of International Entrepreneurship	Positive	Questionnaire	Scoring Model	None	Exports to total sales	311	Italy	Panel 2014	N/A
2014	Almodóvar and Rugman	British Journal of Management	Inverted U-Shaped & M-Shaped	Survey on Business Strategies	ROS	None	Exports to total sales	52	Spain	Unbalanced Panel 1994-2008	Random Effects
2013	Andrade and Galina	Journal of Contemporary Administration	Linear Negative	UNCTAD and Thompson Reuters' Datastream	ROA	None	FS	33 firms	10 EM countries	Panel 2004-09	Fixed Effects
2012	Yang and Driffield	Management International Review	U-Shaped	Meta-analysis of 54	N/A	N/A	N/A	N/A	N/A	N/A	N/A

***Literature is listed chronologically. Foreign sales as a percentage of total sales (FS), Return on assets (ROA), Return on sales (ROS), Return on Equity (ROE), Return on Capital (ROC).**

3.3 Firm Multinationality – Performance

The number of empirical studies that analyze the relationship between international diversification and firm performance has grown significantly. However, there is a well-known lack of consensus in the literature on the shape and direction of the P-M relationship (Li, 2007; Gaur and Kumar, 2009; De Jong and Van Houten, 2014). Some of the initial empirical studies in the 1970s found a positive linear relationship, emphasizing the benefits associated with international diversification, while later studies in the 1980s found a negative linear relationship, highlighting that costs as well as the risks associated with doing business abroad are significant (Benito-Osorio, Colino, Guerras-Martin, and Zúñiga-Vicente 2016). At the end of the 1980s and mainly in the 1990s, studies found two non-linear relationships, namely an inverted U-shape and a U-shape. From the 2000s to present day, the P-M relationship has been described as S-shaped, M-shaped, W-shaped, and sigmoid shaped.

3.3.1 Firm Multinationality – Performance, Early Analysis

In the early IB literature, two P-M relationships have been notably evident, those being a positive or a negative relationship. A positive P-M relationship is due firms deploying their intangible assets to explore market imperfections in foreign countries, resulting in higher levels of internationalization associated with positive returns (Gaur and Kumar, 2009). A negative P-M relationship (Lin, Liu, and Cheng, 2011; Singla and George, 2013) measures higher levels of internationalization and negative returns. This contradictory finding can be explained by Agency Theory, as managers may invest in international projects that destroy value, in an effort to capture cash flows from owners. Beyond the negative P-M relationship is the inverted U-shape which is based on the incremental model developed by Uppsala school (Johanson and Vahlne, 1977). This theory postulates that internationalization starts on geographic adjacent countries, where the business environment is more familiar to firms, and returns are prone to be positive. When entering in more complex markets, firms begin to face managerial difficulties that end up compromising returns. Eventually the marginal cost of international expansion will exceed the marginal benefits. The relationship between internationalization and performance would take an inverted U-shape (Li and Yue, 2008; Chen and Yu, 2012). The U-shaped P-M relationship (Chao and Kumar, 2010; Lampel and Giachetti, 2013) implies that performance first decreases at low levels of international diversification due to the liabilities of internationalization, namely the liability of foreignness (Zaheer, 1995) and the liability of newness (Lu and Beamish, 2004). However, with continued international expansion, performance increases because firm-specific advantages can be exploited at a greater scale and new knowledge and

capabilities are developed (Ruigrok and Wagner, 2003), while the liabilities of internationalization are reduced through accumulated experience in the host country (Lu and Beamish, 2004). Even until recently, the U-shaped description of a firms' relationship between performance and multinationality has surfaced as seen by Tsai (2019) who measured 225 firms from Taiwan using ROA and FS across a 2008-12 time period. In contrast to the U-shape relationship is the inverted U-shape which offers a 180-degree view of the P-M relationship. This has been seen in prominent literature by Hitt et al. (1997), and Gomes and Ramaswamy (1999), who both used ROA as the measure of performance and FS as the measure of multinationality while Gomes and Ramaswany also used the number of countries the firm had subsidiaries located. This P-M relationship identifies the costs of internationalizing being greater than the benefits but as the firm gains' knowledge of the new territory, performance begins to rebound and eventually exceed the initial performance levels before internationalizing.

3.3.2 Firm Multinationality – Performance, S-Shaped

A progression of the U-shape and inverted U-shape is the S-shape hypothesis. Contractor et al. (2003) as well as Lu and Beamish (2004) explain that internationalization produces positive returns up to a certain level of investment in international operations. Further from that point, there is an escalation of managerial costs, and the marginal product of internationalization becomes negative. There is a dynamic interplay between costs and benefits of internationalization, so the resulting relationship with performance is a cyclical S-shaped curve. This curve is explained through a three-stage process. Stage one is the early stage of foreign expansion. Firms face significant entrance costs (Gomes and Ramaswamy, 1999; Zaheer, 1995) stemming from what the literature terms the "liability of foreignness and newness" (lack of familiarity with legal, social, and economic regulations, as well as consumer tastes and cultural aspects of the targeted foreign markets) that initially outweighs the incremental benefits of internationalization (cost savings, tax benefits, and economies of scale). In addition, firms expanding internationally will face initial learning costs and insufficient economies of scale (Contractor et al., 2003). After firms have learned to successfully handle these initial costs of foreign expansion by adjusting organizational structures, processes, and systems, they start to reap the benefits while holding costs under control (Contractor et al., 2003) which is considered stage two. Thus, in the mid-term expansion phase, firm performance on average recovers and increases. Stage three is witnessed when the firm faces an internationalization threshold at which the performance apex is reached and further expansion causes value deterioration (Tallman and Li, 1996). From that point onwards, increased organizational and environmental complexity (Qian, 2002; Zaheer and

Mosakowski, 1997) lead to incremental (governance, coordination, and transaction) costs that begin outweighing the benefits. Although in stage three firms may still generate benefits in better managing foreign subsidiaries, they do so at costs which outweigh these benefits (Gomes and Ramaswamy 1999). Thus, while companies may cover a broader spectrum of internationalization may be found also in stage one and stage three, performance pressures will ultimately select against under-internationalization, stage one, and especially against over-expansion or over-internationalization, stage three, (Contractor et al., 2003). Studies that established a U-shaped (Capar and Kotabe 2003, Ruigrok and Wagner 2003) and an S-shaped (Contractor et al. 2003, Lu and Beamish 2004, Riahi-Belkaoui, 1998) P-M relationship presented three reasons explaining why companies expanding internationally at low internationalization levels have relatively low and diminishing performance. The costs associated with the liability of foreignness and newness, initial learning costs, and insufficient economies of scale will outweigh the incremental benefits.

From an EM perspective, a longitudinal study of firms from Latin America examined the influence multinationality and business group diversification has on firm performance (Borda, Geleilate, Newburry, and Kundu, 2017). This study spans eight years, 2000-07, and uses a sample of 103 firms, suggesting diversified business groups have a stronger positive influence on the multinational-performance relationship for service firms when compared to manufacturing firms. As well, a study of 411 Indian born global firms over three years, 2010-12, reveals that export intensity and financial performance are positively related overall (Ganvir and Dwivedi, 2017). The P-M relationship does not have the same breadth of results to analyze.

3.4 Firm Characteristics in the P-M Equation

There are a plethora of factors that have been analyzed in the IB literature in order to gain a better understanding of why firms decide to invest in foreign markets. Firm size, financial leverage, state ownership, research and development intensity, advertising intensity, export intensity, outward foreign direct investment (OFDI) experience, institutional distance, cultural distance, and economic distance have been used in many variations of regression models to explain the P-M relationship. Of these firm specific characteristics, there are three that have appeared in the P-M literature frequently, those being firm size, firm age, and financial leverage.

3.4.1 Firm Size

Firm size is historically shown to have a positive associated with performance because it is typically indicative of a broad resource base. Larger firms are beneficiaries of scale and scope economies as powerful market players, capable of pre-emptive moves that prevent later entrants from gaining access to suppliers, markets, customers, and other scarce assets (Gaba, Pan, and Ungson, 2002). Larger scale also enables firms to have more resources with which to invest in innovations, pursue aggressive expansions, and bear the costs and risks of internationalization. With these historical points in mind, recent P-M literature has been divided on the relationship firm size has with performance across a wide range of countries as seen in Table 3.3.

Table 3.3

Firm Size and Performance Relationship							
Year of Publication	**Author**	**Journal**	**Size Measure**	**Country of Study**	**Sample Size**	**Time Period**	**Relationship**
2020	Tang, Gu, Xie, and Wu	International Business Review	Number of Employees	China	766 Firms	2008-15	Negative
2019	Vu, Nguyen, Ho, and Vong	Risk and Financial Management	Total Number of Employees	Vietnam	693 Firms	2015	Positive
2019	Shrivastava and Tamvada	Small Business Economics	Total Number of Employees	38 Countries	9,236 Firms	2012	Positive
2019	Bhagat and Bolton	Journal of Corporate Finance	Total Assets	U.S.	100 Firms	1998-2016	Negative
2018	Mullen and O'Hagan	Transnational Corporations Review	Market Capitalization	8 European Countries	803 Firms	1998-2016	No Relationship
2015	Li, Lu, Mittoo, and Zhang	International Review of Financial Analysis	Total Assets	China	1,241	2003-08	Positive
2014	Niresh and Velnampy	International Journal of Business and Management	Total Sales and Total Assets	Sri Lanka	15 Firms	2008-12	No Relationship
2013	Vintila and Duca	Romanian Statistical Review	Total Assets	Romania	100 Firms	2010	Negative
2012	Pouraghajan et al.	International Journal of Business and Commerce	Total Assets	Iran	400 Firms	2006-10	Positive
2010	Becker-Blease	Investment Management and Financial Innovations	Total Assets, Total Sales, Number of Employees	U.S.	109 Firms	1987-2002	Negative
2009	Lee	International Journal of the Economics of Business	Total Assets	U.S.	7,000 Firms	1987-2006	Positive
2007	Jónsson	Bifrost Journal of Social Science	Total Assets	Iceland	250 Firms	2000-04	Positive

***Literature is listed chronologically.**

The measures of firm size that have been seen in literature include total assets, total sales, market capitalization, and number of employees. Every firm size measure exhibit advantages and disadvantages, and no measure can capture all characteristics of "firm size". Generally, total assets

measure total firm resources, market capitalization involves firm growth opportunities and equity market condition, and total sales measures product market competition and is not forward looking (Dang et al., 2018), while number of employees varies from industry to industry and can fluctuate due to seasonal, part-time, and emergency hires.

3.4.2 Firm Age

Firm age is considered to be a determinant of performance because young firms typically have a higher failure rate than old firms, owing to liabilities of newness. Older firms are typically more experienced, command greater reliability and legitimacy, benefit from learning, and are associated with first mover advantages. Younger firms also have fewer network links in their home markets than older firms. The presence of dense networks often lends older firms a strong domestic competitive position, relative to younger firms, but those dense networks simultaneously limit their capacity to change or adjust to changes in the environment (Uzzi, 1996). This embeddedness results in what Autio, Sapienza, and Almeida, (2000) describes as "domestic pull," such that older firms remain focused on their home markets. With their organizational inertia, they are unresponsive to external institutional change (Hannan and Freeman, 1984; Shimizu and Hitt, 2005) and unmotivated or unable to conduct quick collectively bargaining agreements to gain strategic assets to help them better address the new institutional environment. Firm age also appears as a control variable in various empirical finance studies. For example, it is a control variable in default forecast models (Shumway, 2001) and in takeover prediction models (Bhattacharjee, Higson, Holly, and Kattuman, 2009). It is also used to measure increasing complexity of operations (Boone, Field, and Kim, 2007; Coles, Daniel, and Naveen, 2008). The finance literature has also looked at age-related profitability issues. Pástor and Pietro (2003) propose a risk argument. According to this view, investors' uncertainty lessens as the firm grows older (James and Wier, 1990; Berger and Udell, 1990). Consistent with that, the variability of stock returns is negatively related with incorporation age (Adams, Almedia, and Ferreira, 2005) and with listing age (Cheng and Yim, 2008). Declining risk implies declining required rates of return. Hence, profitability could appear to deteriorate with age when in fact the driving factor is declining uncertainty. Other finance papers have uncovered an inverse relation between age and ownership concentration (Holderness, Kroszner, and Sheehan, 1999; Helwege, Pirinsky, and Stulz, 2007; Holderness, 2009). In principle, if ownership were positively related to profitability, this regularity could induce a spurious negative relation between age and profitability. A spurious relation could also be induced by the age and tenure of the managers within the organization (Finkelstein and Hambrick, 1990; Graham, Harvey, and Puri, 2013). Finally, a relation between age and profitability is suggested

by the diversification literature as well. Over time, the reasoning goes, as their original industries mature, firms may be forced to enter new industries. But unrelated, or conglomerate, diversification harms profitability (Campa and Kedia, 2002; Villalonga, 2004). Age could therefore correlate with diversification, and thereby indirectly with profitability. It is evident, with an average age of a firm in my dataset being 75 compared to recent studies that analyze firm age (Ouimet and Zarutskie, 2014; Adomako, Amankwah-Amoah, Danso, Konadu, Owusu-Agyei, 2019), my dataset's average age is considerable higher.

3.4.3 Financial Leverage

The agency cost theory proposes two different outcomes for the impact financial leverage can have on firm performance. First, as the firm's leverage is increased, so is the agency cost. In this case, the conflict between debt owners and equity holders increases because shareholders are likely to adopt riskier projects at the expense of debtholders. Thus, there is a negative relationship between higher leverage and firm performance (Soumadi and Hayajneh, 2012) leading to higher operational risk (Jensen, 1986; Smart and Hitt, 1994). However, from a counter perspective, financial leverage can positively affect firms' performance. In this case, as more debts lead to more interest expense, it creates higher risk of bankruptcy; as a result, managers have to perform better to avoid bankruptcy and associated costs, which in turns improves firm performance.

Most research measures leverage as the ratio of total debt to total assets (Chiao, Yang and Yu, 2006; Elango and Sethi, 2007; Hsu, Lien, and Chen, 2013) or long-term debt to total assets (Geringer, Tallman, and Olsen, 2000; Qian et al., 2008; Tsao and Lien, 2013) to control for variation in firm performance due to changes in capital structures (Xiao, Jeong, Moon, Chung, and Chung, 2013), I use the comparable ratio of total assets divided by equity.

3.5 Multinationality Literature Gaps

Grouping countries into clusters has been a work in progress for over 60 years (Cattell, 1950) and is ever changing. The determinants that have been studied to create country clusters in the past are ethnicity (Portes and Zhou, 1994), geography (Furnham, Kirkcaldy, and Lynn 1994, Aggarwal et al., 2011), religion/language (Cattell, 1950), and work-related values and attitudes (Haire, Ghiselli, and Porter, 1966; Ronen and Shenkar, 2013). The most commonly used measure to demonstrate the level of firm internationalization has been foreign sales percentage (Errunza and Senbet, 1981; Bello and Williamson, 1985; Bilkey, 1985; Axinn, 1988; Moen, 2002; Kundu and Katz, 2003; Lu and Beamish, 2006; Lopez, Kundu, and Ciravegna, 2009; Manolova, Manev, and Gyoshev, 2010). According to

Nguyen (2017), the geographic diversity of the datasets used to analyze the relationship between firm performance and multinationality has been lacking. The United States leads the dataset creation with 60 out of 102 studies using datasets comprised of American firms. Studies of European firms (British, German, Swiss and Spanish firms) are in the second position with 18 out of 102, followed by Japanese firms with seven papers. Other Asia Pacific countries (Hong Kong, Korea, Singapore, and India) total six papers, Mexico and Canada, one paper each. Out of 102 studies with empirical evidence, there are 92 studies out of 102 using single country datasets, and 10 studies out of 102 using multi-country datasets. By using a multinationality model (ABHK model) that groups firms into geographic clusters using a firms' sales and subsidiary geographic location, a P-M analysis can be conducted that allows for a continent-based comparison. Results have varied in past research across continents which can largely be contributed to country effects. No research to date has measured the P-M of firms across all six continents. Furthermore, a comparison of AM to EM firm performance has only been seen in responses to studies but never within the same study using the same control variables. These gaps, coupled with the uniqueness of my 19 country, 1,377-firm balanced panel dataset, provides my thesis with an addition to the IB literature that has not been addressed to date.

3.6 Conclusion

This chapter describes the relevant literature that builds the base of my analytical chapters. AM multinationality literature has been dominated by the Triad model and Alan Rugmans' research in the past with very little opposing views. This has changed in recent times with altercations to the Triad model and alternative models, ABHK model, have arose to provide a more robust way to analyse the level of multinationality of firms. This has influenced the research of AM and EM firms and furthermore, the P-M relationship of these firms. The following three chapters provide an in-depth analysis of firm multinationality, the firm P-M relationship, and how this relationship differs between AM and EMs, as well as continent-based groupings of firms.

Chapter 4
Multinationality Models: Triad and ABHK

4.1 Introduction

Measuring multinationality of firms from advanced market (AM) countries has been conducted most by Alan Rugman using the Fortune 500 at a static point in time using the Triad model as a tool to measure said firm level multinationality. My research measures 19 countries (eight developed and 11 emerging) thus building on current debate of whether multinational firms are regional-based or global. My research on AM and emerging markets (EM) is unique in its longitudinal approach (1998-2015), encompassing hand collected dataset of 2,427 firms from 19 countries. Including EMs to the dataset adds a global element to a debate that is by in large, regional in nature from a firm dataset perspective.

There has been a growing stream of literature on EMs since the late 1980's (Fischer et al., 1996) and more specifically, the mid 1990's when Eastern European countries became liberalized through major political reforms aimed at transitioning toward a market economy (Musteen et al. 2014). This is not surprising since EMs made up four percent of global market capitalization in 1985 (Morrow, 1996), increasing to eight percent in 1995, 12.6 percent in 2012 (Bekaert et al., 2014), and 24.9 percent in 2018 (Bloomberg.com, 2018). These EMs have garnered attention as of late due to their relatively high rate of internationalization when compared to AMs (Kiss et al., 2012). This is exceptional when taking into consideration the barriers that prevent growth in EMs such as the liability of origin effect (Bartlett and Ghoshal, 2000), where a negative country image translates into its products being viewed as inferior in foreign markets (Eren-Erdogmus, Cobanoglu, Yalcin, and Ghauri, 2010). My analysis contributes to the current EM literature by filling gaps through the application of two categorical-based multinationality models. Firstly, a model that dominated the literature surrounding the regional/global debate, the Triad model, and secondly, a more recently use model known as the ABHK model. Both models give an encompassing stance on growth and maturation of firms from 1998-2015. The majority of IB literature measures firm multinationality using either foreign sales percentage (FS), (Errunza and Senbet, 1981; Bello and Williamson, 1985; Bilkey, 1985; Axinn, 1988; Moen, 2002; Kundu and Katz, 2003; Lu and Beamish, 2006; Lopez et al., 2009; Manolova et al., 2010), or a combination of country subsidiary count over total number of countries a firm has subsidiaries located and total number of foreign subsidiaries (Gomes and Ramaswany, 1999; Lu and Beamish, 2001 and 2004; Shin et al., 2017; Zhou, 2018; and Tang et al., 2020).

As described in chapter two, the Triad model has one variable to determine a firms' level of multinationality, geographic location of sales. Using the ABHK model, the two-pronged approach to measuring multinationality creates two pathways to increase multinationality; trading and investment through sales and subsidiaries geographic location. This additional variable, subsidiary location, makes it possible for a firm to be global when measured using the Triad model, but trans-regional in sales and domestic in subsidiaries making this firm a Rank-3 according to the ABHK model. Conversely, the ABHK model may rank a firm as global, but due to sales totals not reaching the thresholds set by the Triad model, the firm could be classified as regional-based, as was the case for German firm Airbus SE, from 2001-15. The variations in methodologies of each model can create a different narrative of whether firms are becoming more multinational, or less multinational over a given period. Using 2,427 firms, this chapter compares two sets of multinationality model-based results, developing a comparison of changes in firm level multinationality.

When using the Triad model, a modification is made to include firms from Africa and South America: If a firm from South Africa is being measured, South Africa is their home country, other African countries are part of the home region, 20 percent of sales to any of the three Triad regions would make that firm bi-regional, more than 50 percent of sales to any of the three Triad regions would make that firm host region, and over 20 percent of sales in the home region, and any two of the remaining three Triad regions would make that firm global. When using the Triad model to measure a firms' multinationality, firms from the United Kingdom decline from 2007-15, being the only country grouping of firms to give this collective result. Geographic sales location show firms from all countries except Italy to become less multinational from 2013-15 while geographic subsidiary scores are higher for firms from the United States when compared to their sales scores signifying a greater commitment to investing abroad than trading abroad. This is also true for firms from Australia, Canada, and France, however the differences from year to year are minimal. Australia and the United Kingdom are the only countries to show no net change overall from 1998-2015 while the other five countries increased their ABHK multinationality score in this time period. Firms from the Utilities sector are collectively the least multinational using all measures while firms from the Basic Materials sector are the most multinational. Furthermore, firms from the non-service sector (Basic Materials, Industrials, Oil and Gas, and Technology) are more multinational than service sector firms, driven by the internationalization of firms from the Basic Materials sector.

EM firms are collectively becoming more multinational over time. The Triad and ABHK models show mixed results from 1998-2001. However, from 2002-15 there are signs of de-internationalization after the financial crisis period from 2007-09, as well as 2014-15 for South African firms. Furthermore, firms from China, South Africa, South America (Argentina, Brazil, and Colombia), and the Visegrád (The Czech Republic, Hungary, Poland, and Slovakia) countries are shown to be in the early internationalization stage, while Russian and Indian firms are in the second stage of internationalization according to the multi stage theory of internationalization (Contractor, 2007). Five of the six EMs grew in multinationality due to their subsidiary advancement more so than their breadth of trading. This growth took place to regions that are geographic closer to the home country, with the exception of South Africa, a country that is geographically the furthest from any other geographic region and the home region does not contain any AM countries. This result both disagrees with the notion that firms sell abroad first and invest abroad second as firms from India, Russia, and South Africa collectively break this trend while Chinese, South American, and Visegrád firms strongly follow this trend, thus corroborating with the findings of Luo and Tung (2018) who identify differing levels of aggressiveness among EM multinationals. When EM firms are separated into their respective industry sectors, Technology firms are the most multinational while firms from the Utilities sector are the least multinational. Firms classified as non-service (Basic Materials, Industrials, Oil and Gas, and Technology) exhibit more multinationality than firms in the service-related industries (Consumer Goods, Consumer Services, Financials, Health Care, Telecommunications, and Utilities). As noted by Ramamurti (2012), there is no richer time than now to study how firms become multinational and through my research, both the rate and path of internationalization will be investigated for Chinese, Indian, Russian, South African, South American, and Visegrád firms from 1998-2015.

Section 4.2 describes how the dataset is selected and compiled followed by the methodology in section 4.3. Section 4.4 compares multinationality results of both models from a global, AM versus EM, and country specific perspective. Section 4.5 analyzes the changes in multinationality of the ABHK model from a geographic region perspective followed by an industry-based comparison of multinationality changes in section 4.6, limitations of the multinationality models in section 4.7, and a conclusion in section 4.8.

4.2 Data

To conduct a longitudinal analysis of firm level multinationality, a global representation of firms is required. This representation is derived from the major stock indices of 19 countries that comprise

my dataset. Eight AM countries from the G7 (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States), with the addition of Australia (According to the OECD listed of AM country's in 2015, Australia is the largest AM from the Oceania region), the BRICS grouping of countries (Brazil, Russia, India, China, South Africa), four Eastern European countries (Czech Republic, Hungary, Poland, and Slovakia), and after Brazil, the next largest economies in South America (Argentina and Colombia). Measuring the multinationality of EM countries can only be completed effectively when there is ample data at the firm level for each country. The EM countries from Eastern Europe; the Czech Republic, Hungary, Poland, and Slovakia, and two of the EM countries from South America; Argentina and Colombia, have multiple years of insufficient data existing. To allow for a comparison of multinationality of EMs, I group the data from the four Eastern European countries that comprise the Visegrád region. This region shares cultural and intellectual values and common roots in diverse religious traditions, which they wish to preserve and further strengthen (www.visegradgroup.eu). Furthermore, I group firms from Argentina, Brazil, and Colombia to make the South American EM grouping. These countries are chosen based on the FTSE Russell EM listing from 2015 that divides EM countries into three categories: advanced, secondary, and frontier. From this stage, two narratives are followed with regards to my dataset. Firstly, choosing firms from as large a geographic spread of countries in which the data collection procedure will allow. Undertaking EM research has historically, been a difficult task (Nassif, Al-Daeaj, Ebrahim, and Thibodeaux, 1991; and Berry, 1999) due to data availability. This leads to less data from frontier EM countries. Secondly, choosing countries within the three EM categories in order to give representation of firms from each stage of the EM classification schema.

As seen in Table 4.1, each stock index is chosen by the size of the country's economy using total gross domestic product in billions of USD as the measure of size (www.worldbank.org). Larger economies comprise a larger portion of the developed market dataset.

Table 4.1

Country Index Selection				
Developed Countries	**Russell Classification**	**Index**	**GDP in Billions (USD)**	**Number of Firms**
Australia	Developed	ASX	1.34	100
Canada	Developed	TSX	1.55	60
France	Developed	SBF	2.42	120
Italy	Developed	HDAX	3.36	110
Germany	Developed	TR Italy	1.82	110
Japan	Developed	Nikkei	4.12	225
United Kingdom	Developed	FTSE	2.86	350

United States	Developed	S&P	18.04	500
Total			**35.51**	**1,575**
Emerging Market Countries	**Russell Classification**	**Index**	**GDP in Billions (USD)**	**Number of Firms**
China	Secondary	SSE	10.87	178
India	Secondary	Nifty	2.07	100
Russia	Secondary	MICEX	1.33	50
South Africa	Advanced	JSE	0.31	163
South America				
-Argentina	Frontier	MERVAL	0.58	69
-Brazil	Advanced	IBX	1.77	100
-Colombia	Secondary	CB	0.29	50
Visegrád				
-Czech Republic	Advanced	PX	0.18	21
-Hungary	Advanced	DS Index	0.12	32
-Poland	Advanced	WIG	0.47	70
-Slovakia	Frontier	SAX	0.086	19
Total			**18.09**	**852**

***GDP data obtained from United Nations Statistics Division, December 2016 and classification of each country obtained from FTSE 2015.**

Data for the above list of firms is obtained from Thompson Reuters' Datastream. This system provides the geographic location (country) of a firms' sales. This is used to determine the firms' level of trading while my subsidiary data is hand collected for each firm using Dun & Bradstreet's Who Owns Whom subsidiary location listing. Every publicly traded company will provide an address of their subsidiaries. This data collection provided me with firm level multinationality results for the Triad model and the ABHK model. This data is divided into the 10 ICB industry sectors: Basic Materials, Industrials, Oil and Gas, and Technology are non-service sectors and Consumer Goods, Consumer Services, Financials, Health Care, Telecommunications, and Utilities and service sectors. Service sector firms provide services directly to the consumer while non-service sector firms provide products that are useable by a third party who then make the product available to the consumer.

4.3 Methodology

I first categorize each firm using two measures of multinationality; the Triad model and the ABHK model. Using the Triad model, I follow Rugman and Verbeke's (2004, 2005, 2007, and 2008) expansion of the original Triad regions, those being the United States, Western Europe, and Japan (Ohmae, 1985), to North America, Europe, and Asia/Oceania. Furthermore, following Mullen and Berrill (2015), I use a version of the Triad model that includes the original four categories: home region (Firm sales > 50 percent in home region), bi-regional (Firm sales are > 20 percent in two Triad regions), host region

(Firm sales are > 50 percent in another Triad region), and global (Firms sales are between 20-50 percent in all three Triad regions). Additionally, a category 'domestic', is added to the Triad model. This category represents firms that have 100 percent of their sales in their home country. This additional category distinguishes purely domestic firms from those that are home region. To determine the level of multinationality using the Triad model, geographic sales location data is analysed, categorizing a firm as home-based, bi-regional, host region, and global. A multinationality score is then assigned as follows: a score of one is given to domestic firms, a score of two to home-based firms, three to bi-regional firms, four to host region firms, and a score of five to global firms. Next, I categorize firms using the ABHK model which requires both sales and subsidiary geographic location data. These two variables give a measure of the level of trading a firm conducts and a level of investment a firm makes through its subsidiary placement, giving a measure of breadth and depth of multinationality of a firm. The ABHK model divides the world into six regions based on the geographic continents (Africa, Asia, Europe, North America, Oceania, and South America), and determines a firms' multinationality from the number of regions their sales (trading) and subsidiaries (investment) have penetrated. The levels of multinationality using this model range from a purely domestic firm, having both sales and subsidiaries only in the firms' home country, to a regional firm, having sales and subsidiaries in the firms' home region, to transregional, having sales and subsidiaries in more than one region, to a truly global firm which has sales and subsidiaries in all six geographic regions (Aggarwal et al., 2011).

With the Triad and ABHK results tabulated for every firm, a year to year comparison is made of how many firms are defined in each of the multinationality categories. The data is then divided into firms from AM countries and firms from EM countries. Furthermore, firms are divided into each of the 10 industry sectors, comparing multinationality per sector by the Triad and ABHK scores. By following this methodology, I can answer my first research question:

Research Question 1: To What Degree are Publicly Traded Companies Becoming More or Less Multinational Over Time?

Hypothesis i) Firms are consistently regional-based in their operations over time, with no signs of multinational growth.

Hypothesis ii) Firms are consistently regional-based in their operations over time, with growth in multinationality to other regions.

Hypothesis iii) Firms are becoming less regional-based in their operations over time, with growth in multinationality to other regions.

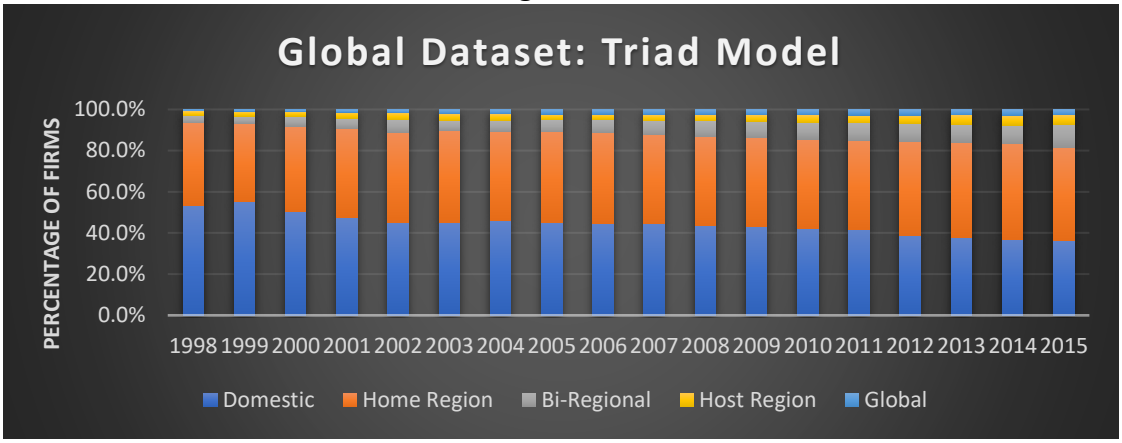
4.4 Global Dataset: Measures of Multinationality

My analysis begins with the Triad model. In past research, this model has been applied to firms from the United States and United Kingdom at a static point in time. More recently, Almodóvar and Rugman (2014) analysed Spanish firms and over an eight-year time period and Mullen and O'Hagan Luff (2018) analysed 803 firms from 11 European countries using this model. No research to date has used this model to measure the multinationality of firms from EM countries. In the following sections of my thesis, I perform this multinational measuring of firms and compare the results to a second multinationality model, the ABHK model.

4.4.1 Triad Results

From Figure 4.1, it is evident that 1998-2000 saw over 50 percent of firms being classified as domestic (all sales are in the home country). From 2001-2011, this percentage fell from 47.7-41.7 percent and again from 2012-15 to its lowest proportion of 36.5 percent. The home region category measured inverse results with 1998-2000 having the lowest percentage of firms categorized as home region while 2001-11 the percentage of firms remained constant between 43.1-44.4 percent. From 2012-14 this percentage increased from 45.7-46.5 percent with 2015 seeing a decrease to 44.9 percent. In the remaining three Triad categories, bi-regional, host region, and global, the low to high percentage change in these categories is minimal, increasing from 3.4-11.5 percent, 2.2-4.6 percent, and 0.8-2.9 percent respectively. The overall trend shows firms conducting sales outside of the home country more frequently, but the majority of firms still remain, as Rugman defines, home region-based, with 93.6 percent of firms (1,348 out of 1,440) being classified in this multinationality category in 1998. This combined percentage does decline over the 18 years with the lowest percentage taking place in 2015 with 81.3 percent of firms (1,918 firms out of 2,358) classified as home region. Triad defined global firms totaled 11 in 1998, approximately one percent of the dataset, and this grew to three percent in 2014 with 69 firms reaching the global classification.

Figure 4.1

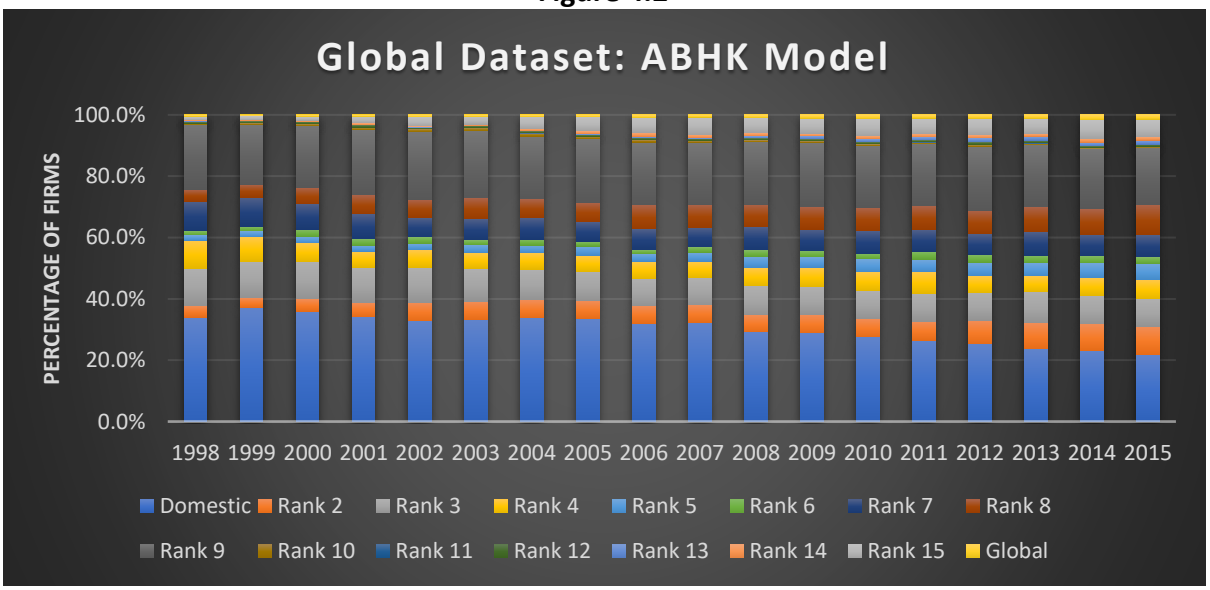


***Data is summarized from Appendix 4.1. Percentage of firms in my dataset on the y-axis and years on the x-axis.**

4.4.2 ABHK Results

When measuring a firms' level of multinationality using the ABHK model, a firm is defined as domestic when all sales and subsidiaries are in their home country. This added requirement has a noticeable effect on the number of firms that are considered domestic when compared to the Triad model (See Figure 4.2).

Figure 4.2



***Data is summarized from Appendix 4.2. Percentage of firms in my dataset on the y-axis and years on the x-axis.**

The domestic category has a high of 37.2 percent of firms in 1999, and a low of 22.0 percent in 2015. With this decrease of the proportion of firms classified as domestic from 1998-2015, other categories of multinationality (Ranks 2, 5, 8, 13, 14, 15, and global) increased over time. For a firm to increase its

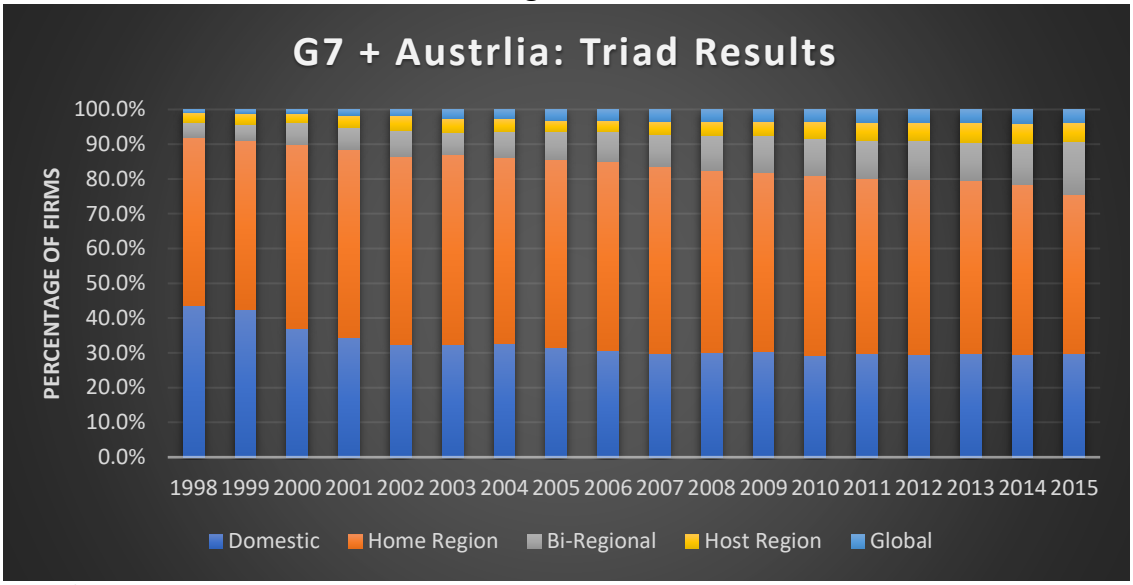
ranking from domestic to Rank-2, sales would have to take place in another country within its continent. Increases to Rank-5 would require a firm to have both sales and subsidiaries in countries within their geographic region. Increases in these ABHK classifications is expected as it represents first a firm selling abroad to neighbouring countries, and next, locating subsidiaries in neighbouring countries. An increase to Rank-8 takes place when a firm with sales and subsidiaries in neighbouring countries now locate subsidiaries in another geographic region, making their level of investment trans-regional (multiple continents). Increases to Ranks 13-16 represent the same behaviour, firms increasing their level of investment without first increasing their breadth of sales.

The global classification has a minimum of six firms in 1999 (0.4 percent of the firm total that year) and a maximum of 38 firms in 2014 (1.6 percent of the firm total that year). Comparing this result to the total number and percentage of firms the Triad model classified as global during these years, 11 in 1999 and 69 in 2014, less firms are classified as global when using the ABHK model, and the increase from 1998-2015 in global firms is less. The ABHK global criteria requires a firm to have sales and subsidiaries in all six continents. Compare this to the Triad criteria of a firm having a minimum of 20 percent of their sales in all three Triad regions, and there are 773 occasions (221 firms) when the Triad model classified a firm as global but the ABHK model did not. Conversely, there are 304 occasions, (88 firms), when the ABHK model classified a firm as global but the Triad model did not. If a firm has sales in all six continents, there is a sales presence in the Triad regions, but the restrictive nature of the 20 percent thresholds keeps firms from being global. However, the ABHK model shows less firms are classified as domestic which leads to the following conclusion. More firms are becoming multinational when measured using the ABHK model versus the Triad model.

4.4.3 Advanced Market and Emerging Market Firms: Triad Results

The countries that comprise the G7 plus Australia provide a very rich dataset to perform a multinationality mapping using the Triad model which has never been applied to this diverse a grouping of firms. From my results, Rugmans claim that firms are home region oriented is not false as 92.1 percent of firms are either purely domestic or home region in 1998 (1,062 out of 1,153 firms). Over the next 18 years, this percentage steadily decreases as shown in Figure 4.3. This decrease contradicts Rugman's argument that multinational firms are home region oriented. At any one year this claim is true, but it is becoming less and less true over time.

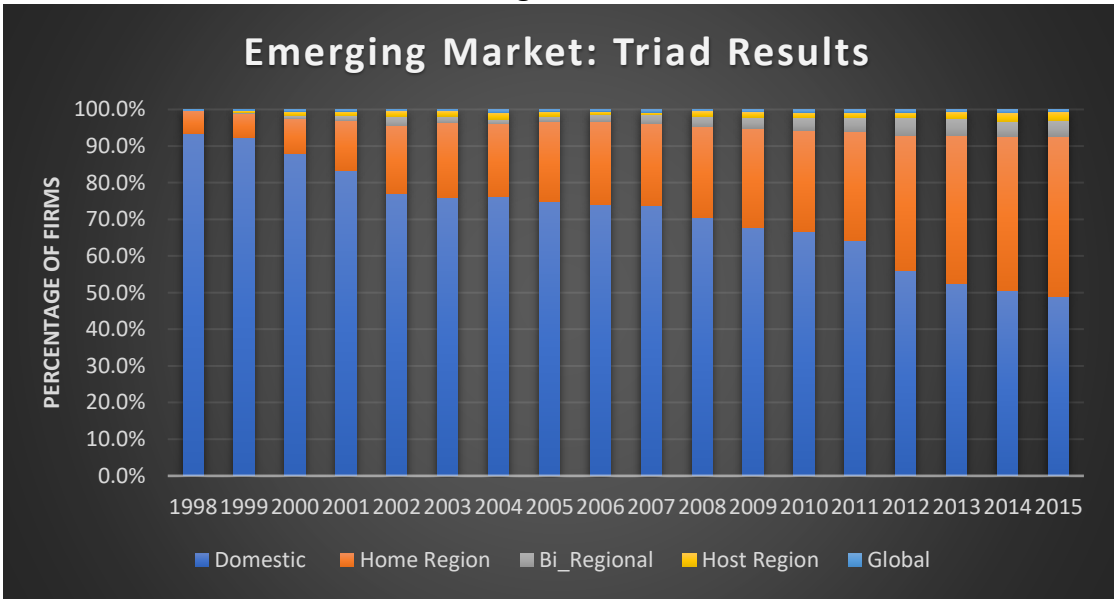
Figure 4.3



***Data is summarized from Appendix 4.3. Percentage of firms in my dataset on the y-axis and years on the x-axis.**

This trend is not evident in EM firms if you measure multinationality using home region as the lowest possible multinationality rank, as seen in Rugman's research of multinationality. All but one firm, Anglo American Platinum Limited from South Africa, is considered home region by the Triad model in 1998 and in 2014-15, 59 firms are classified as either bi-regional, host-region, or global. Across the 18 years, a larger percentage of firms moved out of the home region category, however, over 90 percent of EM firms are home region oriented in any year. If this home region category is split into a further category known as "domestic", when 100 percent of sales are in their home country, the change in multinationality of these firms is significant. In 1998, 93.4 percent of firms are classified in this category and by 2015, less than half (49.1 percent) of the EM firms in my dataset are domestic in their sales.

Figure 4.4



***Data is summarized from Appendix 4.4. Percentage of firms in my dataset on the y-axis and years on the x-axis.**

During the process of analyzing the geographic sales location data, two limitations of the Triad model occurred. Firstly, the limited geographic coverage in the model which specifically excludes South America and Africa, and secondly, the percentage thresholds that exist for each Triad classification, as brought forth in previous literature (Berrill, 2015). For the first mentioned limitation, firm sales to countries in South America and Africa are not included in the Triad regions and therefore are not included in the Triad score calculation. This resulted in a total of 12 firms' Triad scores throughout the 18-years being undefined due to a large percentage of sales taking place in countries within these continents. For example, the Canadian firm First Quantum Minerals measured over 90 percent of their sales in South Africa from 1998-2015. Furthermore, EM firms from South America and Africa cannot technically be measured as they are not part of the Triad regions. Of these 852 EM firms, approximately 45 percent of firms are from either South America or Africa. To include these firms in the analysis, a modification is made to the Triad model as follows: If a firm from South Africa is being measured, South Africa is their home country, other African countries are part of the home region, 20 percent of sales to any of the three Triad regions would make that firm bi-regional, more than 50 percent of sales to any of the three Triad regions would make that firm host region, and over 20 percent of sales in the home region, and any two of the remaining three Triad regions would make that firm global. This weakness in the Triad model is recognized by Rugman as his version of the Triad model is a geographic improvement over the original model purposed by Ohmae as mentioned in chapter two. While firms become more multinational, which my preliminary analysis suggests, the

Triad model would again have to be adjusted from a geographic inclusion standpoint in order to make it possible to measure a firm that is in fact multinational.

The second Triad model limitation arises from the percentage of sales criteria set on each of the four categories. There are cases when a firm will not meet any of the threshold criteria (Berrill, 2015) due to sales exceeding 50 percent in a country located in Africa and/or South America, or a combination of sales to both regions. In 2003, American firm Baker Hughes measured 43.3 percent of their sales in Venezuela, 36 percent in the United States, 6.2 percent in Canada, 5.5 percent in Norway, 2.5 percent in the United Kingdom, and 6.5 percent among other countries not specifically defined by Thompson Reuters' Datastream. To be classified using the Triad model as home region, a firm must have over 50 percent of sales in the home Triad region and in the Baker Hughes case, only 42.2 percent of sales are in the North American home region. To be bi-regional, a firm must have between 20 and 50 percent of sales in their home region and between 20 and 50 percent in a second region. This is the case for the home region, North America, but there are only eight percent of sales in the Europe Triad region and 0 percent in the Asia/Oceania region. To be host region, a firm must have over 50 percent of sales in a Triad region other than the home region which is not true for Baker Hughes even if the 6.5 percent of undefined sales are added to either the Europe or Asia/Oceania region. Finally, to be global, over 20 percent of sales must be present in all three Triad regions. This is only the case for one of the three regions. Due to the 43.3 percent sales in Venezuela, none of the four possible thresholds are met according to the Triad criteria, rendering Baker Hughes to be unclassified in 2003 and absent from the multinationality score as listed in Table 4.2.

Table 4.2

Firms Unclassified by Triad Model

Country	Firm	Industry	Year/s	Percent of Sales in South America	Percent of Sales in Africa
Canada	First Quantum Minerals	Basic Materials	1998-2015		90-100%
	Eldorado Gold	Basic Materials	1998-2008	59-100%	
	Yamana Gold	Basic Materials	2002-15	100%	
	Barrick Gold	Basic Materials	1999,2007-15	33-99%	
France	Eurazeo	Industrials	2003-08	36-90%	52-96%
	Veolia Environment	Utilities	2013	47%	
	Casino Guichard-P	Consumer Services	2014	51%	
Italy	Saipem	Oil and Gas	2003-04		53%
Japan	Mitsui Engineering and Shipbuilding	Industrials	2014	28%	

United Kingdom	Tullow Oil	Oil and Gas	1998, 2007-10, 2014		58-78%
	BHP Billiton	Basic Materials	1998-2000		55-59%
	Anglo America	Basic Materials	1999-01,2004-05,2007-09, 2010	10-28%	40-71%
	Antofagasta	Basic Materials	2000-04	100%	
	SABMiller	Consumer Goods	2000-02		58-100%
	Randgold Resources	Basic Materials	2001-04		100%
	Old Mutual	Financials	2001, 2003, 2005-06, 2010-15		53-86%
	Investec	Financials	2002, 2005, 2007, 2014		42-50%
	Centamin	Basic Materials	2010, 2012-15		100%
	Acacia Mining	Basic Materials	2010-11		50%
	PZ Cussons	Consumer Goods	2013-15		41%
United States	Applied Energy Services	Utilities	1998, 2003-15	38-50%	
	Baker Hughes	Oil and Gas	2003	43%	
	Newmont Mining	Basic Materials	2006, 2008-09, 2011, 2014	31%	17%

***No firm in the Australia or Germany sample measured a sales percentage high enough in South America and/or Africa to disqualify them from being measured using the Triad model.**

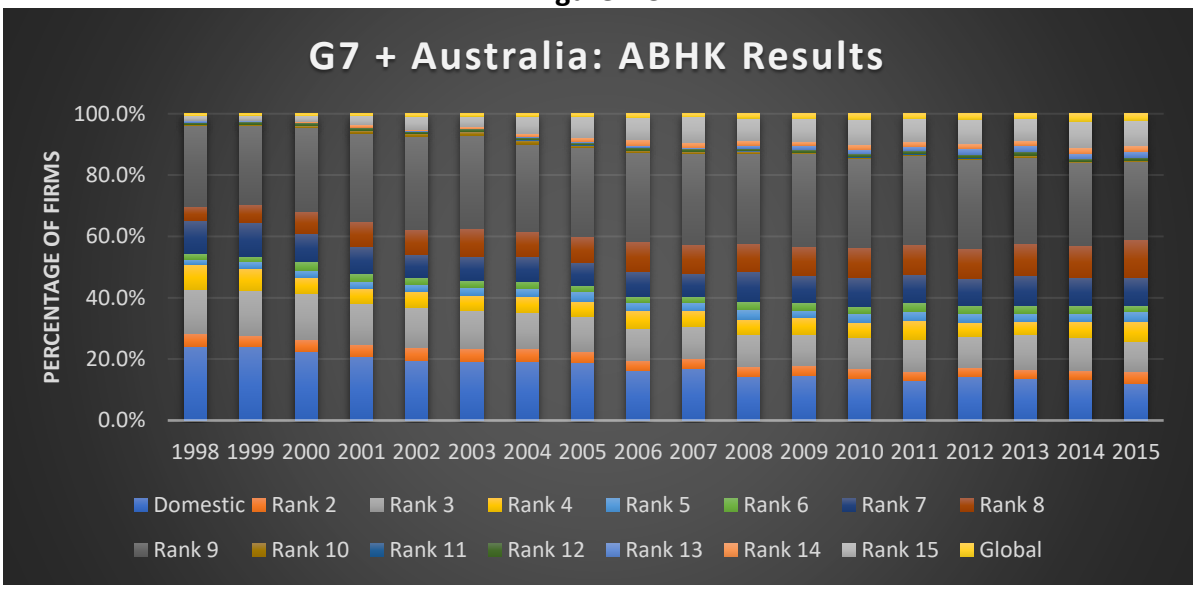
Six of the eight grouping of AM firms, excluding firms from Australia and Germany, contain firms that could not be classified in any of the Triad model regions due to the size of their sales in either Africa or South America. A total of 23 firms fall into this category of not being assigned a score. From an industry standpoint, 11 of the 23 firms are from the Basic Materials industry of having a large percentage of their sales in either South American or African countries. Furthermore, as seen in the "Year/s" column, this trend is more prevalent in the most recent years of my collection period, pointing to an increase in sales to these regions, specifically from firms in the Basic Materials industry. Furthermore, all eight countries show an upward trend in their Triad score from 1998-2015.

4.4.4 Advanced Market and Emerging Market Firms: ABHK Results

Both AM and EM groupings of firms are becoming more multinational according to Figure 4.5. The percentage of firms in the domestic category steadily decreased over the time period. However, 60 percent of firms are classified by the ABHK model in the range of domestic to Rank 8 from 2006-15 with little fluctuation. This statistic suggests firms are not expanding to multiple geographic ABHK regions as Rank-9 indicates a firm is trans-regional in both trading and investments. Furthermore, the category that has the highest number of firms is Rank-9. This is due to Rank-9, a firm that is trans-

regional in both trading and investments, containing the largest variation in multinationality. A firm can have sales and subsidiaries in its own continent along with anywhere from one to four other continents. For a firm to move form Rank-9 to a higher rank, either trading or investing would have to be global, indicating a presence in all six continents. It is evident this is rare as the only ABHK category between Rank-10 and Rank-16 (Global) to show an increase in firms is Rank-15. This rank is a firm that is global in investments and trans-regional in trading.

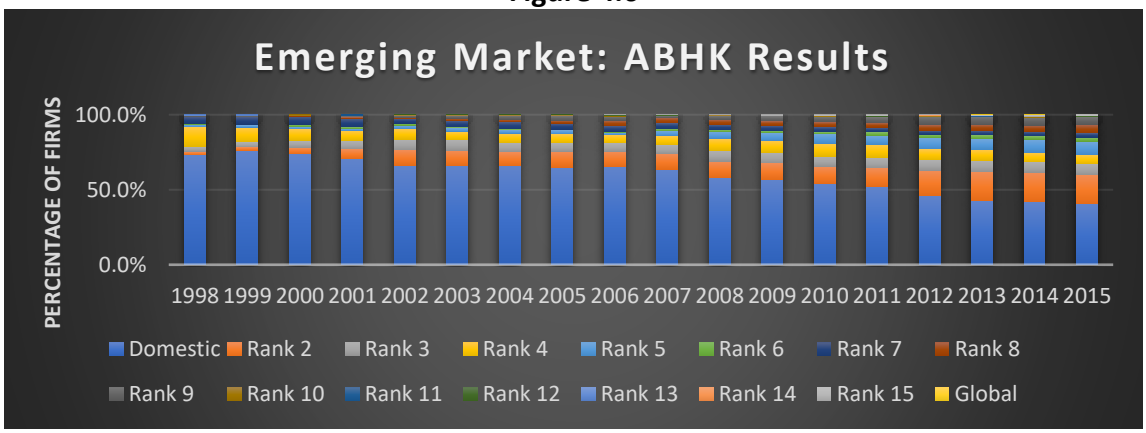
Figure 4.5



***Data is summarized from Appendix 4.5. Percentage of firms in my dataset on the y-axis and years on the x-axis.**

The EM firms are overall less multinational than AM firms but the rate at which these firms are increasing their multinationality from domestic to a higher classification is emphatic as seen in Figure 4.6.

Figure 4.6



***Data is summarized from Appendix 4.6. Percentage of firms in my dataset on the y-axis and years on the x-axis.**

In the first four years of my sample, a limited number of firms provided data, resulting in an inflated average ABHK score as seen in Russia's score ranging from 3.20-3.55 from 1999-2001 and China's score of 2.0 in 1999, followed by less than 2.0 from 1999-2007. From 2001-07, Russian firms are an outlier, declining in their average ABHK scores with a range from 3.55-2.34. From 2007-15, all six groupings of EM firms show increasing or constant ABHK multinationality scores during the second half of my time frame, portraying an increase in multinationality amongst EM firms from the financial crisis in 2008. Increases in multinationality are most evident in Indian firms with a score of 3.13 in 2008 and a maximum score of 4.38 in 2015, this being the highest EM average ABHK score in my dataset as seen in Appendix 4.7.

Only one firm reached the multinationality score of Rank-16, South African firm Sasol, which occurred in 2013 and 2014. Brazilian firm Iochp-Maxion is the most multinational firm among the South American firms with a score of 12 out of a possible 16 in 2012, having a global score of seven in sales and a trans-regional score of six in subsidiaries. Indian firm Aurobindo Pharma Ltd. held a score of 15 from 2013-15 with a global score of seven in subsidiaries and a trans-regional score of four in sales. No Russian, Chinese, or Visegrád firm reached the level of global in either sales or subsidiaries over the 18-years. The financial crisis affected the multinationality of EM firms with decreasing average multinationality scores in 2008 and 2009. The scores increased from 2011-15 providing evidence of re-internationalization during this time period.

From the multinationality results using two models across 18 years, I can reject Hypothesis i): Firms are consistently regional-based in their operations over time with no signs of multinational growth.

4.5 Country Specific Multinationality

The level of multinational from 1998-2015 increased for EM and AM firms across both measures. AM countries have a higher average rank of multinationality when measured using the Triad model compared to EM firms. However, the ABHK's sales measurement showed firms from the United States and Canada to be less multinational than South African firms. This outlier is not repeated when measured using the ABHK models' second measure, subsidiary location. All AM countries have higher subsidiary average rank scores than EM countries and this is also true for the ABHK model averages. One explanation for the United States having a relatively low sales score is the size and diversity of the economy coupled with a 1989 free trade pact with Canada and further including Mexico in 1994 (www.naftanow.org). This leads to an ease of trade between these countries that would not increase the ABHK score beyond Rank-5 if a firm only traded to its neighbouring country. Canadian and

American firms' average geographic sales location scores being the lowest of the AMs is then not surprising. With a score of seven being a completely global firm, the grouping of EM firms with the largest breadth of trading is South African, with an average sales score of 2.72. However, South African firms are only the grouping to steadily decline in sales score from 2001-15 while firms from Russia, India, China, South America, and Visegrád all increased in sales geographic spread over the 18-years measured. Furthermore, Indian firms produced a considerably higher average subsidiary rank than sales rank.

4.5.1 Region Specific Expansion: Advanced Markets

From 1998-2015, an average of 49 Australian firms are measured by the ABHK model to be multinational, that is sales and/or subsidiaries are located outside of Australia. Of these multinational firms, their breadth of trading and depth of investment is highest in the Oceania region, closely seconded by North America, Asia, and finally Europe, comprising Rugmans' Triad regions. An average of 190 firms from Japan are multinational but unlike other AM groupings of firms, Japanese firms expanded their trading and investing to North America (55.4 percent) slightly more than their home region of Asia (54.3 percent) while the region of Europe closely followed with a 46 percent average firm presence of trading or investing.

An 18-year average of 46 out of a possible 60 Canadian firms, and 385 out of 500 American firms are multinational over the 18 years. Canadian firms increased in multinationality within their home region, North America, with 76.9 percent of multinational firms expanding to countries in this region. This is also true for American firms, but to a lesser degree with 64.5 percent expansion. American firms showed more expansion in trading and investing to Europe and Asia (46.8 and 36.9 percent) in comparison to Canadian firms (27.4 and 20.0 percent). Canadian firms collectively are the only grouping of firms to expand to a non-Triad region more than a Triad region, with 22.5 percent of firms trading or investing in the South America region, 2.5 percent more than the region of Asia.

The ABHK region of Europe has the greatest firm representation with an 18-year average of 475 firms being classified as multinational. Firms from all four European countries collectively expanded their trading and investing within the home region of Europe by the largest average percentage of firms. This is followed by a growth to the regions of North America and Asia. Firms from Germany and the United Kingdom expanded trading and investing to countries in the Oceania region at a rate of 32.4 and 24.4 percent respectively. Compared to the other AM groupings of firms, this statistic is unique

as none of the other groupings of firms have a noticeable presence in the Oceania, as shown in Table 4.3.

Table 4.3

G7 + Australia Domestic to Multinational Analysis									
Australia									
	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non Domestic**	**Oceania**	**North America**	**South America**	**Europe**	**Asia**	**Africa**
1998	56	20 (*35.7%*)	36 (*64.3%*)	58.3%	50.0%	19.4%	47.2%	44.4%	2.8%
1999	57	20 (*35.1%*)	37 (*64.9%*)	62.2%	51.4%	24.3%	40.5%	40.5%	5.4%
2000	62	23 (*37.1%*)	39 (*62.9%*)	64.1%	51.3%	30.8%	38.5%	48.7%	5.1%
2001	63	22 (*34.9%*)	41 (*65.1%*)	61.0%	51.2%	29.3%	26.8%	51.2%	4.9%
2002	65	20 (*30.8%*)	45 (*69.2%*)	53.3%	46.7%	22.2%	33.3%	53.3%	4.4%
2003	69	20 (*29.0%*)	49 (*71.0%*)	53.1%	44.9%	24.5%	34.7%	44.9%	6.1%
2004	74	20 (*27.0%*)	54 (*73.0%*)	57.4%	42.6%	24.1%	37.0%	44.4%	5.6%
2005	81	20 (*24.7%*)	61 (*75.3%*)	59.0%	41.0%	21.3%	31.1%	39.3%	8.2%
2006	84	23 (*27.4%*)	61 (*72.6%*)	62.3%	44.3%	24.6%	37.7%	42.6%	8.2%
2007	85	21 (*24.7%*)	64 (*75.3%*)	62.5%	43.8%	23.4%	43.8%	42.2%	6.3%
2008	85	17 (*20.0%*)	68 (*80.0%*)	55.9%	45.6%	22.1%	41.2%	42.6%	5.9%
2009	86	16 (*18.6%*)	70 (*81.4%*)	52.9%	44.3%	14.3%	40.0%	47.1%	2.9%
2010	91	20 (*22.0%*)	71 (*78.0%*)	43.7%	46.5%	12.7%	38.0%	40.8%	2.8%
2011	92	23 (*25.0%*)	69 (*75.0%*)	46.4%	50.7%	15.9%	39.1%	46.4%	5.8%
2012	94	21 (*22.3%*)	73 (*77.7%*)	45.2%	47.9%	16.4%	41.1%	45.2%	5.5%
2013	95	24 (*25.3%*)	71 (*74.7%*)	50.7%	47.9%	16.9%	42.3%	45.1%	9.9%
2014	95	25 (*26.3%*)	70 (*73.7%*)	48.6%	45.7%	20.0%	35.7%	42.9%	8.6%
2015	95	26 (*27.4%*)	69 (*72.6%*)	46.4%	46.4%	15.9%	33.3%	42.0%	7.2%
Canada									
	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non Domestic**	**North America**	**Europe**	**South America**	**Asia**	**Africa**	**Oceania**
1998	46	13 (*28.3%*)	33 (*71.7%*)	72.7%	21.2%	21.2%	18.2%	6.1%	6.1%
1999	49	14 (*28.6%*)	35 (*71.4%*)	60.0%	20.0%	17.1%	17.1%	5.7%	5.7%
2000	51	11 (*21.6%*)	40 (*78.4%*)	72.5%	20.0%	20.0%	17.5%	10.0%	5.0%
2001	52	12 (*23.1%*)	40 (*76.9%*)	72.5%	17.5%	17.5%	15.0%	10.0%	5.0%
2002	53	10 (*18.9%*)	43 (*81.1%*)	76.7%	18.6%	18.6%	11.6%	9.3%	4.7%
2003	53	11 (*20.8%*)	42 (*79.2%*)	83.3%	23.8%	16.7%	16.7%	9.5%	4.8%
2004	55	12 (*21.8%*)	43 (*78.2%*)	86.0%	23.3%	18.6%	16.3%	7.0%	2.3%
2005	55	11 (*20.0%*)	44 (*80.0%*)	86.4%	25.0%	20.5%	22.7%	9.1%	4.5%
2006	56	11 (*19.6%*)	45 (*80.4%*)	82.2%	24.4%	22.2%	24.4%	8.9%	6.7%
2007	57	10 (*17.5%*)	47 (*82.5%*)	78.7%	23.4%	21.3%	23.4%	10.6%	8.5%
2008	57	10 (*17.5%*)	47 (*82.5%*)	78.7%	38.3%	25.5%	23.4%	14.9%	10.6%
2009	58	10 (*17.2%*)	48 (*82.8%*)	81.3%	35.4%	25.0%	20.8%	16.7%	8.3%
2010	59	8 (*13.6%*)	51 (*86.4%*)	78.4%	37.3%	25.5%	21.6%	15.7%	13.7%
2011	59	8 (*13.6%*)	51 (*86.4%*)	74.5%	35.3%	27.5%	21.6%	13.7%	9.8%
2012	60	9 (*15.0%*)	51 (*85.0%*)	78.4%	37.3%	31.4%	23.5%	17.6%	11.8%
2013	60	9 (*15.0%*)	51 (*85.0%*)	78.4%	39.2%	33.3%	29.4%	13.7%	13.7%
2014	60	7 (*11.7%*)	53 (*88.3%*)	81.1%	37.7%	28.3%	28.3%	11.3%	13.2%
2015	60	6 (*10.0%*)	54 (*90.0%*)	63.0%	14.8%	14.8%	9.3%	7.4%	3.7%
France									
	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non Domestic**	**Europe**	**North America**	**South America**	**Asia**	**Africa**	**Oceania**

1998	88	12 (*13.6%*)	76 (*86.4%*)	67.1%	57.9%	17.1%	36.8%	18.4%	10.5%
1999	90	10 (*11.1%*)	80 (*88.9%*)	66.3%	57.5%	20.0%	35.0%	16.3%	10.0%
2000	93	7 (*7.5%*)	86 (*92.5%*)	65.1%	57.0%	31.4%	38.4%	16.3%	5.8%
2001	95	5 (*5.3%*)	90 (*94.7%*)	71.1%	63.3%	35.6%	41.1%	16.7%	6.7%
2002	100	5 (*5.0%*)	95 (*95.0%*)	76.8%	74.7%	40.0%	48.4%	23.2%	9.5%
2003	105	7 (*4.8%*)	100 (*95.2%*)	76.0%	67.0%	34.0%	47.0%	23.0%	8.0%
2004	105	7 (*6.7%*)	98 (*93.3%*)	78.6%	72.4%	39.8%	52.0%	26.5%	8.2%
2005	106	5 (*4.7%*)	101 (*95.3%*)	80.2%	69.3%	36.6%	48.5%	22.8%	8.9%
2006	106	4 (*3.8%*)	102 (*96.2%*)	81.4%	68.6%	38.2%	51.0%	24.5%	8.8%
2007	108	3 (*2.8%*)	105 (*97.2%*)	81.0%	64.8%	37.1%	49.5%	21.0%	5.7%
2008	108	3 (*2.8%*)	105 (*97.2%*)	81.0%	70.5%	41.0%	50.5%	22.9%	7.6%
2009	109	3 (*2.8%*)	106 (*97.2%*)	79.2%	67.9%	38.7%	49.1%	26.4%	7.5%
2010	112	3 (*2.7%*)	109 (*97.3%*)	80.7%	67.9%	40.4%	50.5%	24.8%	9.2%
2011	117	3 (*2.6%*)	114 (*97.4%*)	80.7%	64.0%	38.6%	51.8%	24.6%	7.9%
2012	119	4 (*3.4%*)	115 (*96.6%*)	82.6%	65.2%	44.3%	55.7%	29.6%	9.6%
2013	118	5 (*4.2%*)	113 (*95.8%*)	84.1%	65.5%	45.1%	55.8%	28.3%	10.6%
2014	118	4 (*3.4%*)	114 (*96.6%*)	80.7%	62.3%	43.0%	54.4%	29.8%	11.4%
2015	118	1 (*0.8%*)	117 (*99.2%*)	76.9%	60.7%	39.3%	51.3%	27.4%	9.4%

Germany

	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non Domestic**	**Europe**	**North America**	**Oceania**	**Asia**	**Africa**	**South America**
1998	80	6 (*7.5%*)	74 (*92.5%*)	64.9%	50.0%	13.5%	37.8%	21.6%	14.9%
1999	87	9 (*10.3%*)	78 (*89.7%*)	69.2%	57.7%	12.8%	41.0%	21.8%	15.4%
2000	90	6 (*6.7%*)	84 (*93.3%*)	78.6%	59.5%	11.9%	50.0%	23.8%	28.6%
2001	92	6 (*6.5%*)	86 (*93.5%*)	84.9%	64.0%	11.6%	53.5%	20.9%	34.9%
2002	95	4 (*4.2%*)	91 (*95.8%*)	86.8%	65.9%	15.4%	59.3%	22.0%	38.5%
2003	95	4 (*4.2%*)	91 (*95.8%*)	89.0%	70.3%	17.6%	62.6%	25.3%	38.5%
2004	96	4 (*4.2%*)	92 (*95.8%*)	87.0%	70.7%	15.2%	59.8%	23.9%	37.0%
2005	97	3 (*3.1%*)	94 (*96.9%*)	86.2%	68.1%	11.7%	58.5%	25.5%	34.0%
2006	100	4 (*4.0%*)	96 (*96.0%*)	80.2%	67.7%	13.5%	58.3%	25.0%	31.3%
2007	103	4 (*3.9%*)	99 (*96.1%*)	86.9%	64.6%	12.1%	57.6%	21.2%	30.3%
2008	103	5 (*4.9%*)	98 (*95.1%*)	86.7%	67.3%	11.2%	58.2%	18.4%	32.7%
2009	106	5 (*4.7%*)	101 (*95.3%*)	80.2%	63.4%	14.9%	59.4%	17.8%	33.7%
2010	109	5 (*4.6%*)	104 (*95.4%*)	79.8%	64.4%	15.4%	61.5%	17.3%	34.6%
2011	110	5 (*4.5%*)	105 (*95.5%*)	76.2%	64.8%	13.3%	64.8%	18.1%	38.1%
2012	112	5 (*4.5%*)	107 (*95.5%*)	74.8%	66.4%	14.0%	60.7%	18.7%	32.7%
2013	113	4 (*3.5%*)	109 (*96.5%*)	74.3%	65.1%	15.6%	60.6%	25.7%	33.0%
2014	113	4 (*3.5%*)	109 (*96.5%*)	80.7%	68.8%	14.7%	62.4%	29.4%	37.6%
2015	113	6 (*5.3%*)	107 (*94.7%*)	72.9%	57.9%	18.7%	61.7%	29.9%	38.3%

Italy

	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non Domestic**	**Europe**	**North America**	**South America**	**Asia**	**Africa**	**Oceania**
1998	58	21 (*36.2%*)	37 (63.8%)	73.0%	48.6%	10.8%	27.0%	8.1%	2.7%
1999	63	23 (*36.5%*)	40 (*63.5%*)	67.5%	62.5%	17.5%	32.5%	10.0%	2.5%
2000	65	21 (*32.3%*)	44 (*67.7%*)	79.5%	59.1%	20.5%	29.5%	15.9%	0.0%
2001	71	25 (*35.2%*)	46 (*64.8%*)	84.8%	67.4%	26.1%	32.6%	15.2%	4.3%
2002	75	23 (*30.7%*)	52 (*69.3%*)	86.5%	65.4%	30.8%	32.7%	17.3%	3.8%
2003	78	23 (*29.5%*)	55 (*70.5%*)	83.6%	58.2%	29.1%	29.1%	12.7%	1.8%
2004	83	21 (*25.3%*)	62 (*74.7%*)	83.9%	59.7%	35.5%	27.4%	11.3%	4.8%
2005	87	24 (*27.6%*)	63 (*72.4%*)	81.0%	58.7%	33.3%	38.1%	17.5%	7.9%
2006	87	20 (*23.0%*)	67 (*77.0%*)	80.6%	61.2%	31.3%	38.8%	19.4%	9.0%
2007	89	23 (*25.8%*)	66 (*74.2%*)	84.8%	62.1%	28.8%	37.9%	18.2%	9.1%

2008	90	22 (*24.4%*)	68 (*75.6%*)	82.4%	63.2%	30.9%	39.7%	17.6%	8.8%
2009	92	21 (*22.8%*)	71 (*77.2%*)	78.9%	63.4%	25.4%	39.4%	18.3%	9.9%
2010	93	20 (*21.5%*)	73 (*78.5%*)	72.6%	61.6%	27.4%	41.1%	16.4%	6.8%
2011	97	15 (*15.5%*)	82 (*84.5%*)	68.3%	54.9%	25.6%	40.2%	15.9%	6.1%
2012	99	21 (*21.2%*)	78 (*78.8%*)	71.8%	60.3%	33.3%	46.2%	15.4%	10.3%
2013	99	21 (*21.2%*)	78 (*78.8%*)	74.4%	62.8%	33.3%	46.2%	16.7%	12.8%
2014	100	22 (*22.0%*)	87 (*78.0%*)	70.5%	59.0%	32.1%	44.9%	17.9%	14.1%
2015	100	6 (*6.0%*)	94 (*94.0%*)	51.1%	41.5%	27.7%	35.1%	17.0%	11.7%

Japan

	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non Domestic**	**Asia**	**Europe**	**South America**	**North America**	**Africa**	**Oceania**
1998	195	21 (*10.8%*)	174 (*89.2%*)	40.8%	42.0%	9.2%	53.4%	1.1%	9.2%
1999	195	21 (*10.8%*)	174 (*89.2%*)	43.1%	43.1%	29.3%	56.3%	1.1%	10.3%
2000	197	23 (*11.7%*)	174 (*88.3%*)	46.0%	45.4%	9.8%	56.9%	0.6%	9.2%
2001	198	25 (*12.6%*)	173 (*87.4%*)	44.5%	45.1%	14.5%	59.0%	0.6%	10.4%
2002	200	24 (*12.0%*)	176 (*88.0%*)	44.9%	45.5%	15.3%	58.5%	0.6%	10.2%
2003	205	24 (*11.7%*)	181 (*88.3%*)	46.4%	45.9%	17.1%	58.6%	0.6%	8.3%
2004	207	25 (*12.1%*)	182 (*87.9%*)	52.2%	46.7%	18.1%	57.7%	0.5%	8.2%
2005	210	26 (*12.4%*)	184 (*87.6%*)	53.8%	48.4%	19.0%	58.7%	0.5%	9.8%
2006	213	24 (*11.3%*)	189 (*88.7%*)	57.1%	46.6%	18.5%	57.7%	0.5%	11.1%
2007	214	23 (*10.7%*)	191 (*89.3%*)	61.8%	49.2%	18.3%	58.1%	0.5%	12.6%
2008	217	25 (*11.5%*)	192 (*88.5%*)	61.5%	49.5%	19.3%	57.8%	1.0%	14.6%
2009	220	29 (*13.2%*)	191 (*86.8%*)	63.4%	50.3%	19.4%	58.6%	1.6%	14.7%
2010	222	23 (*10.4%*)	199 (*89.6%*)	62.3%	49.2%	19.1%	57.3%	1.5%	15.1%
2011	223	19 (*8.5%*)	204 (*91.5%*)	63.7%	45.6%	17.2%	51.0%	2.5%	14.2%
2012	223	23 (*10.3%*)	200 (*89.7%*)	65.0%	45.5%	17.5%	53.0%	3.0%	15.0%
2013	224	12 (*5.4%*)	212 (*94.6%*)	56.1%	43.4%	16.5%	48.1%	2.4%	10.8%
2014	225	19 (*8.4%*)	206 (*91.6%*)	56.8%	44.2%	18.4%	49.0%	2.4%	13.1%
2015	225	15 (*6.7%*)	210 (*93.3%*)	57.6%	42.9%	18.1%	46.7%	1.9%	12.9%

United Kingdom

	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non Domestic**	**Europe**	**South America**	**North America**	**Asia**	**Africa**	**Oceania**
1998	213	60 (*28.2%*)	153 (*71.8%*)	68.0%	19.6%	60.1%	32.0%	13.1%	26.8%
1999	222	63 (*28.4%*)	159 (*71.6%*)	71.1%	19.5%	59.7%	32.1%	11.9%	27.0%
2000	231	66 (*28.6%*)	165 (*71.4%*)	80.0%	23.0%	64.8%	35.2%	15.2%	27.9%
2001	235	60 (*25.5%*)	175 (*74.5%*)	74.9%	21.1%	64.6%	34.3%	14.3%	26.3%
2002	247	63 (*25.5%*)	184 (*74.5%*)	74.5%	20.7%	64.7%	32.6%	15.2%	25.5%
2003	256	67 (*26.2%*)	189 (*73.8%*)	73.0%	21.7%	65.6%	32.8%	14.8%	27.0%
2004	269	71 (*26.4%*)	198 (*73.6%*)	72.2%	21.2%	61.6%	32.3%	15.2%	26.3%
2005	276	72 (*26.1%*)	204 (*73.9%*)	69.1%	18.6%	61.8%	35.3%	13.2%	27.9%
2006	279	66 (*23.7%*)	213 (*76.3%*)	67.6%	17.8%	59.6%	33.8%	12.2%	24.9%
2007	289	71 (*24.6%*)	218 (*75.4%*)	70.6%	18.8%	59.6%	35.3%	13.8%	27.1%
2008	297	69 (*23.2%*)	228 (*76.8%*)	69.7%	19.7%	57.5%	36.4%	13.6%	26.8%
2009	303	69 (*22.8%*)	234 (*77.2%*)	62.0%	16.2%	55.6%	32.1%	13.2%	23.1%
2010	308	69 (*22.8%*)	239 (*77.6%*)	63.2%	14.2%	55.6%	31.4%	13.0%	20.9%
2011	327	71 (*22.4%*)	256 (*78.3%*)	59.4%	13.3%	54.3%	29.7%	10.5%	19.1%
2012	341	87 (*21.7%*)	254 (*74.5%*)	62.6%	15.7%	53.1%	30.7%	15.0%	19.7%
2013	346	85 (*25.5%*)	261 (*75.4%*)	63.2%	17.2%	54.8%	33.7%	15.3%	21.8%
2014	347	79 (*22.8%*)	268 (*77.2%*)	61.9%	16.4%	53.4%	34.0%	13.8%	20.9%
2015	348	84 (*24.1%*)	264 (*75.9%*)	60.6%	15.9%	52.3%	36.7%	12.5%	20.5%

United States

	Domestic to Non-Domestic	**Percentage of Non-Domestic by ABHK Region**

	Firm Total	Domestic	Non Domestic	North America	Europe	South America	Asia	Africa	Oceania
1998	417	127 (*30.5%*)	290 (*69.5%*)	62.1%	46.6%	18.3%	28.6%	8.6%	3.1%
1999	431	127 (*29.5%*)	304 (*70.5%*)	64.1%	46.7%	18.4%	30.3%	7.9%	3.3%
2000	436	119 (*27.3%*)	317 (*72.7%*)	67.2%	47.3%	18.6%	30.3%	6.6%	4.1%
2001	445	106 (*23.8%*)	339 (*76.2%*)	64.3%	46.9%	18.3%	31.3%	7.4%	3.8%
2002	452	102 (*22.6%*)	350 (*77.4%*)	62.0%	47.1%	19.1%	30.3%	6.9%	4.3%
2003	456	100 (*21.9%*)	356 (*78.1%*)	63.2%	47.8%	20.5%	32.6%	7.6%	3.9%
2004	462	101 (*21.9%*)	361 (*78.1%*)	65.9%	49.6%	21.6%	35.2%	7.2%	4.7%
2005	464	97 (*20.9%*)	367 (*79.1%*)	65.9%	49.0%	22.3%	36.5%	8.7%	4.9%
2006	466	90 (*19.3%*)	376 (*80.7%*)	68.6%	51.3%	22.1%	37.8%	8.0%	4.3%
2007	472	85 (*18.0%*)	487 (*82.0%*)	69.3%	51.2%	22.5%	39.5%	8.8%	4.1%
2008	476	56 (*11.8%*)	420 (*88.2%*)	63.8%	46.0%	21.0%	36.9%	7.9%	4.0%
2009	481	59 (*12.3%*)	422 (*87.7%*)	64.9%	46.4%	20.6%	37.4%	8.3%	4.5%
2010	485	54 (*11.1%*)	431 (*88.9%*)	64.7%	46.6%	21.6%	38.3%	7.7%	5.1%
2011	486	55 (*11.3%*)	431 (*88.7%*)	65.7%	46.4%	22.3%	40.4%	7.7%	5.3%
2012	489	51 (*10.4%*)	438 (*89.6%*)	66.4%	46.6%	21.7%	38.6%	10.0%	6.4%
2013	489	51 (*10.4%*)	438 (*89.6%*)	67.6%	47.3%	22.8%	39.5%	13.2%	7.1%
2014	489	46 (*9.4%*)	443 (*90.6%*)	68.6%	47.4%	23.3%	39.3%	13.8%	7.2%
2015	490	44 (*9.0%*)	446 (*91.0%*)	47.1%	32.5%	17.5%	25.1%	11.2%	4.5%

***Domestic and Non-Domestic firm totals for each year are shown on columns to the left while each geographic region is shown to the right. The firm count in each region is shown along with the percentage when compared to the Non-Domestic total.**

For all AM grouping of firms, three observable trends developed over the time period. Firstly, the percentage of purely domestic firms, those firms with subsidiaries in their home country only, decreased year after year from 1998-2015. Secondly, of the firms with subsidiaries outside their home country, the percentage of those firms with subsidiaries in South America and Africa increased year over year with the largest fraction for these regions taking place in either 2014 or 2015. Of the six geographic regions, South America and Africa are the only regions that do not contain any AM countries, thus displaying the level of investment by firms into EMs with the number of firms investing in these markets increasing at a faster pace when compared to investment into AMs. Thirdly, for all eight AMs, the presence in the Triad regions of North America, Asia, and Europe is either increasing or near 100 percent from 1998-2015. This evidence is in favour of the Triad regions being the centers of power, and evidence also points to firms locating their subsidiaries geographically closer to their home market.

Australia, Canada, and the United States are the most geographically secluded countries in my dataset. The Atlantic and Pacific Oceans separate North America from Europe and Asia, Australia is separated from Africa by the Indian Ocean, and North America by the Pacific Ocean while being in close geographic proximity to South Asian and Oceanic island nations. Firms from the remaining five countries, France, Germany, Italy, the United Kingdom, and Japan, all have high geographic sales scores (Appendix 4.6). France, Germany, and Italy are connected by land to a plethora of countries

while the United Kingdom is connected to France via the channel tunnel and Japan is within close geographic proximity to South Korea, Taiwan, and major Chinese cities Shanghai and Hong Kong. Overall, firms from these eight AM countries collectively trade to countries in their home region more than they do to countries in the other five regions. Japanese and Australian firms trade at close to the same average percentage as they do to their home region with Japanese firms trading to countries in North America while Australian firms trade to North American countries at 42.8 percent compared to 49.8 percent to Oceania countries. Interestingly, American firms are collectively the least international in their sales-based on the average percent of firms that are domestic. North America is also the region that firms from other countries trade with at the highest rate, after the firms' home country. Furthermore, seven of the eight groupings of AM firms have more firms trading to North America, Europe, and Asia when compared to the regions of Africa, Oceania, and South America with the exception of Canadian firms who trade to South America at an 18-year average of 22.5 percent.

4.5.2 Region Specific Expansion: Emerging Markets

The six EM groupings show progression towards becoming more multinational from 1998-2015 through the growth of the total number of firms in each grouping. 18-year average percentage of firms located in each region are shown in Table 4.4.

Table 4.4

Emerging Markets Domestic to Multinational Analysis									
China									
	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non-Domestic**	**Asia**	**South America**	**North America**	**Europe**	**Africa**	**Oceania**
1998	20	15 (*75.0%*)	5 (*25.0%*)	100.0%	20.0%	40.0%	80.0%	0.0%	0.0%
1999	95	89 (*93.7%*)	6 (*6.3%*)	100.0%	16.7%	66.7%	16.7%	0.0%	0.0%
2000	106	99 (*93.4%*)	7 (*6.6%*)	100.0%	14.3%	100.0%	71.4%	0.0%	0.0%
2001	111	100 (*90.1%*)	11 (*9.9%*)	100.0%	18.2%	45.5%	54.5%	0.0%	0.0%
2002	135	115 (*85.2%*)	20 (*14.8%*)	100.0%	10.0%	30.0%	20.0%	0.0%	0.0%
2003	143	122 (*85.3%*)	21 (*14.7%*)	100.0%	14.3%	23.8%	23.8%	0.0%	0.0%
2004	151	126 (*83.4%*)	25 (*16.6%*)	100.0%	12.0%	24.0%	36.0%	0.0%	0.0%
2005	155	125 (*80.6%*)	30 (*19.4%*)	100.0%	13.3%	16.7%	23.3%	0.0%	0.0%
2006	157	127 (*80.9%*)	30 (*19.1%*)	100.0%	13.3%	13.3%	26.7%	0.0%	0.0%
2007	161	127 (*78.9%*)	34 (*21.1%*)	100.0%	11.8%	2.9%	26.5%	0.0%	0.0%
2008	167	122 (*73.1%*)	45 (*26.9%*)	100.0%	15.6%	6.7%	22.2%	0.0%	0.0%
2009	173	121 (*69.9%*)	52 (*30.1%*)	100.0%	11.5%	5.8%	19.2%	0.0%	0.0%
2010	179	123 (*68.7%*)	56 (*31.3%*)	100.0%	10.7%	10.7%	25.0%	0.0%	0.0%
2011	181	118 (*65.2%*)	63 (*34.8%*)	100.0%	9.5%	12.7%	25.4%	3.2%	0.0%
2012	187	98 (*52.4%*)	89 (*47.6%*)	100.0%	7.9%	10.1%	21.3%	2.2%	3.4%
2013	188	87 (*46.3%*)	101 (*53.7%*)	100.0%	5.9%	9.9%	14.9%	3.0%	2.0%
2014	188	81 (*43.1%*)	107 (*56.9%*)	100.0%	9.3%	11.2%	15.9%	2.8%	1.9%
2015	187	76 (*40.6%*)	111 (*59.4%*)	100.0%	9.0%	11.7%	18.9%	4.5%	1.8%
India									

	Domestic to Non-Domestic Ratio			Percentage of Non-Domestic by ABHK Region					
	Firm Total	Domestic	Non-Domestic	Asia	South America	North America	Europe	Africa	Oceania
1998	57	49 (*86.0%*)	8 (*14.0%*)	37.5%	12.5%	87.5%	37.5%	0.0%	0.0%
1999	63	51 (*81.0%*)	12 (*19.0%*)	33.3%	8.3%	83.3%	25.0%	0.0%	0.0%
2000	71	57 (*80.3%*)	14 (*19.7%*)	28.6%	28.6%	71.4%	42.9%	0.0%	7.1%
2001	81	67 (*82.7%*)	14 (*17.3%*)	14.3%	21.4%	50.0%	50.0%	0.0%	7.1%
2002	85	49 (*57.6%*)	36 (*42.4%*)	13.9%	13.9%	33.3%	25.0%	0.0%	2.8%
2003	93	56 (*60.2%*)	37 (*39.8%*)	13.5%	13.5%	21.6%	18.9%	2.7%	2.7%
2004	101	60 (*59.4%*)	41 (*40.6%*)	29.3%	17.1%	26.8%	36.6%	2.4%	2.4%
2005	104	64 (*61.5%*)	40 (*38.5%*)	45.0%	20.0%	30.0%	37.5%	2.5%	5.0%
2006	106	65 (*61.3%*)	41 (*38.7%*)	51.2%	24.4%	43.9%	48.8%	4.9%	4.9%
2007	109	57 (*52.3%*)	52 (*47.7%*)	34.6%	26.9%	50.0%	44.2%	3.8%	3.8%
2008	110	52 (*47.3%*)	58 (*52.7%*)	44.8%	27.6%	51.7%	41.4%	5.2%	0.0%
2009	112	53 (*47.3%*)	59 (*52.7%*)	44.1%	33.9%	50.8%	52.5%	10.2%	3.4%
2010	113	50 (*44.2%*)	63 (*55.8%*)	52.4%	36.5%	47.6%	52.4%	14.3%	6.3%
2011	113	46 (*40.7%*)	67 (*59.3%*)	56.7%	35.8%	49.3%	55.2%	17.9%	9.0%
2012	113	41 (*36.3%*)	72 (*63.7%*)	58.3%	38.9%	55.6%	54.2%	19.4%	11.1%
2013	114	41 (*36.0%*)	73 (*64.0%*)	60.3%	34.2%	52.1%	61.6%	16.4%	13.7%
2014	113	33 (*29.2%*)	80 (*70.8%*)	51.3%	36.3%	51.3%	52.5%	21.3%	12.5%
2015	113	30 (*26.5%*)	83 (*73.5%*)	51.8%	32.5%	48.2%	54.2%	15.7%	12.0%

Russia

	Domestic to Non-Domestic Ratio			Percentage of Non-Domestic by ABHK Region					
	Firm Total	Domestic	Non-Domestic	Asia	South America	North America	Europe	Africa	Oceania
1998	7	5 (*71.4%*)	2 (*28.6%*)	50.0%	0.0%	100.0%	0.0%	0.0%	0.0%
1999	9	4 (*44.4%*)	5 (*55.6%*)	80.0%	0.0%	40.0%	20.0%	0.0%	0.0%
2000	10	5 (*50.0%*)	5 (*50.0%*)	40.0%	0.0%	60.0%	20.0%	0.0%	0.0%
2001	11	5 (*45.5%*)	6 (*54.5%*)	33.3%	0.0%	83.3%	16.7%	0.0%	0.0%
2002	17	8 (*47.1%*)	9 (*52.9%*)	44.4%	0.0%	66.7%	33.3%	0.0%	0.0%
2003	20	12 (*60.0%*)	8 (*40.0%*)	62.5%	25.0%	87.5%	62.5%	12.5%	0.0%
2004	28	18 (*64.3%*)	10 (*35.7%*)	50.0%	30.0%	80.0%	60.0%	10.0%	0.0%
2005	33	19 (*57.6%*)	14 (*42.4%*)	42.9%	21.4%	50.0%	50.0%	7.1%	0.0%
2006	36	21 (*58.3%*)	15 (*41.7%*)	46.7%	46.7%	46.7%	80.0%	6.7%	0.0%
2007	38	20 (*52.6%*)	18 (*47.4%*)	66.7%	50.0%	27.8%	77.8%	5.6%	11.1%
2008	42	20 (*47.6%*)	22 (*52.4%*)	59.1%	36.4%	31.8%	81.8%	9.1%	9.1%
2009	42	16 (*38.1%*)	26 (*61.9%*)	80.8%	34.6%	46.2%	73.1%	3.8%	3.8%
2010	44	15 (*34.1%*)	29 (*65.9%*)	72.4%	27.6%	34.5%	65.5%	6.9%	10.3%
2011	44	15 (*34.1%*)	29 (*65.9%*)	72.4%	34.5%	27.6%	72.4%	6.9%	10.3%
2012	44	15 (*34.1%*)	29 (*65.9%*)	79.3%	34.5%	37.9%	79.3%	10.3%	10.3%
2013	44	13 (*29.5%*)	31 (*70.5%*)	77.4%	32.3%	51.6%	64.5%	16.1%	9.7%
2014	44	14 (*31.8%*)	30 (*68.2%*)	66.7%	36.7%	43.3%	70.0%	13.3%	6.7%
2015	44	15 (*34.1%*)	29 (*65.9%*)	65.5%	34.5%	48.3%	65.5%	13.8%	6.9%

South Africa

	Domestic to Non-Domestic Ratio			Percentage of Non-Domestic by ABHK Region					
	Firm Total	Domestic	Non-Domestic	Africa	North America	South America	Europe	Asia	Oceania
1998	77	45 (*58.4%*)	32 (*41.6%*)	18.8%	21.9%	12.5%	40.6%	6.3%	9.4%
1999	85	52 (*61.2%*)	33 (*38.8%*)	30.3%	33.3%	18.2%	51.5%	15.2%	21.2%
2000	91	44 (*48.4%*)	47 (*51.6%*)	36.2%	38.3%	12.8%	51.1%	23.4%	21.3%
2001	93	37 (*39.8%*)	56 (*60.2%*)	44.6%	53.6%	14.3%	67.9%	30.4%	25.0%
2002	97	38 (*39.2%*)	59 (*60.8%*)	47.5%	47.5%	10.2%	69.5%	30.5%	25.4%
2003	102	38 (*37.3%*)	64 (*62.7%*)	50.0%	42.2%	12.5%	62.5%	29.7%	29.7%
2004	105	40 (*38.1%*)	65 (*61.9%*)	50.8%	41.5%	12.3%	66.2%	38.5%	29.2%
2005	109	42 (*38.5%*)	67 (*61.5%*)	47.8%	40.3%	14.9%	74.6%	34.3%	29.9%
2006	111	42 (*37.8%*)	69 (*62.2%*)	55.1%	39.1%	18.8%	76.8%	37.7%	30.4%
2007	116	44 (*37.9%*)	72 (*62.1%*)	68.1%	40.3%	16.7%	79.2%	38.9%	31.9%

2008	126	42 (*33.3%*)	84 (*66.7%*)	66.7%	32.1%	21.4%	77.4%	41.7%	31.0%
2009	129	47 (*36.4%*)	82 (*63.6%*)	72.0%	34.1%	19.5%	76.8%	40.2%	29.3%
2010	134	49 (*36.6%*)	85 (*63.4%*)	69.4%	36.5%	21.2%	78.8%	42.4%	35.3%
2011	139	51 (*36.7%*)	88 (*63.3%*)	69.3%	36.4%	20.5%	71.6%	36.4%	30.7%
2012	144	46 (*31.9%*)	98 (*68.1%*)	69.4%	36.7%	14.3%	68.4%	38.8%	33.7%
2013	148	49 (*33.1%*)	99 (*66.9%*)	68.7%	36.4%	18.2%	71.7%	41.4%	38.4%
2014	151	51 (*33.8%*)	100 (*66.2%*)	80.0%	35.0%	18.0%	75.0%	44.0%	41.0%
2015	151	50 (*33.1%*)	101 (*66.9%*)	79.2%	36.6%	17.8%	77.2%	41.6%	39.6%

South America

	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non-Domestic**	**South America**	**North America**	**Europe**	**Asia**	**Africa**	**Oceania**
1998	89	68 (*76.4%*)	21 (*23.6%*)	19.0%	47.6%	4.8%	4.8%	0.0%	0.0%
1999	105	80 (*76.2%*)	25 (*23.8%*)	44.0%	36.0%	16.0%	8.0%	4.0%	0.0%
2000	110	84 (*76.4%*)	26 (*23.6%*)	53.8%	46.2%	26.9%	7.7%	0.0%	3.8%
2001	113	82 (*72.6%*)	31 (*27.4%*)	51.6%	45.2%	25.8%	9.7%	9.7%	0.0%
2002	121	88 (*72.7%*)	33 (*27.3%*)	54.5%	42.4%	33.3%	9.1%	9.1%	0.0%
2003	126	91 (*72.2%*)	35 (*27.8%*)	65.7%	51.4%	37.1%	11.4%	11.4%	0.0%
2004	142	103 (*72.5%*)	39 (*27.5%*)	61.5%	48.7%	33.3%	15.4%	12.8%	0.0%
2005	148	109 (*73.6%*)	39 (*26.4%*)	66.7%	41.0%	35.9%	23.1%	15.4%	2.6%
2006	156	116 (*74.4%*)	40 (*25.6%*)	65.0%	32.5%	37.5%	12.5%	7.5%	2.5%
2007	165	126 (*76.4%*)	39 (*23.6%*)	59.0%	25.6%	33.3%	10.3%	7.7%	5.1%
2008	167	119 (*71.3%*)	48 (*28.7%*)	68.8%	27.1%	35.4%	10.4%	8.3%	6.3%
2009	170	117 (*68.8%*)	53 (*31.2%*)	66.0%	37.7%	41.5%	17.0%	9.4%	5.7%
2010	181	114 (*63.0%*)	67 (*37.0%*)	71.6%	44.8%	43.3%	23.9%	11.9%	4.5%
2011	184	115 (*62.5%*)	69 (*37.5%*)	81.2%	52.2%	44.9%	29.0%	10.1%	4.3%
2012	185	112 (*60.5%*)	73 (*39.5%*)	76.7%	57.5%	45.2%	28.8%	13.7%	8.2%
2013	185	105 (*56.8%*)	80 (*43.2%*)	71.3%	50.0%	43.8%	30.0%	10.0%	5.0%
2014	185	109 (*58.9%*)	76 (*41.1%*)	80.3%	56.6%	46.1%	28.9%	10.5%	6.6%
2015	185	103 (*55.7%*)	82 (*44.3%*)	87.8%	54.9%	43.9%	28.0%	9.8%	6.1%

Visegrád

	Domestic to Non-Domestic Ratio			**Percentage of Non-Domestic by ABHK Region**					
	Firm Total	**Domestic**	**Non-Domestic**	**Europe**	**North America**	**South America**	**Africa**	**Asia**	**Oceania**
1998	37	27 (*73.0%*)	10 (*27.0%*)	80.0%	0.0%	0.0%	0.0%	10.0%	0.0%
1999	45	30 (*66.7%*)	15 (*33.3%*)	80.0%	6.7%	0.0%	0.0%	13.3%	0.0%
2000	49	34 (*69.4%*)	15 (*30.6%*)	86.7%	13.3%	6.7%	0.0%	20.0%	0.0%
2001	51	33 (*64.7%*)	18 (*35.3%*)	83.3%	11.1%	5.6%	0.0%	5.6%	0.0%
2002	57	42 (*73.7%*)	15 (*26.3%*)	100.0%	20.0%	6.7%	0.0%	6.7%	6.7%
2003	72	48 (*66.7%*)	24 (*33.3%*)	100.0%	12.5%	4.2%	0.0%	8.3%	0.0%
2004	82	54 (*65.9%*)	28 (*34.1%*)	100.0%	7.1%	3.6%	3.6%	10.7%	0.0%
2005	93	58 (*62.4%*)	35 (*37.6%*)	100.0%	8.6%	2.9%	2.9%	8.6%	0.0%
2006	102	65 (*63.7%*)	37 (*36.3%*)	100.0%	8.1%	0.0%	5.4%	13.5%	2.7%
2007	108	70 (*64.8%*)	38 (*35.2%*)	94.7%	10.5%	0.0%	5.3%	13.2%	2.6%
2008	115	70 (*60.9%*)	45 (*39.1%*)	100.0%	11.1%	0.0%	6.7%	15.6%	4.4%
2009	121	70 (*57.9%*)	51 (*42.1%*)	100.0%	9.8%	0.0%	9.8%	17.6%	3.9%
2010	125	69 (*55.2%*)	56 (*44.8%*)	100.0%	7.1%	0.0%	10.7%	21.4%	3.6%
2011	130	68 (*52.3%*)	62 (*47.7%*)	100.0%	6.5%	0.0%	12.9%	19.4%	1.6%
2012	130	60 (*46.2%*)	70 (*53.8%*)	94.3%	8.6%	0.0%	12.9%	20.0%	1.4%
2013	130	52 (*40.0%*)	78 (*60.0%*)	93.6%	9.0%	1.3%	17.9%	16.7%	1.3%
2014	128	53 (*41.4%*)	75 (*58.6%*)	92.0%	10.7%	2.7%	14.7%	18.7%	1.3%
2015	129	56 (*43.4%*)	73 (*56.6%*)	98.6%	13.7%	5.5%	13.7%	17.8%	1.4%

***Domestic and Non-Domestic firm totals for each year are shown on columns to the left while each geographic region is shown to the right. The firm count in each region is shown along with the percentage when compared to the Non-Domestic total.**

From Table 4.4, all the groupings show the same trend of a high percentage of domestic firms at the beginning of the time frame with gradual decreases year after year like previously outlined in this chapter. When analysing what ABHK regions have the highest presence of trading and investing, each grouping differed. Multinational firms from China are the least multinational with 100 percent of firms that became multinational, did so through trading or investing to countries within Asia. The regions that followed are Europe and North America with 30.1 and 24.5 percent, respectively. An average of 18 Russian firms are multinational over the 18-year timeframe and their expansion of trading and investing abroad being evenly distributed to the Triad regions with 60.6 percent to the home region of Asia, followed by 55.1 and 53.5 percent to the regions of Europe and North America. On average, 48 Indian firms are multinational over the 18-year time period and unlike firms from China and Russia, Indian firms increased their multinationality to countries within the North American (50.2 percent) and European (43.9 percent) regions more so than the home region of Asia (40.0 percent).

Like Indian firms, South African firms collectively expand their trading and investing abroad to countries from the European region (68.7 percent) more than the home region of Africa (56.9 percent). South African firms, of all the EM groupings, have the largest presence of trading and investing to countries from the Oceania region (29.6 percent), only slightly less than their expansion to countries from the remaining Triad regions of North America (37.9 percent) and Asia (34.0 percent). Firms from the South American and Visegrád regions both showed a greater expansion to countries in their home regions of South America and Europe respectively, compared to the remaining ABHK regions. South American firms have a noticeable difference in their Triad region expansion with 44.3 and 34.9 percent average presence during the 18 years with only 17.1 percent to the region of Asia. The Visegrád countries showed similar results to Chinese firms with 94.6 percent of these multinational firms having traded to, or invested in, European countries with the Asia region averaging a percentage of 14.3.

Chinese firms that invest abroad through their subsidiaries tend to invest in countries located in Asia first, and North America second, as seen by the increasing percentage of non-domestic firms in these two regions. The next region Chinese firms invest in is measured to be Europe, followed by Oceania, however, both average percentages are less than that of Asia and North America. The regions of South America and Africa show no Chinese subsidiaries until 2011 and 2012, with a maximum of four firms. From 1998-2009, Indian firms that are non-domestic invest heavily in Europe, followed by Asia, however, this trend reversed from 2011-15 with the majority of non-domestic firms investing in Asian

countries when compared to European countries. After these two regions, Chinese firms invest heavily in North American countries followed by Oceania, South America, and finally Africa, with the latter three regions holding very small percentages of non-domestic Chinese firms. Russian firms invest in European countries first, followed by Asian countries, and then North American countries. Only one Russian firm, Gazprom, located subsidiaries in Africa from 2011-15, and there are no investments in countries located in South America and Oceania. Among non-domestic South African firms, investments are made in European countries first, and then African countries from 1998-2009. From 2011-15, the average percentage of subsidiaries in these two regions is equal. The next region to see investment from South African firms is North America, followed by Asia and Oceania. The region of South America receives the lowest percentage of South African firms investing in this region until 2005, when GoldFields and Datatec located subsidiaries in this region. Moreover, the total number of South African firms in this region did not exceed seven from 2005-15. From 1998-2001, South American non-domestic firms invest in North American countries first, followed by South American countries second, and then European countries. Investments to Asian countries are not recorded until 2005, with a maximum of six firms while only one firm recorded a subsidiary in the Oceania and African regions, those firms being Brazilian firms Embraer and Iochip-Maxion respectively. From 2002-15, investment in other South American countries recorded the highest percentage of investment by South American firms, followed by investments in North America, and then Europe. Visegrád countries, when investing abroad, heavily invest in other European countries until 2005 when these firms begin to invest in Asian countries. From 1998-2013, only one Visegrád firm invested in the regions of North America (Amica), South America (KGHM Polska Miedz), Oceania (Fabryki Mebli Forte), and Africa (Amica), all firms originating from Poland.

It can be concluded that the six groupings of EM firms can be placed in three categories with regards to the role geographic proximity to another country plays in deciding where to trade and invest. Firms from China and the Visegrád region are predominately home region oriented, South American firms are trading and investing outside the home region (North America and Europe) at an increasing rate, and South African and Indian firms trade and invest outside their home region more than inside their home region. South African firms prefer to trade and invest to European countries more than African countries while Indian firms trade and invest to North American and European countries more than Asian countries. Previous research on the topic of firm expansion identifies factors such as culture (Kogut and Singh, 1988), institutions (Delios and Henisz, 2003), time zones (Zaheer and Zaheer, 2001), and language to increase the difficulty level of international expansion. These barriers apply more to

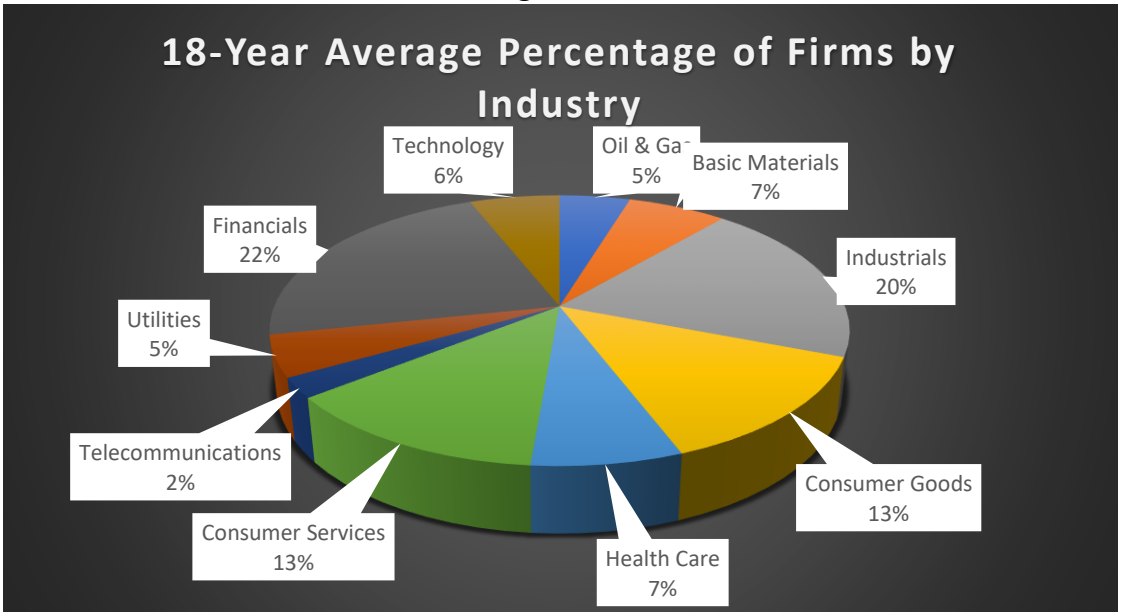
Indian firms expanding to North America and Europe when compared to South African firms expanding to Europe. Time zone differential is less of a factor for South African firms expanding to European countries as South Africa is UTC+2 (Universal Time Coordinated) while European countries are UTC+1. Indian firms expanding to Europe experience a four-hour time zone difference and expansion to North America encounters a range of time zone differences from 10-13 hours. From a cultural perspective, South African firms share culture norms with the United Kingdom as described by Ronen and Kraut (1977), Hofstede (2001) and Ronen and Shenkar (2013), all of whom group South Africa and United Kingdom into the Anglo cultural grouping, sharing both the English language and the majority of the population affiliating with the Anglo-Catholic religion. With the extent of these barriers between Indian firms and the regions these firms trade with and invest in, the paradox of geographic distance impacting the success of a firm in both a positive and negative way can be further tested from my EM dataset. As Zaheer and Hernandez (2011) concluded with his study of 126 Fortune 500 firms from 2002-06, an increase in geographic distance between the company headquarters and the subsidiary results in increases in firm performance.

From the results discussed, I can reject hypothesis iii): Firms are becoming less regional-based in their operations over time with growth in multinationality to other regions. In the next section of this chapter, I examine the multinationality changes of my dataset from an industry viewpoint.

4.6 Industry Analysis of Multinationality

Following the industry classification system, 10 industry sectors are measured over the 18-year time period allowing for industry trends to be made along with a service industry versus non-service industry comparison. Service sector industries (Consumer Goods, Consumer Services, Financials, Health Care, Telecommunications, and Utilities) produce products that are directly used or consumed by the general public. The non-service sectors are comprised of firms that produce products that are not directly used or consumed by the general public and those industry sectors are Basic Materials, Industrials, Oil and Gas, and Technology. Figure 4.7 outlines the distribution of firms in my dataset among the 10 industry sectors. An even distribution would equal 10 percent of firms in each industry sector which is not the case. Firms from the Financials and Industrials sectors comprise 42 percent of my dataset while Telecommunications, Utilities, Oil and Gas, and Technology together, comprise 18 percent. Technology firms have been seen to invest abroad as seen in the literature by Kathuria (2008) who identifies FDI to have a negative effect on domestic FDI in India.

Figure 4.7

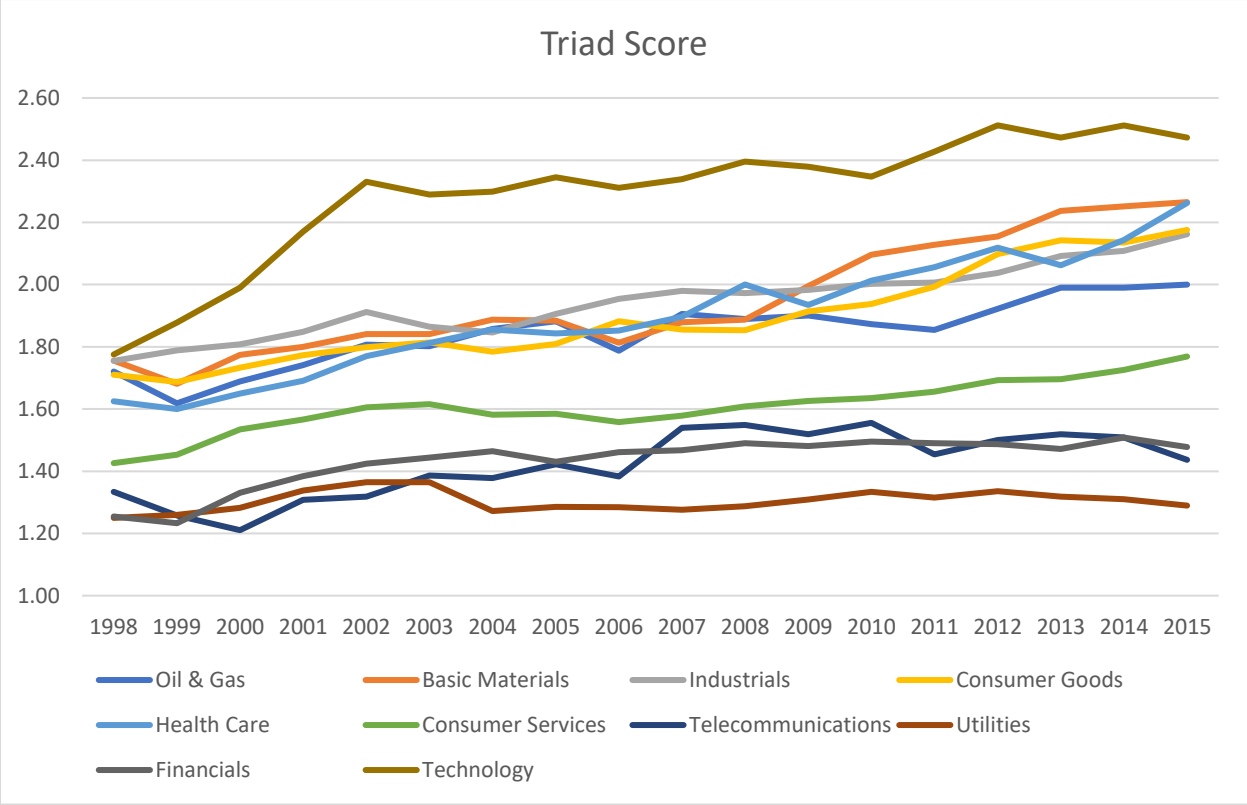


***Data taken from overall 18-year average number of firms from Appendices 4.8 and 4.9.**

4.6.1 Triad and ABHK Models

As depicted in Figure 4.8, the Triad model has two groupings of industries in 1998 based on their Triad score. Industry sectors that are measured to have a score between 1.2-1.4 or between 1.6-1.8 on the Triad category scale of 1-5. In the first grouping, firms from the Utilities sector remained at the same average Triad score of 1.25 while firms from Telecommunications, Financials, and Consumer Services all increased their multinationality Triad score at approximately the same rate year over year. In the second grouping, firms from Oil and Gas, Health Care, Basic Materials, Industrials, and Consumer Goods sectors all increased in multinationality from an average of approximately 1.7-2.1 on the Triad scale while firms from the Technology sector increased by the largest margin, increasing from 1.8-2.5 making this grouping of firms both the most multinational and the fastest growing. The Technology sector comprises six percent of my dataset (approximately 117 firms) and of those 117 firms, 100 are AM firms.

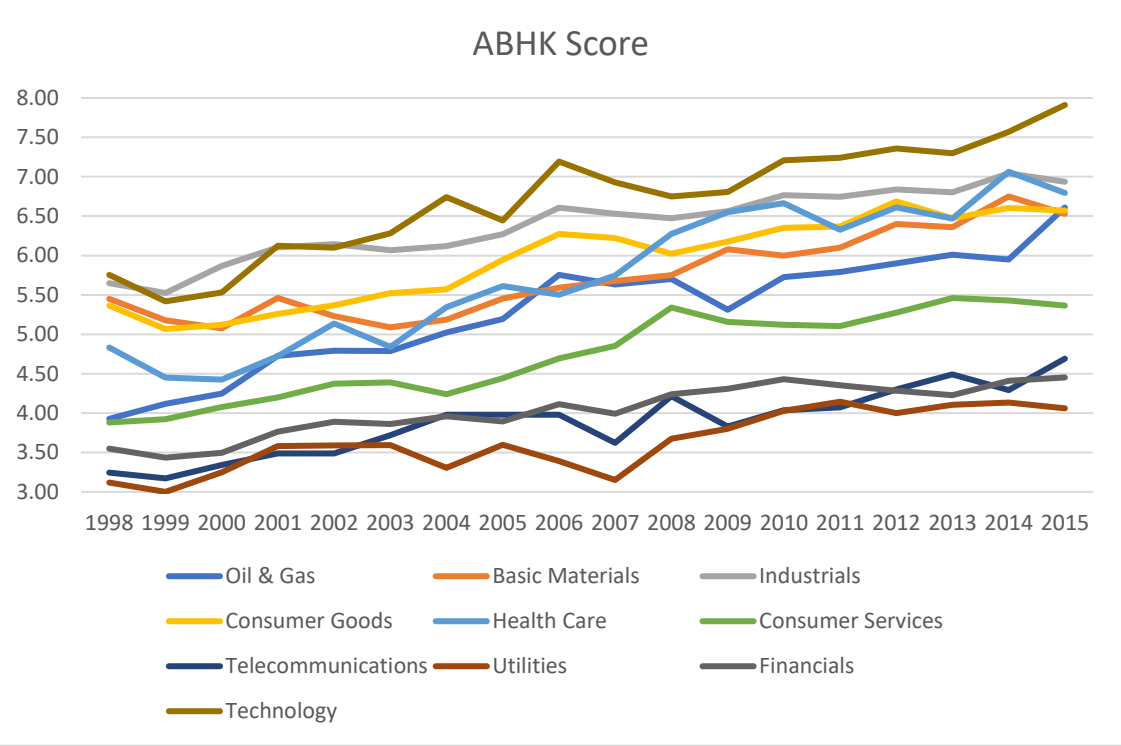
Figure 4.8



***Data summarized from Appendix 4.8. Triad score ranges from a low score of 1 to a high score of 5 on the y-axis and the time period on the x-axis.**

The industry results signify the increase in sales of firms is sector specific. Utilities firms are not becoming more multinational from the Triad "sales centric" model, and the sectors that are becoming more multinational, does not necessarily equate to an increase in the commitment of these firms to countries outside their home region. This commitment can be seen through the results of the ABHK model, as seen in Figure 4.9.

Figure 4.9



***Data taken from Appendix 4.9. ABHK model scores a firm with a 1 if they are domestic to a high score of 16 if they are global on the y-axis and the time period on the x-axis.**

At the start of my time period, firms from each of the 10 industry groupings are in one of two ABHK score ranges; between 3.0-4.0, or 4.8-5.7. Firms comprising Utilities, Telecommunications, Financials, Consumer Services, and Oil and Gas sectors have an ABHK score between 3.0-4.0 while firms from Health Care, Consumer Goods, Basic Materials, Industrials, and Technology have an ABHK average rank between 4.8-5.7. All sectors increased in multinationality over the 18 years. Firms from the Utilities, Telecommunications, and Financials sectors are the least multinational with a score of approximately 4.0-4.5. Like that of the Triad results, firms comprising the Utilities sector are the least multinational when using the ABHK model. These results differ however because there is growth over the 18-year measurement period with a low score of 3.0 in 1999 and a high score of 4.14 in 2014. Consumer Services firms averaged 4.5 by the end of the time period of measurement while Oil and Gas, Health Care, Consumer Goods, Basic Materials, and Industrials scored between 6.5-7.0 and Technology firms scored as high as 7.9 in 2015. What sectors are more or less multinational did not change as firms from the Technology sector are collectively ranked as the most multinational sector from 2002-2015 using the ABHK model. This industry result corroborates with studies performed by Curren (2012) on firms from the Fortune 500 listing in 2007, finding evidence that technology-based

companies operating in the European Union and North American Free Trade Agreement find selling outside the home region easier than less technology-intensive companies. As shown in Table 4.5, both models of multinationality indicate different firms to be the most multinational from each firm grouping in my dataset, with the exception of Brazilian firm Embraer, from the Industrials sector.

Table 4.5

Most Multinational Firm			
Country/Region	*Firm*	*Industry*	*Triad Score*
Australia	Amcor Limited	Industrials	3.8
Canada	TD Bank	Financials	3.2
France	CNP Assurances	Financials	4.2
Germany	Fresnenius Medical Care AG & Co. KGAA	Health Care	3.7
Italy	Luxottica Group	Consumer Goods	3.9
Japan	Canon Incorporated	Technology	4.8
United Kingdom	HSBC Holdings	Financials	4.3
United States	McCormack & Company	Consumer Goods	4.2
China	China COSCO Shipping Holdings Company Limited	Industrials	3.5
Russia	Inter RAO EES	Utilities	3.0
India	Tata Global Beverages	Consumer Goods	3.8
South Africa	Kumba Iron Ore Limited	Basic Materials	3.8
South America	Embraer	Industrials	3.9
Visegrád	Medicalgorithmics	Health Care	2.6
Country/Region	*Firm*	*Industry*	*ABHK Score*
Australia	BHP Billiton Limited	Basic Materials	11.9
Canada	Bombardier	Industrials	9.4
France	Schneider Electric	Industrials	15.1
Germany	Siemens	Industrials	14.2
Italy	Ente Nazionale Idrocarburi	Oil and Gas	11.4
Japan	Toyota Tsusho Corporation	Industrials	13.6
United Kingdom	Reckitt Benckiser Group	Consumer Goods	15.0
United States	Bristol-Myers Squibb Company	Health Care	14.6
China	China State Construction Engineering Corporation Limited	Industrials	8.0
Russia	Tatneft	Oil and Gas	6.1
India	HCL Technologies Limited	Technology	10.2
South Africa	Sasol Limited	Basic Materials	11.1
South America	Embraer	Industrials	7.3
Visegrád	Ciech	Basic Materials	7.9

***Average Multinationality Score across 18 years. Triad score ranges from 1-5 and the ABHK score ranges from 1-16.**

Separating the industry sectors into service and non-service groupings reveal EM firms comprising the four non-service industry sectors (Basic Materials, Industrials, Oil and Gas, and Technology) to be more multinational than those of the service sectors (Consumer Goods, Consumer Services, Financials, Health Care, Telecommunications, and Utilities) as seen in Table 4.6. South American non-service industry firms compared to service industry firms show the greatest difference in the Triad

model results with non-service firms averaging 1.99 and service firms 1.33. For the ABHK model's multinational results and its derivatives, sales and subsidiary geographic location, South African non-service industry firms show the greatest difference when compared to service industry firms with scores of 3.65-2.12 for sales, 2.24-1.61 for subsidiaries, and 5.62-3.53 for the ABHK model. Of the six EM groupings, only Chinese non-service firms did not exceed the multinationality of service firms with both service and non-service firms to be equally multinational with a score of 2.90 out of 16 when using the ABHK multinationality model. Service sector multinational firms have historically shown growth in the 1980's and 1990's, this trend is still true from 1998-2015, however, the growth of EM firms is greater for non-service sector firms with much of that growth being driven by the internationalization of firms in the Technology sector. This finding is aligned with previous studies of firm internationalization (Bell, 1995; Reuber and Fischer, 1997; and Carpenter, Pollock, and Leary, 2003), all having focused on the technology sector, linking higher growth in high technology firms when compared to lower technology firms.

Table 4.6

Service and Non-Service Multinationality Results				
	Triad		ABHK	
	Service	Non-Service	Service	Non-Service
Australia	1.92	2.27	4.25	5.16
Canada	1.75	1.90	6.16	6.74
France	2.31	2.32	9.64	9.09
Germany	2.24	2.30	7.27	7.49
Italy	1.88	2.20	5.42	7.24
Japan	1.97	2.07	7.87	8.91
United Kingdom	2.05	2.79	6.51	8.90
United States	1.79	1.94	6.37	7.69
China	1.47	1.67	2.90	2.90
India	1.52	1.74	4.40	4.74
Russia	1.41	2.05	3.69	4.67
South Africa	1.94	2.40	3.53	5.62
South America	1.33	1.99	2.62	4.12
Visegrád	1.50	1.72	2.56	3.99

***Data taken from Appendices 4.10 and 4.11.**

4.7 Conclusion

In this chapter, I conduct a longitudinal analysis of the changing patterns of firm level multinationality over the 18-year period from 1998-2015 in a literature that was until recently (Mullen and Berrill, 2015; and O'Hagan Luff and Berrill, 2016), dominated by measuring the multinationality of firms that comprise the Fortune 500 at a static point in time. I use two models to measure multinationality of

2,427 firms from eight AM and 11 EM countries, progressing the literature on internationalization and more specifically, EM firm level internationalization by providing a longitudinal analysis of firm, country, and industry level multinationality.

Multinationality for AM firms, when measured by the Triad model, with the exception of firms from the United Kingdom who collectively declined in multinationality from 2007-15, become more multinational based on their average yearly Triad score. EM firms showed increases and decreases in multinationality from 1998-2001, and from 2007-15 the trend is consistent with multinational scores increasing when using the Triad model and ABHK model. As outlined in this chapter, the Triad model is a representation of trading activity alone and with the outlined restrictions of the Triad model, it is possible for firms with sales and subsidiaries located in multiple countries globally to be classified as home region or not classified at all. The ABHK showed firms from India and China to average higher subsidiary multinationality scores than sales scores, identifying a pattern of investing abroad, then trading abroad. This pattern of internationalization contradicts the three-pronged stages theory of how firms become internationalized, seemingly skipping stage one and the liability of foreignness that comes with "early internationalizers" (Contractor et al., 2003). This first stage typically brings many hurdles for a firm to overcome, resulting in the cost of expansion to exceed the benefits or revenues. As a result, the effect of international expansion on such a company's financial performance is negative. This internationalization method is not apparent from the Triad model due to the singular measure of the model, sales geographic location. From an industry-based perspective, firms from the Utilities sector are collectively the least multinational using all measures of multinationality while firms from the Technology sector are the most multinational.

To conclude, the Triad and ABHK models show increases in multinationality and more specifically, for EM firms, this is identified from 2004-06 which may be attributed to the Visegrád countries, the Czech Republic, Hungary, Poland, and Slovakia, joining the European Union (2015). EM firms show clear patterns of regional internationalization throughout the 18-year period as shown by the high percentage of non-domestic firms' year after year, agreeing with Hoskisson, Wright, Filatotchev, and Peng's findings in 2013 for Hungarian and Polish firms. EM firms prove to be majority home region in their trading and investments. However, growth in sales and subsidiaries outside of the Triad regions is evident, thus making the Triad model less and less effective in measuring firm level multinationality in this increasingly global environment. Couple this with the evidence of geographic proximity

influencing the decision of firms to trade and invest abroad, the use of a multinational measure that includes all inhabitable regions is substantiated.

From the discussed analysis, I can accept hypothesis ii): Firms are consistently regional-based in their operations over time, with growth in multinationality to other regions. My thesis now examines the multinationality results from this chapter and whether or not a relationship exists between these increases and decreases in multinationality and the performance of the firm.

Chapter 5
An Alternative Perspective:
Firm Performance and Multinationality Relationship

5.1 Introduction

This chapter of my thesis from the onset agrees with a growing literature (Cavusgil and Knight, 2015; and Tsukanova and Zhang, 2019) supporting the acceptance of the internationalization of firms, and further builds on a divided topic of international business (IB) literature, the relationship between firm performance and multinationality. Do firms improve in performance as they become more multinationality or not? This area of research has provided a plethora of explanations on how the multinationality of a firm impacts their performance. This relationship has been described as linear positive, linear negative, U-shaped, inverted U-shaped, J-shaped, inverted J-shaped, S-shaped, inverted S-shaped, and those with no relationship observed at all. According to Nguyen (2017), a major deficiency of current firm performance literature is the sample of firms chosen which lacks geographic diversity. This is the first of many gaps my research fills in the firm performance-multinationality (P-M) debate as my longitudinal dataset is the first to measure firms originating from 19 countries, encapsulating all six habitable continents (excluding Antarctica).

The relationship between firm performance and multinationality has a range of descriptive patterns, dating back to Grant et al.'s (1988) study of 304 firms from the United Kingdom from 1972-84, finding the relationship to be linear positive. This relationship has since been identified as inverted U-shaped by Gomes and Ramaswany (1999) and Hitt et al. (1997), both studying America firms, both identifying an increase in performance in the early stages of internationalization until a new market is approached by the firm, and costs exceed the benefits that come with internationalization, leading to a decrease in performance. Shortly after, Lu and Beamish (2001) studied the relationship of 124 Japanese firms from 1986-97 finding the relationship to be U-shaped. Lu and Beamish (2004) repeated their study with 1,489 Japanese firms and then found the relationship to be S-shaped which is an extension to the U-shaped theory. This result is also found by Contractor et al. (2003) who observed 103 American firms from 1993-98. More studies have found variations of these observations, those being W-shaped (Fernandez, 2016), an extension again to the S-shaped theory, and the inverse of this, M-shaped (Mendoza et al., 2019). Using my balanced panel dataset of 1,377 firms from 1998-2015, my study on the P-M relationship encompasses the traditional datasets comprised of firms from the United States, United Kingdom, and Japan, with the addition of firms from five other advanced market

(AM) countries totaling 1,106 AM firms, and a total of 271 emerging market (EM) firms from 11 EM countries.

Current IB literature is ambiguous on how to best measure multinationality, therefore I provide a P-M comparison using the traditional multinationality measuring methods (foreign sales percentage (FS) and Triad model), and a more robust model as outlined in chapter four, the ABHK model, that incorporates a unique, hand collected subsidiary dataset. To further the diversity of the P-M comparison, I use three measures of firm performance; Return on Assets (ROA), Return on Equity (ROE), and Total Return Index (RI), thus creating a 3 x 3 matrix of P-M relationships. As identified by Nguyen's (2017) meta-analysis of the P-M literature, a clear gap exists in the datasets used to measure the relationship. Rarely are firms from multiple countries, and to be more specific, firms from EM countries, used to measure this relationship. These issues are addressed with my 1,377-firm dataset, spanning 19 countries.

My model finds the P-M relationship of the entire dataset to be significant at the 10 percent level, however, the Durbin-Watson statistic is closer to 2.0 when using RI as a measure of performance compared to ROA and ROE, indicating serial correlation is playing a greater role in describing the P-M relationship. The results of the P-M relationship when measured by RI is described as U-shaped when using FS and the Triad model but S-shaped when using the ABHK model. Firm age has a significantly positive relationship with performance when measured by RI and ROE but not significant with ROA. The size of the firm as measured by market capitalization also showed a significantly positive relationship but when measured by employee count, the relationship is significantly negative. My final control variable, financial leverage, has a significantly negative relationship with firm performance as previously seen in P-M literature by Hossain and Nguyen (2016) who measured the 10 largest Canadian Oil and Gas firms from 2004-13. From an industry perspective, firms in the Basic Materials and Consumer Goods sectors' firm performance when measured by ROE and multinationality when measured by FS produce a significantly positive P-M relationship while the remaining eight industry sectors have a significantly negative P-M relationship.

Section 5.2 describes my dataset and provides descriptive statistics of the variables used followed by a reminder of chapter two's methodological econometric processes in Section 5.3. Section 5.4 provides results of the initial testing procedures, those being the Hausman Test, Pearson Multicollinearity Test, Variance Inflation Factor Test, and a Unit Root Test, which collectively provide confidence of the robustness of my dataset. Section 5.5 details the observed P-M relationship, the

regression estimation results that identifies the level of significance of each identified relationship, and a discussion of those results in more detail. Section 5.7 provides an overview of the chapter.

5.2 Data and Methodology

The dataset for this chapter consists of 1,377 firms from 19 countries from 1998-2015 with observations existing for all firms, creating a balanced panel dataset analysis. These firms are derived from chapter four's 2,427 firm dataset with the removal of firms that have missing data due to information not being reported on Thompson Reuters' Datastream, or results being eliminated from the Triad model due to the various reasons outlined in chapter four's section 4.4.3 "AM and EM Firms: Triad Results". This panel dataset estimates the economic relationship with cross section series, adding an 18-year time dimension.

In past research, numerous measures of firm performance have been used: ROA, ROE, return on sales (ROS), Tobin's q, shareholder value, RI, total shareholder return, sales growth, firm growth, risk adjusted return, scale efficiency, excess q, Jensen's alpha, Sharpe, Jensen and Treynor's measures, abnormal returns, excess value, market value, economic value added, and cash flow return on investment. There is no set consensus on a measure of firm performance that is most applicable. Following firm performance-multinationality literature (Keats, 1990; Hoskisson and Hitt, 1990; Hoskisson et al., 1993; Tallman and Li, 1996; Hitt et al., 1997; Lu and Beamish, 2001 and 2004; Beiner et al., 2006), accounting-based variables of ROA an ROE have been consistently used as accounting-based measures of performance. More recently in literature (Chen et al., 2014; and Mullen and O'Hagan Luff, 2018), these measures have been used along with a market-based measure (Total Return Index) to measure firm performance. All three performance measures are collected from Thompson Reuters' Datastream. The outcome variables are measured against multinationality, taken from chapter four's ABHK and Triad model results, with the addition of FS. Additional accounting variables (Depreciation, Net Assets, Capital Expenditure, Net Profit, and Operating Income) has shown in the past (Berrill, 2009) to have almost identical results as sales, as a measure of multinationality, thus, I exclude these variables from the analysis. Following recent firm performance literature (Coad et al., 2016; Shrivastava and Tamvada, 2019), my control variables purpose is to measure specific characteristics of the firm. These characteristics consist of three variables; firm size, firm age, and financial leverage. I measure firm size using two commonly used measures, market capitalization (Mullen and O'Hagan Luff, 2018), and as a robustness measure, total employee count (Dias et al., 2020). Firm age records the age from the first year of recorded sales to the year of measurement.

Financial leverage is a measure of total debt to total capital following previous research by Mullen and O'Hagan Luff (2018) and Kyaw, Manley, and Shetty (2011). All variables, with the exception of financial leverage and FS, are normalized by taking the natural logarithm of the variable. Using the above-mentioned variables, I estimated the model (Equation 2.1) nine times using three measures of firm performance and three measures of multinationality. As a robustness measure, I estimated the model using the opposite effects as seen in previous P-M literature by Agyemang-Mintah (2015) and Zagorchev and Gao (2015), and a final robustness measure is performed through a sub-period analysis of the dataset accompanied with a regression estimation for each period. The sub-periods are based on the following time periods; 1998-2001: incorporates the dot-com crash, 2002-06: pre-financial crisis period, 2007-09: the financial crisis, and 2010-15: post-financial crisis. This sub-period division has been conducted in recent P-M literature (Hossain and Nguyen, 2016; Bhagat and Bolton, 2019; and Ryu et al., 2019). Variations of this model have been used in the literature for many years with various measures of firm performance as the outcome variable, a measure of multinationality as the explanatory variable, and control variables to describe firm characteristics such as age, size, and financial leverage. No studies exist that use an identical set of variables to my research due to the multinationality measure taken from chapter four's ABHK results. These results use two variables of multinationality to arrive at a firm's multinationality score, thus making my model unique to firm performance literature. As seen in Equation 2.2 from chapter two, I've added the time-based dummy variables with the omission of 2010-15 to avoid the dummy variable trap.

Equation 2.2 – Firm Performance Model

$$ln\_fp_{it} = \alpha + \beta_1 ln\_mcap_{it} + \beta_2 ln\_age_{it} + \beta_3 ln\_lev_{it} + \beta_4 ln\_mul_{123it} + \beta_5 98\_01 + \beta_6 02\_06 + \beta_7 07\_09 + u_{it}$$

***To account for large variations in the variables being measured, I take the natural logarithm depicted as ln_mcap for the logarithm of market capitalization for example.**

To perform a panel regression analysis, my data must first pass a series of tests which will validate the results of the regression. Firm characteristics of the dataset, such as the heterogeneous nature and possible endogeneity between the variables, are concerns that can possibly alter the results derived from any panel dataset. With the model identified, a correlation matrix followed by a variance inflation factor (VIF) test of the variables determines if a strong relationship exists between the variables in the model. To test for serial correlation of each variable, I perform an Augmented Dicky-Fuller (ADF) test and if a variable accepts the null hypothesis of the test, a first order difference is taken of all variables in the model. To conclude the dataset testing, I perform a Hausman test to estimate if variables are colinear and determine whether a fixed effects or random effects model

should be used. From the regression statistics, a Durbin-Watson (DW) statistic will give the level of serial correlation of the model. With the dataset and methodology in place, I present my research question and list of possible hypotheses.

Research Question 2**:** What Relationship/s Exists, if any, Between a Firms' Performance and Their Level of Multinationality?

Hypothesis i) Higher measurements of multinationality are associated with varying positive increments in firm performance.

Hypothesis ii) Higher measurements of multinationality are associated with varying negative increments in firm performance.

Hypothesis iii) Firm performance and multinationality show no significant relationship.

5.3 Statistical Analysis and Model Testing

Table 5.1 describes the mean, standard deviation, and median of my dataset and sub-periods for each variable that is used in the regression model. All variables, with the exception of financial leverage and FS, are normalized to reduce the variance between the variables.

Table 5.1

Descriptive Statistics				
Panel A: 1998-2015				
FYO = 24,786	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.12	0.51	0.13
Return on Assets	ROA	0.06	0.08	0.05
Total Return Index	TRI	1.16	0.70	1.11
Age	age	75	55	63
Employee Total	emp	34,288	77,243	11,293
Leverage	lev	0.39	0.78	0.38
Market Capitalization	mcap	$14,866,401,935	$33,300,000,000	$4,570,000,000
Foreign Sales Percentage	FS	0.28	0.30	0.17
ABHK	ABHK	6.14	4.16	7
Triad	Triad	1.87	0.90	2
Panel B: 1998-2001				
FYO= 5,508	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.11	0.69	0.12
Return on Assets	ROA	0.06	0.09	0.05
Total Return Index	TRI	1.16	1.04	1.03
Age	age	68	55	55
Employee Total	emp	28,159	61,338	8,381
Leverage	lev	0.39	1.53	0.39
Market Capitalization	mcap	$11,047,465,507	$32,600,000,000	$2,390,000,000
Foreign Sales Percentage	FS	0.21	0.27	0.05
ABHK	ABHK	4.97	3.68	4
Triad	Triad	1.66	0.78	2
Panel C: 2002-06				
FYO = 6,885	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.12	0.63	0.13
Return on Assets	ROA	0.06	0.08	0.06
Total Return Index	TRI	1.24	0.70	1.18
Age	age	72	55	59

Employee Total	emp	31,630	71,402	10,560
Leverage	lev	0.38	0.33	0.38
Market Capitalization	mcap	$12,827,910,569	$29,400,000,000	$3,900,000,000
Foreign Sales Percentage	FS	0.26	0.29	0.16
ABHK	ABHK	5.94	4.10	7
Triad	Triad	1.85	0.88	2
Panel D: 2007-09				
FYO = 4,131	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.13	0.25	0.13
Return on Assets	ROA	0.06	0.09	0.06
Total Return Index	TRI	1.06	0.59	0.98
Age	age	76	55	63
Employee Total	emp	36,176	82,883	12,391
Leverage	lev	0.39	0.32	0.38
Market Capitalization	mcap	$15,651,541,227	$32,600,000,000	$5,140,000,000
Foreign Sales Percentage	FS	0.29	0.30	0.20
ABHK	ABHK	6.55	4.27	7
Triad	Triad	1.93	0.93	2
Panel E: 2010-15				
FYO = 8,262	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.14	0.29	0.12
Return on Assets	ROA	0.06	0.07	0.05
Total Return Index	TRI	1.16	0.41	1.13
Age	age	81	55	68
Employee Total	emp	39,646	87,456	13,861
Leverage	lev	0.39	0.32	0.37
Market Capitalization	mcap	$18,718,532,712	$36,700,000,000	$6,950,000,000
Foreign Sales Percentage	FS	0.33	0.32	0.25
ABHK	ABHK	6.91	4.26	8
Triad	Triad	2.02	0.97	2

***The table indicates the abbreviation used, mean, standard deviation, median values of all variables for 24,786 firm year observations. Market Capitalization is in USD. ROA, ROE, Financial Leverage, and FS are ratios. RI is an index number, age and emp are counts, and ABHK and Triad are categories of multinationality. Each panel gives the number of firm-year observations (FYO) with panels B-E equaling the entire dataset FYO.**

The control variables of age, employee count, and market capitalization all increase across sub-periods as do the three measures of multinationality. Of the three firm performance measures, RI decreases during the financial crisis while ROA and ROE both remain consistent. This is expected as a market-based measure of performance will be negatively affected by an economic depression. However, the question remains, will this also lead to a decline in a firms' level of multinationality? Before answering this question, collinear testing of the variables mentioned above is necessary.

5.3.1 Collinear Testing

A multivariate statistical analysis can have issues with multicollinearity. When control variables are highly correlated, this can create instability in the regression outcome which can be controlled in the regression model. The correlation matrix below (Table 5.2) indicates none of the variables have a correlation that is above a concerning level as the highest correlation is witnessed in the 2002-06 sub-period between Lnmcap and LnABHK of 0.4067 and this correlation of the entire dataset is 0.3980. I have also highlighted the highest correlations between the three outcome variables and three

explanatory variables. I will note that LnRI is negatively correlated, albeit at low levels, with all explanatory and control variables. This is due to the fact that RI does not increase as firms age, grow larger, or become more multinational, a finding that will be measured and explained further in this chapter.

Table 5.2

Pairwise Correlation Matrix									
Panel A: 1998-2015									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6871**[1]	1.0000							
LnRI	0.1064[1]	0.0944[1]	1.0000						
Lnage	-0.0020	-0.1753[1]	-0.0424[1]	1.0000					
lev	-0.0077	-0.1010	-0.0257[1]	0.0391[1]	1.0000				
Lnmcap	0.1187[1]	-0.0452[1]	-0.0208[2]	0.1872[1]	0.0390[1]	1.0000			
FS	0.0638[1]	0.1113[1]	-0.0243[1]	0.1315[1]	-0.0210[2]	0.2049[1]	1.0000		
LnABHK	0.0374[1]	-0.0541[1]	-0.0540[1]	0.2328[1]	0.0263[1]	**0.3980**[1]	0.4955[1]	1.0000	
LnTriad	0.0900[1]	0.0823[1]	-0.0299[1]	0.1505[1]	-0.0074	0.2561[1]	**0.7634**[1]	0.5942[1]	1.000
Panel B: 1998-2001									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6463**[1]	1.0000							
LnRI	0.1131[1]	0.0952[1]	1.0000						
Lnage	-0.0093	-0.2057[1]	-0.0517[1]	1.0000					
lev	-0.0054	-0.0648[1]	-0.0256[3]	0.0126	1.0000				
Lnmcap	0.1114[1]	-0.0840[1]	0.0473[1]	0.1994[1]	0.0178	1.0000			
FS	0.0900[1]	0.0859[1]	-0.0025	0.1533[1]	-0.0001	0.2152[1]	1.0000		
LnABHK	0.0421[1]	-0.0993[1]	-0.0156	0.2612[1]	0.0202	**0.3978**[1]	0.4849[1]	1.0000	
LnTriad	0.0786[1]	0.0577[1]	-0.0042	0.1806[1]	0.0042	0.2881[1]	**0.7837**[1]	0.6019[1]	1.000
Panel C: 2002-06									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6854**[1]	1.0000							
LnRI	0.1459[1]	0.1289[1]	1.0000						
Lnage	0.0317[2]	-0.1671[1]	-0.0221[3]	1.0000					
lev	-0.0182	-0.2487	-0.0279[2]	0.1423[1]	1.0000				
Lnmcap	0.1417[1]	-0.0420[1]	-0.1283[2]	0.1741[1]	0.0996[1]	1.0000			
FS	0.0592[1]	0.1007[1]	-0.0708[1]	0.1120[1]	-0.0533[1]	0.1881[1]	1.0000		
LnABHK	0.0567[1]	-0.0495[1]	-0.1106[1]	0.2269[1]	0.0683[1]	**0.4067**[1]	0.5086[1]	1.0000	
LnTriad	0.1018[1]	0.0694[1]	-0.0804[1]	0.1425[1]	-0.0132	0.2431[1]	**0.7517**[1]	0.6269[1]	1.000
Panel D: 2007-09									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.7189**[1]	1.0000							
LnRI	0.0589[1]	0.0784[1]	1.0000						
Lnage	-0.0129	-0.1640[1]	-0.0662[1]	1.0000					
lev	-0.0336	-0.2366[1]	-0.0813[1]	0.1228[1]	1.0000				
Lnmcap	0.0944[2]	-0.0373[2]	0.0488[1]	0.1332[1]	0.1031[1]	1.0000			
FS	0.0758[1]	0.1381[1]	-0.0050	0.0922[1]	-0.0786[2]	0.1725[1]	1.0000		
LnABHK	0.0418[1]	-0.0226	-0.0628[1]	0.1874[1]	0.0527[1]	**0.3647**[1]	0.5043[1]	1.0000	
LnTriad	0.1060[1]	0.1018[1]	-0.0164	0.1025[1]	-0.0334[2]	0.2157[1]	**0.7611**[1]	0.6012[1]	1.000
Panel E: 2010-15									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**

LnROE	1.0000								
LnROA	**0.7023**[1]	1.0000							
LnRI	0.1318[1]	0.1070[1]	1.0000						
Lnage	-0.03651	-0.1742[1]	-0.0318[1]	1.0000					
lev	-0.0120	-0.2735	-0.0408[1]	0.0935[1]	1.0000				
Lnmcap	0.1060[1]	-0.0290[1]	-0.0363[2]	0.1194[1]	0.1253[1]	1.0000			
FS	0.0384[1]	0.1243[1]	-0.0202[3]	0.1025[1]	-0.0957[1]	0.1542[1]	1.0000		
LnABHK	0.0011	-0.0472[1]	-0.0342[1]	0.1770[1]	0.0529[1]	**0.3325**[1]	0.4586[1]	1.0000	
LnTriad	0.0707[1]	0.0987[1]	-0.0238[2]	0.1054[1]	-0.0571[1]	0.1914[1]	**0.7503**[1]	0.5329[1]	1.000

***This table shows the pairwise correlation coefficients for my independent variables and controls. A correlation greater than 0.5 is considered severe and one of the variables should not be included in the model being tested. The significance of the correlation to the model are shown at the following three levels: [1]Significant at 0.01 level, [2] at 0.05 level, [3] at 0.10 level. The highest correlation among all variables, and the highest correlation among control variables are highlighted.**

The highest level of correlation that exists across all five panels is between the LnTriad score and FS. The correlation for the entire dataset is 0.7634 with a one percent significance level and the variation in this correlation from the four sub-periods is minimal. This correlation is to be expected as net sales is a common variable between the multinationality measures that are the Triad model and FS and are separate explanatory variables in the model. Due to the nature of the Triad models thresholds, an increase in FS will likely increase the probability of a firm moving from home region to bi-regional or to host region. The highest correlation among outcome variables is between ROE and ROA with a correlation of 0.6871 in the dataset but like the correlation between FS and LnTriad, these outcome variables are not existing together in the model and the variation in this correlation across the sub-periods in minimal. Of the control variables, Lnmcap and LnABHK have a correlation of 0.3980 with the remaining correlations between variables being considerably lower. It can be concluded that multilinearity does not exist to a degree that warrants considering the removal of any variables. To verify this claim further, a VIF test is conducted in two formats. The first test is performed using the variables in their actual value form and second test, with the natural logarithm of each variable. (Table 5.3).

Table 5.3

Variance Inflation Factor Test						
	Actual Value			**Ln Value**		
	ABHK	**Triad**	**FS**	**ABHK**	**Triad**	**FS**
Leverage	1.002	1.002	1.003	1.033	1.032	1.034
Age	1.052	1.022	1.020	1.096	1.077	1.075
Market Capitalization	1.067	1.030	1.029	1.215	1.116	1.088
Multinationality Measure	1.108	1.033	1.030	1.236	1.092	1.059

A VIF score > 5.0 is significant and indicates severe correlation between variables. The test is performed using the real values of each variable and performed a second time using the logarithm form, as used in the regression model.

Transforming the variables to their natural logarithm form will increase the correlation between the variables but not to a degree that negatively impacts the model. This is evident in the minimal

variation of the VIF scores, all remaining between 1.116-1.032, indicating no serious correlations between the explanatory variables and the control variables. From Table 5.4, a unit root test is performed on all variables at level. This test produces a T-statistic and a probability value (P-value). A P-value greater than five percent indicates the variable is suffering from serial correlation and regression results will show a low DW statistic. This is not the case for any of the variables, therefore, all variables are taken at level.

Table 5.4

Unit Root Test		
	T-Statistic	**Probability**
LnROE	5,520.26	0.0000
LnROA	5,704.67	0.0000
LnRI	10,363.30	0.0000
lev	4,524.18	0.0000
Lnemp	4,528.29	0.0000
Lnmcap	4,548.46	0.0000
FS	3,513.67	0.0000
LnABHK	4,164.07	0.0000
LnTriad	2,411.86	0.0000

***Augmented Dickey-Fuller (ADF) P-value < five percent is insignificant and indicates rejecting the null hypothesis.**

5.3.2 Determining the Model

For each of the nine variations of the model, the effects used must be determined by performing the Hausman test in the E-views software. The Hausman test measures the correlation of random effects in the model. If the probability statistic is less than five percent, the null hypothesis is rejected, and the model is estimated using fixed effects (See Table 5.5). Accepting the null hypothesis is due to the probability of the unique errors and the regressors in the model being greater than five percent, indicating the model should be estimated using random effects. All nine iterations of the Hausman test give P-values less than five percent, allowing the null hypothesis to be rejected and the model is estimated using fixed effects.

Table 5.5

Hausman Test												
	LnABHK				**LnTriad**				**Foreign Sales Percentage**			
	Chi^2	DoF	P-value	Result	Chi^2	DoF	P-value	Result	Chi^2	DoF	P-value	Result
Ln RI	591.19	7	0.0000	**Fixed**	628.94	7	0.0000	**Fixed**	622.30	7	0.0000	**Fixed**
Ln ROA	591.84	7	0.0000	**Fixed**	598.45	7	0.0000	**Fixed**	598.76	7	0.0000	**Fixed**
Ln ROE	231.42	7	0.0000	**Fixed**	287.11	7	0.0000	**Fixed**	264.15	7	0.0000	**Fixed**

***Chi^2 that is greater than the critical value results in a rejection of the null hypothesis. This is also the case when the P-value is greater than five percent. Degrees of Freedom (DoF), indicates the number of variables in the model. Results of the test are highlighted.**

5.4 Preliminary Statistical Analysis

Of the 24,867 firm year observations (FYOs), a firm's average age is approximately 75 years with 34,289 employees, a market capitalization of 14.9 billion USD, and financial leverage of 39 percent. The average ROA, ROE, and RI are 6.22 percent, 12.34 percent, and 1.16 respectively while the average multinationality measures are 6.14, 1.87, and 27.71 percent for ABHK, Triad, and FS, as detailed in Table 5.6.

5.4.1 Foreign Sales as a Percent of Net Sales

FS is divided into six categories based on prior research that incorporated international intensity as a measure of multinationality (Calof and Beamish, 1995). The first category is domestic, keeping consistency with the ABHK and Triad model categories. The following five categories are in increments as follows; >0 – 10 percent, 10 – 20 percent, 20 - 50 percent, 50 – 75 percent, and 75 – 100 percent. The domestic category comprised 8,993 FYOs, or 36.3 percent, making this the largest category. From my control variables, firms in this category are the youngest (65.3 years) and smallest as measured by market capitalization, and total employee count. Conversely, firms with the highest measures of FS are not the oldest firms as the average age of firms decreased from the 50 – 75 percent category to the 75 – 100 percent category. The domestic categorical grouping of firms is the lowest performing according to ROE but when measured by ROA and RI. Domestic firms average a ROA of 6.07 percent while the 10 – 19 percent category of firms dropped to a ROA of 5.64 percent followed by a rise to 6.02 percent when FS is between 20 – 49 percent. ROA is recorded at the highest average by the highest level of multinational firms with FS between 75 – 100 percent, with a ROA of 7.26 percent. This pattern is similar when measuring performance using RI. Firms with no FS have the highest measured RI overall at 1.19. This is followed by consistent decreases in performance until the 75 – 100 percent FS category when RI increases to 1.17. When measuring firm performance using ROE, the results take the same S-shaped pattern as ROA only with larger variations from category to category. Using ROE, a firms' performance is at its lowest when there are no measured FS, averaging a ROE of 11.11 percent. Conversely to ROA, the average firm that sells between 0-10 percent outside their home country has the highest average performance of 15.61 percent ROE. The next four categories covering FS from 10-100 percent show ROE to consistently increase. The control variables of size (employee count and market capitalization) both increased by the largest margins when comparing domestic firms, to firms with less than 10 percent of sales outside of the home country. The size measures continue to increase as FS increases with the maximum average size of firms being recorded

when FS are between 50 – 75 percent outside of the home country. Both measures of size decrease when FS are between 75 -100 percent, as does the average of these firms.

Table 5.6

Average Incremental Statistical Analysis of Multinationality Measures											
		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Dataset Average	**24,786**	**6.22%**	**12.34%**	**1.16**	**74.92**	**38.73%**	**$14,866**	**27.71%**	**6.14**	**1.87**	**34,289**
Foreign Sales as a Percent of Net Sales											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Domestic	8,993 (36.3%)	6.07%	11.11%	1.19	65.30	38.28%	$8,196	$0.00	3.08	1.00	19,340
>0-10%	1,852 (7.5%)	6.46%	15.61%	1.18	76.41	41.49%	$11,640	$630	6.11	2.07	30,857
10%-20%	2,280 (9.2%)	5.64%	11.43%	1.14	81.70	37.70%	$15,326	$3,193	7.19	2.10	36,736
20%-50%	5,304 (21.4%)	6.02%	12.05%	1.15	78.91	40.71%	$19,787	$5,645	8.05	2.10	46,083
50%-75%	3,732 (15.1%)	6.35%	13.45%	1.13	84.43	36.91%	$22,110	$12,233	8.59	2.67	52,551
75%-100%	2,625 (10.6%)	7.26%	14.04%	1.17	79.34	33.17%	$19,355	$13,867	8.38	2.95	36,001
Triad Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	ABHK	Employee Count
Domestic	8,993 (36.3%)	6.07%	11.11%	1.19	65.30	38.28%	$8,196	$0.00	0.00%	3.08	19,340
Home Region	12,146 (49.0%)	5.97%	12.60%	1.15	79.38	40.06%	$17,173	$6,255	36.55%	7.57	42,809
Bi-Regional	2,063 (8.3%)	6.95%	13.58%	1.15	85.30	36.98%	$25,093	$13,317	63.20%	8.90	46,132
Host Region	927 (3.7%)	8.10%	14.88%	1.17	76.85	33.23%	$18,264	$8,966	74.22%	8.25	31,569
Global	657 (2.7%)	7.84%	16.81%	1.17	88.70	33.62%	$26,625	$13,215	66.51%	10.01	48,046
ABHK Categories											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	Triad	Employee Count
Domestic	5,419 (21.9%)	6.56%	10.47%	1.22	58.72	35.50%	$5,209	$0.00	0.00%	1.00	14,100
2 (RT-DI)	1,216 (4.9%)	7.87%	15.87%	1.20	58.13	34.73%	$12,067	$3,709	28.06%	2.09	22,610
3 (TT-DI)	2,559 (10.3%)	6.32%	12.94%	1.14	76.84	39.36%	$13,939	$6,314	47.98%	2.37	33,095
4 (DT-RI)	1,229 (5.0%)	5.56%	11.33%	1.17	67.14	40.98%	$6,148	$0.00	0.00%	1.00	15,531
5 (RT-RI)	680 (2.7%)	6.59%	13.64%	1.19	64.78	37.86%	$6,940	$1,737	28.06%	2.04	17,225
6 (TT-RI)	549 (2.2%)	7.31%	15.86%	1.19	66.44	38.47%	$7,460	$3,043	40.67%	2.29	21,890
7 (DT-TI)	2,119 (8.5%)	5.07%	12.29%	1.12	78.88	43.28%	$15,829	$0.00	0.00%	1.00	32,842
8 (RT-TI)	2,164 (8.7%)	6.49%	15.80%	1.17	78.50	37.53%	$23,316	$5,152	30.40%	2.19	58,721
9 (TT-TI)	6,336 (25.6%)	5.80%	10.78%	1.14	82.80	39.19%	$14,971	$5,913	46.00%	2.43	35,332
10 (GT-DI)	154 (0.6%)	6.00%	12.19%	1.18	67.03	32.54%	$23,503	$12,109	60.86%	2.42	38,310
11 (GT-RI)	25 (0.1%)	9.15%	17.03%	1.31	72.32	25.34%	$13,219	$5,096	54.88%	2.48	9,665
12 (GT-TI)	204 (0.8%)	8.07%	19.87%	1.16	99.40	34.19%	$22,791	$8,956	59.27%	2.84	42,965
13 (DT-GI)	175 (0.7%)	5.88%	13.85%	1.19	87.55	44.28%	$24,442	$0.00	0.00%	1.00	47,633
14 (RT-GI)	282 (1.1%)	7.18%	12.42%	1.12	93.41	45.92%	$51,788	$35,152	52.49%	2.28	128,290
15 (TT-GI)	1,402 (5.7%)	5.95%	13.91%	1.11	101.75	43.70%	$40,867	$20,569	54.93%	2.67	86,865
Global (GT-GI)	273 (1.1%)	6.57%	16.56%	1.09	109.99	42.70%	$36,268	$20,972	58.68%	2.73	61,297

***ABHK Categories: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), GI (Global Investing). Market Capitalization and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations) total with each category's percentage shown in brackets.**

Firms with the highest average FS have the lowest financial leverage with 33 percent while firms with FS between 50 and 75 are the next least leveraged group of firms with 37 percent leverage. According to FS as a measure of performance, the comparison of debt to capital decreases as multinationality increases. As a comparison of multinationality measures, domestic firms using FS score one out of five using the Triad model and as firms increase in FS, their Triad score also increases with the highest average of 2.95 out of five taking place when FS is between 75 – 100 percent. This correlation is not surprising as mentioned in the pairwise correlation matrix in Table 5.2, these two variables have the highest correlation among all variables. The ABHK follows a similar trend with a low average score of 3.08 out of 16 when FS is domestic, and a high average score of approximately 8.59 when FS is between 50 – 75 percent. The ABHK score then drops slightly to 8.38 when FS are over 75 percent.

Depending on the measure of firm performance used, the P-M relationship can be described in two ways. When using ROA and ROE, the relationship is a cyclical S-shape, otherwise referred to as a sigmoid relationship (Riahi-Belkaoui, 1998; Contractor et al., 2003 and 2012; Shin et al., 2017). Increases in performance are followed by decreases from category to category with the highest firm performance range taking place when FS is between 75 – 100 percent. When using RI to measure performance, the relationship takes a U-shape or W-shape (Almodóvar, 2012; Fernandex-Olmos, 2016) with performance declining in the lower levels (0-10 percent FS) of multinationality but then increasing in the later stages of multinationality (75 – 100 percent FS). A conclusion with regards to the age and size of the firm that applies to all three firm performance measures is the relationship between these control variables and firm performance is linear up to the 50 – 75 percent FS category. Firms that record the highest levels of firm performance are not the largest or oldest firms, in fact, the average size of a firm drops considerably across all measures of firm size while the average age of the top performing firms drops to approximately 79 years, compared to 84 years (FS between 50 – 75 percent).

5.4.2 Triad Model

The domestic results when the Triad model is used to measure firm performance are the same as the results when using FS. A firm with 100 percent of their sales in their home country is categorized as domestic using the modified Triad model. Moving to the home-region category, close to half (49 percent) of the FYOs are observed, resulting in a sharp decline in FYO total for the bi-regional, host region, and global categories, averaging 8.3, 3.7, and 2.7 percent FYOs, respectively. The differences between bi-regional, host region, and global categories depend on debatably arbitrary thresholds as

described in detail in chapter two. These thresholds make it less likely for a firm to meet the requirements to be host region or global. The Triad model measures domestic firms to be the youngest (65.3 years) and global firms to be the oldest (85.7 years) while the same result holds for employee count and market capitalization. As firms moved from domestic to home region and then to bi-regional, both age and size increase. The transition from bi-regional (20 percent sales in two Triad regions) to host region (50 percent of sales or more in a Triad outside the home region) proves to be a more common level of multinationality for younger and smaller firms as the average age and size both decrease. This result is in line with the decline in age when firms reach 75 – 100 FS. These measures of multinationality are in agreement with recent born global literature by Ganvir and Dwivedi (2017) who analyze the P-M relationship of Indian "born-global" firms. Similar to the measured financial leverage of firms categorized by FS, financial leverage is highest for home-region Triad firms with 40 percent financial leverage ratio. This percent declines as firms become more multinational with host-region and global firms having the lowest financial leverage, 33 percent. When measuring performance using ROA and RI, purely domestic firms have higher measures of performance than firms in the home region category and they are collectively 14 years younger. Moving from the home region category to the bi-regional category, ROA increases from 5.97 – 6.95 percent while RI remains constant at 1.15. As firms move from bi-regional to host region, ROA increases by the largest margin and this category is also the highest measure of performance with 8.10 percent while RI increases to 1.17. Moving to the global category, which requires a firm to have greater than 20 percent of sales in each of the Triad regions, firms decrease in ROA (7.84 percent) but remain constant with a RI of 1.17.

Based on the Triad categories as a measure of multinationality, performance when measured by ROE, shows a consistent positive linear P-M relationship (Rugman and Verbeke, 2008; Gaur and Kumar, 2009; Lee, Kim, and Davidson, 2015) with firm performance consistently increasing from 11.11 percent to a maximum in the global category of 16.81 percent. ROA or RI as a measure of firm performance depicts the P-M relationship to be S-shaped with a decline in performance as firms increase the breadth of their sales from their home country to neighboring countries. Moving from the home region category to bi-regional and host region, performance increases beyond the initial level as a domestic firm, but then declines as sales move to the global category.

5.4.3 ABHK Model

What makes the ABHK model analysis unique when compared to FS and the Triad model is the combination of sales and subsidiary geographic location scores which results in a categorization of each firm on a scale from one being domestic to 16 being global. The categories follow a systematic movement from domestic, sales and subsidiaries are only located in the home country, to global, sales and subsidiaries are present in all six continents. The increase from domestic, to the next ABHK category, which is regional trading, but subsidiaries are still domestic. The next category is an increase in trading to trans-regional, sales to multiple continents, but subsidiaries remain domestic. These first three categories all increase in trading but remain stationary in subsidiary multinationality, making the first ABHK multinationality groupings as shown previously in Table 5.6. The fourth ABHK category is an increase in investing from domestic to regional, however trading is now back to domestic and this progressively increases for the next three ABHK categories. The ABHK categories are now segregated into five groupings.

Table 5.7

ABHK Model Sub Groupings					
	1-3	**4-6**	**7-9**	**10-12**	**13-16**
Trading	Increasing	Increasing	Increasing	Global	Increasing
Investing	Domestic	Regional	Trans-Regional	Increasing	Global
ROA	6.66%	6.24%	5.79%	7.31%	6.19%
ROE	11.87%	12.98%	12.10%	16.60%	14.05%
RI	1.20	1.18	1.14	1.18	1.12

***Increasing indicates a movement from domestic to regional, regional to trans-regional and in the final grouping from 13-16, trading increases from trans-regional to global.**

When measuring firm performance using ROA and RI, the P-M relationship takes a S-shape as firms move from domestic in investing to regional, and again from regional to trans-regional, the performance declines. When trading reaches a global level however, performance is at its highest (9.15 percent), more specifically, when firms are global in trading and regional or trans-regional in investing. Interestingly, when firms have subsidiaries in all six continents, this is when firm performance is at its lowest when measured by RI, as seen in Table 5.7, RI is 1.09 at this global ABHK category. As firms that are global in trading are increasing in investments, ROA is declining, similar to RI. ROE tells a slightly different story with the P-M relationship taking a M-shaped relationship with incremental increases in firm performance followed by less severe decreases. With regards to firm performance, multinationality declines when investing increases to the following ABHK categories: 3-4, 6-7, and 13-14 in Table 5.7. However, an increase in firm performance is evident when a firm increases from category 9-10 due to trading moving from trans-regional (two to five continents) to

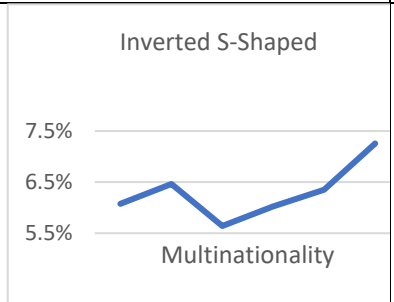
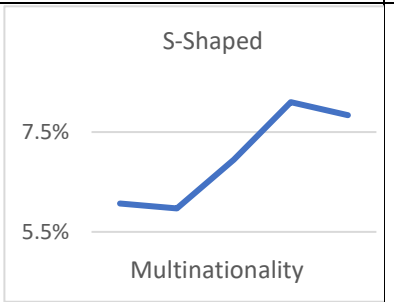
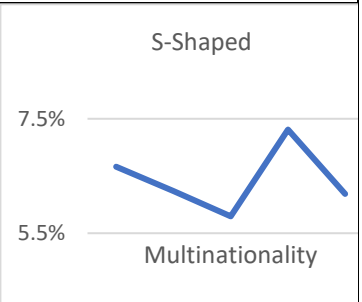
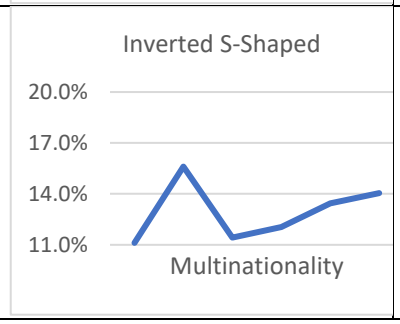
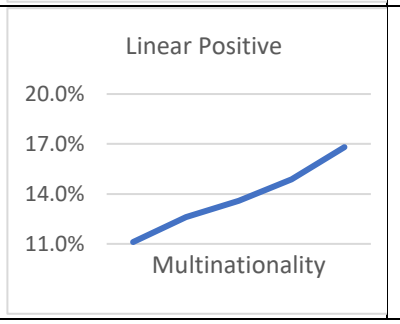
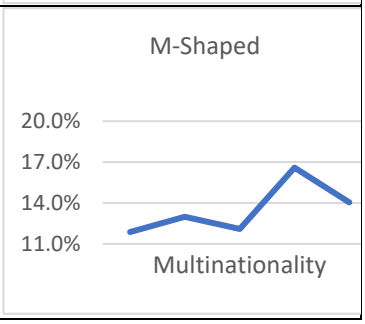
global (six continents). Firm age is generally increasing the more multinational the firm is with domestic firms being the youngest at 59 years and global firms being the oldest at 110 years. Firm size by both measures show the largest firms to be global in investments while the financial leverage of firms shows an inverse relationship to multinationality. Financial leverage increases as investing increases as seen in Table 5.6 from ABHK category 3-4, 6-7, and 12-13 but leverage noticeably decreases from category 9-10 due to the level of investing remaining constant and while trading increases.

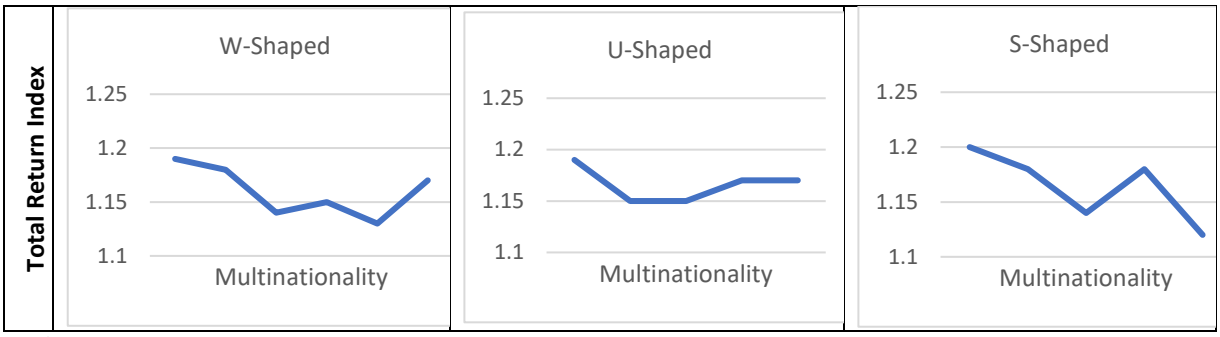
5.4.4 Range of Outcomes: Foreign Sales versus Triad and ABHK

Observing the P-M relationship using nine combinations of firm performance measures and multinationality measures, a total of six unique patterns emerged. Three of the relationships are described as S-shaped and two Inverted S-shaped, one W-shaped, M-shaped, U-shaped, and Linear Positive respectively (Table 5.8). In comparing these P-M relationships, I will separate the results into two categories; FS versus Triad and ABHK. The Triad and ABHK models have categories that require clear continental increases in sales and subsidiaries (ABHK) while FS increases do not. It is possible for a company to have near 100 percent FS but those sales are to a neighboring country while an increase in each score in both the Triad and ABHK models requires trading and/or investing to an additional geographic region.

Table 5.8

Firm Performance – Multinationality Relationship

	Foreign Sales Percentage	Triad Model	ABHK Model
Return on Assets			
Return on Equity			



***Outcome variable is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart.**

Multinationality when measured by FS produces an inverted S-shape when performance is measured by ROA and ROE due to the benefits (increase in sales) that come with early expansion exceeding the costs. As firms trade abroad in the range of 25 – 75 percent FS, performance is at its lowest but as FS moves to 75 – 100 percent, performance rebounds and reaches its highest level of ROA. When using the Triad and ABHK models, firms that move from domestic to the next multinationality category, decrease in performance (ROA) due to what the literature has coined "liability of foreignness and newness", marking stage one of the S-shaped P-M relationship. Stage two sees a steady increase in firm performance, likely due to adjustments being made and costs being controlled in these new markets. Stage three occurs when a threshold of firm performance is seen, considered the performance apex, and further expansion leads to lower levels of performance. Both the Triad model's global category produces this decline in ROA and the ABHK model shows a very steep decline in ROA. The variation seen in the highest level of multinationality can be attributed to the Triad model's global category not requiring more than 40 percent of sales to occur outside the home country, and the ABHK model's highest categories requiring firms to have subsidiaries in all six continents, not just sales. This steep decline in multinationality is observed across all three measures of performance when using the ABHK model, but this is not evident when using the Triad model.

The Triad model and FS results are similar as both use sales to determine multinationality and thus, both began with the same number of FYOs in the domestic category, approximately 36.3 percent. Due to the Triad's home region comprising 49.0 percent of FYOs, the overall dispersion of data among the Triad categories is taking place in the first two categories while bi-regional, host region, and global combine for only 13.7 percent of the FYOs. The rigidity of the Triad thresholds creates a barrier to move from one category of multinationality to the next as seen in the largely reduced FYOs in these three categories. Comparing the two measures, FS appears to describe the P-M relationship more accurately, however, FS only distinguishes when a firm enters a new market when comparing the

performance of firms with no FS to firms with FS. Past research has used the ABHK taxonomy to measure firms based on sales geographic location alone (Mullen and O'Hagan Luff, 2018). The addition of subsidiary geographic location to the ABHK model adds a degree of advancement in the measurement of multinationality when compared to FS and the Triad model. The ABHK's global category requires firms to have subsidiaries in all six continents and according to the traditional accounting-based measures of performance, ROA and ROE, and the market-based measure, RI, firms experience a decrease in performance when subsidiary region totals increase from trans-regional (two to five continents) to global. This result is not observed when only viewing FS.

Overall, the P-M relationship is evidently unclear as seen in Table 5.8. However, by using three measures of multinationality, a better understanding of the variations that exist when using different measures can be outlined. Five of the nine relationships begin with a U-shaped P-M relationship, displaying a drop in performance in the early stages of internationalization followed by a learning adaptation, leading to a rise in performance. More evident is the inverted U-shaped relationship, witnessed in the later stages of multinationality. Seven of the nine relationships observed an inverted U-shape in the middle or latter stages of multinationality suggesting that multinationality is associated with positive performance but, beyond an optimal desirable level, there is a detrimental effect on performance. The reasons for this downturn in performance are due to the liabilities associated with overseas expansion and the difficulties of organizational coordination across different cultures and legal environments (Gomes and Ramaswany, 1999; and Qian et al., 2008).

5.5 Applying the Regression Results

To identify the significance of the relationship between the variables described in the previous section and make conclusions regarding the validity of the recognized P-M relationships, the fixed effects model is estimated. In Table 5.9 I report the results of the regression with the outcome variables as the column headers followed by the model effects used, fixed or random, and in the third row, which explanatory variable (multinationality measure) is being used.

Table 5.9

Regression Analysis									
	Ln Return Index			Ln Return on Assets			Ln Return on Equity		
Model Effects Multinationality	Fixed LnABHK	Fixed LnTriad	Fixed FS	Fixed LnABHK	Fixed LnTriad	Fixed FS	Fixed LnABHK	Fixed LnTriad	Fixed FS
Constant	-2.01[4]	-2.03[4]	-2.00[4]	-7.43[4]	-7.45[4]	-7.39[4]	-7.24[4]	-7.25[4]	-7.20[4]
Leverage	-0.01[2]	-0.01[2]	-0.01[2]	-0.01[4]	-0.01[4]	-0.01[4]	0.01	0.01	0.01
Lnmcap	0.10[4]	0.10[4]	0.10[4]	0.22[4]	0.22[4]	0.22[4]	0.23[4]	0.24[4]	0.23[4]
Lnage	-0.01	-0.01	-0.02	-0.13[4]	-0.14[4]	-0.14[4]	-0.02	-0.03	-0.03

Multinationality	**-0.02[4]**	**-0.06[4]**	**-0.06[3]**	**-0.07[4]**	**-0.12[4]**	**-0.16[4]**	**-0.06[4]**	**-0.12[4]**	**-0.18[4]**
1998-2001	0.05[4]	0.05[4]	0.05[4]	0.16[4]	0.16[4]	0.16[4]	0.18[4]	0.18[4]	0.17[4]
2002-2006	0.12[4]	0.12[4]	0.12[4]	0.15[4]	0.15[4]	0.15[4]	0.19[4]	0.19[4]	0.19[4]
2007-2009	-0.13[4]	-0.13[4]	-0.13[4]	0.13[4]	0.13[4]	0.13[4]	0.16[4]	0.16[4]	0.15[4]
No. Observations	24,268	24,268	24,268	22,915	22,915	22,915	22,171	22,171	22,171
R^2	0.09	0.09	0.09	0.63	0.63	0.63	0.42	0.42	0.42
Adjusted R^2	0.04	0.04	0.04	0.61	0.61	0.61	0.38	0.38	0.38
F-Statistic	1.67	1.68	1.67	26.68	26.66	26.62	10.81	10.81	10.80
Probability (F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin-Watson	2.23	2.23	2.23	1.18	1.18	1.18	1.16	1.15	1.15

***Model effects are determined by the Hausman test in Table 5.5. Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001.**

In the first column I list my control variables followed by the number of FYOs for each regression. Total FYOs for the balanced dataset is 24,786 but after taking the natural logarithm of each variable, observations are lost due to the variable being negative, resulting in an undefined result. R^2 and Adjusted R^2 measure how much variation in the outcome variable can be explained by the explanatory variables. The F-Statistic measures the general significance of how the explanatory and control variables can explain the outcome variable. If the p-value is less than the significance level (F-statistic), the sample data provides sufficient evidence to conclude that the regression model fits the data better than the model with no explanatory and control variables. To conclude, the Durbin-Watson (DW) statistic tests for first order serial correlation in the error term. If this statistic is less than two, there is evidence of positive serial correlation and the lower the DW is, the less reliable the R^2 becomes as the variation in the outcome variable is influenced by serial correlation instead of the explanatory variables. Of the three measures of performance, LnRI shows the least instance of serial correlation with a DW statistic of 2.23 compared to 1.18 and 1.15 of LnROA an LnROE respectively.

5.5.1 Significance of the Control Variables

Firm size as measured by market capitalization has a significantly positive correlation with performance across all three measures. The coefficient for size is 0.10, 0.22, and 0.23 when performance is measured using LnRI, LnROA, and LnROE respectively. This confirms the results from the preliminary statistical analysis in section 5.4, firm size increases as performance increases as seen in previous studies by Beiner et al. (2006) and Black, Jang, and Kim (2006). Financial leverage and age, unlike market capitalization, both have negative coefficients and when measuring performance. Using RI and ROE, age is insignificant in relation to performance while age does have a significant relationship to ROA as a performance measure. Financial leverage is significant to RI and ROA with a coefficient of -0.01 and insignificant to ROE with a coefficient of 0.01. This identifies that while the

correlation between financial leverage and performance is significant and negative in the RI and ROA models, a change in financial leverage will only result in a minimal change in performance. Across all three performance measures, performance increased from 1998-2001 and again from 2002-06 with high significance. The performance measures varied during the financial crisis from 2007-09 with a negative coefficient of 0.13 when using RI as the measure of performance, and a positive coefficient of 0.13 and 0.16 when using ROA and ROE respectively.

5.5.2 Significance of the P-M Relationship

RI, ROA, and ROE all measure a significantly negative relationship with multinationality. The coefficient when using the ABHK model measures 0.02, 0.06, and 0.05 when performance is measured using RI, ROA, and ROE. This indicates movement in ABHK multinationality, leading to minimal negative changes in firm performance. Due to the DW statistic of ROA and ROE being considerably less than 2.0, 1.18 and 1.15 respectively, while RI measures a DW of 2.23, I can conclude that the P-M relationship when modelled using RI is more reliable than when measured using ROA and ROE as both suffer from higher levels of serial correlation. With RI as the performance measure that produces the most reliable model results, the adjusted R^2 of four percent can be interpreted as four percent of the variation in RI can be explained by the explanatory and control variables.

Overall, the P-M relationship is negative whether multinationality is measured using FS, the Triad model, or the ABHK model. The early stages of multinationality bring considerable decreases in firm performance when measured using RI, whether the relationship is depicted as W-shape, U-shape, or S-shape. Of these three multinationality measures, the ABHK model's S-shaped relationship is the only measure that distinctly shows firms moving from a trans-regional multinationality status to global to see clear declines in performance. The Triad model estimates firms to remain at a constant performance level while FS estimates firms to increase in their performance. This leads to the P-M relationship being largely inconclusive, agreeing with recent findings by Mullen and O'Hagan Luff (2018) who also used the Triad model results, although as dummy variables, and a sales geographic sales location variable applied to the ABHK categories. This conclusion allows me to reject hypothesis i): Higher measurements of multinationality are associated with varying positive increments in firm performance, and hypothesis iii): Firm performance and multinationality show no significant relationship.

5.5.3 Robustness Checks

To test for robustness of the regression model, a random effects check is conducted to compare results for all nine regressions using the opposite model effect which is used in Table 5.9's regression estimation. The results shown in Panel A of Table 5.10 give near equal results for each variable, their coefficient, and significance level. This conclusion, based on the model effects as advised by the Hausman Test in Table 5.5, across both iterations of the model, implies robustness of the model. A second robustness check is performed by interchanging total employee count for market capitalization as a measure for firm size. Total employee count has a small and negative (negligible) relationship to firm performance indicating that performance is not affected by the size of the firm when measured by the total number of employees, matching findings of previous studies by Fama and French (1992); Clegg et al. (2016); and Girod and Whittington (2017). This measure of size gives a different result than market capitalization, likely due to the cost of hiring more employees from employee training, salaries, and benefits collectively stagnates firm performance in the short run (Tang et al., 2020). As shown in Table 5.10, all models reject the null hypothesis of the Hausman test and apply fixed effects. The coefficients, variable significance, R^2 values, DW statistic, and P-M relationships vary slightly from the regression results from Table 5.9 when market capitalization is used as the measure of firm size, confirming the overall robustness and consistency of model.

Table 5.10

Robustness Test A									
Panel A: Regression Analysis Using Opposite Model Effects									
	Ln Return Index			**Ln Return on Assets**			**Ln Return on Equity**		
Model Effects Multinationality	**Random LnABHK**	**Random LnTriad**	**Random FS**	**Random LnABHK**	**Random LnTriad**	**Random FS**	**Random LnABHK**	**Random LnTriad**	**Random FS**
Constant	-0.04	0.02	0.03	-5.87[4]	-5.79[4]	-5.75[4]	-5.52[4]	-5.43[4]	-5.42[4]
Leverage	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01	-0.01	-0.01
Lnmcap	0.01[4]	0.01[4]	0.01[4]	0.16[4]	0.16[4]	0.16[4]	0.16[4]	0.15[4]	0.15[4]
Lnage	-0.01[3]	-0.01[4]	-0.01[4]	-0.18[4]	-0.19[4]	-0.20[4]	-0.03	-0.03[2]	-0.04[2]
Multinationality	-0.02[4]	-0.03[4]	-0.04[4]	-0.07[4]	-0.08[4]	-0.06[2]	-0.06[4]	-0.06[3]	-0.09[3]
1998-2001	-0.05[4]	-0.05[4]	-0.05[4]	0.07[4]	0.08[4]	0.08[4]	0.09[4]	0.09[4]	0.09[4]
2002-2006	0.07[4]	0.07[4]	0.07[4]	0.10[4]	0.10[4]	0.10[4]	0.14[4]	0.14[4]	0.14[4]
2007-2009	-0.15[4]	-0.15[4]	-0.15[4]	0.11[4]	0.11[4]	0.11[4]	0.14[4]	0.14[4]	0.14[4]
No. Observations	24,268	24,268	24,268	22,915	22,915	22,915	22,171	22,171	22,171
R^2	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03
Adjusted R^2	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03
F-Statistic	134.51	128.63	127.76	127.15	119.12	116.65	103.77	99.13	99.35
Probability (F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin-Watson	2.19	2.19	2.19	1.09	1.08	1.09	1.08	1.07	1.07
Panel B: Regression Using Employee Count as Size Measure									
Constant	0.41[4]	0.41[4]	0.41[4]	-2.60[4]	-2.59[4]	-2.58[4]	-2.10[4]	-2.10[4]	-2.09[4]
Leverage	-0.01[3]	-0.01[3]	-0.01[3]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01	-0.01	-0.01
Lnemp	-0.08[4]	-0.08[4]	-0.08[4]	-0.06[4]	-0.06[4]	-0.06[4]	-0.07[4]	-0.08[4]	-0.07[4]

Lnage	0.10[4]	0.10[4]	0.10[4]	0.05[1]	0.05	0.04	0.18[4]	0.17[4]	0.17[4]
Multinationality	-0.01	-0.02	-0.01	-0.04[4]	-0.05[3]	-0.08[2]	-0.03[3]	-0.05[2]	-0.10[2]
1998-2001	-0.05[4]	-0.06[4]	-0.05[4]	-0.05[3]	-0.04[3]	-0.04[3]	-0.05[2]	-0.05[2]	-0.05[2]
2002-2006	0.06[4]	0.06[4]	0.06[4]	0.03[2]	0.03[2]	0.03[2]	0.06[4]	0.06[4]	0.06[4]
2007-2009	-0.15[4]	-0.15[4]	-0.15[4]	0.08[4]	0.08[4]	0.08[4]	0.11[4]	0.11[4]	0.10[4]
No. Observations	24,268	24,268	24,268	22,915	22,915	22,915	22,171	22,171	22,171
R^2	0.07	0.07	0.07	0.61	0.61	0.61	0.40	0.40	0.40
Adjusted R^2	0.02	0.02	0.02	0.59	0.59	0.59	0.36	0.36	0.36
F-Statistic	1.34	1.34	1.34	24.83	24.81	24.80	9.92	9.92	9.92
Probability (F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin-Watson	2.28	2.28	2.28	1.16	1.16	1.16	1.14	1.14	1.14

***Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001.**

A third robustness check is performed through a sub-period analysis estimation of the regression (1998-2001, 2002-06, 2007-09, 2010-15). As outlined in Panel A of Table 5.11, each sub-period is first determined to use fixed effects when estimating the model for all sub-periods. Panel B outlines the regression results for each sub-period and of the four sub-periods, 2007-09 produced results that varied from the overall regression of the dataset in Table 5.9. The DW statistic and low F-Statistic for all nine iterations of the model are higher than the normal range limit of 2.5, signifying a negative serial correlation. Furthermore, the F-statistic is near zero which is an indicator the control variables collectively do not predict the outcome variable. Following the 2007-09 sub-period, 2010-15 produces a DW statistic that is closest to 2.0 across all regression estimations as well as the highest R^2 values with significance of all control variables with the exception of the multinationality explanatory variables. This comparison shows the inability of the model to estimate firm performance using multinationality as the explanatory variables followed by the accuracy of the model from 2010-15 which indicates a significant relationship does not exist between firm performance and multinationality.

Table 5.11

Robustness Test B						
Panel A: Sub-Period Hausman Tests						
	LnABHK		**LnTriad**		**FS**	
			1998-2001			
Outcome Variables	**Chi²**	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	103.76	0.0000	110.12	0.0000	115.00	0.0000
LnROA	108.35	0.0000	127.25	0.0000	140.63	0.0000
LnROE	14.79	0.0051	24.33	0.0001	31.83	0.0000
			2002-2006			
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	365.50	0.0000	368.59	0.0000	371.26	0.0000
LnROA	453.73	0.0000	464.57	0.0000	472.77	0.0000
LnROE	272.12	0.0000	275.87	0.0000	271.55	0.0000
			2007-2009			
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**

LnRI	522.72	0.0000	527.14	0.0000	527.69	0.0000
LnROA	267.99	0.0000	292.59	0.0000	303.54	0.0000
LnROE	200.39	0.0000	218.94	0.0000	215.33	0.0000
	2010-2015					
	Chi^2	**Probability**	**Chi^2**	**Probability**	**Chi^2**	**Probability**
LnRI	674.22	0.0000	677.78	0.0000	673.20	0.0000
LnROA	267.73	0.0000	295.16	0.0000	293.53	0.0000
LnROE	195.40	0.0000	212.39	0.0000	204.16	0.0000

Panel B: Sub-Period Regression Statistics

1998-2001

	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-2.37[4]	-2.41[4]	-2.41[4]	-6.51[4]	-6.52[4]	-6.58[4]	-5.76[4]	-5.87[4]	-5.89[4]
Lnmcap	0.18[4]	0.18[4]	0.18[4]	0.19[4]	0.19[4]	0.19[4]	0.17[4]	0.17[4]	0.17[4]
Leverage	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lnage	-0.34[4]	-0.33[4]	-0.33[4]	-0.14	-0.14	-0.12	-0.03	-0.01	0.01
Multinationality	**-0.03**	**-0.09**[2]	**-0.20**[3]	**-0.01**	**-0.02**	**-0.19**[2]	**0.01**	**-0.10**[1]	**-0.25**[2]
No. Observations	5,348	5,348	5,348	5,087	5,087	5,087	4,851	4,851	4,851
R^2	0.18	0.18	0.18	0.81	0.81	0.81	0.69	0.70	0.70
Adjusted R^2	-0.09	-0.09	-0.09	0.74	0.74	0.74	0.58	0.58	0.58
F-Statistic	0.67	0.67	0.68	11.43	11.43	11.45	5.85	5.86	5.87
Durbin-Watson	2.79	2.79	2.79	2.19	2.19	2.19	2.23	2.23	2.23

2002-2006

	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-4.14[4]	-4.14[4]	-4.15[4]	-11.40[4]	-11.43[4]	-11.44[4]	-12.13[4]	-12.20[4]	-12.23[4]
Lnmcap	0.11[4]	0.11[4]	0.11[4]	0.28[3]	0.28[3]	0.29[3]	0.30[4]	0.30[4]	0.30[4]
Leverage	-0.01	-0.01	-0.01	-0.01[3]	-0.01[3]	-0.01[3]	-0.01[4]	-0.01[4]	-0.01[4]
Lnage	0.48[4]	0.48[4]	0.48[4]	0.55[4]	0.56[4]	0.56[4]	0.87[3]	0.89[3]	0.90[3]
Multinationality	**-0.01**	**-0.05**[1]	**-0.08**	**0.02**	**-0.02**	**-0.19**[2]	**0.05**[2]	**0.01**	**0.18**[2]
No. Observations	6,685	6,685	6,685	6,385	6,385	6,385	6,194	6,194	6,194
R^2	0.23	0.23	0.23	0.78	0.78	0.78	0.68	0.68	0.68
Adjusted R^2	0.04	0.04	0.04	0.72	0.72	0.72	0.59	0.59	0.59
F-Statistic	1.21	1.21	1.21	12.97	12.97	12.99	7.37	7.36	7.37
Durbin-Watson	2.47	2.47	2.47	1.65	1.65	1.65	1.75	1.75	1.75

2007-2009

	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-32.49[4]	-32.49[4]	-32.49[4]	5.87[3]	5.83[3]	5.64[3]	8.92[4]	8.83[4]	8.54[4]
Lnmcap	0.54[4]	0.54[4]	0.54[4]	0.32[4]	0.31[4]	0.31[4]	0.32[4]	0.32[4]	0.32[4]
Leverage	0.01	0.01	0.01	-0.01[2]	-0.01[2]	-0.01[2]	-0.01	-0.01	-0.01
Lnage	5.00[4]	5.00[4]	5.00[4]	-3.86[4]	-3.82[4]	-3.78[4]	-4.43[4]	-4.38[4]	-4.30[4]
Multinationality	**-0.01**	**0.03**	**0.02**	**-0.01**	**-0.21**[2]	**-0.33**[2]	**-0.01**	**-0.19**[2]	**-0.40**[2]
No. Observations	4,054	4,054	4,054	3,725	3,725	3,725	3,615	3,615	3,615
R^2	0.29	0.28	0.28	0.80	0.81	0.81	0.70	0.70	0.70
Adjusted R^2	-0.08	-0.08	-0.08	0.69	0.69	0.69	0.53	0.53	0.53
F-Statistic	0.77	0.77	0.77	7.18	7.20	7.20	3,98	3,99	3,99
Durbin-Watson	3.55	3.55	3.55	2.95	2.95	2.96	2.74	2.74	2.75

2010-2015

	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-4.13[4]	-4.13[4]	-4.13[4]	-7.07[4]	-7.07[4]	-7.07[4]	-6.78[4]	-6.78[4]	-6.77[4]
Lnmcap	0.26[4]	0.26[4]	0.26[4]	0.40[4]	0.40[4]	0.40[4]	0.44[4]	0.44[4]	0.44[4]
Leverage	-0.01[1]	-0.01[1]	-0.01[1]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[3]	-0.01[3]	-0.01[3]
Lnage	0.37[4]	0.37[4]	-0.37[4]	-1.12[4]	-1.12[4]	-1.12[4]	-1.28[4]	-1.29[4]	-1.30[4]
Multinationality	**0.01**	**0.02**	**-0.01**	**-0.01**	**-0.04**	**-0.04**	**-0.01**	**-0.02**	**0.05**

No. Observations	8,181	8,181	8,181	7,718	7,718	7,718	7,511	7,511	7,511
R^2	0.27	0.27	0.27	0.78	0.78	0.78	0.62	0.62	0.62
Adjusted R^2	0.12	0.12	0.12	0.73	0.73	0.73	0.53	0.53	0.53
F-Statistic	1.82	1.82	1.82	16.20	16.20	16.20	7.24	7.24	7.24
Durbin-Watson	2.25	2.25	2.25	1.88	1.88	1.88	1.82	1.82	1.82

***Model effects for each sub-period are determined by the Hausman test in Panel A. Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001.**

5.6 ICB Industry Sectors

Using the 1,377 firm dataset, each of the 10 industry sectors are estimated with the model using the sub-period intervals as dummy variables. Previous research confirms that the firm effect plays a larger role than industry effects in explaining firms' profitability (Short, Ketchen, Palmer, and Hult, 2007; Bamiatzi and Hall 2009; Bamiatzi, Bozos, Cavusgil, and Hult 2016). Furthermore, studies that differentiated firms by size find for large companies, the firm effect is considerably more important than the industry effect (McGahan and Porter, 2002; Ruefli and Wiggins, 2003; Fernández, Iglesias-Antelo, López-López, Rodríguez-Rey, and Fernandez-Jardon, 2019). The average firm size of my 1,377-firm dataset is 34,288 employees with a 14.9 billion USD market capitalization. The firm size is considerably large due to the nature of my firm selection, which is taken from each country's major stock index as outlined in chapter two. For this reason, my model is not testing for industry effects but instead I estimate the P-M relationship on each industry grouping of firms as previously conducted in this chapter.

5.6.1 Descriptive Statistics

The 18-year average performance measures, control variables, and multinationality measures for each of the 10 industries are shown in Table 5.12. The smallest industry by market capitalization is Industrials (8.2 billion USD) while Financials employs, on average, the least number of employees with 22,689. Industrials is among the highest by the three measures of multinationality while Financials is among the lowest.

Table 5.12

18-Year Industry Variable Averages										
	Outcome Variables			Control Variables				Explanatory Variables		
	ROA	ROE	RI	Age	Leverage	Market Capitalization	Employee Count	Foreign Sales	ABHK	Triad
Oil and Gas	6.6%	12.3%	1.13	59.2	33.7%	$31,067	24,207	30.5%	5.95	1.93
Basic Materials	6.9%	11.9%	1.17	79.3	34.7%	$11,429	22,972	39.4%	6.75	2.10
Industrials	6.2%	13.2%	1.18	77.1	39.8%	$8,282	32,485	35.0%	7.06	2.06
Consumer Goods	7.5%	14.9%	1.16	86.4	37.9%	$14,258	38,903	35.0%	6.90	2.05
Health Care	7.8%	13.9%	1.22	65.1	29.9%	$20,647	26,226	36.7%	6.90	2.05
Consumer Services	7.2%	13.9%	1.15	64.9	41.6%	$12,079	68,086	19.8%	5.37	1.66

Telecommunications	6.8%	-2.4%	1.22	38.6	43.1%	$33,912	55,934	12.0%	4.59	1.44
Utilities	4.6%	8.2%	1.12	76.8	50.8%	$12,291	23,068	8.5%	4.34	1.37
Financials	3.7%	10.6%	1.13	90.0	43.9%	$15,206	22,689	12.0%	4.82	1.54
Technology	7.9%	14.2%	1.25	42.7	22.0%	$24,090	33,130	47.2%	7.70	2.43

***Market Capitalization is rounded to millions of USD.**

Table 5.13

18-Year Multinationality Category Based Industry Sector Averages											
Foreign Sales Percentage											
	Oil and Gas	**Basic Materials**	**Industrials**	**Consumer Goods**	**Health Care**	**Consumer Services**	**Telecommunications**	**Utilities**	**Financials**	**Technology**	**Totals**
Domestic	20 (30.8%)	26 (22.2%)	62 (21.5%)	45 (24.5%)	27 (29.2%)	83 (48.2%)	19 (59.5%)	45 (67.2%)	162 (58.7%)	11 (13.0%)	**500 (36%)**
0-10%	7 (10.8%)	4 (3.4%)	22 (7.6%)	11 (6.0%)	4 (4.3%)	14 (8.2%)	4 (12.5%)	8 (11.9%)	28 (10.1%)	2 (2.4%)	**104 (8%)**
10-20%	7 (10.8%)	14 (11.9%)	34 (11.8%)	17 (9.3%)	4 (4.3%)	16 (9.4%)	2 (6.3%)	4 (6.0%)	23 (8.3%)	6 (7.1%)	**127 (9%)**
20-50%	11 (16.9%)	28 (23.7%)	76 (26.3%)	48 (26.4%)	25 (26.9%)	29 (17.0%)	4 (12.5%)	6 (9.0%)	42 (15.2%)	24 (28.6%)	**293 (21%)**
50-75%	12 (18.5%)	22 (18.6%)	56 (19.4%)	40 (22.0%)	17 (18.3%)	17 (9.9%)	2 (6.3%)	3 (4.5%)	15 (5.4%)	23 (27.4%)	**207 (15%)**
75-100%	8 (12.3%)	24 (20.3%)	39 (13.5%)	21 (11.5%)	16 (17.2%)	12 (7.0%)	1 (3.1%)	1 (1.5%)	6 (2.2%)	18 (21.4%)	**146 (11%)**
	65 (4.7%)	**118 (8.6%)**	**289 (21.0%)**	**182 (13.2%)**	**93 (6.8%)**	**171 (12.4%)**	**32 (2.3%)**	**67 (4.9%)**	**276 (20.0%)**	**84 (6.1%)**	**1,377 (100%)**
Triad Model											
	Oil and Gas	**Basic Materials**	**Industrials**	**Consumer Goods**	**Health Care**	**Consumer Services**	**Telecommunications**	**Utilities**	**Financials**	**Technology**	**Totals**
Domestic	20 (30.8%)	26 (22.2%)	62 (21.5%)	45 (24.5%)	27 (29.2%)	83 (48.2%)	19 (59.5%)	45 (67.2%)	162 (58.7%)	11 (13.0%)	**500 (36%)**
Home Region	35 (54.4%)	68 (57.9%)	176 (61.0%)	104 (56.9%)	46 (49.4%)	71 (41.6%)	12 (37.7%)	20 (29.5%)	94 (34.0%)	48 (57.7%)	**673 (49%)**
Bi-Regional	5 (7.1%)	13 (11.3%)	30 (10.4%)	22 (11.9%)	12 (12.4%)	12 (6.9%)	1 (1.9%)	2 (2.2%)	10 (3.8%)	9 (11.0%)	**115 (8%)**
Host Region	4 (6.2%)	6 (4.9%)	13 (4.5%)	5 (2.7%)	5 (5.0%)	4 (2.4%)	0 (0.9%)	1 (1.0%)	6 (2.0%)	9 (10.1%)	**53 (4%)**
Global	1 (1.5%)	4 (3.7%)	7 (2.6%)	7 (4.1%)	4 (4.1%)	2 (0.9%)	0 (0.0%)	0 (0.1%)	4 (1.5%)	7 (8.2%)	**36 (3%)**
	65 (4.7%)	**118 (8.6%)**	**289 (21.0%)**	**182 (13.2%)**	**93 (6.8%)**	**171 (12.4%)**	**32 (2.3%)**	**67 (4.9%)**	**276 (20.0%)**	**84 (6.1%)**	**1,377 (100%)**
ABHK Model											
	Oil and Gas	**Basic Materials**	**Industrials**	**Consumer Goods**	**Health Care**	**Consumer Services**	**Telecommunications**	**Utilities**	**Financials**	**Technology**	**Totals**
Domestic	12 (19.1%)	15 (12.9%)	36 (12.4%)	29 (15.7%)	15 (15.9%)	49 (28.5%)	12 (36.8%)	30 (44.4%)	100 (36.3%)	4 (4.4%)	**301 (22%)**
2 (RT-DI)	4 (5.8%)	7 (5.5%)	14 (4.7%)	10 (5.4%)	4 (4.2%)	7 (3.8%)	4 (11.8%)	3 (4.1%)	13 (4.6%)	4 (4.8%)	**68 (5%)**
3 (TT-DI)	8 (12.5%)	20 (16.5%)	35 (12.1%)	24 (13.1%)	9 (9.4%)	16 (9.5%)	1 (4.3%)	3 (5.0%)	18 (6.5%)	8 (9.5%)	**142 (10%)**
4 (DT-RI)	5 (7.4%)	5 (3.9%)	9 (3.1%)	5 (2.5%)	4 (4.1%)	13 (7.5%)	2 (4.9%)	4 (6.6%)	20 (7.4%)	2 (2.8%)	**68 (5%)**
5 (RT-RI)	5 (8.2%)	2 (1.8%)	7 (2.4%)	3 (1.7%)	3 (3.0%)	6 (3.2%)	0 (0.9%)	1 (1.2%)	8 (2.8%)	3 (3.8%)	**38 (3%)**
6 (TT-RI)	2 (2.5%)	4 (3.6%)	7 (2.2%)	5 (2.6%)	3 (2.7%)	3 (1.9%)	0 (0.2%)	1 (1.1%)	4 (1.4%)	3 (3.8%)	**31 (2%)**
7 (DT-TI)	3 (4.2%)	6 (5.4%)	17 (5.7%)	10 (5.3%)	8 (8.4%)	19 (11.2%)	5 (16.3%)	9 (13.8%)	37 (13.3%)	4 (5.2%)	**118 (9%)**
8 (RT-TI)	5 (7.0%)	5 (4.2%)	23 (8.1%)	14 (7.6%)	11 (11.4%)	18 (10.7%)	2 (7.1%)	4 (6.0%)	26 (9.4%)	13 (15.0%)	**120 (9%)**
9 (TT-TI)	15 (22.4%)	38 (32.0%)	108 (37.4%)	59 (32.4%)	26 (27.7%)	28 (16.3%)	4 (11.5%)	9 (13.0%)	33 (12.1%)	33 (39.6%)	**352 (26%)**

10 (GT-DI)	1 (1.1%)	2 (1.9%)	2 (0.6%)	1 (0.3%)	1 (1.3%)	1 (0.5%)	0 (0.0%)	0 (0.2%)	1 (0.4%)	0 (0.1%)	**9 (1%)**
11 (GT-RI)	0 (0.1%)	0 (0.3%)	0 (0.1%)	0 (0.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.3%)	0 (0.4%)	0 (0.2%)	**0 (0%)**
12 (GT-TI)	1 (0.8%)	3 (2.2%)	5 (1.7%)	1 (0.5%)	0 (0.3%)	1 (0.4%)	1 (1.6%)	0 (0.1%)	1 (0.3%)	0 (0.5%)	**11 (1%)**
13 (DT-GI)	0 (0.1%)	0 (0.3%)	1 (0.2%)	1 (0.3%)	1 (0.8%)	2 (1.0%)	1 (1.6%)	2 (2.4%)	3 (1.2%)	0 (0.5%)	**10 (1%)**
14 (RT-GI)	1 (1.9%)	2 (1.3%)	3 (1.1%)	5 (2.6%)	1 (0.6%)	2 (1.4%)	0 (0.3%)	0 (0.1%)	1 (0.4%)	1 (1.0%)	**16 (1%)**
15 (TT-GI)	4 (6.4%)	7 (5.8%)	20 (6.9%)	16 (8.7%)	8 (8.8%)	6 (3.3%)	1 (1.6%)	1 (1.2%)	9 (3.4%)	7 (8.0%)	**78 (6%)**
Global (GT-GI)	0 (0.6%)	3 (2.5%)	4 (1.3%)	2 (1.3%)	1 (1.6%)	1 (3.3%)	0 (1.2%)	0 (0.6%)	2 (0.6%)	1 (0.8%)	**15 (1%)**
	65 (4.7%)	**118 (8.6%)**	**289 (21.0%)**	**182 (13.2%)**	**93 (6.8%)**	**171 (12.4%)**	**32 (2.3%)**	**67 (4.9%)**	**276 (20.0%)**	**84 (6.1%)**	**1,377 (100%)**

***ABHK Categories: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), GI (Global Investing).**

From Table 5.13, the Telecommunications and Oil and Gas industries have the least representation in the dataset with 32 and 65 firms respectively while Industrials and Financials have the greatest representation totaling 289 and 276 firms. By all three multinationality measures, Utilities records the highest percentage of domestic firms with 67.2 percent by the Triad model and FS and 44.1 percent by the ABHK model and Industrials recorded the lowest with 21.5 percent and 12.4 percent domestic firms, respectively.

5.6.2 Collinearity Testing and Regression Results

There are no variables in the 10 industry groupings that have a high correlation however five of the 10 groupings suffer from serial correlation and when estimating the regressions. All variables for these groupings are taken at their first difference. From Table 5.14, the unit root test on the market capitalization variable produces a probability above five percent at level and a probability less than five percent at the first order difference.

Table 5.14

Unit Root Test on Logarithm of Market Capitalization		
	P-Value At Level	**At 1st Difference**
Basic Materials	**0.9815**	0.0000
Consumer Goods	**0.9616**	0.0000
Consumer Services	0.0026	0.0000
Financials	0.0000	0.0000
Health Care	**0.1337**	0.0000
Industrials	0.0000	0.0000
Oil and Gas	**0.1687**	0.0000
Technology	0.0000	0.0000
Telecommunications	0.0102	0.0000
Utilities	**0.6611**	0.0000

***Augmented Dickey-Fuller (ADF) P-value < five percent is insignificant and indicates rejecting the null hypothesis. If P-value is less than five percent at level, the unit root test is not performed at 1st difference.**

After the Hausman test is performed (Appendix 5.1), the regression is estimated for each of the 10 industries producing nine P-M results for each industry grouping (Appendix 5.2). To compare the results to the overall dataset regression from earlier in the chapter I've combined the P-M relationships that produced significant results and have a DW statistic between 1.5-2.5, or the closet to 2.0 if multiple regressions are within this range, as seen in Table 5.15. Each significant P-M relationship is organized based on what multinationality measure is used in the model.

Table 5.15

Significant P-M Relationship Regression Results by Multinationality Measure										
Panel A: Foreign Sales Percentage										
Industry	**Basic Materials**	**Consumer Goods**	**Consumer Services**	**Financials**	**Health Care**	**Industrials**	**Oil and Gas**	**Tele-communications**	**Technology**	**Utilities**
Model Effects	**Random**	**Random**	**Fixed**	**Fixed**	**Random**		**Random**	**Fixed**		**Random**
Performance Measure	**DLnROE**	**DLnROE**	**LnRI**	**LnRI**	**DLnROE**		**DLnROA**	**LnROE**		**DLnROE**
Constant	-0.03	-0.01	-1.88[4]	-2.54[4]	-0.16[4]		-0.07	-7.56[4]		-0.04
Lnmcap	0.43[4]	0.30[4]	0.10[4]	0.11[4]	0.09[1]		0.14[2]	0.21[4]		0.19[3]
Leverage	-0.01[2]	-0.01[4]	-0.01[1]	-0.01	-0.01		-0.02[4]	0.01[3]		-0.01
Lnage	-0.78	0.35	-0.05	0.07[2]	3.81[4]		-0.62	0.10[4]		0.53
Multinationality	**0.29**[2]	**0.30**[2]	**-0.14**[2]	**-0.14**[3]	**-0.16**[1]		**-0.68**[4]	**-0.77**[2]		**-0.97**[3]
1998-2001	0.04	-0.10[2]	0.02	0.09[4]	-0.01		0.19[2]	0.08		0.04
2002-2006	0.01	-0.01	0.03	0.14[4]	0.07		0.11	0.05		0.04
2007-2009	-0.21[3]	-0.08[2]	-0.15[4]	-0.19[4]	0.08		-0.19[3]	0.11		-0.11
No. Observations	1,570	2,645	2,971	4,832	1,363		946	499		925
R^2	0.07	0.05	0.09	0.14	0.06		0.13	0.30		0.03
Adjusted R^2	0.06	0.04	0.04	0.09	-0.01		0.13	0.24		0.02
F-Statistic	16.20	18.31	1.65	2.74	0.89		20.60	5.14		3.67
Durbin-Watson	2.30	2.27	2.21	2.26	2.42		2.32	1.52		2.35
Panel B: Triad Model										
Industry	**Basic Materials**	**Consumer Goods**	**Consumer Services**	**Financials**	**Health Care**	**Industrials**	**Oil and Gas**	**Tele-communications**	**Technology**	**Utilities**
Model Effects			**Fixed**	**Fixed**	**Random**			**Fixed**	**Fixed**	
Performance Measure			**LnRI**	**LnRI**	**DLnROE**			**LnROE**	**LnRI**	
Constant			-1.90[4]	-2.60[4]	-0.16[4]			-7.72[4]	-2.55[4]	
Lnmcap			0.10[4]	0.11[4]	0.09[2]			0.22[4]	0.14[4]	
Leverage			-0.01[1]	-0.01	-0.01			0.01[3]	0.01	
Lnage			-0.05[3]	0.07[2]	3.83[4]			0.09[4]	-0.14	
Multinationality			**-0.08**[2]	**-0.09**[4]	**-0.02**[1]			**-0.30**[1]	**-0.11**[2]	
1998-2001			0.02	0.08[4]	-0.02			0.10	-0.01	
2002-2006			0.03	0.14[4]	0.01			0.07	0.02	
2007-2009			-0.15[4]	-0.18[4]	0.07			0.13	-0.12[3]	
No. Observations			2,971	4,832	1,363			499	1,482	
R^2			0.09	0.15	0.06			030	0.07	
Adjusted R^2			0.04	0.09	-0.01			0.24	0.01	
F-Statistic			1.63	2.77	0.87			5.10	1.20	
Durbin-Watson			2.21	2.26	2.41			1.51	2.19	

Panel C: ABHK Model										
Industry	**Basic Materials**	**Consumer Goods**	**Consumer Services**	**Financials**	**Health Care**	**Industrials**	**Oil and Gas**	**Tele-communications**	**Technology**	**Utilities**
Model Effects				**Fixed**	**Random**	**Fixed**	**Random**			
Performance Measure				**LnRI**	**DLnROE**	**LnRI**	**DLnROA**			
Constant				-2.54[4]	-0.16[4]	-1.38[4]	-0.07			
Lnmcap				0.10[4]	0.09[2]	0.07[4]	0.15[2]			
Leverage				-0.01	-0.01	-0.01[2]	-0.02[4]			
Lnage				0.07[2]	3.80[4]	0.01	-0.61			
Multinationality				**-0.03**[3]	**-0.06**[1]	**-0.02**[1]	**-0.06**[4]			
1998-2001				0.09[4]	0.01	-0.01	0.18[2]			
2002-2006				0.14[4]	0.07	0.13[4]	0.10			
2007-2009				-0.19[4]	0.08	-0.15[4]	-0.19[3]			
No. Observations				4,832	1,363	5,151	946			
R^2				0.14	0.07	0.09	0.12			
Adjusted R^2				0.09	-0.01	0.03	0.12			
F-Statistic				2.74	0.90	1.61	18.58			
Durbin-Watson				2.26	2.41	2.34	2.30			

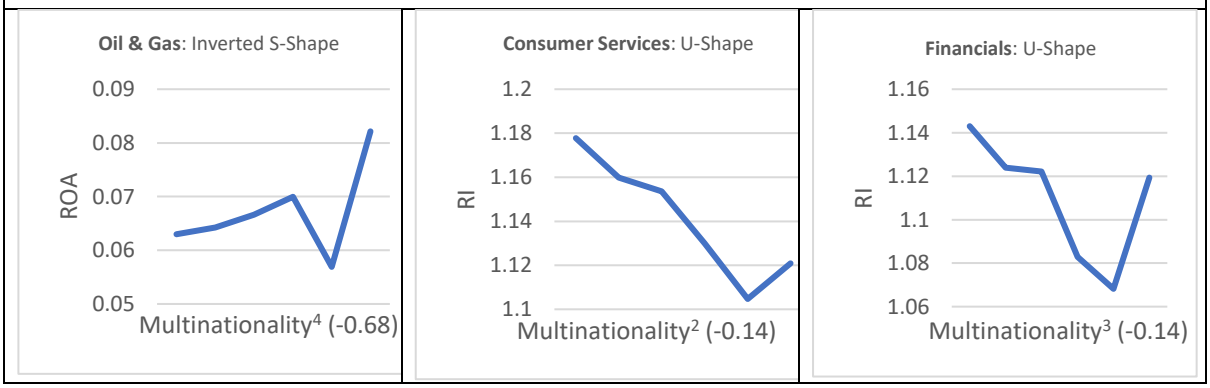
***Model effects for each sub-period are determined by the Hausman test in Panel A. Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001.**

From Panel A, FS produces the largest number of significant P-M relationships with eight of the 10 industries and of those eight, two relationships are significantly positive while the remaining six are significantly negative as seen in the results from section 5.5. Basic Materials and Consumer Goods estimates ROE to increase as FS increases and firm size also has a significantly positive relationship with ROE. This is true across all significant P-M relationships from Table 5.15, thus agreeing with recent findings by Fernández et al. (2019) and Vu et al. (2019), and with the regression results of the 1,377-firm dataset, firm size has a positive effect on firm performance. The Triad and ABHK models, as seen in Panel B and Panel C, both produce less significant P-M relationships based on industry with the Triad model estimating five industries, and ABHK model four industries to have a significantly negative P-M relationship. Across all industries, financial leverage has a negligible affect with a constant of 0.01 although some industries, like Utilities, have a much higher average financial leverage (50.8 percent) than others, like Technology with 22.0 percent financial leverage. The sub-period dummy variables are mostly consistent with the overall findings of the chapter as eight of the 10 industries estimated the financial crisis to have a significantly negative effect on performance. Health Care and Telecommunications groupings showed a positive coefficient but no measured significance.

Using the average multinationality data and the regression results, the P-M relationships are outlined in Tables 5.16-5.18. Only the P-M relationships that are measured to be significant and gave reliable results, based on the DW regression statistic, are presented.

Table 5.16

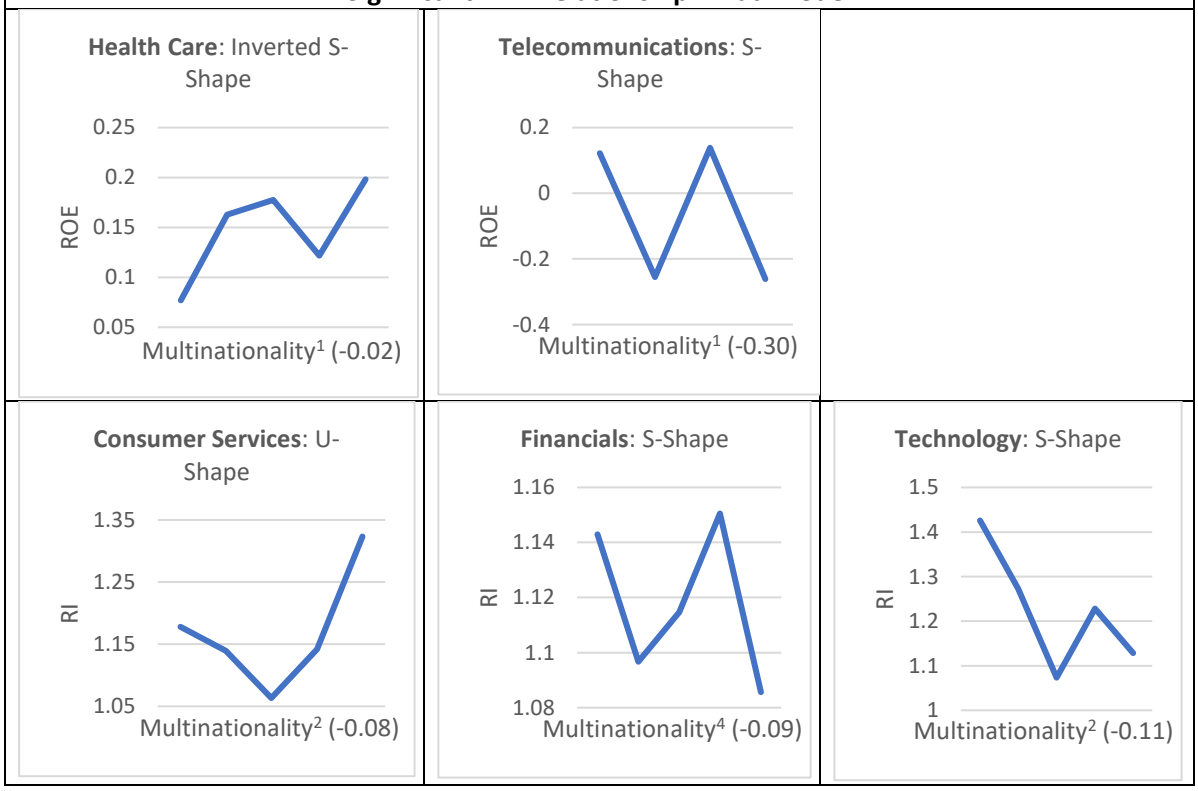
Significant P-M Relationship: Foreign Sales Percentage



***Performance measure is on the Y-axis and explanatory variable is represented as "Multinationality" on the x-axis with the coefficient in brackets. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00.**

Table 5.17

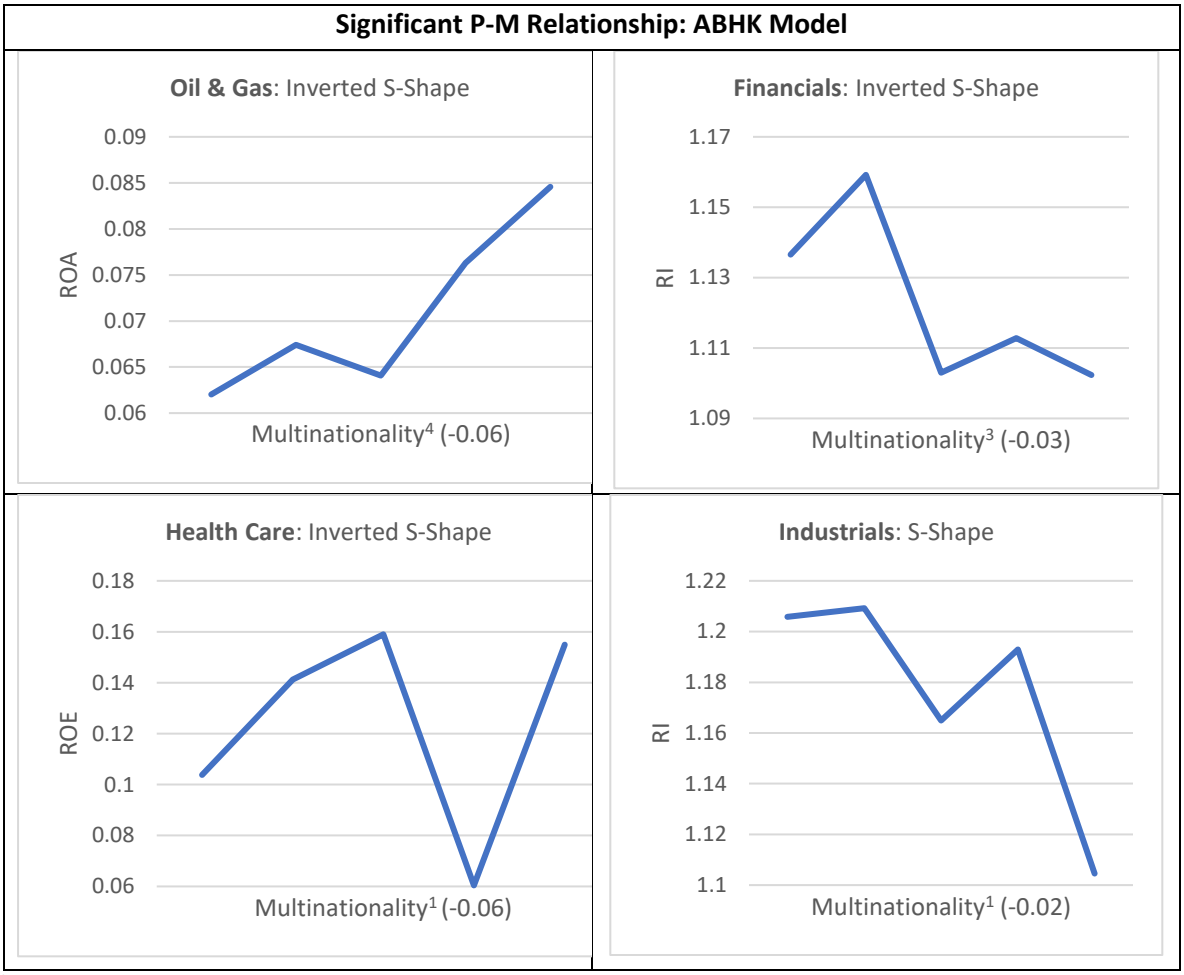
Significant P-M Relationship: Triad Model



***Performance measure is on the Y-axis and explanatory variable is represented as "Multinationality" on the x-axis with the coefficient in brackets. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00.**

Table 5.18

Significant P-M Relationship: ABHK Model



***Performance measure is on the Y-axis and explanatory variable is represented as "Multinationality" on the x-axis with the coefficient in brackets. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00.**

Overall, the P-M relationship by the 10 industry sectors is consistent with the 1,377-firm dataset regression with a variation found in the Basic Materials and Consumer Goods groupings. Both presented significantly positive ROE to FS relationships with coefficients of 0.29 and 0.30 respectively and the firm totals for both sectors are among the highest with 118 and 182 firms. This leads to the conclusion that firms within these industry sectors are more favourable from an investment perspective than the remaining eight industry sectors.

5.7 Conclusion

In this chapter I performed a regression analysis using a 1,377-firm balanced panel dataset leading to accepting or rejecting three commonly tested hypothesis of the P-M relationship, outlined in section 5.2. The analysis is initiated with verification of each variable used in my model by linking past and

recent firm performance literature to each variable. Section 5.3 describes the multicollinearity testing of each variable followed by the Hausman test of the nine models determining a fixed effects model should be used for each iteration of the regression. A linear statistical analysis identified nine firm performance multinationality relationships. Three of the relationships are S-shaped, supporting previous studies by Babillo, López-Iturriaga, and Tejerina-Gaite (2010) who measured 1,500 manufacturing firms from 1991-2001, Serrano, Fernández-Olmos, and Pinilla, (2015) who measured approximately 189 agri-food exporting firms from 1994-2012, and Benito-Osorio et al. (2016) who measured 1,371 exporting and large manufacturing firms from 1994-2008. One of the observed relationships is W-shaped as previously identified by Fernandez-Olmos (2016) who studied 526 Spanish manufacturing firms from 2006-11 and two of the observed relationships are inverted S-shaped like that of the research performed by Shin et al. (2017) on 1,082 micro-multinational firms from 2005-12. One P-M relationship is observed to be M-shaped, as previously identified by Almodóvar and Rugman (2014) who observed 100 manufacturing firms from 1994-2008, and another relationship identified as Linear Positive, agreeing with findings by Zahra et al. (2000) who performed a study of 1,388 firms in 1993, and Ramirez-Aleson (2001), a study of 103 non-financial firms from 1991-95. To conclude, one P-M relationship is identified as U-shaped as previously identified by Lu and Beamish (2001), who analyzed the P-M relationship of 164 Japanese firms from 1986-1997.

Of the nine observed relationships, three are identified by the regression to be statistically significant without bias due to serial correlation based on the DW statistic. When the relationship is measured using RI as the performance measure, the Triad model and FS identify the relationship between P-M to be U-shaped, with a statistically significant (Triad model more significant than FS) coefficient of -0.05. When the P-M relationship is measured using the ABHK model, a S-shaped relationship takes shape and the result is statistically significant with a coefficient of -0.02. These findings agree with Contractor et al.'s (2003) three stage model of international expansion. The first stage includes an initially negative effect of international expansion on performance shown by a U-shaped P-M relationship due to the costs of moving from domestic to a higher multinational category. This is followed by a second stage of further internationalization with positive effects on performance represented by an increase in multinationality where benefits of international expansion are now realized (Contractor, 2012). The third stage witnesses the highest measurable levels of multinationality, bringing a negative impact on performance shown by an inverted U-shaped P-M relationship, which suggests that international expansion beyond an optimal level brings lower

measured levels of performance. This third stage is apparent across all three performance measures when using the ABHK model as a clearly defined drop in performance is witnesses when moving from trans-regional in investing to global. This conclusion allows for an acceptance of hypothesis ii): Higher measurements of multinationality are associated with varying negative increments in firm performance, when performance is measured using RI and multinationality is measured using FS and the Triad model. This hypothesis is also true when multinationality is measured using the ABHK model but to be more specific, performance increases when trading increases but performance decreases when investing increases, thus creating a continuation of the U-shape to form an S-shape P-M relationship. From an industry perspective, firms in the Basic Materials and Consumer Goods sectors estimated a significantly positive P-M relationship when using ROE and FS as the outcome and explanatory variables.

The next chapter of my thesis examines the P-M relationship further by separating the dataset into AM versus EM firms as well as six geographic-based groupings. Furthermore, with the 2007-09 period being identified as having a consensus negative relationship with performance, a sub-period analysis will be conducted to identify to what extent the financial crisis effected the P-M relationship for AM and EM firms.

Chapter 6
Patterns in the Performance Multinationality Relationship

6.1 Introduction

This chapter of my thesis analyzes the P-M relationship as seen previously in chapter five but through two lenses. Firstly, through the advanced market (AM) versus emerging market (EM) lens. This analysis is seeking to uncover if the significantly negative P-M relationship identified in chapter five holds true in AM, EM, or both groupings. The second lens the P-M relationship will be analyzed through is a continental-based geographic perspective with a focus on the role geographic distance of countries from Triad regions plays on the P-M relationship.

As outlined throughout my thesis, firms from the United States, the United Kingdom, and Japan have been commonly used for measuring the P-M relationship of firms as these countries provide rich data over extended periods of time. This is not the case for EM firms as data becomes largely scarce the further back one searches. There have been studies on the P-M relationship of EM firms over a short period of time with a moderate sample of firms (Clegg et al., 2016), or over a long period of time, tracking a very small number of firms (Loncan and Nique, 2010). Through my research there are no instances in the P-M literature of research on EM firms across multiple continents, or even multiple countries. Recently, Tang et al. (2020) has studied the P-M relationship of 766 Chinese firms from 2008-15, identifying firm performance to increase when firms increase their total number of subsidiaries abroad and more specifically, when subsidiaries are established in a country for the first time. This measure of multinationality is commonly used however, the advantages in multinationality growth are in favor of firms positioned in continents with a large number of neighbouring countries such as a Chinese firm versus a firm from Oceania or South America. Banalieva and Santoro (2009) also produced a study on the geographic orientation and relative financial performance of 701 EM firms from 2000-06, covering four continents using data from the Bureau Van Dijk financial database. The measure of multinationality used was a ratio of global sales to total sales which proved a significantly positive P-M relationship when firms reached a global level. This finding aligns with my results from Table 5.8 in chapter five which sees performance increase as FS increases. However, when level of investment is included through the ABHK model multinationality measure, performance declines across all three measures of performance.

The second lens of this chapter is the geographic comparison of P-M, more specifically, the continent-based geographic segments used by the ABHK model. This branch of firm performance multinational literature has produced varied results as seen in Castellani and Zanfei (2007) and Pangarkar (2008) who observed a linear positive P-M relationship, identifying greater geographic dispersion facilitates the undertaking of domestic ventures that are high-risk but also highly profitable. More recently, the S-shaped P-M relationship has been linked to the three stages model (Contractor et al., 2003; and Beamish 2004), suggesting multinational firms experience a performance downturn at low degrees of multinationality, followed by an increase in performance at moderate degrees of multinationality, and eventually a second and final performance downturn at high degrees of multinationality. To date, the analysis of the P-M relationship has rarely featured a dataset that encompasses firms from multiple continents, or multiple countries. Cano, Carrillat, and Jaramillo (2004) compared the performance of firms to their market orientation with a dataset covering five continents across 23 countries, resulting in an overall significantly positive relationship. Banalieva and Santoro (2009) analysed 701 firms from 28 EM countries, creating coverage across Africa, Asia, Europe, and the Americas from 2000-06. However, 89 percent of these firms are from Asian countries, five percent from Europe, and three percent from Africa, and three percent from the Americas. This study concluded that Asian EM firms have greater performance when staying local, but a positive P-M relationship is witnessed when these firms skip the regional scene and expand globally. In South America, multiple studies have measured small and medium sized EM firms, but few measuring the P-M relationship of large firms. Loncan and Nique (2010) used six Brazilian firms to measure the relationship between ROA and FS, finding a significantly positive relationship. Andrade and Galina (2013) analysed the P-M relationship of 33 EM firms across 10 developing countries from 2004-09, finding the higher the degree of internationalization (DOI), the lower the firms' performance. As outlined in chapter three, the P-M relationship varies due to the compilation of firms, and the rotation of both performance and multinationality measures used. A contribution that cannot be ignored in the literature of international business is by Dunning (1998) who argues the importance of geographic location when firms internationalize. With my dataset divided into continent-based geographic regions, the P-M relationship can be analysed across continents. Finally, the P-M relationship for non-U.S. based firms has been described as U-shaped by Yang and Driffield (2012) and Yang et al. (2014) through a measure of mostly European firms from 1997-2007 using total number of subsidiaries as the measure of multinationality collected through the Bureau Van Dijk database. To measure whether or not geographic expansion leads to an increase in performance requires a standardized method which is

accomplished using the geographic-based ABHK model. To further the P-M literature in the area of geographic relevance, an understanding of what regions are more or less conducive to increasing multinationality, and does this lead to increases in firm performance, is what the second P-M lens of chapter six sets to describe.

South American firms have not reached the global ABHK categories which include investing to all six geographic regions while South African firms have a minimal number of firm year observations (FYOs) in this category. Both of the P-M relationships are significantly positive with a linear progressive U-shape as seen in previous EM literature (Qian et al., 2008; Yang and Driffield, 2012; Yang et al., 2014). When measuring multinationality with the ABHK model, these firms are in the second stage of the three stage S-shaped model with the third stage requiring a global presence of subsidiaries. Oceanic firms have the highest proportion of firms in multiple geographic regions however, the P-M relationship is significantly negative when measured by the ABHK model showing high levels of performance when trans-regional but decreasing levels when reaching the global category. European firms show a significantly negative P-M relationship but with a small coefficient when RI is the measure of firm performance as this market-based measure fits the model with the most accuracy of the three performance measures. North American firms have a significantly positive P-M relationship when measured by FS and the ABHK model but a negative relationship between RI and the Triad model. Asian firms measure a significantly negative P-M relationship when using ROE while no significance is measured when using RI or ROA.

Section 6.2 describes the dataset used and the methodology followed throughout the chapter. Section 6.3 introduces the AM versus EM comparison and the results of the test on the variables in each dataset. Section 6.4 offers the statistical analysis and regression estimated results followed by the geographic region-based observations in section 6.5. Section 6.6 provides a conclusion of the chapter.

6.2 Data and Methodology

The dataset for this chapter is taken from chapter fives balanced panel dataset, consisting of 1,377 firms across 19 countries from 1998-2015. I continue to use ROA and ROE as my accounting-based performance measures, and RI as my market-based performance measure. The performance measures are regressed against multinationality as measured by the ABHK and Triad models, and FS. In recent literature (Ryu et al., 2019; Yang et al., 2014), the financial crisis is used as a dummy variable, separating datasets into a pre-crisis period (Beginning Year – 2007) and post crisis period (2008 –

Ending Year). This structural time break is based on the acknowledgement of the financial crisis start date of August 9th, 2007 (Laeven and Valencia, 2008), triggered by the interbank market freezing and money market rates spiking (Baglioni and Monticini, 2010). As outlined in chapter two, I implement a structural time break in my data, creating four sub-periods (1998-2001, 2002-06, 2007-09, and 2010-15). This sub-period analysis will enable an addition to the post financial crisis firm performance literature with a comparison of EM performance to AM performance. As seen in models used by Bhagat and Bolton (2019) and Ryu et al. (2019), my control variables consist of firm size, firm age, and financial leverage. These control variables are implemented as they were in chapter five with the size variable, market capitalization, measuring firm size and as a robustness measure, market capitalization is replaced in the model by total employee count. The age variable is recorded from the first year of recorded sales to the year of measurement and financial leverage is measured using the ratio of total debt to total capital. All variables, with the exception of financial leverage and FS, are normalized by taking the natural logarithm of the variable. Using the above-mentioned variables, I estimate the model across each sub-period for both AM and EM's nine times using three measures of firm performance and three measures of multinationality as described in Equation 6.1.

Equation 6.1 – Firm Performance-Multinationality Model B

$$ln\_fp_{it} = \alpha + \beta_1 ln\_mcap_{it} + \beta_2 ln\_age_{it} + \beta_3 lev_{it} + \beta_4 ln\_mul_{123it} + u_{it}$$

***To account for large variations in the variables being measured, I take the natural logarithm depicted as ln_mcap for the logarithm of market capitalization for example.**

Where i is each firm, t is each period (denominated in years), and β denotes the coefficients. fp = Firm Performance; RI = Total Return Index; ROA = Return on Assets; ROE = Return on Equity; age = firm's age in years; ln_emp = logarithm of employee count; ln_mcap = logarithm of market capitalization; lev = financial leverage; mul_1 = ABHK results; mul_2 = Triad results; mul_3 = foreign sales as a percent of net sales; α = Constant; u = Error term. To perform a panel regression analysis, my data must first pass a series of tests which will validate the results of the regression. Firm characteristics, such as the heterogeneous nature of a firm and possible endogeneity between the variables, are concerns that can possibly alter the results derived from any panel dataset. With the model identified, a correlation matrix followed by a variance inflation factor (VIF) test of the variables tests if strong relationships exist between variables. To test for serial correlation of each variable, I perform an Augmented Dickey Fuller (ADF) test and if a variable accepts the null hypothesis of the test, a first order difference is taken of all variables in the model. To conclude the dataset testing, I determine whether a fixed effects or random effects model should be used by performing a Hausman test to estimate if variables are colinear. A fixed effects regression is most often used with panel data, as stated by Brüderl and Ludwig

(2015), a fixed effect model allows a casual effect to be identified under weaker assumptions. A fixed effects regression is specified on the level of the units and includes group-specific constants which are the fixed effects. From the EVIEWS produced regression data, a Durbin-Watson (DW) statistic will give the level of serial correlation of the model. With the dataset and methodology in place, I present my research question and list of possible hypotheses.

Research Question 3: Does the Performance-Multinationality Relationship Vary for Firms from Differing Geographic Regions?

Hypothesis i) Firms from the Triad regions measure a significant P-M relationship and firms from non-Triad regions measure an insignificant P-M relationship.

Hypothesis ii) Firms from the Triad regions measure an insignificant P-M relationship and firms from non-Triad regions measure a significant P-M relationship.

Hypothesis iii) Firms from all geographic regions measure a significant P-M relationship.

6.3 Statistical Analysis and Model Testing

My 1,377-firm dataset is comprised of firms across 19 countries allows for a thorough sub-analysis of the P-M relationship that is comparable in breadth of firms to recent studies as outlined in chapter three. The purpose of my AM-EM sub-analysis is to outline the differences of these firms, starting with the descriptive statistics in Table 6.1.

6.3.1 Descriptive Statistics

The average age of the AM firm is 80 years while the EM firm is 56 years. AM firms are larger by both size measures with 37,364 employees and a market capitalization of approximately 16.8 billion USD compared to 21,733 employees and approximately 7.1 billion USD of market capitalization. Financial leverage, as measured by total debt to total capital, is higher for AM firms (40 percent) than EM firms (34 percent) while all three measures of firm performance (ROE, ROA, RI) are higher, on average, for EM firms than AM firms; 15 percent, 9 percent, and 1.25 compared to 12 percent, 6 percent, and 1.14 respectively. Conversely, multinationality as measured by FS, Triad, and ABHK is lower for EM firms than AM firms with 14 percent FS, 2.93 ABHK and 1.49 Triad compared to 31 percent, 6.93, and 1.97 respectively. From the four sub-periods, all variables either increase or remain constant with the exception of the market-based measures of performance, RI, which decreases during the 2007-09 time period.

Table 6.1

AM and EM Descriptive Statistics							
		Advanced Markets			Emerging Markets		
1998-2015							
	Short Form	**Mean**	**SD**	**Median**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.12	0.55	0.12	0.15	0.27	0.15
Return on Assets	ROA	0.06	0.08	0.05	0.09	0.09	0.07
Total Return Index	RI	1.14	0.63	1.10	1.25	0.93	1.13
Age	age	80	57	70	56	40	50
Employee Count	emp	37,364	82,578	13,019	21,733	47,864	6,246
Leverage	Lev	0.40	0.86	0.39	0.34	0.24	0.33
Market Capitalization	mcap	$16,760	$35,100	$5,740	$7,140	$23,100	$1,370
Foreign Sales Percentage	FS	0.31	0.31	0.24	0.14	0.25	0.00
ABHK	ABHK	6.93	4.07	8.00	2.93	2.71	2.00
Triad	Triad	1.97	0.92	2.00	1.49	0.73	1.00
1998-2001							
	Short Form	**Mean**	**SD**	**Median**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.10	0.77	0.12	0.13	0.21	0.12
Return on Assets	ROA	0.05	0.10	0.05	0.09	0.09	0.08
Total Return Index	RI	1.17	1.04	1.04	1.16	1.07	0.99
Age	age	73	57	63	49	40	43
Employee Count	emp	30,522	64,037	9,705	18,513	47,619	4,786
Leverage	Lev	0.39	1.70	0.40	0.34	0.23	0.34
Market Capitalization	mcap	$12,900	$34,200	$3,330	$3,580	$23,400	$453
Foreign Sales Percentage	FS	0.25	0.28	0.14	0.06	0.18	0.00
ABHK	ABHK	5.66	3.67	6.00	2.13	1.98	1.00
Triad	Triad	1.77	0.78	2.00	1.18	0.53	1.00
2002-06							
	Short Form	**Mean**	**SD**	**Median**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.10	0.69	0.13	0.16	0.30	0.17
Return on Assets	ROA	0.06	0.07	0.05	0.09	0.09	0.08
Total Return Index	RI	1.19	0.49	1.16	1.45	1.20	1.31
Age	age	77	57	68	53	40	48
Employee Count	emp	34,713	76,303	12,150	19,045	44,144	5,320
Leverage	Lev	0.40	0.34	0.39	0.34	0.24	0.33
Market Capitalization	mcap	$14,700	$31,200	$4,960	$5,230	$18,500	$968
Foreign Sales Percentage	FS	0.30	0.29	0.22	0.12	0.23	0.00
ABHK	ABHK	6.75	4.02	8.00	2.64	2.11	1.00
Triad	Triad	1.95	0.89	2.00	1.44	0.70	1.00
2007-09							
	Short Form	**Mean**	**SD**	**Median**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.12	0.26	0.13	0.19	0.22	0.19
Return on Assets	ROA	0.05	0.09	0.05	0.09	0.09	0.08
Total Return Index	RI	1.02	0.51	0.96	1.25	0.81	1.12
Age	age	81	57	72	57	40	52
Employee Count	emp	39,583	89,230	14,323	22,269	46,633	6,700
Leverage	Lev	0.40	0.40	0.39	0.34	0.24	0.32
Market Capitalization	mcap	$17,000	$33,200	$6,030	$10,100	$29,300	$2,010
Foreign Sales Percentage	FS	0.33	0.30	0.27	0.16	0.26	0.00
ABHK	ABHK	7.36	4.14	8.00	3.00	2.72	2.00
Triad	Triad	2.02	0.94	2.00	1.54	0.76	1.00
2010-15							
	Short Form	**Mean**	**SD**	**Median**	**Mean**	**SD**	**Median**
Return on Equity	ROE	0.13	0.29	0.12	0.15	0.29	0.15
Return on Assets	ROA	0.06	0.07	0.05	0.08	0.08	0.06
Total Return Index	RI	1.16	0.39	1.13	1.14	0.50	1.10
Age	age	86	57	76	62	40	56
Employee Count	emp	43,026	93,927	15,505	25,852	51,227	8,164
Leverage	Lev	0.40	0.33	0.38	0.36	0.26	0.34
Market Capitalization	mcap	$20,900	$39,100	$8,490	$9,630	$22,300	$2,950

Foreign Sales Percentage	FS	0.36	0.32	0.33	0.20	0.28	0.04
ABHK	ABHK	7.70	4.12	8.00	3.67	3.10	2.00
Triad	Triad	2.09	0.99	2.00	1.71	0.79	2.00

***The table indicates the abbreviation used, mean, standard deviation, and median of all variables for 19,909 advanced market and 4,878 emerging market firm year observations. Market Capitalization is in millions of USD. ROA, ROE, financial leverage, and FS are ratios. RI is an index-based figure and age and employee total are counts. ABHK and Triad are categories of multinationality.**

6.3.2 Correlation of Variables

The correlation between the control variables for AM firms is considerably low with the logarithm of market capitalization and ABHK being the most correlated at 0.2986. This correlation is decreasing from 1998-2015 with a high from 1998-2001 of 0.2986 and a low from 2010-15 of 0.2396. EM firms measured the highest correlation between the logarithm of ROA and financial leverage with a correlation -0.3842. This correlation increases to -0.4086 during the financial crisis and remains constant during the last sub-period 2010-15. The performance measures of ROA and ROE show a high correlation across all sub-periods as does the correlation between the explanatory variables of FS and the Triad model score for both AM and EM firms. Highlighted in Table 6.2, these correlations across the sub-periods do not cause collinearity as each performance and multinationality measure exists in the regression model independent of the other variable.

When comparing the level of correlation between the variables of AM and EM firms, EM firms produce a higher number of negative correlations across the 18 years and EM firms also have slightly higher correlations among variables, albeit low correlations. Performance measures for AM firms all have negative correlations with age while ROA and RI have positive correlations with EM firms. This is likely due to the younger firms in the dataset coming from the EM category that become multinational at a higher speed than older, AM firms in my dataset. Financial leverage measured a near negligible correlation with all three performance measures for AM firms and two of the three multinationality measures, with the exception of the ABHK model. This is also true for EM firms, but the correlation is positive with market capitalization. This size variable measured a higher than average positive correlation for all variable for AM firms with the exception of ROA.

Table 6.2

Pairwise Correlation Matrix									
Panel A: Advanced Markets									
1998-2015									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6957**[1]	1.0000							
LnRI	0.0837[1]	0.0770[1]	1.0000						
Lnage	-0.0142[3]	-0.1825[2]	-0.0482[1]	1.0000					
Lev	0.0004[1]	-0.0855[1]	-0.0259[1]	0.0337[1]	1.0000				
Lnmcap	0.1674[1]	-0.0291[1]	0.0156[2]	0.1477[1]	0.0277[1]	1.0000			

FS	0.0978[1]	0.1603[1]	-0.0062	0.1040[1]	-0.0302[1]	0.1198[1]	1.0000		
LnABHK	0.0815[1]	0.0111	-0.0332[1]	0.1840[1]	0.0122	**0.2986**[1]	0.4399[1]	1.0000	
LnTriad	0.1247[1]	0.1353[1]	-0.0142[3]	0.1283[1]	-0.0156[2]	0.1677[1]	**0.7479**[1]	0.5464[1]	1.0000
1998-2001									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6793**[1]	1.0000							
LnRI	0.1086[1]	0.1058[1]	1.0000						
Lnage	-0.0193	-0.2024[2]	-0.0804[1]	1.0000					
Lev	-0.0007	-0.0601[1]	-0.0301[3]	0.0078	1.0000				
Lnmcap	0.1357[1]	-0.0031	0.0290[3]	0.1531[1]	0.0120	1.0000			
FS	0.1021[1]	0.1407[1]	-0.0300[3]	0.1164[1]	-0.0031	0.1172[1]	1.0000		
LnABHK	0.0578[1]	-0.0216	-0.0565[1]	0.2161[1]	0.0150	**0.2914**[1]	0.4333[1]	1.0000	
LnTriad	0.0965[1]	0.1287[1]	-0.0382[2]	0.1510[1]	-0.0003	0.1783[1]	**0.7583**[1]	0.5550[1]	1.0000
2002-06									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6828**[1]	1.0000							
LnRI	0.0982[1]	0.0801[1]	1.0000						
Lnage	0.0225	-0.1759[2]	-0.0022	1.0000					
Lev	0.0032	-0.2198[1]	-0.0199	0.1401[1]	1.0000				
Lnmcap	0.2139[1]	0.0464[1]	-0.0485[1]	0.1412[1]	0.0668[1]	1.0000			
FS	0.0914[1]	0.1483[1]	-0.0143	0.0805[1]	-0.0785[1]	0.0912[1]	1.0000		
LnABHK	0.1167[1]	0.0302[2]	-0.0266[3]	0.1866[1]	0.0262[3]	**0.2893**[1]	0.4615[1]	1.0000	
LnTriad	0.1436[1]	0.1177[1]	-0.0251[3]	0.1276[1]	-0.0329[2]	0.1492[1]	**0.7306**[1]	0.5912[1]	1.0000
2007-09									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.7257**[1]	1.0000							
LnRI	0.0487[1]	0.0657[1]	1.0000						
Lnage	-0.0224	-0.1830[2]	-0.0552[1]	1.0000					
Lev	-0.0207	-0.1978[1]	-0.0816[1]	0.1194[1]	1.0000				
Lnmcap	0.1420[1]	-0.0099	0.1313[1]	0.1025[1]	0.0635[1]	1.0000			
FS	0.1133[1]	0.1839[1]	0.0571[1]	0.0736[1]	-0.1179[1]	0.0860[1]	1.0000		
LnABHK	0.1029[1]	0.0393[2]	0.0218	0.1259[1]	-0.0020	**0.2642**[1]	0.4341[1]	1.0000	
LnTriad	0.1412[1]	0.1549[1]	0.0418[2]	0.0902[1]	-0.0747[1]	0.1265[1]	**0.7399**[1]	0.5450[1]	1.0000
2010-15									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.7036**[1]	1.0000							
LnRI	0.1114[1]	0.0967[1]	1.0000						
Lnage	-0.0520[3]	-0.1899[1]	-0.0517[1]	1.0000					
Lev	0.0142	-0.2377[1]	-0.0309[2]	0.0852[1]	1.0000				
Lnmcap	0.1625[1]	-0.0307[2]	-0.0171	0.0832[1]	0.1161[1]	1.0000			
FS	0.0883[1]	0.1672[1]	-0.0201	0.0836[1]	-0.1380[1]	0.0808[1]	1.0000		
LnABHK	0.0468[1]	-0.0085	-0.0516[1]	0.1173[1]	0.0188	**0.2396**[1]	0.3970[1]	1.0000	
LnTriad	0.1144[1]	0.1391[1]	-0.0208	0.0900[1]	-0.0819[1]	0.1298[1]	**0.7478**[1]	0.4828[1]	1.0000
Panel B: Emerging Markets									
1998-2015									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6379**[1]	1.0000							
LnRI	0.1544[1]	0.1126[1]	1.0000						
Lnage	0.1237[1]	-0.0376[2]	0.2366	1.0000					
Lev	-0.0917[1]	**-0.3842**[1]	-0.0283[3]	0.0764[1]	1.0000				
Lnmcap	0.1344[1]	-0.0756[1]	-0.0268[3]	0.1061[1]	0.1067[1]	1.0000			
FS	0.0343[2]	0.0992[1]	-0.0180	0.0526[1]	-0.0170	0.2398[1]	1.0000		
LnABHK	0.0798[1]	-0.0180	-0.0099	0.1530[1]	0.0787[1]	0.3400[1]	0.5353[1]	1.0000	
LnTriad	0.0732[1]	0.0596[1]	-0.0116	0.0496[1]	-0.0177	0.2947[1]	**0.7688**[1]	0.6340[1]	1.0000

1998-2001									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.5236**[1]	1.0000							
LnRI	0.1347[1]	0.0880[1]	1.0000						
Lnage	0.0630[3]	-0.0778[2]	0.0080	1.0000					
Lev	-0.1674[1]	**-0.3652**[1]	-0.0200	0.1213	1.0000				
Lnmcap	0.1492[1]	-0.0792[2]	0.0815[2]	0.0632[3]	0.1232[1]	1.0000			
FS	0.1219[1]	0.1514[1]	0.1239[1]	0.0603[3]	-0.0269	0.1598[1]	1.0000		
LnABHK	0.0904[1]	-0.0738[2]	0.0885[1]	0.1427[1]	0.1216[1]	0.2315[1]	0.3863[1]	1.0000	
LnTriad	0.1070[1]	0.1345[1]	0.1005[1]	-0.0186	-0.0148	0.1627[1]	**0.8213**[1]	0.4222[1]	1.0000
2002-06									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6604**[1]	1.0000							
LnRI	0.1933[1]	0.1282[1]	1.0000						
Lnage	0.1944[1]	0.0114	0.0836[1]	1.0000					
Lev	-0.0582[2]	**-0.3538**[1]	0.0557[3]	0.0622[2]	1.0000				
Lnmcap	0.1990[1]	-0.0146	-0.0512[3]	0.0404	0.0895[1]	1.0000			
FS	0.0978[1]	0.1553[1]	-0.0577[3]	0.0493[3]	-0.0669[2]	0.2228[1]	1.0000		
LnABHK	0.1547[1]	-0.0316	-0.0074	0.1010[1]	0.0730[2]	0.3473[1]	0.5163[1]	1.0000	
LnTriad	0.1226[1]	0.1384[1]	-0.0357	-0.0049	-0.0763[1]	0.2372[1]	**0.7831**[1]	0.6143[1]	1.0000
2007-09									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6772**[1]	1.0000							
LnRI	0.0284	0.0458	1.0000						
Lnage	0.1192[2]	0.0046	0.0030	1.0000					
Lev	-0.0428	**-0.4086**[1]	-0.0279	0.0555	1.0000				
Lnmcap	0.1223[1]	-0.0171	0.0268	0.0298	0.1666[1]	1.0000			
FS	0.0759[2]	0.1398[1]	-0.0636[3]	-0.0498	0.0001	0.1995[1]	1.0000		
LnABHK	0.1066[1]	0.0456	-0.0549	0.0957[1]	0.1133[1]	0.2932[1]	0.5828[1]	1.0000	
LnTriad	0.1316[1]	0.0814[2]	0.0456	-0.0642[3]	0.0445	0.2373[1]	**0.7826**[1]	0.6526[1]	1.0000
2010-15									
	LnROE	**LnROA**	**LnRI**	**Lnage**	**Lev**	**Lnmcap**	**FS**	**LnABHK**	**LnTriad**
LnROE	1.0000								
LnROA	**0.6865**[1]	1.0000							
LnRI	0.2070[1]	0.1564[1]	1.0000						
Lnage	0.0978[1]	-0.0290	0.0136	1.0000					
Lev	-0.0891[1]	**-0.4037**[1]	-0.0860[1]	0.0574[2]	1.0000				
Lnmcap	0.0569[2]	-0.0993[1]	-0.1130[1]	0.0368	0.0763[1]	1.0000			
FS	-0.0930[1]	0.0588[2]	-0.0477[3]	-0.0113	-0.0020	0.1826[1]	1.0000		
LnABHK	-0.0053	-0.0101	-0.0320	0.1229[1]	0.0363	0.2797[1]	0.5331[1]	1.0000	
LnTriad	-0.0399	0.0170	-0.0539[2]	0.0240	-0.0233	0.2379[1]	**0.7146**[1]	0.6629[1]	1.0000

***This table shows the pairwise correlation coefficients for my independent variables and controls. A correlation greater than 0.8 is considered severe and one of the variables should not be included in the model being tested. The significance of the correlation to the model are shown at the following three levels: [1]Significant at 0.01 level, [2] at 0.05 level, [3] at 0.10 level. The highest correlation among all variables, and the highest correlation among control variables are highlighted.**

As a secondary test of collinearity, a VIF test is performed on each variable to identify whether or not any variable is highly correlated to the remaining variables in the model. As shown in Table 6.3, this is not the case as the variables before taking the natural logarithm and after, have a VIF score close to 1.0 which suggests an insignificant level of correlation.

Table 6.3

Variance Inflation Factor Test						
Panel A: Advanced Markets						
	Real Value			**Log Value**		
	ABHK	**Triad**	**FS**	**ABHK**	**Triad**	**FS**
Age	1.03	1.01	1.01	1.05	1.04	1.04
Leverage	1.00	1.00	1.00	1.00	1.00	1.00
Market Capitalization	1.06	1.02	1.02	1.11	1.05	1.04
Multinationality Measure	1.08	1.02	1.02	1.13	1.04	1.02
Panel B: Emerging Markets						
	Real Value			**Log Value**		
	ABHK	**Triad**	**FS**	**ABHK**	**Triad**	**FS**
Age	1.03	1.01	1.01	1.04	1.02	1.02
Leverage	1.01	1.01	1.01	1.01	1.01	1.00
Market Capitalization	1.04	1.03	1.03	1.13	1.12	1.08
Multinationality Measure	1.05	1.02	1.03	1.15	1.11	1.07

A VIF score > 5.0 is significant and indicates severe correlation between variables. The test is conducted using the real values of each variable and a second time using the logarithm form, as used in the regression model.

As seen in chapter five, the unit root test of the full 1,377 dataset did not measure serial correlation for any variable in the model. When testing the variables in the AM and EM firm groupings, Lnmcap measures serial correlation at level for the EM grouping as shown in Table 6.4. With a probability of 0.1176, the variables must be taken at the order of first difference and the ADF test is performed a second time to verify serial correlation does not exist. Due to the first order difference of the EM variables, FYOs will be reduced due to a year of observations being eliminated.

Table 6.4

AM and EM Unit Root Test				
	Probability Value			
	Advanced Markets		**Emerging Markets**	
	At Level	**At 1st Difference**	**At Level**	**At 1st Difference**
LnROE	0.0000	0.0000	0.0000	0.0000
LnROA	0.0000	0.0000	0.0000	0.0000
LnRI	0.0000	0.0000	0.0000	0.0000
Leverage	0.0000	0.0000	0.0000	0.0000
Lnemp	0.0000	0.0000	0.0158	0.0000
Lnmcap	0.0000	0.0000	**0.1176**	0.0000
FS	0.0000	0.0000	0.0000	0.0000
LnABHK	0.0000	0.0000	0.0000	0.0000
LnTriad	0.0000	0.0000	0.0000	0.0000

***Augmented Dickey-Fuller (ADF) P-value < five percent is insignificant and indicates rejecting the null hypothesis.**

To complete the statistical testing, the Hausman test is performed on the model for each iteration of multinationality and firm performance to determine the effects that are applied to the model (Table 6.5). EM firms using all nine forms of the model have a probability greater than 0.05 resulting in an

acceptance of the null hypothesis and random effects are applied to the model's regression. This is not the case for AM firms as the probability is nil, resulting in a rejection of the null hypothesis and fixed effects are applied.

Table 6.5

AM and EM Hausman Test						
	Panel A: Advanced Markets					
	ABHK		**Triad**		**FS**	
Outcome Variables	**Chi²**	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	552.89	0.0000	570.94	0.0000	567.98	0.0000
LnROA	334.28	0.0000	403.69	0.0000	401.89	0.0000
LnROE	115.82	0.0000	167.63	0.0000	153.06	0.0000
	Panel B: Emerging Markets					
	ABHK		**Triad**		**FS**	
Outcome Variables	**Chi²**	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	6.61	0.1578	6.93	0.1399	6.81	0.1462
LnROA	4.12	0.3896	2.33	0.6756	5.81	0.2137
LnROE	4.54	0.3382	4.08	0.3959	5.33	0.2551

***Chi² that is greater than the critical value results in a rejection of the null hypothesis. This is also the case when the P-value is greater than five percent.**

6.4 Analysis and Results of Model Estimations

Of the total firm year observations, AM firms comprise 19,908 and EM firms 4,978 FYOs. AM firm's average age is approximately 80 years with 37,365 employees, a market capitalization of 16.8 billion USD, and leverage of 40 percent. The average ROA, ROE, and RI are 5.66 percent, 11.64 percent, and 1.14 respectively while average multinationality measures are 6.93, 1.97, and 31.12 percent for ABHK, Triad, and FS. EM firms, on average, are younger at 56 years, smaller as measured by market capitalization (7.1 billion USD) and employee count, 21,733, and lower levels of multinationality measured by FS, Triad model, and ABHK model. However, average firm performance is higher across all three measures for EM firms than AM firms as seen in Table 6.6.

6.4.1 Preliminary Statistical Analysis

As seen in past P-M literature (Calof and Beamish, 1995), firms are divided into six categories set on increasingly higher percentages of foreign sales. Entirely domestic firms with no FS are the first category followed by 0-10 percent, 10-20 percent, 20-50 percent, 50-75 percent, and 75-100 percent as seen in panels A and C of Table 6.6. The Triad model and ABHK model categories determine the incremental changes in multinationality. Following the methodology in chapter five, the ABHK categories are grouped so that a movement from category to category requires investment to an

additional continent. One exception to this rule is movement from category three to category four, which requires a firm to have a trading presence in all six continents.

6.4.1.1 Foreign Sales – Firm Performance Relationship

The domestic category comprised 6,021 FYOs (30.2 percent) for AM firms compared to 2,902 FYOs (60.9 percent) for EM firms outlining the difference in proportions of firms that are entirely domestic in sales. Both AM and EM domestic firms are the youngest and smallest according to the average age and size measures and they also measure the lowest average levels of firm performance according to ROA and ROE. However, RI and financial leverage measured above the overall averages signifying firms that are home-based see better performance as measured by the market performance measures (RI) versus their accounting performance measures, ROA and ROE. As AM firms increase in FS, they also increase in size, peaking in the 50 – 75 percentage category. Moving to the 75 – 100 FS category, AM firms, on average, are smaller in market capitalization and employee count. This is not the case for EM firms with the largest average EM firms also being the most multinational as measured by FS. Financial leverage shows the same pattern for AM and EM firms with leverage decreasing as firms move from 50 percent FS to 100 percent. The lowest average level of financial leverage is measured when AM and EM firms are the most multinational.

Table 6.6

Average Incremental Statistical Analysis of Foreign Sales Percentage and Triad Model											
Advanced Markets											
		Outcome Variables			**Control Variables**			**Explanatory Variables**			**Size Robustness**
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**Foreign Sales**	**ABHK**	**Triad**	**Employee Count**
Dataset Average	**19,908**	**5.66%**	**11.64%**	**1.14**	**79.61**	**40.00**	**$16,760**	**31.12%**	**6.93**	**1.97**	**37,365**
Panel A: Foreign Sales as a Percent of Net Sales											
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**Foreign Sales**	**ABHK**	**Triad**	**Employee Count**
Domestic	6,021 (30.2%)	5.05%	9.99%	1.15	71.05	40.08	$10,333	$0.00	3.72	1.00	21,119
0-10%	1,852 (7.5%)	5.58%	13.55%	1.15	80.42	44.30	$12,184	$691	6.72	2.07	30,168
10-20%	2,280 (9.2%)	4.96%	10.03%	1.13	86.59	45.83	$15.370	$3,209	7.86	2.10	38,343
20-50%	5,304 (21.4%)	5.78%	11.61%	1.14	81.41	40.78	$20,917	$6,028	8.45	2.11	48,481
50-75%	3,732 (15.1%)	6.11%	13.28%	1.13	86.52	37.13	$23,080	$12,854	8.86	2.69	54,424
75-100%	2,625 (10.6%)	6.88%	13.60%	1.17	81.81	33.44	$19,529	$14,339	8.62	2.94	35,442
Panel B: Triad Category											
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**Foreign Sales**	**FS%**	**ABHK**	**Employee Count**
Domestic	6,021 (30.2%)	5.05%	9.99%	1.15	71.05	40.08	$10,333	$0.00	0.00%	3.72	21,119
Home Region	10,553 (53.0%)	5.55%	11.78%	1.14	82.14	40.94	$17,885	$6,723	37.66%	8.05	44,516
Bi-Regional	1,869 (9.4%)	6.70%	13.31%	1.14	88.78	37.31	$26,289	$13,959	63.45%	9.14	47,935
Host Region	859 (4.3%)	7.67%	14.41%	1.16	79.32	33.19	$19,073	$9,382	74.06%	8.40	31,533
Global	606 (3.0%)	7.45%	16.42%	1.15	92.73	34.28	$28,351	$14,130	65.96%	10.39	49,907
Emerging Markets											
		Outcome Variables			**Control Variables**			**Explanatory Variables**			**Size Robustness**
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**Foreign Sales**	**ABHK**	**Triad**	**Employee Count**
Dataset Average	**4,978**	**8.52%**	**15.21%**	**1.25**	**55.76**	**34.38**	**$7,140**	**13.80%**	**2.93**	**1.49**	**21,733**
Panel C: Foreign Sales as a Percent of Net Sales											
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**Foreign Sales**	**ABHK**	**Triad**	**Employee Count**
Domestic	2,972 (60.9%)	8.15%	13.38%	1.28	53.65	34.65	$3,866	$0.00	1.79	1.00	15,735
0-10%	395 (8.1%)	9.71%	23.22%	1.26	61.60	31.12	$9,632	$406	3.89	2.08	33,397
10-20%	406 (8.3%)	8.80%	17.85%	1.21	59.14	30.25	$15,118	$3,120	4.10	2.06	29,316
20-50%	532 (10.9%)	8.18%	16.05%	1.19	56.46	40.11	$9,651	$2,214	4.52	2.02	24,573
50-75%	329 (6.7%)	8.81%	15.19%	1.09	62.83	34.60	$12,071	$5,815	5.81	2.50	33,162
75-100%	244 (5.0%)	10.93%	18.36%	1.26	55.50	30.50	$17,579	$9,291	5.99	3.01	41,694
Panel D: Triad Category											
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**Foreign Sales**	**FS%**	**ABHK**	**Employee Count**
Domestic	2,972 (60.9%)	8.15%	13.38%	1.28	53.65	34.65	$3,866	$0.00	0.00%	1.79	15,735
Home Region	1,593 (32.7%)	8.75%	18.07%	1.19	61.12	34.27	$12,458	$3,157	29.26%	4.39	31,497
Bi-Regional	194 (4.0%)	9.43%	16.18%	1.22	51.78	33.69	$13,570	$12,243	60.72%	6.56	28,748
Host Region	68 (1.4%)	13.57%	20.86%	1.23	45.60	33.79	$8,043	$9,301	76.19%	6.41	32,011
Global	51 (1.0%)	12.53%	21.38%	1.32	40.78	25.74	$6,115	$3,284	73.05%	5.45	25,937

***Market Capitalization and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations) total with each category's percentage shown in brackets.**

When measuring firm performance against FS for AM using all three measures, the results take the same inverted S-shaped pattern where firms see increases in performance as sales to other countries increase outside the home country. Once FS reach the 10 – 20 percent category, there is a uniform decrease in performance followed by consistent increases from 20 - 100 percent FS with the highest average level of FS taking place in the 75 – 100 percent category. EM firms follow a similar pattern when measuring firm performance against FS using ROA and ROE as both measures increase when firms move from domestic to FS under 10 percent. This increase is then followed by declines in performance until the highest category of FS is reached and both ROA and ROE increase. When measuring performance using RI, performance is at its highest for domestic firms. As FS increases, RI decreases with the lowest average RI taking place in the 50 – 75 percent category. This is followed by an increase back to the same RI levels (1.26) seen in the 0 – 10 percent category. Both ROA and ROE create an inverted S-shaped P-M relationship while RI creates a U-shape, leading to the conclusion that both AM and EM firms increase in firm performance as firms increase their FS to above 75 percent.

6.4.1.2 Triad Model – Firm Performance Relationship

When firms move from Triad categories of domestic to home-region, which requires a firm to have more than 50 percent of sales in the home Triad region, more than half (53 percent) of the FYOs are in this category for AM firms as seen in Panel B of Table 6.6. Firm age and firm size increases as firms move up the Triad multinationality categories with the exception of the host-region category which sees a decline in both variables. The host-region category requires a firm to have more than 50 percent of sales in another Triad region, making this category comparably easier to attain from a sales percentage threshold standpoint compared to the bi-regional category, which requires a firm to have between 20 - 50 of sales in the home-region and a second Triad region. As seen in the results in the previous section, comparing FS to firm performance, firms with 75 – 100 percent FS are younger than firms with FS between 50 – 75 percent, and smaller than firms with FS between 20 -75 percent when measured by both market capitalization and employee count. For EM firms, this pattern is more pronounced with the average age and size of firms decreasing as multinationality, as measured by the Triad model, increases. Financial leverage for AM and EM firms are the lowest when firms are in the host-region and global categories. For AM firms, the performance measures of ROA and ROE produce the same P-M relationship with the Triad model, both showing a linear positive trend. RI produces a S-shape P-M relationship, but the variations from category to category of the Triad model are minimal

which indicates no relationship overall. EM firms also produce a linear positive P-M relationship for ROA and a S-shape relationship with ROE which follows a linear positive trajectory. The P-M relationship with RI is a very clear U-shape with the highest level of multinationality appearing in the global category (1.32) and the second highest in the domestic category (1.28). Overall, the Triad model shows a linear positive P-M relationship with some variations of the linear positive trend taking place when multinationality is measured with RI.

6.4.1.3 ABHK Model – Firm Performance Relationship

The ABHK model uses geographic sales data, like that of the previous two multinational measures, and a measure of investment which is subsidiary geographic location. This creates a 16-category model that develops a more incremental multinationality categorizing process as seen in Table 6.7. FYOs in the ABHK model for the domestic category is 15.1 percent (3,012 FYOs) for AM firms and 49.3 percent (2,407 FYOs) for EM firms. AM firms increase in age and size as the ABHK categories increase while EM firms show more variation in age and size with trans-regional firms being older than global firms. Financial leverage is at the highest level for global AM firms while EM firms have on average higher leverage when investing abroad is at a greater level than trading abroad. The P-M relationship between ROA and multinationality is somewhat M-shaped with an overall linear positive trend and performance is declining slightly when firms move from trans-regional to global. This result is also true for ROE as a measure of performance, while RI produces a more pronounced version of the M-shaped relationship with the lowest levels of RI being measured for global firms, and the highest measured RI when firms are trans-regional. For EM firms, the P-M relationship is near identical for ROA and ROE with firms peaking in these measures when multinationality is trans-regional in trading and investing but once a firm becomes global in these measures, performance declines to the lowest average multinational level. When measuring performance with RI, the relationship is linear negative as firms show the highest measures of RI when domestic and the lowest when investing is global. Across all three performance measures for AM and EM firms, multinationality declines when firms progress from trans-regional to global, and specifically for EM firms, performance declines to the lowest average level when multinationality is a its highest as measured by the ABHK model.

Table 6.7

Average Incremental Statistical Analysis of ABHK Model										
Panel A: Advanced Markets										
		Outcome Variables			**Control Variables**			**Explanatory Variables**		**Size Robustness**
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**FS%**	**Triad**	**Employee Count**
Domestic	3,012 (15.1%)	5.07%	8.17%	1.17	64.75	37.42	$7,042	0.00%	1.00	15,775
2 (RT-DI)	596 (3.0%)	6.23%	12.65%	1.21	66.92	38.44	$14,848	34.58%	2.14	23,162
3 (TT-DI)	2,100 (10.5%)	5.67%	11.82%	1.13	79.83	40.14	$13,603	49.23%	2.37	34,094
4 (DT-RI)	914 (4.6%)	5.39%	11.78%	1.14	68.30	41.48	$7,107	0.00%	1.00	15,999
5 (RT-RI)	450 (2.3%)	6.03%	13.18%	1.20	67.86	40.86	$7,453	28.62%	2.06	16,717
6 (TT-RI)	432 (2.2%)	6.62%	15.40%	1.17	67.98	39.25	$8,485	40.65%	2.29	21,280
7 (DT-TI)	1,919 (9.6%)	4.78%	11.67%	1.12	80.78	43.23	$15,747	0.00%	1.00	29,475
8 (RT-TI)	1,933 (9.7%)	6.27%	15.67%	1.17	79.28	36.94	$23,975	30.25%	2.20	58,270
9 (TT-TI)	6,110 (30.7%)	5.69%	10.56%	1.14	83.84	39.37	$15,183	45.86%	2.43	35,189
10 (GT-DI)	125 (0.6%)	3.88%	8.11%	1.17	70.62	33.90	$14,487	62.02%	2.34	38,920
11 (GT-RI)	19 (0.1%)	7.16%	14.85%	1.27	59.00	30.30	$12,808	63.27%	2.58	7,825
12 (GT-TI)	191 (1.0%)	7.76%	19.71%	1.16	101.82	34.99	$23,203	60.09%	2.87	43,941
13 (DT-GI)	174 (0.9%)	5.88%	13.84%	1.19	87.60	44.14	$24,573	0.00%	1.00	47,833
14 (RT-GI)	275 (1.4%)	7.22%	12.45%	1.13	93.84	45.79	$52.306	52.07%	2.26	130,126
15 (TT-GI)	1,387 (7.0%)	5.94%	13.94%	1.12	102.54	43.87	$41,239	54.66%	2.67	87,395
Global (GT-GI)	271 (1.4%)	6.53%	16.55%	1.09	110.33	42.91	$36,284	58.74%	2.73	61,494
Panel B: Emerging Markets										
		Outcome Variables			**Control Variables**			**Explanatory Variables**		**Size Robustness**
	FYO Total	**ROA**	**ROE**	**RI**	**Age**	**Leverage**	**Market Capitalization**	**FS%**	**Triad**	**Employee Count**
Domestic	2,407 (49.3%)	8.42%	13.35%	1.29	51.18	33.09	$2,916	0.00%	1.00	12,003
2 (RT-DI)	620 (12.7%)	9.44%	18.96%	1.18	49.69	31.16	$9,394	21.79%	2.04	22,080
3 (TT-DI)	459 (9.4%)	9.27%	18.05%	1.18	63.17	35.79	$15,476	42.27%	2.37	28,526
4 (DT-RI)	315 (6.5%)	6.04%	10.00%	1.27	63.78	39.53	$3,368	0.00%	1.00	14,170
5 (RT-RI)	230 (4.7%)	7.70%	14.56%	1.16	58.73	31.98	$5,936	26.96%	2.00	18,217
6 (TT-RI)	117 (2.4%)	9.85%	17.56%	1.27	60.74	35.57	$3,674	40.76%	2.29	24,138
7 (DT-TI)	200 (4.1%)	7.88%	18.25%	1.19	60.70	43.81	$16,610	0.00%	1.10	65,141
8 (RT-TI)	231 (4.7%)	8.34%	19.48%	1.23	72.02	42.48	$17,801	31.73%	2.09	62,495
9 (TT-TI)	226 (4.6%)	8.71%	16.58%	1.24	68.16	34.35	$9,247	49.96%	2.50	39,194
10 (GT-DI)	29 (0.6%)	15.16%	29.79%	1.22	51.59	26.70	$62,366	55.83%	2.72	35,677
11 (GT-RI)	6 (0.1%)	15.44%	23.92%	1.42	114.50	9.61	$14,522	28.33%	2.17	15,490
12 (GT-TI)	13 (0.3%)	12.68%	22.14%	1.18	63.77	25.14	$16,729	47.30%	2.38	28,620
13 (DT-GI)	1 (0.02%)	5.70%	15.57%	1.55	79.00	68.69	$1,615	0.00%	1.00	12,800
14 (RT-GI)	7 (0.1%)	5.80%	11.18%	0.95	76.57	50.78	$31,415	69.34%	3.00	56,141
15 (TT-GI)	15 (0.3%)	6.94%	11.35%	1.18	28.40	27.90	$6,507	79.91%	3.13	37,838
Global (GT-GI)	2 (0.04%)	12.07%	12.07%	1.17	63.50	13.54	$34,019	50.19%	2.50	34,436

***ABHK Categories are listed on the left with the level of trading abbreviated on the left: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), and level of investment abbreviated on the right: DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), and GI (Global Investing). Market Capitalization and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations) total with each category's percentage shown in brackets.**

6.4.2 Regression Analysis

To properly assess the significance of the relationship between the variables described in the previous section and make conclusions regarding the validity of the recognized P-M relationships, the fixed effects model is estimated. In Table 6.8, I report the results of the regression with the outcome variables as the column headers followed by the model effects used. Panel A in Table 6.8 outlines the AM results using a fixed effects model and the multinationality regression significance highlighted in bold. The multinationality measures are all highly significant in the model along with the logarithm of age and market capitalization. Financial leverage has a lower significance level when the logarithm of RI is used as the measure of performance and no significance when performance is measured using the logarithm of ROE. Of the three measures of performance, RI produces a DW statistic of 2.12 compared to 1.19 and 1.17 of ROA and ROE. This statistic demonstrates the model is not suffering from serial correlation when RI is used as the performance measure, indicating the coefficients are more reliable. Overall, the coefficient of determination is low for both AM and EM regressions, specifically for the ABHK and Triad model as measures of multinationality. Both models assign firms a score from 1-16 and 1-5 respectively, which will innately produce a low R^2 due to the low variability in multinational of these measures compared to FS which is a 0-100 percentage.

Table 6.8

Multinationality and Firm Performance									
Panel A: Advanced Markets									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-1.77[4]	-1.77[4]	-1.76[4]	-7.49[4]	-7.48[4]	-7.48[4]	-6.40[4]	-6.40[4]	-6.42[4]
Lnmcap	0.11[4]	0.11[4]	0.11[4]	0.25[4]	0.25[4]	0.25[4]	0.23[4]	0.23[4]	0.23[4]
Leverage	-0.01[2]	-0.01[2]	-0.01[2]	-0.01[4]	-0.01[3]	-0.01[3]	-0.01	0.01	0.01
Lnage	-0.15[4]	-0.15[4]	-0.15[4]	-0.29[4]	-0.30[4]	-0.30[4]	-0.20[4]	-0.21[4]	-0.20[4]
Multinationality	**-0.02**[4]	**-0.05**[4]	**-0.07**[4]	**-0.06**[4]	**-0.12**[4]	**-0.17**[4]	**-0.05**[4]	**-0.13**[4]	**-0.24**[4]
Observations	19,589	19,589	19,589	18,350	18,350	18,350	17,819	17,819	17,819
R^2	0.06	0.06	0.06	0.63	0.63	0.63	0.41	0.41	0.41
Adjusted R^2	0.01	0.01	0.01	0.61	0.61	0.61	0.37	0.37	0.37
F-Statistic	1.10	1.10	1.10	26.82	26.82	26.79	10.48	10.48	10.50
Durbin-Watson	2.12	2.12	2.12	1.19	1.19	1.19	1.17	1.16	1.17
Panel B: Emerging Market									
	DLnRI			**DLnROA**			**DLnROE**		
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	-0.02	-0.02	-0.02	-0.05[4]	-0.05[4]	-0.05[4]	-0.07[4]	-0.07[4]	-0.07[4]
DLnmcap	0.17[4]	0.17[4]	0.17[4]	0.17[4]	0.17[4]	0.17[4]	0.23[4]	0.23[4]	0.23[4]
DLeverage	-0.01	-0.01	-0.01	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]
DLnage	0.33	0.33	0.33	-0.28[4]	-0.27[4]	0.28[4]	0.21	0.21	0.22
DMulti.	**-0.01**	**0.02**	**0.05**	**-0.01**	**0.07**	**0.07**	**0.01**	**0.04**	**0.09**
Observations	4,413	4,413	4,413	4,129	4,129	4,129	3,861	3,861	3,861
R^2	0.02	0.02	0.02	0.05	0.05	0.05	0.04	0.04	0.04

Adjusted R^2	0.02	0.02	0.02	0.05	0.05	0.05	0.04	0.04	0.04
F-Statistic	26.15	26.18	26.23	50.69	51.27	50.87	39.50	39.63	39.69
Durbin-Watson	2.98	2.98	2.98	2.43	2.43	2.43	2.22	2.22	2.22

***Panel B EM variables are taken at the first difference which is depicted with "D". Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001. DMultinational is abbreviated DMulti.**

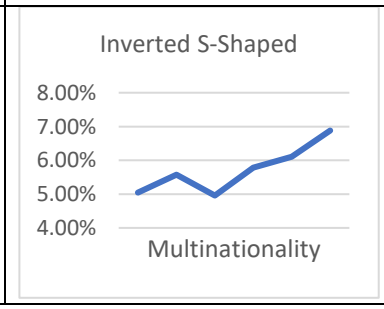
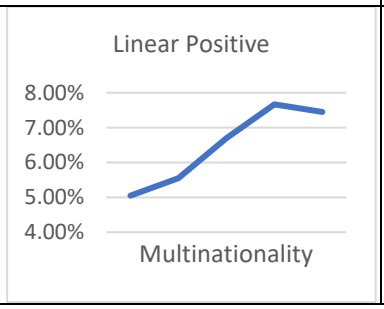
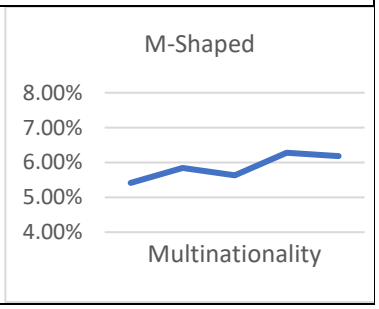
The EM regression model is estimated using random effects and due to the unit root test identifying serial correlation in the logarithm of market capitalization, a first order difference is taken of all variables. As seen in Table 6.8, multinationality is insignificantly predicting firm performance while firm size is measured to be significant. Financial leverage is significant when ROA and ROE measure performance and firm age is significant when ROA is the measure of performance. Due to the first order difference taken of all variables, the DW statistic is closer to 3.0 for LnRI which identifies negative serial correlation while LnROE and LnROA have a DW of 2.22 and 2.43 respectively.

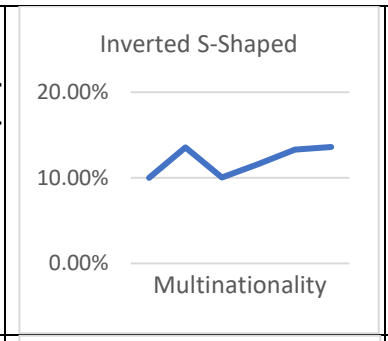
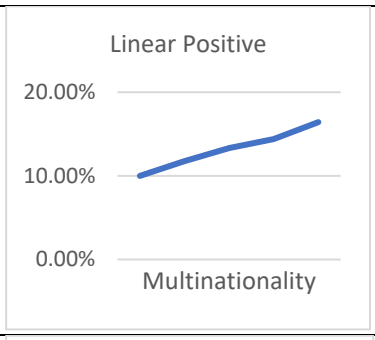
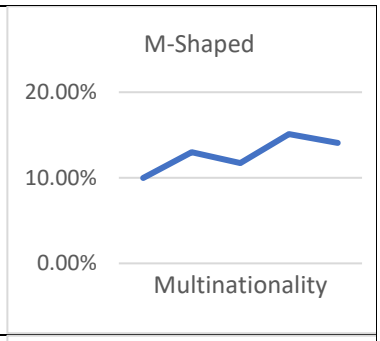
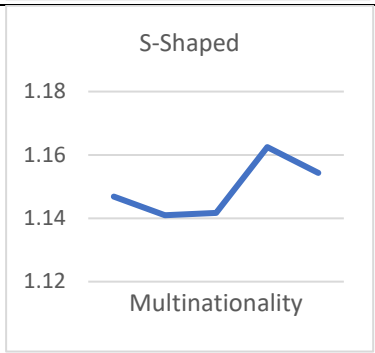
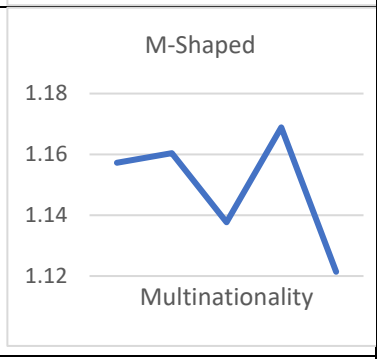
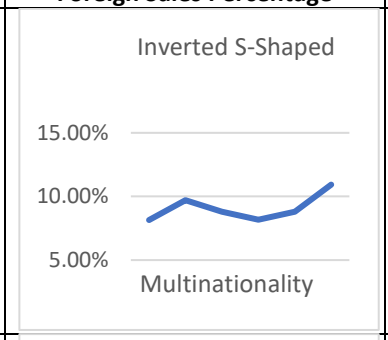
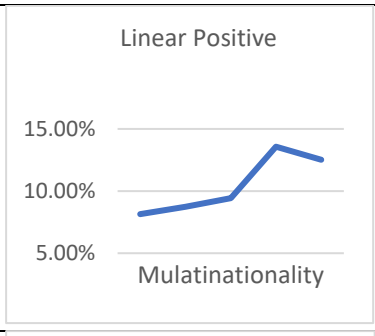
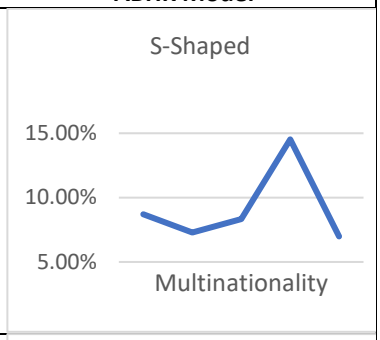
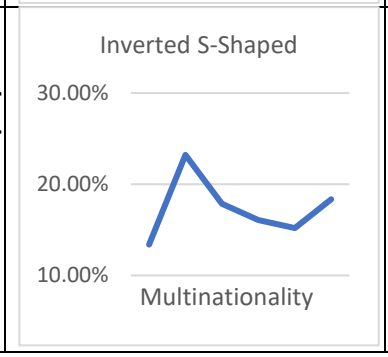
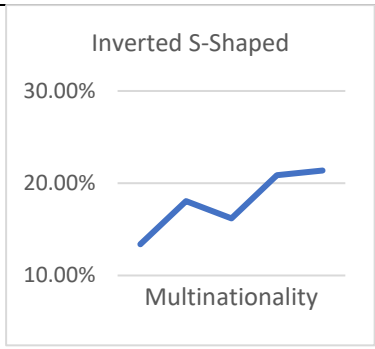
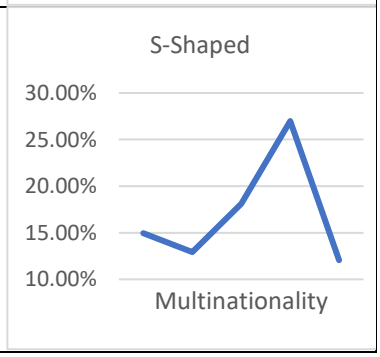
From the incremental analysis of the multinationality categories in Tables 6.6 and 6.7, and the regression analysis from Table 6.8, the P-M relationships that were previously mentioned are projected in Table 6.9. The statistical significance in the multinationality variables of the model regression for AM firms is a near zero negative correlation with the most reliable results coming from the logarithm of RI with a W-shaped or U-shaped relationship with FS as the multinationality measure, a S-shaped with the Triad model as the multinationality measure, and a M-shaped relationship with the ABHK model as the multinationality measure. EM firms that reach the global category experience greater declines in performance once that level of multinationality is reached when compared to AM firms.

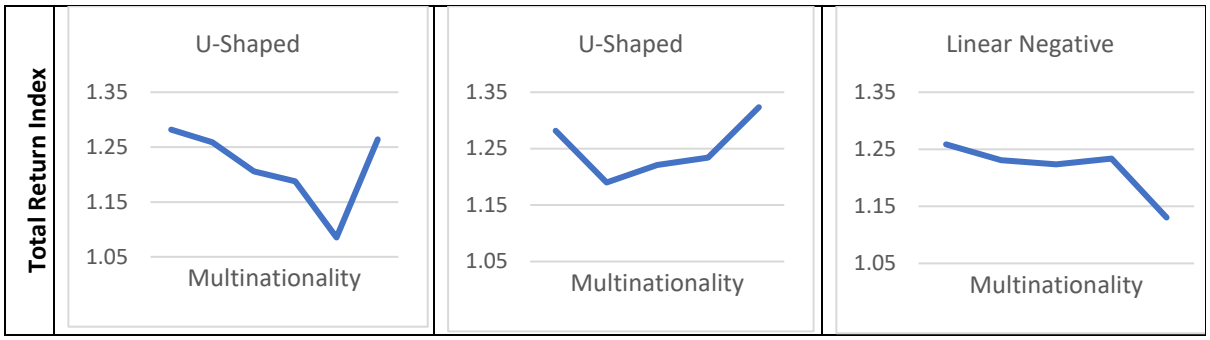
Table 6.9

Firm Performance – Multinationality Relationship

Panel A: Advanced Markets

	Foreign Sales Percentage	**Triad Model**	**ABHK Model**
Return on Assets			

Return on Equity			
Total Return Index			
Panel B: Emerging Markets			
	Foreign Sales Percentage	**Triad Model**	**ABHK Model**
Return on Assets			
Return on Equity			



***Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart.**

FS across all three performance measures show the relationship to be positive but more specifically, when multinationality is at its highest, performance is increasing. Using the Triad model, the relationship is mostly linear positive with a difference between AM firms and EM firms when using RI as the performance measure. More specifically, when multinationality is at its highest, two of the three performance measures decrease for EM firms and one of the three decrease for AM firms. Moving to the ABHK model, the results are consistent within the two categories, measuring firms at the highest level of multinationality (when a firm is moving from transregional in trading and investing to global in trading and investing) to see performance decline and this decline is more noticeable for EM firms across all three performance measures. A multinationality model using both trading and investing measures that requires expansion to a new market to move to a higher category of multinationality in the model is the most accurate way to project the P-M relationship. The ABHK model provides an addition to the EM P-M literature as global EM firms clearly decline in performance as measured by 271 firms across 11 countries.

6.4.3 Robustness Test A

As a measure of robustness, market capitalization is replaced by employee count and the Hausman test is performed to determine the effects in which the model is estimated as seen in Table 6.10. For both AM and EM market groupings, fixed effects models are used. For the EM grouping, employee count variable passed the unit root test, showing serial correlation does not exist and the variables in the model are taken at the first order.

Table 6.10

Robustness Test: Alternate Size Variable						
Panel A: Hausman Test						
Advanced Markets						
	ABHK		**Triad**		**FS**	
Outcome Variables	**Chi²**	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**

LnRI	181.00	0.0000	570.94	0.0000	181.97	0.0000
LnROA	233.70	0.0000	403.69	0.0000	254.60	0.0000
LnROE	124.25	0.0000	167.63	0.0000	137.40	0.0000
Emerging Markets						
	ABHK		**Triad**		**FS**	
Outcome Variables	**Chi^2**	**Probability**	**Chi^2**	**Probability**	**Chi^2**	**Probability**
LnRI	24.06	0.0001	177.27	0.0000	24.83	0.0001
LnROA	27.00	0.0000	270.59	0.0000	37.11	0.0000
LnROE	17.53	0.0015	150.03	0.0000	13.30	0.0099

Panel B: Regression Estimation

Advanced Markets

	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.32[4]	0.32[4]	0.34[4]	-3.28[4]	-3.27[4]	-3.24[4]	-2.50[4]	-2.49[4]	-2.51[4]
Lnemp	**-0.09[4]**	**-0.09[4]**	**-0.09[4]**	**-0.06[4]**	**-0.06[4]**	**-0.07[4]**	**-0.08[4]**	**-0.08[4]**	**-0.08[4]**
Leverage	-0.01[3]	-0.01[3]	-0.01[3]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01	-0.01	-0.01
Lnage	0.14[4]	0.14[4]	0.13[4]	0.20[4]	0.20[4]	0.19[4]	-0.28[4]	-0.27[4]	-0.28[4]
Multinationality	0.01	0.01	0.04[1]	-0.02[1]	-0.03	0.01	-0.02	-0.03	-0.07
Observations	19,589	19,589	19,589	18,350	18,350	18,350	17,819	17,819	17,819
R^2	0.04	0.04	0.04	0.61	0.62	0.61	0.39	0.39	0.39
Adjusted R^2	-0.02	-0.02	-0.02	0.59	0.59	0.59	0.35	0.35	0.35
F-Statistic	0.71	0.72	0.72	24.62	24.61	24.61	9.69	9.69	9.69
Durbin-Watson	2.17	2.17	2.17	1.16	1.16	1.16	1.15	1.15	1.15

Emerging Market

	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.53[4]	0.50[4]	0.49[4]	-1.82[4]	-1.67[4]	-1.73[4]	-1.95[4]	-1.83[4]	-1.86[4]
Lnemp	**-0.06[4]**	**-0.06[4]**	**-0.06[4]**	**-0.04[2]**	**-0.05[3]**	**-0.05[2]**	**-0.03**	**-0.04[1]**	**-0.04[1]**
Leverage	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]
Lnage	0.06[2]	-0.07[2]	0.07[2]	-0.05	-0.07[1]	-0.06	0.13[3]	0.11[2]	0.12[2]
Multinationality	-0.01	-0.03	-0.09[1]	-0.09	-0.05	-0.19[3]	-0.06[2]	-0.01	-0.07
Observations	4,679	4,679	4,679	4,565	4,565	4,565	4,352	4,352	4,352
R^2	0.04	0.04	0.04	0.59	0.59	0.59	0.39	0.39	0.39
Adjusted R^2	-0.02	-0.02	-0.02	0.57	0.57	0.57	0.35	0.35	0.35
F-Statistic	0.70	0.70	0.71	22.89	22.74	22.80	9.56	9.53	9.54
Durbin-Watson	2.17	2.17	2.18	1.11	1.11	1.11	1.03	1.03	1.03

***Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001**

Panel B in Table 6.10 provides the results of the AM and EM regression estimations and total employee count measures a negatively significant correlation with firm performance across all measures. This measure of firm size gives an opposite result when compared to market capitalization which measured a significantly positive correlation. Furthermore, the overall model fit is not as accurate when market capitalization is the measure of firm size for EM firms but the opposite is true for AM firms as the significance of the P-M relationship is only present for two of the nine iterations

of the model estimation compared to all nine being significant when market capitalization is used. For EM firms, not having to take the variables at their first order difference, which is necessary when using total employee count, does not cause serial correlation, resulting in a better model estimation. This can be seen in the significance of three of the nine iterations of the model which does not exist in the regression estimation from panel B of Table 6.8. By using total employee count, the P-M relationship using ABHK and ROE, which is significantly negative with a constant of 0.06 and produced a S-shape, can be accepted. Also, when measuring multinationality using FS, and performance using RI and ROA, significantly negative relationships are identified with a coefficient of 0.19 describing the relationship between FS and ROA.

6.4.4 Robustness Test B

My second robustness test estimates the regressions for AM and EM firms using sub-period regression estimations. These sub-periods are chosen to highlight two major economic events, the dot-com crash in 2001 and the financial crisis in 2007. These sub-periods have also been used in past P-M studies by Calof and Beamish (1995) and more specifically, the pre- and post-financial crisis by Hossain and Nguyen (2016), Bhagat and Bolton (2019), and Ryu et al., (2019). The model effects for each sub-period for both AM and EM firms are first determined in Table 6.11.

Table 6.11

Sub-Period Hausman Test						
Panel A: Advanced Markets						
	ABHK		**Triad**		**FS**	
	1998-2001					
Outcome Variables	**Chi²**	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	183.28	0.0000	188.06	0.0000	194.56	0.0000
LnROA	57.93	0.0000	90.49	0.0000	102.77	0.0000
LnROE	4.79	0.3098	26.37	0.0000	30.32	0.0000
	2002-2006					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	520.43	0.0000	521.22	0.0000	522.87	0.0000
LnROA	416.54	0.0000	433.20	0.0000	441.99	0.0000
LnROE	223.82	0.0000	237.56	0.0000	234.25	0.0000
	2007-2009					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	511.99	0.0000	512.94	0.0000	512.17	0.0000
LnROA	228.47	0.0000	244.44	0.0000	248.88	0.0000
LnROE	168.89	0.0000	178.03	0.0000	175.86	0.0000
	2010-2015					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	457.88	0.0000	464.60	0.0000	462.78	0.0000
LnROA	155.55	0.0000	184.02	0.0000	173.75	0.0000
LnROE	85.67	0.0000	105.98	0.0000	91.66	0.0000

Panel B: Emerging Markets						
	ABHK		Triad		FS	
	1998-2001					
Outcome Variables	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	3.12	0.5387	4.78	0.3112	4.04	0.4001
LnROA	31.00	0.0000	30.05	0.0000	30.08	0.0000
LnROE	9.49	0.0500	7.83	0.0981	7.20	0.1259
	2002-2006					
	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	7.22	0.1249	7.60	0.1074	8.40	0.0779
LnROA	12.32	0.0151	12.44	0.0144	14.87	0.0050
LnROE	24.58	0.0001	22.48	0.0002	22.15	0.0002
	2007-2009					
	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	59.80	0.0000	60.44	0.0000	60.22	0.0000
LnROA	34.73	0.0000	39.52	0.0000	45.62	0.0000
LnROE	42.26	0.0000	49.55	0.0000	46.02	0.0000
	2010-2015					
	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	247.36	0.0000	243.09	0.0000	240.39	0.0000
LnROA	97.65	0.0000	100.27	0.0000	100.52	0.0000
LnROE	113.28	0.0000	116.58	0.0000	119.87	0.0000

***Chi^2 that is greater than the critical value results in a rejection of the null hypothesis. This is also the case when the P-value is greater than five percent.**

In Table 6.12, the sub-period regression estimations for AM firms are given. The model holds for all sub-periods, showing an overall slightly negative relationship between performance and multinationality. The exception is seen in the 2007-09 sub-period. Starting with the DW statistic, there is a very high measure of negative serial correlation for the RI performance measure and the F-statistic is near zero which indicates the model is not predicting the performance measure.

Table 6.12

AM Multinationality and Firm Performance									
Panel A: 1998-2001									
	LnRI			LnROA			LnROE		
Model Effects	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Random	Fixed	Fixed
	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS
Constant	-3.43[4]	-3.44[4]	-3.45[4]	-6.30[4]	-6.38[4]	-6.42[4]	-3.97[4]	-5.57[4]	-5.53[4]
Lnmcap	0.26[4]	0.26[4]	0.26[4]	0.20[4]	0.20[4]	0.20[4]	0.09[4]	0.14[4]	0.14[4]
Leverage	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lnage	-0.53	-0.52	-0.52	-0.29[3]	-0.26[2]	-0.25[2]	-0.04	0.11	0.09
Multinationality	**-0.05[2]**	**-0.10[2]**	**-0.25[2]**	**-0.02**	**-0.10**[2]	**-0.33**[4]	**0.01**	**-0.21**[2]	**-0.41**[4]
Observations	4,324	4,324	4,324	4,070	4,070	4,070	3,903	3,903	3,903
R^2	0.19	0.19	0.19	0.81	0.81	0.81	0.01	0.69	0.69
Adjusted R^2	-0.09	-0.09	-0.09	0.74	0.74	0.74	0.01	0.57	0.57
F-Statistic	0.68	0.68	0.68	11.53	11.55	11.58	10.36	5.78	5.78
Durbin-Watson	2.68	2.68	2.68	2.16	2.16	2.17	1.58	2.21	2.22
Panel B: 2002-2006									
	LnRI			LnROA			LnROE		
Model Effects	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS

Constant	-5.71[4]	-5.70[4]	-5.71[4]	-14.60[4]	-14.63[4]	-14.66[4]	-14.28[4]	-14.43[4]	-14.46[4]
Lnmcap	0.20[4]	0.20[4]	0.20[4]	0.42[4]	0.42[4]	0.43[4]	0.39[4]	0.39[4]	0.40[4]
Leverage	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01[3]	-0.01[3]	-0.01[3]
Lnage	0.35[4]	0.35[4]	0.35[4]	0.51[3]	0.52[3]	0.52[3]	0.83[4]	0.87[4]	0.86[4]
Multinationality	**-0.01**	**-0.04**	**-0.06**	**0.02**	**-0.06**	**-0.27**[3]	**0.07**[3]	**0.01**	**-0.23**[2]
Observations	5,405	5,405	5,405	5,119	5,119	5,119	4,988	4,988	4,988
R^2	0.23	0.23	0.23	0.78	0.78	0.78	0.68	0.68	0.68
Adjusted R^2	0.04	0.04	0.04	0.72	0.72	0.72	0.59	0.58	0.58
F-Statistic	1.20	1.20	1.20	13.17	13.17	13.20	7.38	7.36	7.37
Durbin-Watson	2.61	2.61	2.61	1.69	1.69	1.69	1.74	1.74	1.74
Panel C: 2007-2009									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-37.78[4]	-37.82[4]	-37.76[4]	6.13[3]	6.15[3]	5.99[3]	8.22[3]	8.17[3]	7.93[3]
Lnmcap	0.56[4]	0.56[4]	0.56[4]	0.38[4]	0.38[4]	0.38[4]	0.39[4]	0.39[4]	0.39[4]
Leverage	0.01	0.01	0.01	-0.01	-0.01	-0.01	0.01	0.01	0.01
Lnage	6.04[4]	6.05[4]	6.03[4]	-4.24[4]	-4.22[4]	-4.19[4]	-4.61[4]	-4.58[4]	-4.51[4]
Multinationality	**0.05**	**0.05**	**0.08**	**-0.01**	**-0.17**[1]	**-0.23**	**0.01**	**-0.16**	**-0.33**[1]
Observations	3,269	3,269	3,269	2,960	2,960	2,960	2,870	2,870	2,870
R^2	0.31	0.31	0.31	0.80	0.80	0.80	0.69	0.69	0.69
Adjusted R^2	-0.04	-0.04	-0.04	0.68	0.68	0.68	0.50	0.50	0.50
F-Statistic	0.89	0.89	0.89	6.68	6.69	6.69	3.63	3.64	3.64
Durbin-Watson	3.39	3.39	3.39	2.92	2.92	2.92	2.78	2.78	2.78
Panel D: 2010-2015									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-2.89[4]	-2.89[4]	-2.89[4]	-7.12[4]	-7.10[4]	-7.12[4]	-7.41[4]	-7.40[4]	-7.41[4]
Lnmcap	0.25[4]	0.25[4]	0.25[4]	0.40[4]	0.40[4]	0.40[4]	0.40[4]	0.40[4]	0.40[4]
Leverage	-0.01[2]	-0.01[2]	-0.01[2]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01	-0.01	-0.01
Lnage	-0.63[4]	-0.63[4]	-0.63[4]	-1.14[4]	-1.14[4]	-1.14[4]	-0.93[4]	-0.92[4]	-0.93[4]
Multinationality	**-0.01**	**0.02**	**0.01**	**-0.01**	**0.06**	**-0.03**	**-0.01**	**-0.03**	**-0.07**
Observations	6,591	6,591	6,591	6,201	6,201	6,201	6,058	6,058	6,058
R^2	0.24	0.24	0.24	0.78	0.78	0.78	0.61	0.61	0.61
Adjusted R^2	0.09	0.09	0.09	0.73	0.73	0.73	0.52	0.52	0.52
F-Statistic	1.57	1.57	1.57	16.29	16.30	16.29	6.94	6.94	6.94
Durbin-Watson	2.26	2.26	2.26	1.87	1.87	1.87	1.84	1.84	1.84

***Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001**

From Table 6.13, the sub-period results of EM firms mirror those from Table 6.12 with 2007-09 giving adverse estimates of the regression as seen in the DW statistic for RI and ROA. The P-M relationship is uniformly significantly positive from 1998-2001, but from 2002-09, the relationship is negative but rarely significant. This begins to change in the 2010-15 sub-period with five of the nine possible P-M outcomes being positive, however there is no measured significance.

Table 6.13

EM Multinationality and Firm Performance									
Panel A: 1998-2001									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Random**	**Random**	**Random**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Random**	**Random**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-0.69[4]	-0.72[4]	-0.70[4]	-6.18[4]	-5.91[4]	-6.03[4]	-6.07[4]	-4.20[4]	-4.19[4]
Lnmcap	0.04[4]	0.04[4]	0.04[4]	0.16[4]	0.16[4]	0.16[4]	0.24[4]	0.11[4]	0.11[4]

Leverage	-0.01[3]	-0.01[3]	-0.01[3]	-0.01[1]	-0.01[1]	-0.01[2]	-0.01[4]	-0.01[4]	-0.01[4]
Lnage	0.01	0.01	0.01	0.10	0.04	0.09	-0.15	0.02	0.01[2]
Multinationality	**0.06[2]**	**0.16[3]**	**0.30[3]**	**0.04**	**0.29[3]**	**0.38[2]**	**0.15[2]**	**0.27[3]**	**0.42[2]**
Observations	1,024	1,024	1,024	1,017	1,017	1,017	948	948	948
R^2	0.04	0.04	0.04	0.77	0.78	0.78	0.72	0.06	0.06
Adjusted R^2	0.03	0.03	0.04	0.69	0.70	0.69	0.61	0.06	0.06
F-Statistic	9.68	10.04	10.61	9.49	9.61	9.55	6.49	15.22	14.82
Durbin-Watson	2.45	2.46	2.46	2.28	2.29	2.28	2.32	1.61	1.61
Panel B: 2002-2006									
		LnRI			**LnROA**			**LnROE**	
Model Effects	**Random**	**Random**	**Random**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.24[1]	0.23[1]	0.21[1]	-5.05[4]	-4.96[4]	-5.03[4]	-7.70[4]	-7.59[4]	-7.69[4]
Lnmcap	-0.01	-0.01	-0.01	0.08[3]	0.08[3]	0.08[3]	0.15[4]	0.15[4]	0.15[4]
Leverage	-0.01	-0.01	-0.01	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]
Lnage	0.05[4]	0.05[4]	0.05[4]	0.30	0.28	0.30	0.84[3]	0.82[3]	0.84[3]
Multinationality	**-0.01**	**-0.03**	**-0.10[1]**	**-0.02**	**0.08**	**-0.01**	**-0.04**	**0.10**	**-0.07**
Observations	1,280	1,280	1,280	1,266	1,266	1,266	1,206	1,206	1,206
R^2	0.01	0.01	0.01	0.77	0.77	0.77	0.68	0.68	0.68
Adjusted R^2	0.01	0.01	0.01	0.70	0.71	0.70	0.58	0.58	0.58
F-Statistic	3.31	3.56	4.24	12.11	12.12	12.11	7.14	7.14	7.13
Durbin-Watson	1.85	1.85	1.85	1.70	1.70	1.70	1.87	1.87	1.87
Panel C: 2007-2009									
		LnRI			**LnROA**			**LnROE**	
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-20.06[4]	-19.90[4]	-19.99[4]	5.67[2]	5.41[1]	5.18[1]	10.71[3]	10.50[3]	10.15[3]
Lnmcap	0.47[4]	0.47[4]	0.47[4]	0.14[3]	0.14[3]	0.13[3]	0.12[2]	0.12[2]	0.12[2]
Leverage	-0.01	-0.01	-0.01	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[2]	-0.01[2]	-0.01[2]
Lnage	2.72[4]	2.67[3]	2.70[4]	2.83[4]	-2.75[4]	-2.68[4]	-3.87[4]	-3.81[4]	-3.72[4]
Multinationality	**-0.05**	**-0.02**	**-0.04**	**-0.08**	**-0.35[2]**	**-0.57[2]**	**-0.09**	**-0.30[1]**	**-0.59[2]**
Observations	785	785	785	765	765	765	745	745	745
R^2	0.18	0.18	0.18	0.83	0.84	0.84	0.75	0.75	0.75
Adjusted R^2	-0.24	-0.24	-0.24	0.74	0.75	0.75	0.61	0.61	0.61
F-Statistic	0.44	0.44	0.43	9.14	9.23	9.23	5.32	5.35	5.37
Durbin-Watson	3.91	3.91	3.91	3.22	3.23	3.24	2.65	2.66	2.68
Panel D: 2010-2015									
		LnRI			**LnROA**			**LnROE**	
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-8.07[4]	-8.14[4]	-8.14[4]	-6.74[4]	-6.60[4]	-6.64[4]	-5.86[4]	-5.77[4]	-5.78[4]
Lnmcap	0.32[4]	0.32[4]	0.32[4]	0.39[4]	0.39[4]	0.39[4]	0.50[4]	0.50[4]	0.50[4]
Leverage	0.01	0.01	0.01	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[3]	-0.01[3]	-0.01[3]
Lnage	0.30[1]	0.33[2]	0.34[2]	-1.04[4]	-1.11[4]	-1.08[4]	-1.71[4]	-1.76[4]	-1.76[4]
Multinationality	**0.04**	**0.01**	**-0.06**	**-0.04**	**0.07**	**-0.01**	**-0.04**	**0.03**	**0.09**
Observations	1,590	1,590	1,590	1,517	1,517	1,517	1,453	1,453	1,453
R^2	0.36	0.35	0.36	0.77	0.77	0.77	0.65	0.65	0.65
Adjusted R^2	0.22	0.22	0.22	0.71	0.71	0.71	0.57	0.58	0.58
F-Statistic	2.71	2.70	2.70	14.89	14.89	14.87	8.23	8.23	8.23
Durbin-Watson	2.28	2.28	2.29	1.91	1.91	1.91	1.78	1.78	1.78

***Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00**

6.5 Geographic Region-Based Analysis

From the previous section, there are differences in the performance of an EM firm that reaches the highest levels of multinationality, and an AM firm. The following section estimates the P-M

relationship using geographic-based regions, as used in the ABHK model to measure the P-M relationship, as a commonality among firms.

6.5.1 Descriptive Statistics

Table 6.14 provides the descriptive statistics of the six geographic regions. South African firms have the highest average firm performance measurements with the lowest financial leverage ratio and this grouping is also the youngest grouping of firms with an average age of 59 years. European firms are measured to be the oldest at 86 years and this grouping also is measured to be the most multinational as measured by FS and Triad scores while North American firms have the highest average multinationality as measured by ABHK scores. North American firms are also on average the largest by both market capitalization and employee count while South American firms are the smallest by employee count and South African firms are the smallest by market capitalization.

Table 6.14

Geographic Regional Descriptive Statistics				
Africa				
FYO = 1,333	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	20.36%	21.59%	19.37%
Return on Assets	ROA	10.11%	9.10%	9.73%
Total Return Index	RI	1.19	0.58	1.17
Age	age	59.35	40.16	55
Employee Count	emp	18,619	29,581	7,677
Leverage	Lev	28.39%	22.21%	25.16%
Market Capitalization	mcap	$5,600,000,000	$16,900,000,000	$1,170,000,000
Foreign Sales Percentage	FS	20.82%	28.61%	7.60%
ABHK	ABHK	3.61	3.01	3.00
Triad	Triad	1.73	0.80	2.00
Asia				
FYO = 4,887	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	9.18%	22.22%	7.96%
Return on Assets	ROA	4.87%	6.78%	3.11%
Total Return Index	RI	1.19	0.98	1.06
Age	age	68.97	40.72	61
Employee Count	emp	33,707	59.776	13,841
Leverage	Lev	40.81%	25.29%	41.68%
Market Capitalization	mcap	$9,940,000,000	$20,700,000,000	$4,030,000,000
Foreign Sales Percentage	FS	21.62%	25.12%	12.60%
ABHK	ABHK	6.44	3.84	8.00
Triad	Triad	1.76	0.81	2.00
Europe				
FYO = 8,262	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	12.87%	23.91%	12.55%
Return on Assets	ROA	5.76%	7.50%	5.07%
Total Return Index	RI	1.14	0.50	1.11
Age	age	86.46	70.52	72.00
Employee Count	emp	32,883	63,449	8,175
Leverage	Lev	38.50%	47.34%	36.98%
Market Capitalization	mcap	$10,900,000,000	$24,000,000,000	$2,460,000,000
Foreign Sales Percentage	FS	38.42%	34.13%	36.91%
ABHK	ABHK	6.52	4.49	6.00

Triad	Triad	2.06	0.97	2.00
North America				
FYO = 7,986	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	12.54%	82.07%	14.67%
Return on Assets	ROA	6.58%	9.29%	6.40%
Total Return Index	RI	1.15	0.59	1.11
Age	age	70.66	47.97	63
Employee Count	emp	44,677	107,821	16,715
Leverage	Lev	39.06%	125.52%	38.38%
Market Capitalization	mcap	$25,100,000,000	$46,500,000,000	$10,300,000,000
Foreign Sales Percentage	FS	25.23%	26.87%	18.09%
ABHK	ABHK	6.74	3.96	8.00
Triad	Triad	1.87	0.87	2.00
Oceania				
FYO = 954	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	14.98%	15.40%	13.90%
Return on Assets	ROA	7.16%	7.06%	6.19%
Total Return Index	RI	1.15	0.46	1.12
Age	age	76.35	45.92	70.00
Employee Count	emp	16,520	29,797	6,528
Leverage	Lev	38.84%	20.77%	36.08%
Market Capitalization	mcap	$12,000,000,000	$25,400,000,000	$3,600,000,000
Foreign Sales Percentage	FS	26.18%	30.47%	14.69%
ABHK	ABHK	6.01	3.49	7.00
Triad	Triad	2.02	1.04	2.00
South America				
FYO = 1,494	**Short Form**	**Mean**	**SD**	**Median**
Return on Equity	ROE	9.71%	33.40%	10.97%
Return on Assets	ROA	7.10%	7.72%	5.99%
Total Return Index	RI	1.28	1.21	1.09
Age	age	65.83	38.85	60.00
Employee Count	emp	13,917	24,575	4,715
Leverage	Lev	40.79%	22.32%	40.93%
Market Capitalization	mcap	$7,800,000,000	$28,700,000,000	$1,100,000,000
Foreign Sales Percentage	FS	8.33%	19.87%	0.00%
ABHK	ABHK	2.22	2.12	1.00
Triad	Triad	1.28	0.63	1.00

***The table indicates the abbreviation used, mean, standard deviation, median values of all variables for 24,786 firm year observations. Market Capitalization is in USD. ROA, ROE, Financial Leverage, and FS are ratios. RI is an index number, age and emp are counts, and ABHK and Triad are categories of multinationality. Each geographic region gives the number of firm-year observations (FYO).**

6.5.2 Regression Estimation

From Table 6.15, the results of the multinationality variables are highlighted. African and South American models are estimated using the first difference of each variable as determine by the unit root test. When measuring firm performance with ROA, African firms measured the P-M relationship with the most accuracy with all variables measuring a level of significance with the only exception being multinationality when measured by the ABHK model. This model estimation is further verified with a DW statistic of 2.29 and an R^2 of 0.07. African firm performance increases as multinationality increases with both age and size also measuring a significantly positive relationship with performance. South American firms estimate ROE as a firm performance measure to produce the most reliable estimation with a DW statistic of 2.03 and significance in the firm size and financial leverage variables

as well as when FS is the measure of multinationality. Financial leverage is negatively significant while market capitalization is positively significant. The remaining four regions measure RI as the performance measure with the most accurate estimation in the regression based on a DW statistic near 2.0. Asian and Oceanic firms measure firm size to be negatively significant to RI and age is positively significant for Asian firms but negatively significant for Oceanic firms. The ABHK model has a negatively significant relationship with RI for Oceanic firms while no multinationality measures are found to be significant when RI is the performance measure. The P-M relationship is estimated to be negatively insignificant for all three multinational measures for the European region while North American firms are positively significant when using ABHK and FS, but not when measured using the Triad model. Firm size measures a positively significant relationship with firm performance for both groupings but increases in age do not lead to increases in performance for European firms while the opposite is true for North American firms. Financial leverage has a negligible relationship with a coefficient of 0.01 for these four groupings.

Table 6.15

Geographic Region-Based Multinationality and Firm Performance									
Africa									
	DLnRI			**DLnROA**			**DLnROE**		
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-0.03[1]	-0.03	-0.03[1]	-0.08[4]	-0.08[4]	-0.08[4]	-0.08[3]	-0.08[3]	-0.08[3]
DLnmcap	0.13[4]	0.12[4]	0.12[4]	0.34[4]	0.34[4]	0.34[4]	0.32[4]	0.33[4]	0.32[4]
DLeverage	-0.01	-0.01	-0.01	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[2]	-0.01[2]	-0.01[2]
DLnage	0.56[1]	0.57[2]	0.56[1]	0.66[2]	0.65[2]	0.66[2]	0.41	0.39	0.41
Multi.	**0.03**	**-0.10**	**-0.04**	**0.07**	**0.12**[1]	**0.10**[2]	**0.08**	**0.19**[2]	**0.07**
Observations	1,202	1,202	1,202	1,142	1,142	1,142	1,094	1,094	1,094
R^2	0.02	0.02	0.02	0.07	0.07	0.07	0.04	0.04	0.04
Adjusted R^2	0.01	0.02	0.01	0.07	0.07	0.07	0.04	0.04	0.04
F-Statistic	5.12	5.62	4.98	22.58	22.78	22.17	11.68	12.29	11.28
Durbin-Watson	2.77	2.76	2.77	2.29	2.29	2.29	2.32	2.32	2.31
Asia									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	1.08[4]	1.22[4]	1.17[4]	-6.16[4]	-6.33[4]	-5.99[4]	-6.82[4]	-7.04[4]	-6.82[4]
Lnmcap	-0.08[4]	-0.09[4]	-0.08[4]	0.24[4]	0.24[4]	0.23[4]	0.29[4]	0.29[4]	0.28[4]
Leverage	0.01	0.01	0.01	-0.02[4]	-0.02[4]	-0.02[4]	-0.01[4]	-0.01[4]	-0.01[4]
Lnage	0.20[4]	0.19[4]	0.18[4]	-0.43[4]	-0.42[4]	-0.46[4]	-0.36[4]	-0.35[4]	-0.36[4]
Multi.	**-0.02**	**-0.04**	**0.03**	**-0.08**	**-0.20**	**-0.08**	**-0.07**[3]	**-0.20**[4]	**-0.18**[2]
Observations	4,730	4,730	4,730	4,378	4,378	4,378	4,238	4,238	4,238
R^2	0.05	0.05	0.05	0.70	0.70	0.69	0.53	0.53	0.53
Adjusted R^2	-0.01	-0.01	-0.01	0.68	0.68	0.67	0.49	0.50	0.49
F-Statistic	0.82	0.82	0.82	34.83	34.88	34.65	16.43	16.50	16.41
Durbin-Watson	2.32	2.32	2.32	1.25	1.25	1.25	1.12	1.12	1.12
Europe									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**

	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS
Constant	-2.63[4]	-2.68[4]	-2.63[4]	-7.43[4]	-7.50[4]	-7.50[4]	-6.43[4]	-6.50[4]	-6.55[4]
Lnmcap	0.15[4]	0.15[4]	0.15[4]	0.24[4]	0.24[4]	0.24[4]	0.22[4]	0.23[4]	0.23[4]
Leverage	-0.01[1]	-0.01[1]	-0.01[1]	-0.01[2]	-0.01[2]	-0.01[2]	-0.01	-0.01	-0.01
Lnage	-0.12[4]	-0.12[4]	-0.12[4]	0.18[4]	0.18[4]	0.17[4]	-0.12[2]	-0.12[2]	-0.10[2]
Multi.	**-0.02**[2]	**-0.07**[4]	**-0.06**[2]	**-0.06**[4]	**-0.14**[4]	**-0.27**[4]	**-0.05**[3]	**-0.13**[4]	**-0.33**[4]
Observations	8,096	8,096	8,096	7,601	7,601	7,601	7,367	7,367	7,367
R^2	0.09	0.10	0.09	0.59	0.59	0.59	0.35	0.35	0.36
Adjusted R^2	0.04	0.04	0.04	0.56	0.56	0.56	0.31	0.31	0.31
F-Statistic	1.72	1.74	1.72	22.02	22.05	22.10	8.19	8.20	8.26
Durbin-Watson	2.00	2.00	2.00	1.15	1.15	1.15	1.13	1.13	1.14
North America									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-2.63[4]	-2.62[4]	-2.71[4]	-5.94[4]	-5.85[4]	-5.93[4]	-4.99[4]	-4.91[4]	-4.97[4]
Lnmcap	0.17[4]	0.17[4]	0.17[4]	0.20[4]	0.20[4]	0.20[4]	0.17[4]	0.17[4]	0.17[4]
Leverage	-0.01[1]	-0.01[1]	-0.01[1]	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01[3]
Lnage	0.28[1]	0.29[1]	0.28[1]	-0.37[4]	-0.38[4]	-0.38[4]	-0.21[4]	-0.22[4]	-0.22[4]
Multi.	**0.03**[4]	**-0.08**[4]	**0.20**[4]	**-0.06**[4]	**-0.13**[4]	**-0.24**[4]	**-0.06**[4]	**-0.13**[4]	**-0.21**[3]
Observations	7,824	7,824	7,824	7,397	7,397	7,397	7,223	7,223	7,223
R^2	0.11	0.11	0.11	0.64	0.64	0.64	0.35	0.35	0.34
Adjusted R^2	0.05	0.05	0.06	0.62	0.62	0.62	0.30	0.30	0.30
F-Statistic	2.01	2.02	2.05	28.01	27.95	27.93	8.05	8.03	8.02
Durbin-Watson	2.09	2.09	2.09	1.21	1.21	1.21	1.23	1.22	1.22
Oceania									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.66[1]	0.84[2]	0.82[2]	-3.58[4]	-2.98[4]	-3.21[4]	-2.96[4]	-2.42[4]	-2.54[4]
Lnmcap	0.01	-0.01	-0.01	0.12[4]	0.10[4]	0.11[4]	0.19[4]	0.18[4]	0.18[4]
Leverage	-0.01[3]	-0.01[3]	-0.01[3]	-0.01[4]	-0.01[4]	-0.01[4]	0.01[2]	0.01[2]	0.01[2]
Lnage	-0.10	-0.13[1]	-0.13[1]	-0.38[3]	-0.46[4]	-0.44[3]	-0.80[4]	-0.89[4]	-0.89[4]
Multi.	**-0.04**[1]	**-0.02**	**-0.05**	**-0.06**	**0.11**	**0.04**	**-0.10**[2]	**-0.01**	**-0.08**
Observations	937	937	937	910	910	910	877	877	877
R^2	0.04	0.04	0.04	0.63	0.63	0.63	0.38	0.37	0.37
Adjusted R^2	-0.02	-0.02	-0.02	0.60	0.60	0.60	0.33	0.33	0.33
F-Statistic	0.74	0.68	0.69	25.55	25.56	25.49	8.86	8.74	8.76
Durbin-Watson	2.10	2.10	2.10	1.28	1.28	1.28	1.06	1.06	1.06
South America									
	DLnRI			**DLnROA**			**DLnROE**		
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	0.01	0.01	0.01	-0.04	-0.04	-0.04	-0.07[2]	-0.07[2]	-0.08[2]
DLnmcap	0.24[4]	0.24[4]	0.24[4]	0.11[4]	0.11[4]	0.11[4]	0.17[4]	0.17[4]	0.18[4]
DLeverage	-0.01	-0.01	-0.01	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[2]	-0.01[2]	-0.01[3]
DLnage	0.49	0.49	0.49	-0.12	-0.12	-0.12	-0.32	-0.32	-0.28
Multi.	**0.07**	**0.03**	**0.06**	**0.05**	**0.12**	**0.10**	**-0.01**	**0.02**	**0.41**[2]
Observations	1,326	1,326	1,326	1,235	1,235	1,235	1,073	1,073	1,073
R^2	0.06	0.05	0.05	0.03	0.03	0.03	0.02	0.02	0.03
Adjusted R^2	0.05	0.05	0.05	0.03	0.03	0.03	0.02	0.02	0.02
F-Statistic	19.41	19.15	19.16	9.55	9.82	9.50	6.77	6.77	7.86
Durbin-Watson	2.88	2.89	2.89	2.62	2.63	2.63	2.03	2.04	2.03

***Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00. Multinationality is abbreviated Multi.**

6.5.3 Significance of P-M Relationship

Table 6.16 identifies the 18-year averages for each variable used in the model for each of the six geographical regions. The least multinational grouping is South America followed by Africa, while the most multinational grouping is Europe when measured by FS and the Triad model, and North America when measured by the ABHK model. Overall, firms from South America and Africa are the smallest by both measures of size, and these groupings are also the youngest.

Table 6.16

18-Year Average of Each Variable by Geographic Region

		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Cap.	Foreign Sales	ABHK	Triad	Employee Count
Africa	1,333	10.11%	20.36%	1.19	59.35	28.39%	$5,604	20.82%	3.61	1.73	18,619
Asia	4,788	4.87%	9.18%	1.19	68.97	40.81%	$9,940	21.62%	6.44	1.76	33,707
Europe	8,262	5.76%	12.87%	1.14	86.46	38.50%	$10,900	34.42%	6.52	2.06	32,883
North America	7,956	6.58%	12.54%	1.15	70.66	39.06%	$20,513	25.23%	6.74	1.87	44,677
Oceania	954	7.16%	14.98%	1.15	76.35	38.84%	$12,028	26.18%	6.01	2.02	16,520
South America	1,495	7.10%	9.71%	1.28	65.83	40.79%	$7,804	8.33%	2.22	1.28	13,917

***Firm Year Observation totals are in the first column followed by the outcome variables, control variables explanatory variables, and the robustness replacement size variables, employee count.**

6.5.3.1 Africa and South America

As Brouthers and Nakos (2005) highlights, younger or "born global" firms may experience earlier and faster rates of performance growth than experienced by larger firms due to choosing to enter a limited number of niche foreign markets, thus, seeking fast growth, resulting in improved overall performance (Gleason, Madura, and Wiggenhorn, 2006). This is due to firms entering countries with small domestic markets when they can no longer expand domestically, which is typically the case with EM multinational firms (Autio, 2000; and Moen and Servais, 2002). This claim in the born global literature can be verified from the regression analysis for the Africa and South America grouping of firms. This result, coupled with the linear progression of the P-M relationships (Tables 6.18 and 6.20) as determine by the average incremental variable statistics seen in Table 6.17 for African firms and 6.19 for South American firms, builds on the EM, born global, and P-M relationship literatures. African firms display a U-shaped P-M relationship that is significant when regressed in the model using ROA and ROE to measure performance while using the Triad model and FS to measure multinationality. South American firms also measure a significant P-M relationship when using ROE to measure performance and FS to measure multinationality with the linear P-M progression taking a sigmoid or M-shape. From Table 6.20, South American firms are the only grouping to not have a firm classified in the ABHK global category due to subsidiaries not reaching all six continents. This is evident in the

linear positive P-M relationships seen in Table 6.20 from ROA and ROE as the performance measure, and ABHK as the multinationality measure, as the majority of the performance to ABHK multinationality relationships measure a decrease in performance when a firm moves from trans-regional to global.

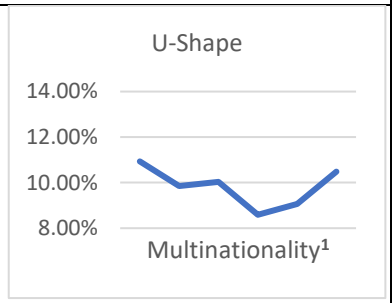
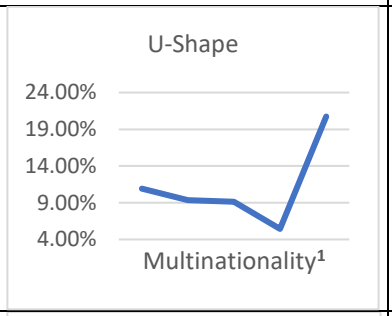
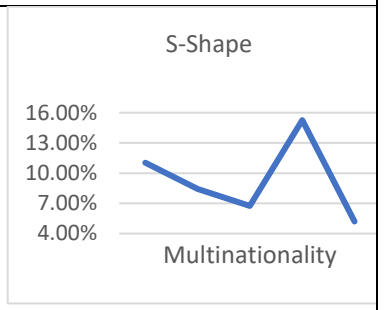
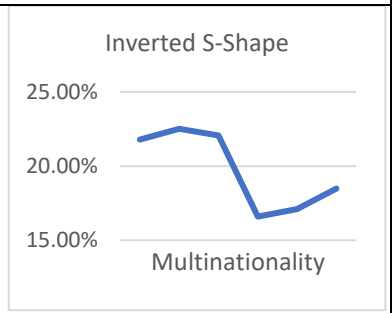
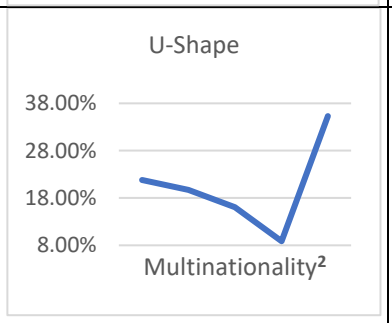
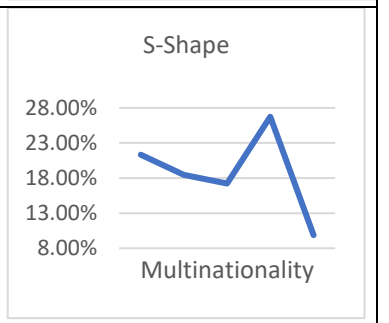
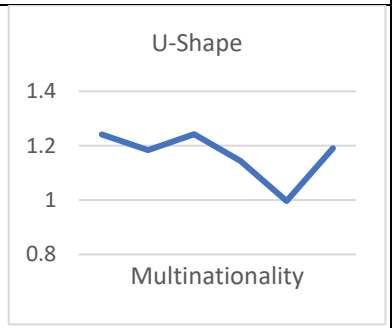
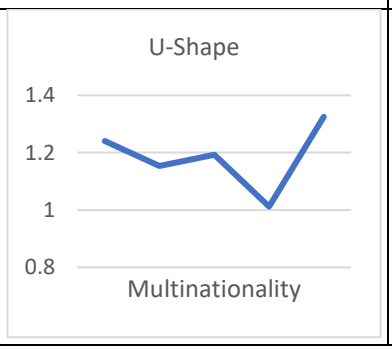
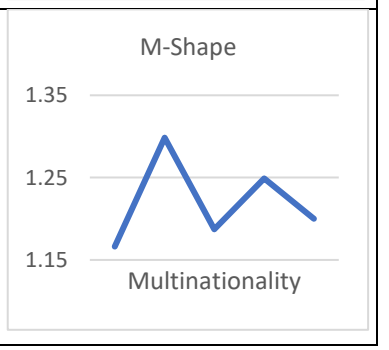
Table 6.17

Africa: Average Incremental Statistical Analysis of Multinationality Measures											
		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Dataset Average	**1,333**	**10.11%**	**20.36%**	**1.19**	**59.35**	**28.39%**	**$5,604**	**20.82%**	**3.61**	**1.73**	**18,619**
Panel A: Foreign Sales as a Percent of Net Sales											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Domestic	567 (42.6%)	10.93%	21.78%	1.24	52.43	26.09%	$1,250	$0.00	2.01	1.00	9,107
0-10%	159 (11.9%)	9.85%	22.51%	1.18	70.36	30.06%	$4,253	$170	4.04	2.07	15,499
10-20%	156 (11.7%)	10.03%	22.063%	1.24	65.31	24.38%	$4,749	$2,714	4.04	2.12	24,246
20-50%	224 (16.8%)	8.59%	16.59%	1.14	62.00	34.46%	$4,090	$1,251	5.08	2.04	20,992
50-75%	107 (8.0%)	9.06%	17.10%	1.00	59.49	30.95%	$18,122	$5,735	5.70	2.53	36,431
75-100%	119 (8.9%)	10.49%	18.49%	1.19	64.70	28.57%	$20,876	$7,819	5.46	2.88	40,246
Panel B: Triad Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	ABHK	Employee Count
Domestic	567 (42.6%)	10.93%	21.78%	1.24	52.43	26.09%	$1,250	$0.00	0.00%	2.01	9,107
Home Region	621 (46.6%)	9.37%	19.72%	1.15	68.36	29.86%	$8,769	$2,694	30.55%	4.48	27,416
Bi-Regional	99 (7.4%)	9.12%	16.08%	1.19	45.52	32.55%	$11,254	$4,838	57.18%	6.32	20,341
Host Region	25 (1.9%)	5.44%	8.87%	1.01	56.04	42.25%	$3,734	$3,466	62.23%	6.96	11,025
Global	20 (1.5%)	20.74%	35.30%	1.32	33.80	9.75%	$5,187	$1,814	77.37%	4.25	16,100
Panel C: ABHK Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	Triad	Employee Count
Domestic	428 (32.1%)	11.93%	11.93%	1.20	48.58	24.63	$999	-	0.00%	1.00	6,361
2 (RT-DI)	182 (13.7%)	11.19%	11.19%	1.09	53.16	25.08	$3,785	$728	24.33%	2.10	12,881
3 (TT-DI)	272 (20.4%)	9.56%	9.56%	1.16	65.12	32.08	$8,920	$3,128	43.40%	2.36	27,150
4 (DT-RI)	89 (6.7%)	7.82%	7.82%	1.49	56.24	25.53	$1,629	-	0.00%	1.00	13,688
5 (RT-RI)	51 (3.8%)	6.64%	6.64%	1.07	74.18	22.81	$5,252	$375	10.48%	1.96	26,766
6 (TT-RI)	80 (6.0%)	10.30%	10.30%	1.23	62.34	33.71	$3,574	$2,051	36.73%	2.19	29,671
7 (DT-TI)	44 (3.3%)	8.21%	8.21%	1.17	79.75	40.47	$2,929	-	0.00%	1.00	24,382
8 (RT-TI)	29 (2.2%)	6.24%	6.24%	1.21	94.48	39.98	$9,313	$1,422	14.09%	2.00	39,677
9 (TT-TI)	102 (7.7%)	6.27%	6.27%	1.19	79.94	34.28	$6,165	$2,641	42.82%	2.33	33,582
10 (GT-DI)	25 (1.9%)	15.88%	15.88%	1.24	50.40	24.75	$72,180	$25,439	61.90%	2.84	39,921
11 (GT-RI)	3 (0.2%)	18.01%	18.01%	1.56	55.00	18.54	$28,936	$7,419	44.99%	2.33	30,751
12 (GT-TI)	12 (0.9%)	13.28%	13.28%	1.18	61.25	21.12	$18,018	$6,094	46.27%	2.42	29,880
13 (DT-GI)	1 (0.1%)	5.70%	5.70%	1.55	79.00	68.69	$1,615	-	0.00%	1.00	12,800
14 (RT-GI)	0 (0.0%)	-	-	-	-	-	-	-	-	-	-
15 (TT-GI)	12 (0.9%)	4.02%	4.02%	1.18	27.42	32.12	$1,533	$3,968	76.53%	3.00	17,713
Global (GT-GI)	2 (0.2%)	12.07%	12.07%	1.17	63.50	13.54	$34,019	$9,382	50.19%	2.50	34,436

***ABHK Categories are listed on the left with the level of trading abbreviated on the left: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), and level of investment abbreviated on the right: DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), and GI (Global Investing). Market Capitalization, Net Sales, and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations).**

Table 6.18

Africa: Firm Performance – Multinationality Relationship

	Foreign Sales Percentage	Triad Model	ABHK Model
Return on Assets			
Return on Equity			
Total Return Index			

***Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00**

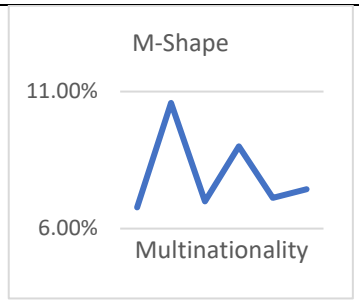
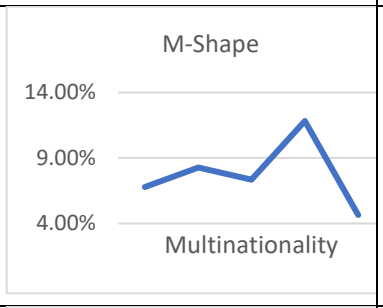
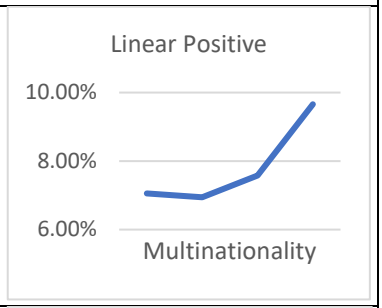
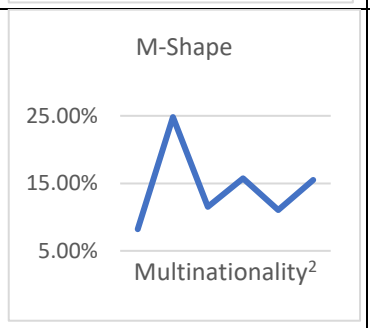
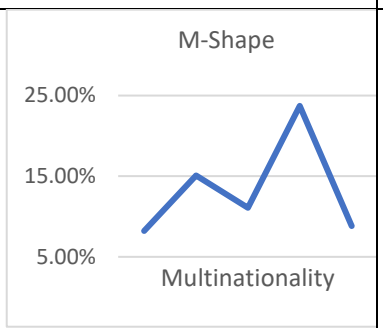
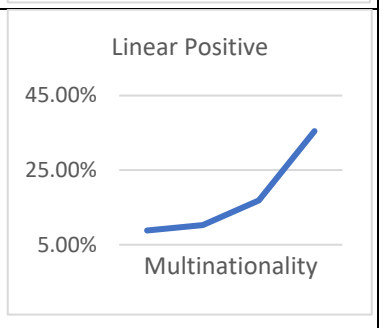
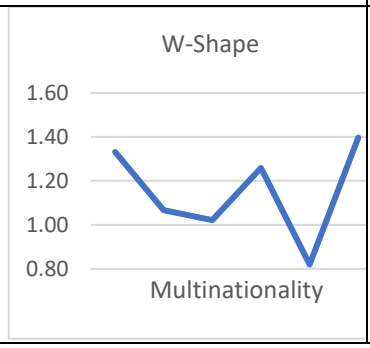
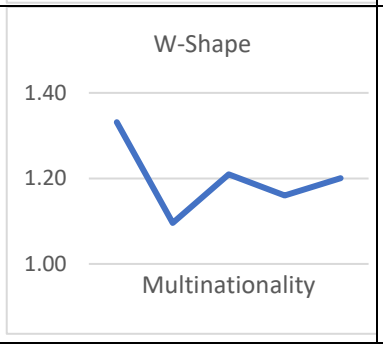
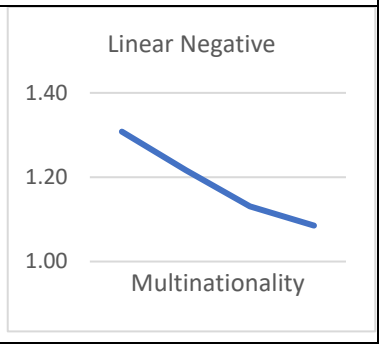
Table 6.19

South America: Average Incremental Statistical Analysis of Multinationality Measures											
		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Dataset Average	**1,495**	**7.10%**	**9.71%**	**1.28**	**65.83**	**40.79%**	**$7,804**	**8.33%**	**2.22**	**1.28**	**13,917**
Panel A: Foreign Sales as a Percent of Net Sales											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Domestic	1,163 (77.8%)	6.77%	8.21%	1.33	64.76	39.73%	$4,244	-	1.62	1.00	10,882
0-10%	41 (2.7%)	10.59%	24.81%	1.07	60.24	48.85%	$34,716	$1,693	3.56	2.07	52,831
10-20%	69 (4.6%)	7.00%	11.50%	1.02	70.49	34.10%	$35,353	$4,389	3.54	2.03	31,523
20-50%	118 (7.9%)	9.00%	15.72%	1.26	66.16	47.25%	$17,774	$1,248	4.27	2.00	13,598
50-75%	68 (4.6%)	7.12%	11.02%	0.82	89.07	48.65%	$4,644	$5,910	4.82	2.43	21,451
75-100%	35 (2.3%)	7.43%	15.49%	1.40	52.17	42.49%	$12,795	$6,853	6.03	3.63	20,890
Panel B: Triad Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	ABHK	Employee Count
Domestic	1,163 (77.8%)	6.77%	8.21%	1.33	64.76	39.73%	$4,244	-	0.00%	1.62	10,882
Home Region	283 (18.9%)	8.27%	15.08%	1.10	70.95	45.12%	$21,705	$3,035	31.63%	4.19	24,921
Bi-Regional	19 (1.3%)	7.33%	11.09%	1.21	83.32	40.76%	$22,472	$10,272	64.75%	3.74	38,333
Host Region	15 (1.0%)	11.82%	23.72%	1.16	48.80	39.97%	$4,005	$3,485	75.17%	4.93	10,572
Global	14 (0.9%)	4.65%	8.83%	1.20	44.93	41.77%	$6,726	$3,927	81.04%	7.36	13,990
Panel C: ABHK Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	Triad	Employee Count
Domestic	963 (64.5%)	6.87%	7.68%	1.36	63.25	38.44%	$3,668	-	0.00%	1.00	9,543
2 (RT-DI)	106 (7.1%)	7.93%	11.38%	1.11	68.92	38.99%	$18,022	$2,596	22.27%	1.98	22,890
3 (TT-DI)	123 (8.2%)	7.79%	15.53%	1.10	69.74	45.34%	$32,224	$4,861	35.54%	2.13	25,002
4 (DT-RI)	126 (8.4%)	6.52%	9.20%	1.22	79.14	44.01%	$5,024	-	0.00%	1.00	13,769
5 (RT-RI)	34 (2.3%)	7.55%	8.65%	1.04	79.82	48.87%	$3,870	$1,096	32.79%	1.94	10,116
6 (TT-RI)	19 (1.3%)	8.66%	19.93%	1.52	60.47	47.25%	$4,788	$3,182	46.94%	2.58	12,094
7 (DT-TI)	51 (3.4%)	6.86%	17.98%	1.18	58.35	48.02%	$14,517	-	0.00%	1.00	30,019
8 (RT-TI)	26 (1.7%)	10.98%	22.60%	1.03	63.35	55.11%	$14,105	$2,983	39.67%	2.00	31,129
9 (TT-TI)	41 (2.7%)	6.31%	11.83%	1.14	67.32	48.55%	$6,962	$2,296	48.95%	2.63	34,175
10 (GT-DI)	4 (0.3%)	10.69%	42.50%	1.08	59.00	38.88%	$1,026	$244	17.86%	2.00	9,150
11 (GT-RI)	0 (0.0%)	-	-	-	-	-	-	-	0.00%	-	-
12 (GT-TI)	1 (0.1%)	5.53%	7.30%	1.12	94.00	73.34%	$1,262	$1,660	59.70%	2.00	13,500
13 (DT-GI)	0 (0.0%)	-	-	-	-	-	-	-	-	-	-
14 (RT-GI)	0 (0.0%)	-	-	-	-	-	-	-	-	-	-
15 (TT-GI)	0 (0.0%)	-	-	-	-	-	-	-	-	-	-
Global (GT-GI)	0 (0.0%)	-	-	-	-	-	-	-	-	-	-

***ABHK Categories are listed on the left with the level of trading abbreviated on the left: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), and level of investment abbreviated on the right: DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), and GI (Global Investing). Market Capitalization, Net Sales, and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations).**

Table 6.20

South America: Firm Performance – Multinationality Relationship

	Foreign Sales Percentage	Triad Model	ABHK Model
Return on Assets			
Return on Equity			
Total Return Index			

***Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00. No firms are measured to be global by the ABHK model.**

6.5.3.2 Triad Regions and Oceania

The groupings of Asia, Europe, North America, and Oceania each produce a unique P-M relationship. The measure of performance that estimates the most accurate model regression is RI with a DW statistic of 2.32, 2.00, 2.09, and 2.31 and an R^2 of 0.05, 0.09, 0.11, and 0.04 for each grouping, respectively. Asian firms estimate all three multinationality measures to predict performance when measured by ROE, and this relationship is significantly negative. From Table 6.21, only 5.7 percent of FYOs are ABHK global in either sales or subsidiaries, 4.4 percent are above 75 percent in FS, and 2.7 percent by the Triad global category. Compared to the other two Triad regions, Asian firms are the least global and have the highest proportion of firms in the domestic category of the four groupings.

Overall, Asian firms perform better when they focus their operations in their home country and/or neighbouring countries in their home Triad region. When using ROE and the ABHK model, the P-M relationship is significant, and U-shaped as seen in Table 6.22. The significantly negative P-M relationship is also true for European firms from all nine combinations of the P-M model. This grouping produces a pattern for each multinationality measure that is distinctly unique for European firms. FS and performance show an inverted S-shaped P-M relationship. When using the Triad model, which is also a foreign sales-based multinational measure, with the cavate of thresholds and presence in the Triad regions necessary to be considered global, European firms are collectively linear positive with global firms having the highest measurements of performance, similar to the FS results. The change in the P-M relationship is evident when the ABHK model is used as the multinationality measure. The P-M relationship is described as an inverted U-shape or S-shape, with performance decreasing when firms move from transregional to global, a finding that aligns with previous studies by Contractor et al. (2003) and Contractor (2014); Lu and Beamish (2004); Ruigrok, Amann, and Wagner, (2007); and Rugman (2010). The additional subsidiary geographic location requirement of the ABHK global category would on the surface, appear to make this category more difficult to attain compared to the Triad model which only uses foreign sales percentages, but this is not the case. From Table 6.23, 3.3 percent of FYOs are global when using the Triad model but this percentage is 12.6, approximately four times more occurrences of European firms with subsidiaries in all six geographic regions than measuring between 20-50 percent sales in all three Triad regions. Like chapter four explains, these models differ in their ability to capture global firms. European firms are the most multinational when measured by the Triad model and FS which is not surprising as geographic distance from a firms' home country to neighbouring countries plays a role in a firms' ability to become more global. As highlighted by Perryman and Combs (2012), increased geographic distance between markets increases monitoring costs due to greater travel and communication expenses. This leads to decreases in firm performance the more multinational a firm becomes, which is not the case for European firms as their ROA and ROE are highest when firms are global in trading but less than global in investments. From Table 6.24, European firms show a P-M relationship to have an inverted S-shape when using FS, a linear positive shape when using the Triad model, and an inverted U-shape when using the ABHK model across all three performance measures.

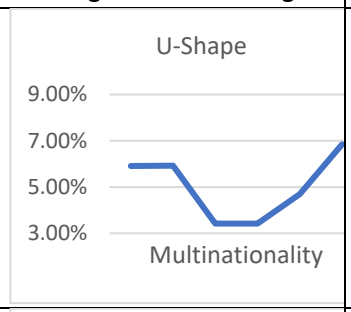
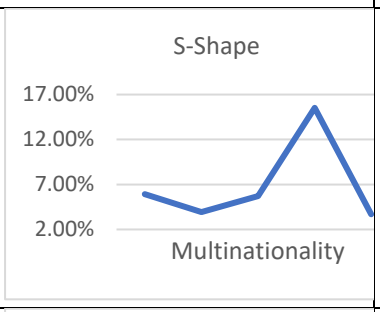
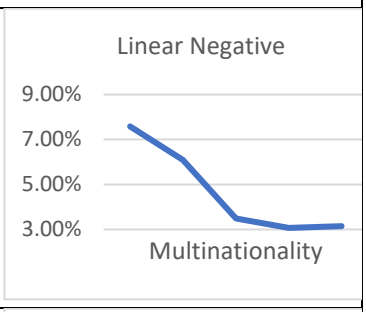
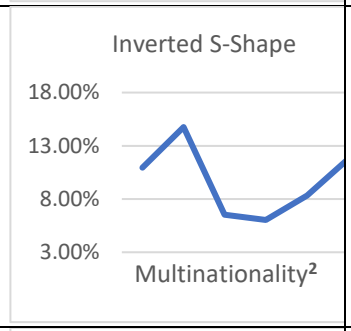
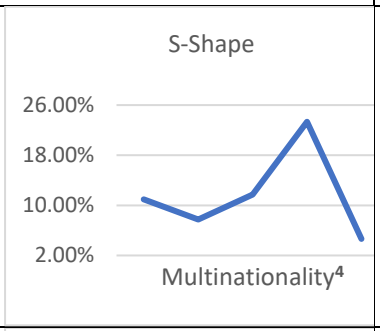
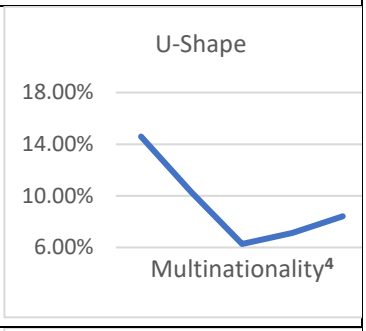
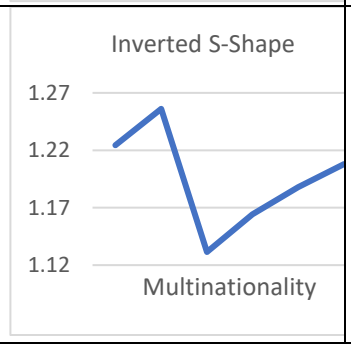
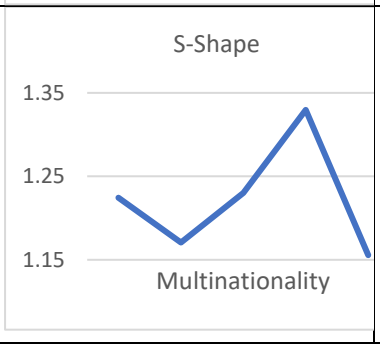
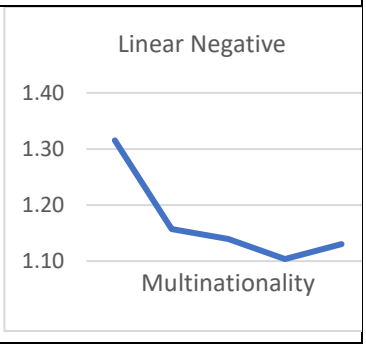
Table 6.21

Asia: Average Incremental Statistical Analysis of Multinationality Measures											
		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Dataset Average	**4,788**	**4.87%**	**9.18%**	**1.19**	**68.97**	**40.81%**	**$9,940**	**21.62%**	**6.44**	**1.76**	**33,707**
Panel A: Foreign Sales as a Percent of Net Sales											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Domestic	1,827 (38.2%)	5.91%	10.95%	1.22	57.21	40.36%	$8,366	$0.00	3.47	1.00	23,974
0-10%	361 (7.5%)	5.92%	14.76%	1.26	70.55	39.78%	$8,172	$609	6.56	2.03	41,179
10-20%	676 (14.1%)	3.42%	6.52%	1.13	85.03	47.08%	$8,170	$2,630	7.91	2.01	24,519
20-50%	1,107 (23.1%)	3.43%	6.03%	1.16	79.86	42.33%	$9,890	$5,396	8.35	2.01	38,849
50-75%	607 (12.7%)	4.70%	8.33%	1.19	69.62	35.88%	$14,906	$12,369	9.26	2.75	48,139
75-100%	210 (4.4%)	6.85%	11.76%	1.21	57.68	32.59%	$18,374	$19,261	9.18	2.97	66,307
Panel B: Triad Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	ABHK	Employee Count
Domestic	1,827 (38.2%)	5.91%	10.95%	1.22	57.21	40.36%	$8,366	$0.00	0.00%	3.47	23,974
Home Region	2,576 (53.8%)	3.92%	7.74%	1.17	78.13	41.94%	$9,416	$4,785	30.12%	8.10	35,307
Bi-Regional	212 (4.4%)	5.71%	11.70%	1.23	64.08	38.10%	$25,723	$23,869	70.72%	9.75	71,534
Host Region	43 (0.9%)	15.52%	23.33%	1.33	46.86	30.48%	$22,759	$18,962	82.30%	8.37	85,065
Global	130 (2.7%)	3.69%	4.64%	1.16	69.12	34.97%	$14,719	$14,708	66.18%	9.76	64,653
Panel C: ABHK Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	Triad	Employee Count
Domestic	1,010 (21.1%)	7.80%	14.41%	1.31	45.98	35.02%	$6,128	-	0.00%	1.00	19,169
2 (RT-DI)	239 (5.0%)	10.24%	22.43%	1.32	46.18	31.75%	$11,402	$2,141	19.82%	2.02	32,070
3 (TT-DI)	236 (4.9%)	3.96%	7.41%	1.31	63.17	40.41%	$9,307	$8,002	35.40%	2.26	55,654
4 (DT-RI)	135 (2.8%)	4.62%	5.23%	1.15	55.96	42.79%	$7,543	-	0.00%	1.00	18,570
5 (RT-RI)	88 (1.8%)	9.04%	19.09%	1.16	54.49	33.40%	$9,851	$1,643	18.41%	2.05	23,901
6 (TT-RI)	27 (0.6%)	3.84%	6.83%	1.18	75.11	38.26%	$3,828	$2,441	28.93%	2.22	13,915
7 (DT-TI)	653 (13.6%)	2.96%	6.03%	1.10	73.24	48.27%	$11,893	-	0.00%	1.00	32,351
8 (RT-TI)	219 (4.6%)	7.05%	15.69%	1.26	75.49	40.38%	$17,601	$5,794	30.88%	2.11	63,178
9 (TT-TI)	1,911 (39.9%)	3.26%	5.27%	1.14	82.75	42.01%	$8,733	$4,915	35.78%	2.22	30,332
10 (GT-DI)	1 (0.0%)	7.81%	17.28%	1.24	91.00	37.99%	$27,136	$19,078	79.69%	2.00	44,206
11 (GT-RI)	0 (0.0%)	-	-	-	-	-	-	-	-	-	-
12 (GT-TI)	17 (0.4%)	2.86%	6.62%	1.12	60.75	42.11%	$13,297	$8,764	40.28%	2.25	32,949
13 (DT-GI)	6 (0.1%)	3.15%	8.85%	1.58	65.50	41.85%	$41,334	-	0.00%	1.00	122,710
14 (RT-GI)	10 (0.2%)	5.23%	11.73%	1.14	76.20	49.15%	$30,906	$22,474	57.97%	2.70	72,717
15 (TT-GI)	218 (4.6%)	3.05%	8.28%	1.13	79.20	46.79%	$23,688	$26,077	49.00%	2.58	92,245
Global (GT-GI)	18 (0.4%)	2.71%	6.84%	1.06	73.50	44.83%	$13,686	$11,455	48.83%	2.50	68,483

***ABHK Categories are listed on the left with the level of trading abbreviated on the left: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), and level of investment abbreviated on the right: DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), and GI (Global Investing). Market Capitalization, Net Sales, and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations).**

Table 6.22

Asia: Firm Performance – Multinationality Relationship

	Foreign Sales Percentage	Triad Model	ABHK Model
Return on Assets			
Return on Equity			
Total Return Index			

*** Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00**

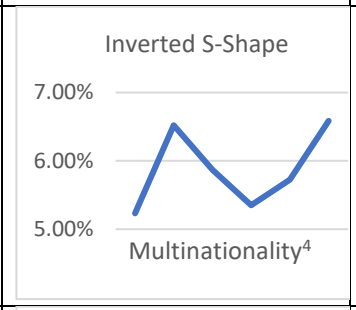
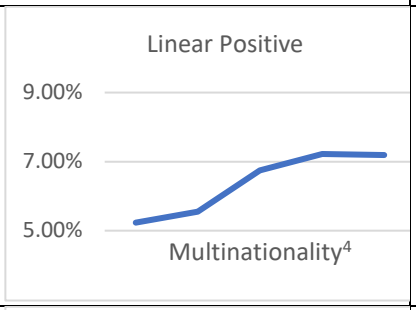
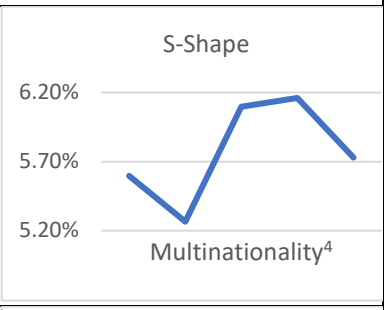
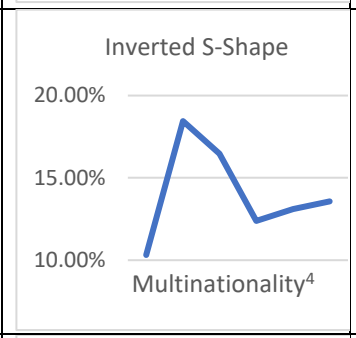
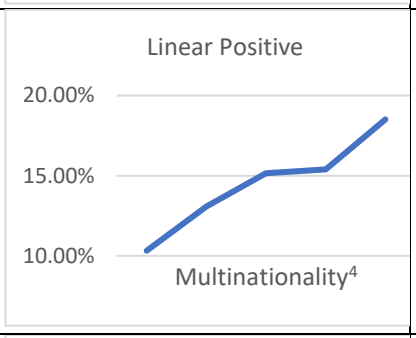
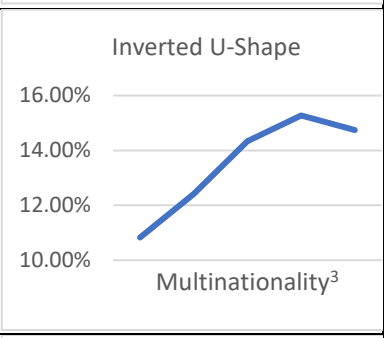
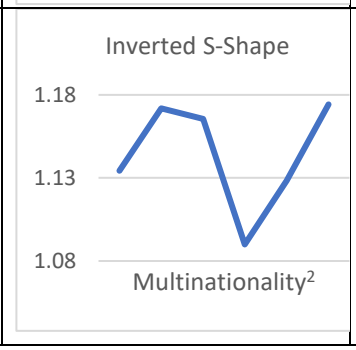
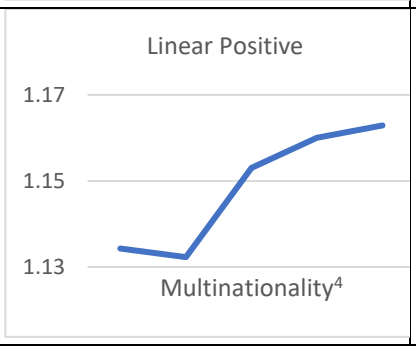
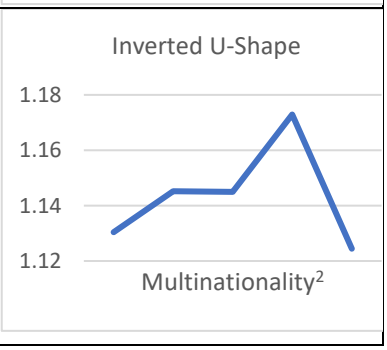
Table 6.23

Europe: Average Incremental Statistical Analysis of Multinationality Measures											
		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Dataset Average	**8,262**	**5.76%**	**12.87%**	**1.14**	**86.46**	**38.50%**	**$10,900**	**34.42%**	**6.52**	**2.06**	**32,883**
Panel A: Foreign Sales as a Percent of Net Sales											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Domestic	2,321 (28.1%)	5.23%	10.32%	1.13	76.53	35.75%	$3,402	-	2.77	1.00	8,978
0-10%	543 (6.6%)	6.52%	18.45%	1.17	84.40	45.42%	$7,631	$410	5.62	2.02	19,502
10-20%	549 (6.6%)	5.87%	16.46%	1.17	89.53	47.10%	$13,316	$4,016	7.37	2.12	31,263
20-50%	1,411 (17.1%)	5.35%	12.39%	1.09	84.36	39.96%	$14,137	$6,375	7.86	2.14	47,770
50-75%	1,787 (21.6%)	5.73%	13.10%	1.13	95.45	39.18%	$14,598	$11,904	8.52	2.57	53,501
75-100%	1,651 (20.0%)	6.59%	13.57%	1.17	92.15	35.25%	$15,091	$12,833	8.51	2.91	36,386
Panel B: Triad Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	ABHK	Employee Count
Domestic	2,321 (28.1%)	5.23%	10.32%	1.13	76.53	35.75%	$3,402	-	0.00%	1.00	8,978
Home Region	4,205 (50.9%)	5.55%	13.08%	1.13	85.73	40.62%	$11,917	$7,826	45.44%	7.41	42,009
Bi-Regional	940 (11.4%)	6.74%	15.15%	1.15	101.44	36.89%	$17,916	$12,549	70.74%	9.54	46,669
Host Region	522 (6.3%)	7.22%	15.39%	1.16	93.87	38.12%	$12,131	$7,685	77.06%	8.33	28,776
Global	274 (3.3%)	7.19%	18.51%	1.16	116.25	35.55%	$33,286	$18,849	71.68%	10.84	55,838
Panel C: ABHK Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	Triad	Employee Count
Domestic	1,440 (17.4%)	5.39%	9.26%	1.14	67.13	32.18%	$2,098	-	-	1.00	4,816
2 (RT-DI)	418 (5.1%)	5.95%	11.23%	1.19	57.98	39.21%	$6,458	$2,246	37.12%	2.09	18,631
3 (TT-DI)	1,202 (14.5%)	5.72%	12.56%	1.10	83.96	37.33%	$9,611	$7,363	56.78%	2.43	32,544
4 (DT-RI)	497 (6.0%)	4.65%	11.26%	1.11	74.52	41.63%	$3,482	-		1.00	11,387
5 (RT-RI)	330 (4.0%)	5.85%	12.85%	1.20	70.64	39.42%	$3,465	$1,088	34.54%	2.06	8,976
6 (TT-RI)	271 (3.3%)	5.67%	14.01%	1.14	71.87	40.64%	$5,329	$3,339	42.69%	2.34	18,110
7 (DT-TI)	334 (4.0%)	5.41%	12.91%	1.12	113.54	39.82%	$7,962	-	-	1.00	18,842
8 (RT-TI)	412 (5.0%)	5.68%	13.13%	1.16	92.85	37.30%	$9,730	$4,815	47.87%	2.23	29,203
9 (TT-TI)	2,025 (24.5%)	6.29%	14.82%	1.15	94.71	39.58%	$11,462	$6,779	55.05%	2.55	37,449
10 (GT-DI)	111 (1.3%)	3.28%	7.17%	1.15	75.05	34.28%	$13,573	$10,589	62.41%	2.35	42,095
11 (GT-RI)	20 (0.2%)	7.13%	13.44%	1.30	73.65	25.79%	$5,384	$3,708	52.85%	2.40	5,534
12 (GT-TI)	158 (1.9%)	8.06%	21.20%	1.17	106.93	34.21%	$23,515	$9,286	61.96%	2.97	46,587
13 (DT-GI)	50 (0.6%)	5.21%	14.51%	1.25	120.82	53.63%	$9,633	-	-	1.00	37,164
14 (RT-GI)	124 (1.5%)	4.54%	11.15%	1.13	95.56	42.44%	$33,246	$43,393	65.40%	2.20	181,232
15 (TT-GI)	653 (7.9%)	5.72%	14.81%	1.12	115.88	45.29%	$32,914	$21,965	61.56%	2.85	92,191
Global (GT-GI)	217 (2.6%)	6.56%	16.65%	1.10	112.70	44.78%	$34,119	$21,550	61.80%	2.74	62,073

***ABHK Categories are listed on the left with the level of trading abbreviated on the left: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), and level of investment abbreviated on the right: DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), and GI (Global Investing). Market Capitalization, Net Sales, and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations).**

Table 6.24

Europe: Firm Performance – Multinationality Relationship

	Foreign Sales Percentage	Triad Model	ABHK Model
Return on Assets			
Return on Equity			
Total Return Index			

***Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00.**

Firms from North America all measure a significantly negative P-M relationship, with the exception of when the ABHK model and FS are measures of multinationality, and RI is the measure of performance. The relationships for each multinational measure tell opposite stories, as seen in Table 6.25. The P-M relationship as firms become global, measured by FS, show RI to increase as firms move to the 75-100 percent category while the ABHK model show RI to decrease as firms move to the global multinationality ABHK categories. Interestingly, more global FYOs exist in the ABHK model (10.1 percent) than both FS (6.0 percent) and Triad (2.2 percent) models. This statistic, coupled with the overall FS of 25.23 percent, identifies the lack of FS by North American firms compared to the other geographic-based groupings. The reduced FS does not equal reduced investments abroad as North

American firms are second only to European firms in FYOs in the global ABHK category. Furthermore, the significantly positive P-M relationship is also true for South American and African groupings of firms, like previously mentioned. Oceanic firms, similar to North American firms, estimate a negative P-M relationship with the exception of ROA being the performance measure, and the Triad model and FS being the measures of multinationality. The P-M relationships that are significant exist between the ABHK model as the multinationality measure, and ROE and RI as the performance measures (Table 6.26). Oceanic results are unique due to the ratio of domestic to transregional to global FYOs compared to the other groupings. Oceanic firms, as categorized by the ABHK model, are mostly trans-regional with 66 percent of FYOs taking place in these categories (Table 6.27) compared to 64 percent by Asian and North American firms, 51 percent by European firms, 40 percent by African firms, and 17 percent by South American firms. FYOs for the ABHK trans-regional category in both sales and subsidiaries are highest for Asian and Oceanic groupings of firms. The P-M relationship for Oceanic firms, trends upwards for eight of the nine iterations of the model estimation with the exception of RI and ABHK as the measures of performance and multinationality which measure an M-shape relationship (Table 6.28).

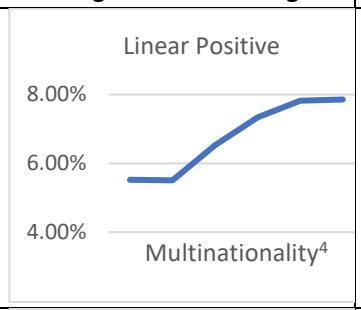
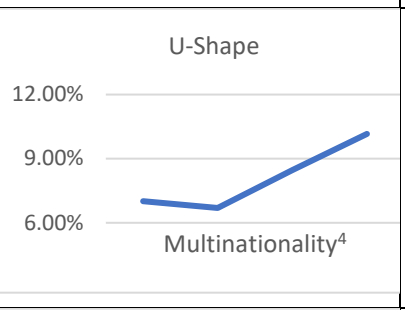
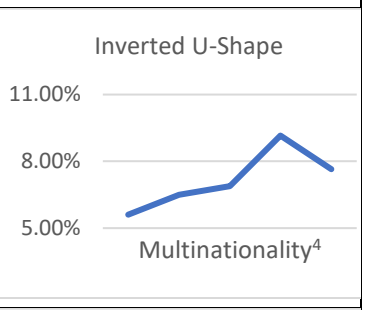
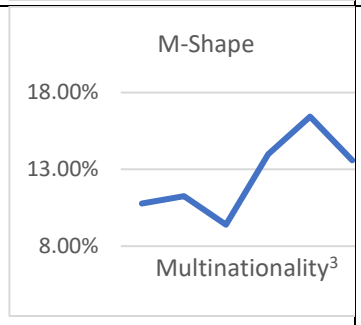
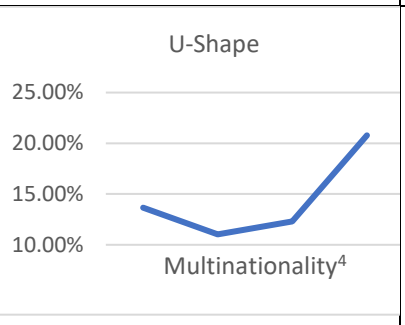
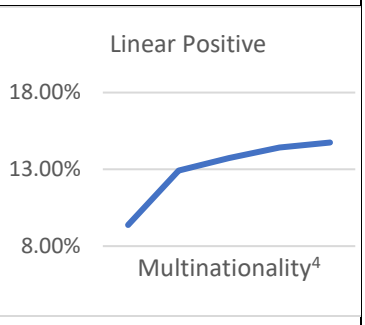
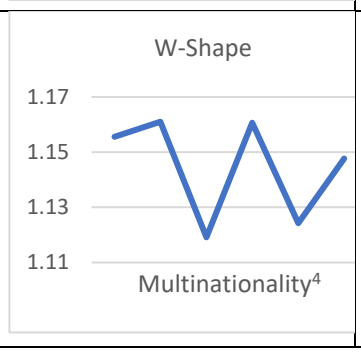
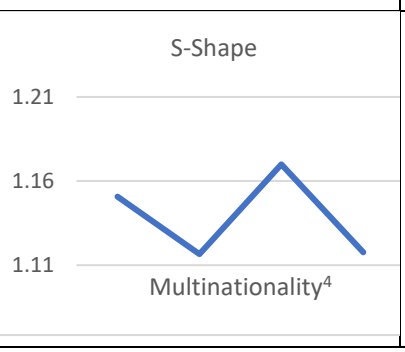
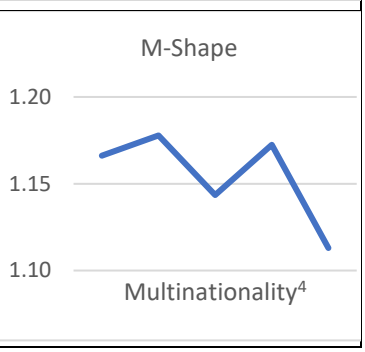
Table 6.25

North America: Average Incremental Statistical Analysis of Multinationality Measures											
		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Dataset Average	**7,956**	**6.58%**	**12.54%**	**1.15**	**70.66**	**39.06%**	**$20,513**	**25.23%**	**6.74**	**1.87**	**44,677**
Panel A: Foreign Sales as a Percent of Net Sales											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Domestic	2,794 (35.1%)	5.52%	10.78%	1.16	63.51	41.21%	$15,636	-	3.93	1.00	31,697
0-10%	638 (8.0%)	5.51%	11.25%	1.16	74.77	41.83%	$16,335	$832	6.90	2.13	35,712
10-20%	713 (9.0%)	6.53%	9.39%	1.12	77.02	40.84%	$22,693	$2,928	7.45	2.14	58,477
20-50%	2,255 (28.3%)	7.34%	13.98%	1.16	77.43	40.31%	$30,776	$6,277	8.59	2.14	55,129
50-75%	1,077 (13.5%)	7.82%	16.43%	1.12	76.59	33.38%	$41,026	$14,497	8.86	2.77	59,981
75-100%	479 (6.0%)	7.86%	13.59%	1.15	52.17	27.04%	$33,596	$18,775	8.36	2.88	28,172
Panel B: Triad Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	ABHK	Employee Count
Domestic	2,794 (35.1%)	5.52%	10.78%	1.16	63.51	41.21%	$15,636	-	0.00%	1.00	31,697
Home Region	4,028 (50.6%)	7.01%	13.67%	1.15	76.04	39.15%	$28,956	$6,808	33.89%	8.17	54,177
Bi-Regional	686 (8.6%)	6.69%	11.03%	1.12	74.69	37.66%	$37,943	$14,371	52.25%	8.31	47,201
Host Region	274 (3.4%)	8.46%	12.30%	1.17	52.85	23.54%	$30,317	$10,749	68.92%	8.41	34,756
Global	174 (2.2%)	10.16%	20.78%	1.12	72.83	32.40%	$30,511	$6,625	54.69%	9.92	38,844
Panel C: ABHK Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	Triad	Employee Count
Domestic	1,384 (17.4%)	4.98%	7.03%	1.17	57.54	40.43	$10,526	-	0.00%	1.00	6,361
2 (RT-DI)	253 (3.2%)	6.56%	13.99%	1.21	69.61	33.62	$24,795	$10,271	26.20%	2.19	12,881
3 (TT-DI)	637 (8.0%)	6.58%	12.64%	1.14	75.27	44.78	$23,315	$6,047	42.75%	2.36	27,150
4 (DT-RI)	328 (4.1%)	5.84%	11.55%	1.16	58.66	43.76	$11,623	-	0.00%	1.00	13,688
5 (RT-RI)	155 (2.0%)	6.45%	11.45%	1.22	49.88	41.29	$13,894	$3,841	24.21%	2.04	26,766
6 (TT-RI)	88 (1.1%)	9.07%	20.83%	1.19	55.89	37.17	$22,237	$5,223	42.47%	2.11	29,671
7 (DT-TI)	965 (12.1%)	6.08%	15.54%	1.13	72.32	41.63	$22,569	-	0.00%	1.00	24,382
8 (RT-TI)	1,373 (17.3%)	6.61%	16.22%	1.17	73.55	35.58	$28,286	$5,495	26.48%	2.20	39,677
9 (TT-TI)	1,958 (25.6%)	7.48%	11.10%	1.13	71.72	36.34	$26,084	$6,643	46.28%	2.46	33,582
10 (GT-DI)	11 (0.1%)	8.10%	12.83%	1.29	12.73	27.82	$7,646	$759	57.58%	2.18	39,921
11 (GT-RI)	1 (0.0%)	7.23%	11.91%	0.88	24.00	34.97	$7,914	$2,590	91.08%	2.00	30,751
12 (GT-TI)	6 (0.1%)	11.42%	17.79%	1.00	22.83	29.44	$8,117	$2,533	83.28%	2.00	29,880
13 (DT-GI)	117 (1.5%)	9.71%	21.08%	1.21	66.00	31.34	$59,557	-	0.00%	1.00	12,800
14 (RT-GI)	147 (1.9%)	9.58%	13.47%	1.12	92.12	48.38	$68,989	$29,281	41.46%	2.31	-
15 (TT-GI)	511 (6.4%)	7.46%	15.16%	1.11	95.14	40.62	$58,997	$16,842	48.04%	2.47	17,713
Global (GT-GI)	25 (0.3%)	6.33%	18.83%	0.94	111.64	25.45	$30,910	$16,037	28.44%	2.24	34,436

***ABHK Categories are listed on the left with the level of trading abbreviated on the left: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), and level of investment abbreviated on the right: DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), and GI (Global Investing). Market Capitalization, Net Sales, and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations).**

Table 6.26

North America: Firm Performance – Multinationality Relationship

	Foreign Sales Percentage	Triad Model	ABHK Model
Return on Assets			
Return on Equity			
Total Return Index			

*** Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00**

Table 6.27

Oceania: Average Incremental Statistical Analysis of Multinationality Measures											
		Outcome Variables			Control Variables			Explanatory Variables			Size Robustness
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Dataset Average	**954**	**7.16%**	**14.98%**	**1.15**	**76.35**	**38.84%**	**$12,028**	**26.18%**	**6.01**	**2.02**	**16,520**
Panel A: Foreign Sales as a Percent of Net Sales											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	ABHK	Triad	Employee Count
Domestic	321 (33.7%)	6.75%	12.44%	1.13	70.49	35.64%	$3,717	-	2.89	1.00	9,039
0-10%	110 (11.5%)	7.05%	16.23%	1.04	80.45	39.48%	$17,656	$878	6.50	2.01	38,882
10-20%	117 (12.3%)	5.35%	14.26%	1.17	82.79	44.41%	$23,493	$4,128	6.99	2.22	20,234
20-50%	189 (19.8%)	5.63%	14.12%	1.20	78.28	45.00%	$8,689	$2,072	7.28	2.04	17,940
50-75%	88 (9.2%)	8.42%	16.58%	1.21	86.20	39.63%	$10,685	$3,065	8.60	3.20	15,196
75-100%	129 (13.5%)	11.31%	21.04%	1.17	72.04	31.64%	$23,319	$7,610	8.85	3.53	11,520
Panel B: Triad Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	ABHK	Employee Count
Domestic	321 (33.7%)	6.75%	12.44%	1.13	70.49	35.64%	$3,717	-	0.00%	2.9	9,039
Home Region	433 (45.4%)	6.17%	15.12%	1.15	77.58	43.34%	$13,844	$1,816	25.19%	7.0	23,201
Bi-Regional	107 (11.2%)	10.25%	18.84%	1.13	89.21	37.14%	$20,334	$6,305	68.61%	9.2	14,951
Host Region	48 (5.0%)	9.17%	16.89%	1.18	75.29	31.07%	$24,157	$8,340	72.35%	8.1	13,077
Global	45 (4.7%)	10.12%	20.45%	1.34	76.84	30.73%	$21,156	$8,030	72.30%	9.5	13,002
Panel C: ABHK Category											
	FYO Total	ROA	ROE	RI	Age	Leverage	Market Capitalization	Foreign Sales	FS%	Triad	Employee Count
Domestic	194 (20.3%)	6.56%	11.24%	1.11	70.88	36.69%	$2,531	-	0.00%	1.00	4,449
2 (RT-DI)	18 (1.9%)	5.06%	16.52%	1.16	45.83	58.24%	$20,947	$2,993	24.84%	2.11	19,714
3 (TT-DI)	89 (9.3%)	6.86%	13.59%	1.18	73.71	39.11%	$7,629	$1,315	31.31%	2.25	15,372
4 (DT-RI)	54 (5.7%)	8.55%	16.93%	1.28	68.57	31.99%	$4,026	-	0.00%	1.00	20,686
5 (RT-RI)	22 (2.3%)	7.39%	18.47%	1.24	77.82	25.85%	$7,089	$1,164	30.09%	2.14	23,401
6 (TT-RI)	67 (7.0%)	9.12%	17.24%	1.25	60.94	34.62%	$4,195	$471	37.87%	2.37	5,282
7 (DT-TI)	72 (7.5%)	5.94%	12.10%	1.10	71.33	34.76%	$6,493	-	0.00%	1.00	12,656
8 (RT-TI)	105 (11.0%)	5.88%	18.18%	1.14	92.57	53.09%	$29,711	$2,224	14.47%	2.06	45,407
9 (TT-TI)	299 (31.3%)	7.41%	15.19%	1.14	78.07	37.61%	$9,944	$3,251	48.97%	2.79	14,363
10 (GT-DI)	2 (0.2%)	11.85%	29.80%	1.45	132.50	43.65%	$96,496	$12,510	55.87%	3.00	42,359
11 (GT-RI)	1 (0.1%)	24.69%	49.89%	1.13	146.00	26.94%	$128,081	$28,375	89.09%	5.00	33,184
12 (GT-TI)	10 (1.0%)	9.27%	19.79%	1.14	130.50	36.50%	$45,032	$12,814	53.26%	2.80	45,016
13 (DT-GI)	1 (0.1%)	3.38%	28.22%	1.00	38.00	90.45%	$17,029	-	0.00%	1.00	10,023
14 (RT-GI)	1 (0.1%)	2.30%	22.14%	1.11	189.00	82.84%	$31,184	$3,112	19.35%	2.00	27,224
15 (TT-GI)	8 (0.8%)	9.32%	21.12%	1.05	91.38	43.17%	$60,384	$22,637	88.66%	3.13	29,948
Global (GT-GI)	11 (1.2%)	12.54%	25.19%	1.22	120.82	42.71%	$128,184	$38,474	83.60%	3.91	33,592

***ABHK Categories are listed on the left with the level of trading abbreviated on the left: DT (Domestic Trading), RT (Regional Trading), TT (Trans-Regional Trading), GT (Global Trading), and level of investment abbreviated on the right: DI (Domestic Investing), RI (Regional Investing), TI (Trans-Regional Investing), and GI (Global Investing). Market Capitalization, Net Sales, and Foreign Sales are rounded to millions of USD. FYO (Firm-Year Observations).**

Table 6.28

Oceania: Firm Performance – Multinationality Relationship

***Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00.**

Overall, South American and African firms measure a positive P-M relationship, but these groupings have 4.2 percent global FYO's and 0.4 percent firms are global in trading, as seen in African and South American groupings respectively. This lack of global firms for these groupings is due to the ABHK requirement to have subsidiaries in all six geographic regions. Using this measure, these firms can be place in stage two of the three stage S-shaped P-M relationship model. From the remaining four groupings, the P-M relationship is negative for the majority of the regression estimations.

6.5.4 Size Variable Robustness Test

To test the robustness of model for each of the six groupings, market capitalization is replaced with total employee count as this measure produced significant results for the EM grouping in section 6.4.3 of this chapter. Table 6.29 outlines the results of the Hausman test and African and South American groupings of firms both apply random effects while the remaining four groupings apply fixed effects. This is the same result when market capitalization is used as the measure of firm size.

Table 6.29

Hausman Test: Total Employee Count Variable						
	ABHK		Triad		FS	
	Africa					
Outcome Variables	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	4.25	0.3730	4.77	0.3118	3.54	0.4723
LnROA	6.01	0.1982	4.03	0.4014	6.67	0.1544
LnROE	4.83	0.3047	2.93	0.5697	2.01	0.7348
	Asia					
	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	49.80	0.0000	50.93	0.0000	51.04	0.0000
LnROA	37.97	0.0000	38.00	0.0000	34.87	0.0000
LnROE	64.83	0.0000	44.80	0.0000	44.39	0.0000
	Europe					
	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	61.87	0.0000	62.08	0.0000	61.71	0.0000
LnROA	92.88	0.0000	101.04	0.0000	105.73	0.0000
LnROE	79.10	0.0000	76.56	0.0000	74.78	0.0000
	North America					
	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	84.10	0.0000	77.71	0.0000	80.84	0.0000
LnROA	91.96	0.0000	106.43	0.0000	98.08	0.0000
LnROE	110.27	0.0000	117.18	0.0000	107.08	0.0000
	Oceania					
Outcome Variables	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	21.28	0.0003	21.79	0.0002	21.80	0.0002
LnROA	19.03	0.0008	16.07	0.0029	16.49	0.0024
LnROE	12.86	0.0120	13.77	0.0081	13.94	0.0075
	South America					
	Chi^2	Probability	Chi^2	Probability	Chi^2	Probability
LnRI	1.20	0.8784	1.19	0.8799	1.18	0.8816
LnROA	1.26	0.8673	1.20	0.8785	1.19	0.8794
LnROE	1.95	0.7458	2.70	0.6091	2.00	0.7350

***Chi^2 that is greater than the critical value results in a rejection of the null hypothesis. This is also the case when the P-value is greater than five percent.**

Table 6.30 provides the regression results for each geographic regional grouping of firms. African firms have a significantly positive relationship with firm performance when measured by ROA, but this relationship is negative when performance is measured using RI. Market capitalization's relationship

with firm performance for African firms is significantly positive with a much higher coefficient than total employee count. Total employee count as the measure of firm size does not produce a probability statistic greater than five for the unit root test. The variables of the model are not taken at their first difference and from the DW statistic for the African grouping in Table 6.16 and Table 6.30, total employee count as the variable of firm size leaves only the RI measure of performance to be reliable. Overall, the regression estimation is more accurate when using market capitalization.

Table 6.30

Robustness Test with Total Employee Count									
Africa									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.30[4]	0.30[4]	0.29[4]	-1.64[4]	-1.67[4]	-1.65[4]	-1.88[4]	-1.87[4]	-1.89[4]
Lnemp	**-0.02[2]**	**-0.01[2]**	**-0.01[2]**	**0.06[2]**	**0.06[2]**	**0.06[2]**	**0.01**	**0.01**	**0.01**
Leverage	-0.01[1]	-0.01[1]	-0.01[1]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01	-0.01	-0.01
Lnage	0.01	0.01	0.01	-0.04	-0.03	-0.04	0.03	0.03	0.03
Multi.	-0.01	-0.02	-0.05	0.03	0.01	0.04	-0.01	0.01	-0.05
Observations	1,274	1,274	1,274	1,254	1,254	1,254	1,221	1,221	1,221
R^2	0.01	0.01	0.01	0.04	0.03	0.03	0.01	0.01	0.01
Adjusted R^2	0.01	0.01	0.01	0.03	0.03	0.03	-0.01	-0.01	-0.01
F-Statistic	2.86	3.05	3.17	11.33	11.14	11.25	0.19	0.20	0.22
Durbin-Watson	1.75	1.75	1.75	1.00	1.00	1.00	1.05	1.05	1.05
Asia									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.36[2]	0.42[2]	0.42[2]	-3.13[4]	-3.14[4]	-2.98[4]	-2.95[4]	-2.98[4]	-2.90[4]
Lnemp	**-0.09[4]**	**-0.09[4]**	**-0.09[4]**	**0.06[3]**	**0.06[3]**	**0.06[2]**	**0.02**	**0.02**	**0.02**
Leverage	0.01[4]	0.01[4]	0.01[4]	-0.02[4]	-0.02[4]	-0.02[4]	-0.01[4]	-0.01[4]	-0.01[4]
Lnage	0.12[3]	0.11[2]	0.11[2]	-0.01	-0.01	-0.04	-0.21[3]	-0.22[3]	-0.20[3]
Multi.	-0.03[2]	0.01	0.01	-0.04	-0.07	0.04	-0.01	-0.04	-0.04
Observations	4,730	4,730	4,730	4,378	4,378	4,378	4,238	4,238	4,238
R^2	0.04	0.04	0.04	0.68	0.68	0.68	0.50	0.50	0.50
Adjusted R^2	-0.02	-0.02	-0.02	0.66	0.66	0.66	0.46	0.46	0.46
F-Statistic	0.73	0.72	0.72	32.33	32.32	32.30	14.56	14.56	14.56
Durbin-Watson	2.35	2.35	2.35	1.23	1.23	1.23	1.10	1.10	1.10
Europe									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.06	0.05	0.07	-3.25[4]	-3.24[4]	-3.28[4]	-2.47[4]	-2.47[4]	-2.55[4]
Lnemp	**-0.07[4]**	**-0.07[4]**	**-0.07[4]**	**-0.08[4]**	**-0.08[4]**	**-0.08[4]**	**-0.09[4]**	**-0.09[4]**	**-0.08[4]**
Leverage	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[2]	-0.01[2]	-0.01[2]	-0.01[2]	-0.01[2]	-0.01[2]
Lnage	-0.15[4]	-0.15[4]	-0.15[4]	-0.23[4]	-0.23[4]	-0.24[4]	-0.28[2]	-0.28[4]	-0.30[2]
Multi.	0.01	0.01	0.03	-0.02	-0.04	-0.15[3]	-0.02	-0.03	-0.21[4]
Observations	8,096	8,096	8,096	7,601	7,601	7,601	7,367	7,367	7,367
R^2	0.04	0.04	0.04	0.57	0.57	0.57	0.34	0.34	0.34
Adjusted R^2	-0.02	-0.02	-0.02	0.54	0.54	0.54	0.29	0.29	0.29
F-Statistic	0.72	0.72	0.72	20.31	20.31	20.34	7.55	7.55	7.58
Durbin-Watson	2.08	2.08	2.08	1.13	1.13	1.13	1.12	1.12	1.12
North America									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**

	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS	LnABHK	LnTriad	FS
Constant	0.53[4]	0.51[4]	0.53[4]	-2.25[4]	-2.23[4]	-2.18[4]	-1.61[4]	-1.58[4]	-1.52[4]
Lnemp	**-0.09[4]**	**-0.09[4]**	**-0.09[4]**	**-0.08[4]**	**-0.08[4]**	**-0.08[4]**	**-0.11[4]**	**-0.12[4]**	**-0.12[4]**
Leverage	-0.01[2]	-0.01[2]	-0.01[2]	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Lnage	0.11[4]	0.11[4]	0.11[4]	-0.06	-0.05	-0.05	-0.21[4]	-0.21[4]	-0.20[4]
Multi.	0.01	0.01	0.03	-0.03[2]	-0.05	-0.01	-0.02	-0.04	-0.05
Observations	7,824	7,824	7,824	7,397	7,397	7,397	7,223	7,223	7,223
R^2	0.05	0.05	0.05	0.63	0.63	0.63	0.33	0.33	0.33
Adjusted R^2	-0.01	-0.01	-0.01	0.60	0.60	0.60	0.29	0.29	0.29
F-Statistic	0.81	0.80	0.80	26.40	26.39	26.37	7.67	7.67	7.66
Durbin-Watson	2.24	2.24	2.24	1.18	1.18	1.18	1.21	1.21	1.21
Oceania									
	LnRI			**LnROA**			**LnROE**		
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	0.99[4]	1.12[4]	1.11[4]	-1.69[3]	-1.34[3]	-1.49[3]	-0.92	-0.48	-0.60
Lnemp	**-0.07[3]**	**-0.08[3]**	**-0.08[3]**	**0.07**	**0.10[2]**	**-0.09[1]**	**0.05**	**0.02**	**0.03**
Leverage	-0.01[3]	-0.01[3]	-0.01[3]	-0.01[4]	-0.01[4]	-0.01[4]	0.01	0.01[1]	0.01
Lnage	-0.02	-0.05	-0.05	-0.06	-0.14	-0.09	-0.37[2]	-0.46[2]	-0.44[2]
Multi.	-0.03	-0.01	-0.01	-0.01	0.21[3]	0.21[1]	-0.05	0.12	0.09
Observations	937	937	937	910	910	910	877	877	877
R^2	0.05	0.05	0.05	0.62	0.62	0.62	0.35	0.35	0.35
Adjusted R^2	-0.01	-0.01	-0.01	0.60	0.60	0.60	0.31	0.31	0.31
F-Statistic	0.91	0.88	0.88	24.87	25.22	25.01	7.90	7.93	7.88
Durbin-Watson	2.11	2.11	2.11	1.27	1.29	1.28	1.04	1.06	1.05
South America									
	DLnRI			**DLnROA**			**DLnROE**		
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	0.03	0.03	0.03	-0.03	-0.04	-0.04	-0.06[2]	-0.07[2]	-0.07[2]
DLnemp	**-0.22[3]**	**-0.22[3]**	**-0.22[3]**	**0.07**	**0.07**	**0.07**	**0.18**	**0.18**	**0.18**
DLeverage	-0.01[1]	-0.01[1]	-0.01[1]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[2]	-0.01[2]	-0.01[2]
DLnage	0.43	0.42	0.42	-0.10	-0.10	-0.10	-0.36	-0.36	-0.33
Multi.	0.07	0.02	0.02	0.04	0.11	0.07	-0.01	-0.01	0.38[1]
Observations	1,326	1,326	1,326	1,235	1,235	1,235	1,073	1,073	1,073
R^2	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.02
Adjusted R^2	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01
F-Statistic	3.07	2.86	2.85	6.24	6.49	6.20	3.24	3.24	4.13
Durbin-Watson	2.90	2.90	2.90	2.60	2.60	2.60	2.01	2.01	2.00

***Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00. Multinationality is abbreviated Multi.**

Market capitalization for South American firms, as is the case for African firms, also suffers from serial correlation but this is true for total employee count. The P-M relationship is similar when market capitalization is used as the size variable. A more significant relationship between FS and ROE is observed for market capitalization compared to total employee count as the size variable. Like African firms, the relationship is significantly positive between size and firm performance across all measures for South American firms while total employee count produces a negative relationship with RI as the measure of performance. European and North American firms show a negatively significant relationship between total employee count and performance while market capitalization produced a significantly positive relationship. The overall estimation of the model is more accurate when using market capitalization versus total employee count, as the P-M relationship is significant across all nine

regressions while total employee count produces two significant P-M relationships for European firms, and one for North American firms. Asian and Oceanic firms show similar results when total employee count is used as the variable for firm size as there is no change in the results of the regression estimations. Both regions show a negative relationship between firm size and performance when RI is the measure of performance and the relationship is positive when ROA and ROE is used. The significance of the relationship is greater for market capitalization when compared to total employee count.

6.6 Conclusion

In this chapter I performed a regression analysis of the balanced panel dataset leading to accepting or rejecting three hypotheses of the P-M relationship, outlined in section 6.2. The 1,377 firm dataset is divided into 1,106 AM firms, and 271 EM firms and section 6.3 describes each groupings tested variables, tests those variables for correlations and serial correlation, and determines whether fixed or random effects are applied to the model estimation. Section 6.4 discusses the results of the regression for each grouping and this process is followed again in section 6.5 as the dataset is separated into the six geographic continents: Africa, Asia, Europe, North America, Oceania, and South America.

EM firms from 11 countries are on average, 37 years old in 1998 and 55 years in 2015. This is 23 years younger than AM firms that originate from eight countries. EM firms are also smaller as measured by market capitalization and total employee count averages, as well less multinational across all three measures of multinationality when compared to AM firms. The regression estimation produced a positive P-M relationship for EM firms, with the exception of ABHK as the multinationality measure and RI or ROA as the performance measure. With RI producing the closest DW statistic to 2.00, the P-M relationships are most reliable using this performance measure. The conclusion of this P-M relationship is AM firms' performance increases when FS are in the 75-100 percent range, and this result is also observed when the multinational scores are in the host-region Triad category, and the global trading category of the ABHK model. Multinational declines for both the Triad and ABHK models as firms enter the global categories, producing an overall inverted U-shape P-M relationship, as seen in previous studies by Qian et al. (2008) and Yang and Driffield (2012). The P-M relationship is not measured to be significant for EM firms across all nine iterations of the model. During the first robustness test in section 6.4.3, the regression is estimated with total employee count used as the size variable. AM firms show similar P-M relationships with either market capitalization or employee

count as the size measure, but EM firms produce a difference in regression estimations. Market capitalization for EM firms suffers from serial correlation and the variables are taken at their first difference. This is not the case for total employee count, resulting in the P-M relationships to be significant, as seen in recent EM P-M relationship literature by Clegg et al. (2016) who analyzed 261 Chinese firms from 1991-2011. When measured by FS as the multinationality measure, the P-M relationship is U-shaped while the ABHK and ROE combination show an S-shaped P-M relationship. As a second robustness test, a sub-period analysis, is performed with the 2007-09 sub-period producing a very high level of negative serial correlation for RI and ROA. The results for ROE as a measure of performance show a significantly negative P-M relationship for both AM and EM firms, however, from 2010-15 (post-crisis), the P-M relationship is negligible with firm size and age both measuring significantly positive to firm performance. Financial leverage, like multinationality, is negligible as seen in previous research by Hossain and Nguyen (2016).

The P-M relationship when measured for each geographic continent, produces unique results. African and South American firms have a significantly positive P-M relationship, taking a U-shape when measured by the Triad model. The ABHK relationship formed a negative S-shape is observed with declines in performance as firms invest abroad to all six geographic regions which is only the case for African firms as no South American firms are global due to a lack of geographic breadth in their investments abroad. When these groupings of firms sell and invest outside of their home continent, South American firms move to North America first while African (South African) firms move to Europe as recently seen in EM P-M literature by Boso, Adeleye, Ibeh, and Chizema (2019). Both of these groupings of firms have the lowest levels of multinationality and can be identified as being in the second stage of internationalization as measured by the ABHK model, with the final stage required presence in all six geographic regions from a trading and investing perspective. Firms from Oceania (Australia) have the highest proportion of FYOs in the trans-regional ABHK category which is not surprising as the Oceania region has the least number of countries of all the geographic regions. This results in an earlier move to other countries outside the home region compared to firms from other continents, and this move is typically to Asian countries as identified in previous studies by Maitland and Nicholas (2002), or European countries as identified by Merrett (2002) with his coverage of the Australian banks internationalization to London. However, Australian firms expand to North America more than any other region from 2010-15. The results from the Triad regions of North America, Europe, and Asia estimate the P-M relationship to be significantly negative and the performance

measure that best fits the model is RI. North American and European firms increase in performance as FS reaches 75-100 percent but declines in performance are evident when multinationality is measure by the ABHK model, creating an S-shape or inverted U-shape to the P-M relationship as firms move into the global category. Asian firms are generally performing better at high levels of FS as seen in the FS and host-region Triad categories. Performance, when measured by the ABHK model, is highest at the domestic and regional levels, signifying Asian firms have significantly negative performance when investing abroad to countries outside of their home Triad region.

From these results, I can accept hypothesis iii): Firms from all geographic regions measure a significant P-M relationship, with the addition of total employee count used as the measure of firm size when measuring firms from South America and Africa. The final chapter of my thesis culminates the findings of my thesis, describes the additions that are made to the IB, P-M, and EM P-M literatures, and presents possible areas for future research.

Chapter 7
Conclusion

7.1 Introduction

My research measures the multinationality of firms comprising eight advanced market (AM) countries (Australia, Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) of the 26 possible AMs, and 11 emerging market (EM) countries (Argentina, Brazil, China, Colombia, the Czech Republic, Hungary, India, Poland, Russia, Slovakia, and South Africa) of a possible 22 EMs, as defined by the FTSE group in 2015, thus building on current AM and EM multinationality literatures. My dataset contains 2,427 firms, taken from each country's benchmark national stock-market index which were members at any time during the sample period. I use firm level geographic sales and subsidiary location data to first measure the multinationality of each firm using the Triad and ABHK multinationality models. With these results, I identify each firms' multinationality score for every year of my time period and additional firm level data is collected; foreign sales as a percent of total sales (FS), market capitalization, return on equity (ROE), return on assets (ROA), total return index (RI), firm age, firm total employee count, and financial leverage for a total 271 EM and 1,206 AM firms. With this balanced panel dataset that contains multinationality firms from all continents of the world, my findings build on current international business (IB) literature and more specifically, the relationship between a firms' performance and multinationality.

The uniquely international nature of my dataset, containing hand-collected subsidiary data, provides me with the ability to conduct a global analysis of two topics in IB literature that have produced ambiguous results. Firstly, how can multinationality be measured accurately for firms and secondly, as a firms' level of multinationality changes over time, is there an effect on the firms' performance. This first IB topic of measuring a firms' multinationality has been traditionally measured using FS and since the 1980's, a categorical model was introduced based on three of the major economic centers in the world, this model being the Triad model proposed by Alan Rugman. Rugman and his co-authors use the Triad model to measure the multinationality of firms from these Triad regions using the Fortune 500 listing of firms. As firms trade and invest in more and more countries, especially EM regions, the Triad model fails to capture this international growth. The ABHK model, introduced in 2008, does capture this internationalization due to the categories of this model being derived from the continently division of the world. The differences of these models when measuring the multinational of firms is outlined in chapter four of my thesis, putting forward an answer to my first

research question; To what degree are publicly traded companies becoming more or less multinational over time? Chapters five and six measure the performance-multinationality (P-M) relationship by using a regression analysis and incorporating firm characteristics that have been proven to be factors that affect multinationality. As outlined in chapter three's literature review, a wide range of research on the topic of P-M exists and there is no consensus on what measure for both variables is most appropriate. My second research question "What relationship/s exists, if any, between a firms' performance and their level of multinationality?" determines whether or not the performance and multinationality measures play a significant role in determining the P-M relationship. This relationship is analyzed, using a balanced panel dataset of 1,377 firms, from an industry sector perspective, an AM versus EM perspective, and finally, a continent-based regional perspective. By using three measures of firm performance and three measures of multinationality, a variety of P-M relationships are produced, ranging in significance, sign, and overall linear shape, thus leading to the conclusion that the P-M relationship varies depending on how performance and multinationality are measured. This brings my thesis to the final chapter which sets out to analyze how the P-M relationship varies among advanced and emerging market, Triad and non-Triad firms.

The remainder of the chapter is structured as follows. Section 7.2 discusses my main findings on the topic of firm-level multinationality. Section 7.3 describes the P-M relationship of 1,377 firms that provide full data for all 18 years of my sample period. This section also details the relationship a firms' age, size and financial leverage plays in the P-M equation while also providing insight the influence of industry on the P-M relationship. Section 7.4 compares the P-M relationship between AM and EM firms along with a geographic-based comparison, thus utilizing the international nature of the dataset and contributing to the P-M literature.

7.2 Multinationality Model Debate

My thesis first investigates whether or not firms are becoming more multinational using two categorical-based multinationality models. By conducting a longitudinal analysis of firm level multinationality over the 18-year period from 1998-2015, substantial differences in the models are highlighted. The process of measuring a firms' multinationality is until recently (Mullen and Berrill, 2015; and O'Hagan Luff and Berrill, 2016), an area of IB that is predominately comprised of research using firms from the Fortune 500 listing at a static point in time. I use two models to measure multinationality of 2,427 firms from eight AM countries, and 11 EM countries, progressing the

literature on multinationality and more specifically, EM firm level internationalization by providing a longitudinal analysis of firm, country, and industry level multinationality.

Multinationality for AM firms become more multinational based on their average yearly Triad score. One exception is firms from the United Kingdom who collectively decline in multinationality from 2007-15. EM firms show increases and decreases in multinationality from 1998-2001, and from 2007-15 the trend is consistent with multinational scores increasing when using the Triad model and ABHK model. The Triad model is a representation of trading activity alone and with the irrefutable restrictions of the Triad model, it is possible for firms with sales and subsidiaries located in multiple countries across multiple continents to be classified as home region, or not classified at all. The ABHK model measures firms from India and China to average higher subsidiary multinationality scores than sales scores, identifying a pattern of investing abroad, then trading abroad. This pattern of internationalization contradicts the three-pronged stages theory of how firms become internationalized, seemingly skipping stage one and the liability of foreignness that comes with "early internationalizers" (Contractor et al., 2003). This first stage typically brings many hurdles for a firm to overcome, resulting in the cost of expansion to exceed the benefits or revenues. As a result, in stage one, the effect of international expansion on such a company's financial performance is negative. Firms from these countries, and EMs of my dataset, generally exhibit born global characteristics (Gleason et al., 2006) with the greater number of countries the firm enters, the better the overall performance of the firm. This internationalization method is not apparent from the Triad model due to the singular measure of the model, sales geographic location. From an industry analysis, firms from the Utilities sector are collectively the least multinational using all measures of multinationality while firms from the Technology sector are the most multinational.

To conclude, the Triad and ABHK models show increases in multinationality and more specifically, for EM firms, this is identified from 2004-06 which may be attributed to the Visegrád countries, the Czech Republic, Hungary, Poland, and Slovakia, joining the European Union (2015). EM firms show clear patterns of regional internationalization throughout the 18-year period as measured by the high percentage of non-domestic firms' year after year, agreeing with Hoskisson et al.'s (2013) findings for Hungarian and Polish firms. EM firms prove to be majority home region-based in their trading and investments. However, growth in sales and subsidiaries outside of the Triad regions is evident, thus making the Triad model less effective in measuring firm level multinationality in this increasingly global environment. Couple this with the evidence of geographic proximity influencing the decision of

firms to trade and invest abroad, the use of a multinational measure that includes all inhabitable regions is substantiated. My results provide support for chapter four's hypothesis ii): Firms are consistently regional-based in their operations over time, with growth in multinationality to other regions. Overall, existing theories have some relevance, but many firms operate outside conventional internationalization patterns. My thesis now examines whether or not a firms' performance is impacted by their level of multinationality.

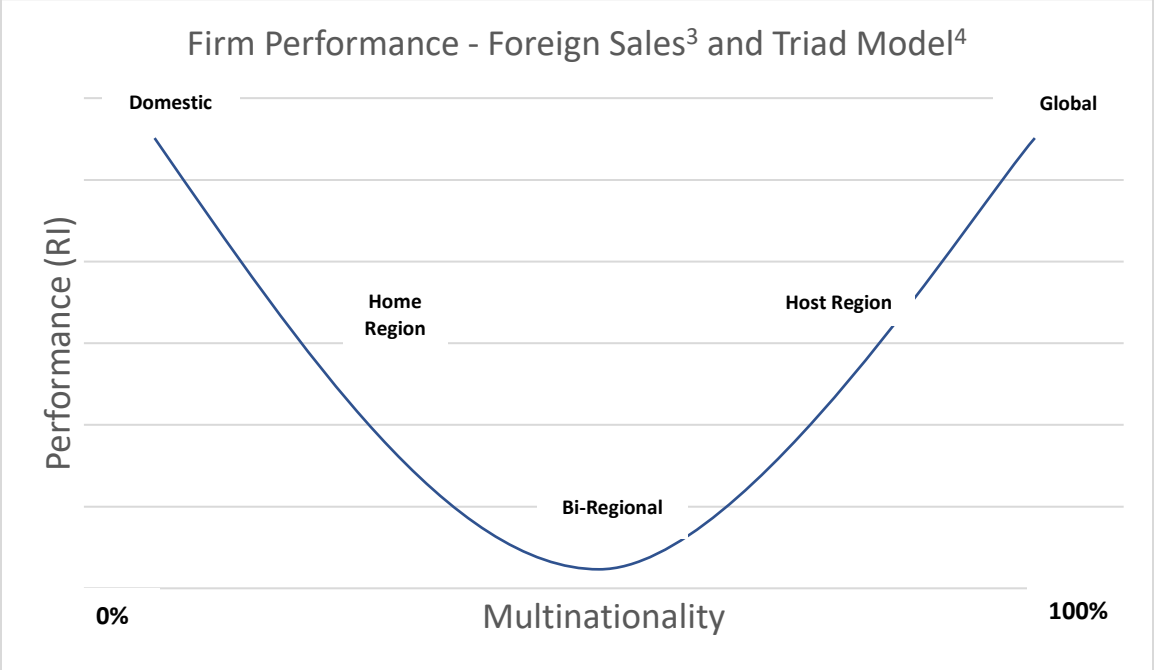
7.3 Firm Performance-Multinationality

Following the conclusions from chapter four, I perform a linear progression of the P-M relationship followed by a regression analysis of the 1,377 firm balanced panel dataset, leading to accepting or rejecting three commonly tested hypothesis of the P-M relationship. Hypothesis i): Higher levels of multinationality are associated with positive increments in firm performance. Hypothesis ii): Higher levels of multinationality are associated with negative increments in firm performance. Hypothesis iii): Firm performance and multinationality show no significant relationship. By graphing the linear progression of the P-M relationship, I identify nine P-M relationships, three of which are S-shaped, supporting previous studies by Babillo et al. (2010) who measures 1,500 manufacturing firms from 1991-2001, Serrano et al. (2015) who measures 189 agri-food exporting firms from 1994-2012, and Benito-Osorio et al. (2016) who measures 1,371 exporting and large manufacturing firms from 1994-2008. One of the observed relationships is W-shaped as previously identified by Fernandez-Olmos (2016) who studied 526 Spanish manufacturing firms from 2006-11 and two of the observed relationships are inverted S-shaped as seen in the research performed by Shin et al. (2017) on 1,082 micro-multinational firms from 2005-12. One P-M relationship is observed to be M-shaped, as previously identified by Almodóvar and Rugman (2014) who observed 100 manufacturing firms from 1994-2008, and another relationship identified as linear positive, agreeing with findings by Zahra et al. (2000), who analyzed 1,388 firms in 1993, and Ramirez-Aleson (2001), a study of 103 non-financial firms from 1991-95. To conclude, one P-M relationship is identified as U-shaped as previously identified by Lu and Beamish (2001), who analyzed the P-M relationship of 164 Japanese firms from 1986-1997.

The regression analysis is initiated with verification of each variable used in my model by linking past and recent firm performance literature to each variable. Of the nine observed relationships, three are identified by the regression to be statistically significant without bias due to serial correlation based on the Durbin Watson (DW) statistic. When the relationship is measured using RI as the performance

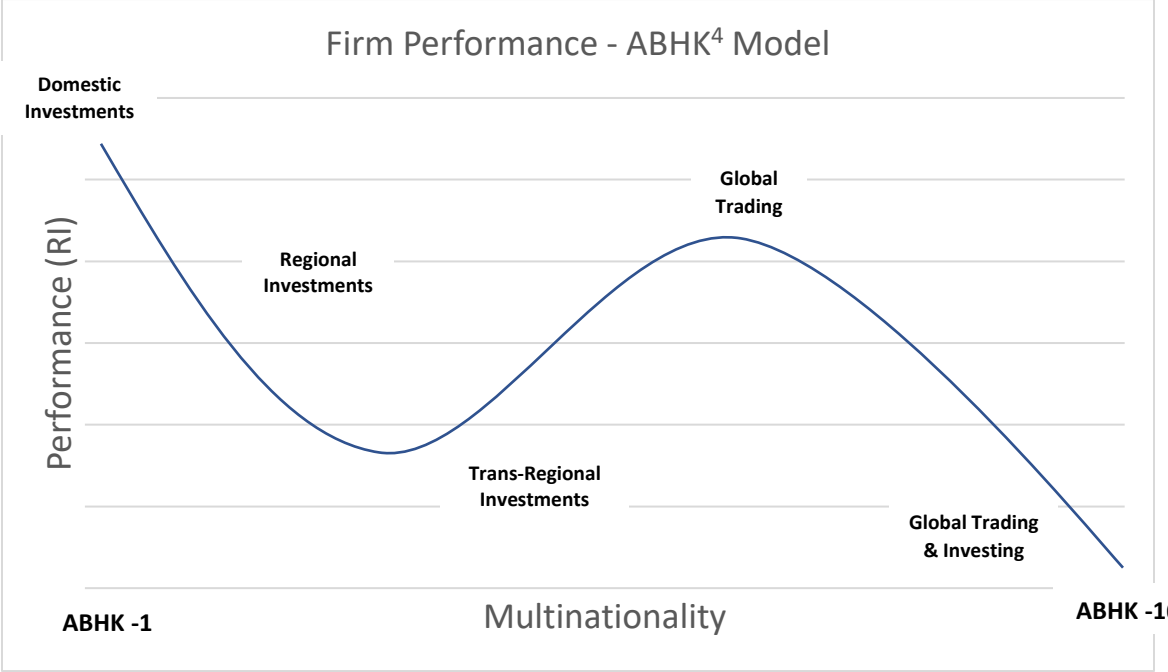
measure, the Triad model and FS identify the relationship between P-M to be U-shaped, with a statistically significant (Triad model more significant than FS) coefficient of -0.05 as seen in Figure 7.1. When the P-M relationship is measured using the ABHK model, a S-shaped relationship takes shape, and the result is statistically significant with a coefficient of -0.02 as seen in Figure 7.2.

Figure 7.1



***The x-axis is made of both foreign sales percentage and the five Triad model categories while performance is measured by RI as this performance measure produced a DW statistic of 2.23. The significance level of each multinationality variable is identified by using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001.**

Figure 7.2



***With performance being measured by RI, the P-M relationship is S-Shaped. The significance level of the ABHK score as a measure of multinationality is identified by using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001.**

These findings agree with Contractor et al.'s (2003) three stage model of international expansion. The first stage includes an initially negative effect of international expansion on performance shown by a U-shaped relationship due to the costs of moving from the domestic category, to the next multinational category. This is followed by a second stage of further internationalization with positive effects on performance represented by an increase in multinationality where benefits of international expansion are now realized (Contractor, 2012). The third stage witnesses the highest measurable levels of multinationality, bringing a negative impact on performance shown by an inverted U-shaped P-M relationship, which suggests that international expansion beyond an optimal level brings lower measured levels of performance. This third stage is apparent across all three performance measures when using the ABHK model as a clearly defined drop in performance is witnessed when moving from trans-regional to global in investing. This conclusion allows for an acceptance of chapter fives hypothesis ii): Higher measurements of multinationality are associated with varying negative increments in firm performance, when performance is measured using RI and multinationality is measured using FS and the Triad model. This hypothesis is also true when multinationality is measured using the ABHK model but to be more specific, performance increases when trading increases but

performance decreases when investing increases, thus creating a continuation of the U-shape to form an S-shape P-M relationship.

Subsidiary count has been a common measure of multinationality in the P-M literature, most notable from chapter three's accumulation of the most cited literature, Contractor et al. (2003) who measured 149 firms from the United States and Europe, and Lu and Beamish (2004) who measure 1,498 Japanese firms, both using subsidiary country count, resulting in S-shaped P-M relationships. I argue this method of measuring multinationality is not particularly strong when comparing firm multinationality across multiple continents as the number of countries in close geographic proximity is vastly different from continent to continent. This measure would be advantageous for firms that originate from Africa, Asia, or Europe versus North America, Oceania, and South America, due to the country count more than doubling (See Table 7.1).

Table 7.1

Continent Comparison			
	Total Countries	**Kilometers^2**	**2020 Population**
Africa	54 (17.20%)	44.24	1,340,598,147
Asia	48 (59.54%)	104.11	4,641,054,775
Europe	44 (9.59%)	33.78	747,636,026
North America	23 (4.73%)	14.93	368,869,647
Oceania	14 (0.55%)	5.03	42,677,813
South America	12 (5.53%)	24.15	430,759,766
Total	**195**	**226.24**	**7,571,596,174**

***KM^2 is rounded to millions. Data taken from United Nations (2019) Department of Economic and Social Affairs, Population Division. World Population Prospects.**

As more firms trade and invest abroad, a standardize measure of multinationality is warranted as the P-M relationship itself will change in both shape and the sign of the relationship (positive or negative), as seen in previous literature and from chapter five's regression estimation. Firm performance is also a decision that has split researchers as the majority of IB literature uses accounting-based measures of firm performance instead of market-based. Accounting-based measures can have weaknesses due to potential managerial manipulation with profitability, and changes in accounting systems (Morck and Yeung 2009). Furthermore, these measures are a representation of past activities and unable to capture the firms' strategy manifested in its expected future profitability. More recent research has used market-based measures of performance such as Tobin's Q and Total Return Index, the latter has produced a more accurate regression estimation for my dataset as a whole.

Firm size has a significantly positive relationship with performance when measured by market capitalization while employee count does not produce the same result as seen in the robustness test. The age of a firm measures a significantly negative relationship but only when using ROE as the performance measure as RI and ROA do not show any significance in this variable with the P-M relationship. Financial leverage is significant, but the coefficient is a negative 0.01, indicating a near zero significance. From an industry perspective, firms in the Basic Materials and Consumer Goods sectors estimate a significantly positive P-M relationship when using ROE and FS as the outcome and explanatory variables.

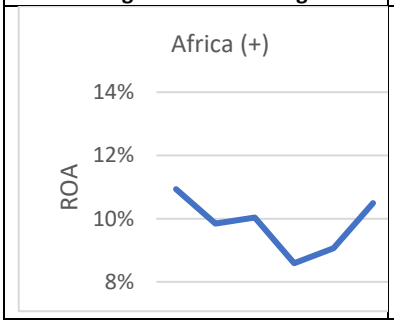
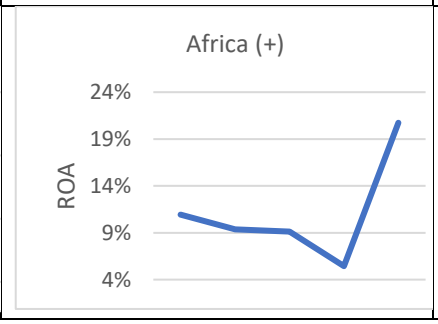
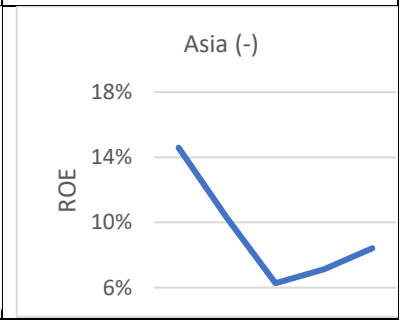
7.4 Firm Performance-Multinationality by Groupings

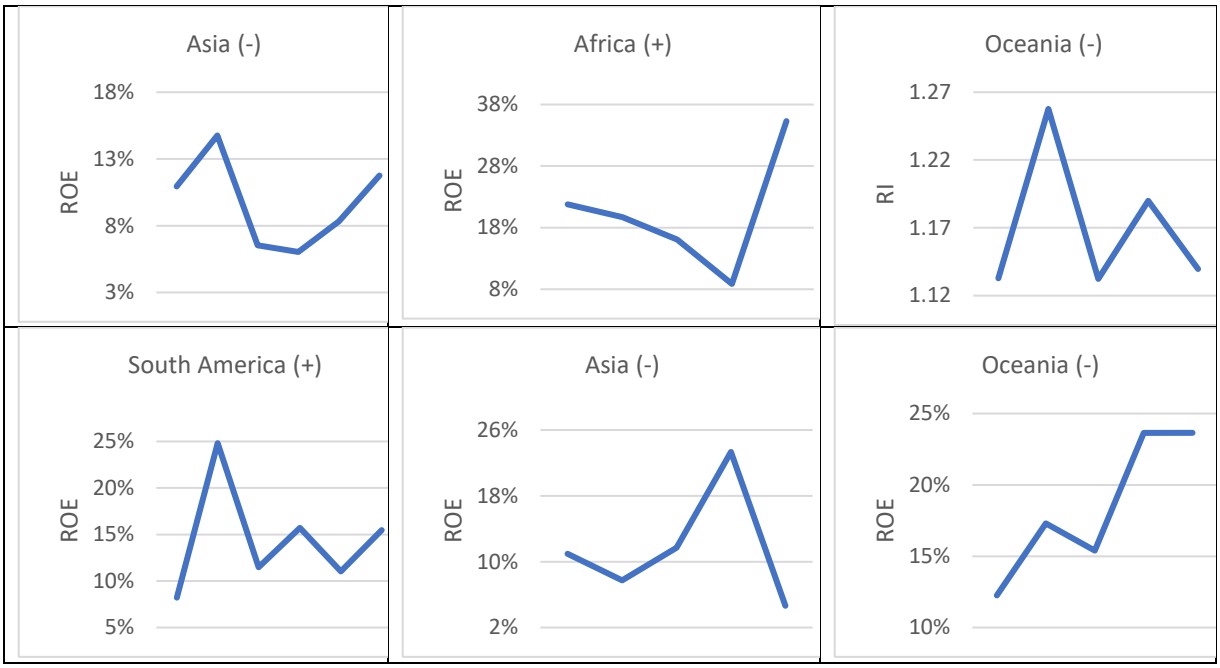
The regression estimation produces a positive P-M relationship for EM firms, with the exception of ABHK as the multinationality measure and RI or ROA as the performance measure. With RI producing the closest DW statistic to 2.00, the P-M relationships are most reliable, and the conclusion of this relationship is AM firms' performance increases when FS are in the 75-100 percent range and this result is also seen in the multinational scores being the highest in the host-region Triad category, and the global trading category of the ABHK model. Multinational declines for both the Triad and ABHK models as firms enter the global categories, producing an overall inverted U-shape, as seen in previous studies by Qian et al. (2008) and Yang and Driffield (2012). The P-M relationship is not measured to be significant for EM firms across all nine iterations of the model. During the first robustness test in section 6.4.3, the regression is estimated with total employee count as the firm size variable. AM firms show similar P-M relationships with either market capitalization or total employee count as the size measure, but EM firms produce a difference in regression estimations. Market capitalization for EM firms suffer from serial correlation and the variables are taken at their first difference. This is not the case for total employee count, and when the regression is estimated at level the P-M relationships are estimated to be significant, as seen in recent EM P-M literature by Clegg et al. (2016) who analyzed 261 Chinese firms from 1991-2011. When FS is the multinationality measure, the P-M relationship is U-shaped while the ABHK and ROE combination show an S-shaped relationship. As a second robustness test, a sub-period analysis is performed with the 2007-09 sub-period producing a very high level of negative serial correlation for RI and ROA. The results for ROE as a measure of performance show a significantly negative P-M relationship for both AM and EM firms, however, from 2010-15 (post-crisis), the P-M relationship is negligible, with firm size and age both measuring significantly

positive to firm performance, and financial leverage, like multinationality, is negligible, as seen in previous research by Hossain and Nhuyen (2016).

From the geographic-based grouping lens, African and South American firms have a significantly positive P-M relationship, taking a U-shape when measured by the Triad model. The ABHK model relationship to firm performance is not estimated to be significant, however, a negative S-shape is observed with declines in performance as firms invest abroad to all six geographic regions. This is only the case for African firms as no South American firms are global due to a lack of investments abroad. Both of these groupings of firms have the lowest levels of multinationality suggesting that they are in the second stage of internationalization as measured by the ABHK model. Firms from Oceania (Australia) have the highest proportion of FYOs in the trans-regional ABHK category, which is not surprising as the Oceania region has the second least number of countries (14) of all the geographic regions, next to South America with 12 countries. This geographic isolation results in an earlier expansion to countries outside the home region compared to firms from other continents. This move is typically to Asian countries as identified in previous studies by Maitland and Nicholas (2002) or European countries as identified by Merrett (2002) with his coverage of the Australian banks' internationalization to London. Table 7.2 outlines the significant P-M relationships for all regions, with the exception of Europe and North America, as both of these groupings of firms produced significant results across all nine model estimations.

Table 7.2

Geographic Regions with Significant P-M Relationships		
Foreign Sales Percentage	**Triad Model**	**ABHK Model**
		



***Performance measure is on the left and explanatory variable is represented as "Multinationality" on the x-axis with the measure of multinationality used located on the top row of the chart. The significance level for each multinationality measure is identified using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.00. North American and Europe are excluded from this Table as all nine P-M relationships are significant.**

The Triad regions of North America, Europe, and Asia measure the P-M relationship to be significantly negative and the performance measure that best fits the model is RI. North American and European firms increase in performance as FS reaches 75-100 percent but declines in performance are evident when multinationality is measured by the ABHK model, creating an S-shape or inverted U-shape to the P-M relationship as firms move into the global category. Asian firms are generally performing better at high levels of FS and host-region Triad category. Performance, as measured by the ABHK model, is highest at the domestic and regional levels, signifying Asian firms have significantly negative performance when investing abroad to countries outside of their home Triad region.

These findings build on the current P-M literature as shown in Table 7.3, by offering recent results, specifically for the regions of South America, Oceania, and Africa.

Table 7.3

Geographic Region-Based P-M Relationship Comparison		
	Previous Literature	**Chapter Six Findings**
Africa	Linear Negative	U-Shaped
Asia	U-Shaped	U-Shaped
Europe	Various U or S-Shaped	Inverted U-Shaped
North America	Various U or S-Shaped	S/M Shaped
Oceania	None to Date	M-Shaped

South America	Linear Negative	M-Shaped

***RI is the performance measure used for Asian, European, North American, and Oceanic firms while ROA is the performance measure for African firms and ROE for South American firms. These performance measures gave the most accurate estimation of the regression model.**

7.5 Conclusion and Future Research

Overall, subsidiary data is essential to correctly measure firm level multinationality, which is proven to be increasing over my 18-year sample period. AM firms display higher levels of multinationality than EM firms and both groupings of firms are increasing in multinationality. EM firms estimate a positive P-M relationship while AM firms' P-M relationship is negative. RI as the market-based measure of performance is more accurate than ROA and ROE for AM firms while ROE is the better measure of performance for EM firms. Firm size when measured by market capitalization has a significantly positive relationship to performance for AM firms and this is also true for EM firms when size is measured by total employee count. To conclude, the three stages theory of internationalization (Contractor et al., 2003) aligns with the results of my research with AM firms appearing to be in stage three while EM firms are in either stage one or stage two. However, it is evident a different conclusion can be reached if the multinationality measure, or performance measure changes. For all three research questions, the financial crisis effectively decreased multinationality and firm size, and had mixed effects on performance, resulting in insignificant results when regressed in the sub-period analysis.

As previously mentioned, the count-based measures of number of foreign subsidiaries and number of host countries as proxies for the breadth or dispersion of internationalization both have shortcomings. Specifically, they favor firms from continents that are more country dense. Furthermore, the subsidiary geographic location information does not take into account the nature of foreign subsidiaries' operations, whether or not they are really engaged in value-creating activities. Large databases such as Bureau Van Dijk Database, Dun & Bradstreet Who Owns Whom, and the Chinese WIND Database, only give specific location details. For future research, information on the nature of these foreign subsidiaries would provide a deeper understanding of why and/or how firms become multinational. This level of detail can only be attained through company websites if the details are provided, annual reports, and surveys given to specific companies, all of which would either reduce the firm count or reduce the time period, thus making research to this level of detail a cross-sectional analysis instead of a longitudinal analysis.

References

Abbasi, A., and Malik, Q. A. (2015). Firms' size moderating financial performance in growing firms: An empirical evidence from Pakistan. International Journal of Economics and Financial Issues, 5(2): 334-339.

Adams, R. B., Almeida, H., and Ferreira, D. (2005). Powerful CEOs and their impact on corporate performance. The Review of Financial Studies, 18(4): 1,403-1,432.

Adomako, S., Amankwah-Amoah, J., Danso, A., Konadu, R., and Owusu-Agyei, S. (2019). Environmental sustainability orientation and performance of family and nonfamily firms. Business Strategy and the Environment, 28(6): 1,250-1,259.

Aggarwal, R., Berrill, J., Hutson, E., and Kearney, C. (2011). What is a multinational corporation? Classifying the degree of firm-level multinationality. International Business Review, 20(5): 557-577.

Agyemang-Mintah, P. (2015). The nomination committee and firm performance: An empirical investigation of UK financial institutions during the pre/post financial crisis. Corporate Board: Role, Duties and Composition, 11(3): 176-190.

Akbar, S., Rehman, S., and Ormrod, P. (2013). The impact of recent financial shocks on the financing and investment policies of UK private firms. International Review of Financial Analysis, 26: 59-70.

Almodóvar, P. (2012). The international performance of standardizing and customizing Spanish firms. Multinational Business Review, 20: 306-330.

Almodóvar, P., and Rugman, A. M. (2014). The M curve and the Performance of Spanish International New Ventures. British Journal of Management, 25: 6-23.

Anderson, B. S., and Eshima, Y. (2013). The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs. Journal of Business Venturing, 28(3): 413–429.

Andrade, A., and Galina, S. (2013). Effects of internationalization on the performance of multinationals in developing economies. Revista de Administração Contemporânea, 17(2): 239-262.

Archibugi, D., and Michie, J. (1995). The globalisation of technology: A new taxonomy. Cambridge Journal of Economics, 19: 121-140.

Arnold, D.J., and Quelch, J.A. (1998). New strategies in emerging economies. Sloan Management Review, 40(1): 7-20.

Autio, E., Sapienza, H. J., and Almeida, J. G. (2000). Effects of age at entry, knowledge intensity, and imitability on international growth. Academy of Management Journal, 43(5): 909-924.

Axinn, C. N. (1988). Export performance: Do managerial perceptions make a difference? International Marketing Review, 5: 61–71.

Babillo, A. M., López-Iturriaga, F., and Tejerina-Gaite, F. (2010). Firm performance and international diversification: The internal and external competitive advantages. International Business Review, 19(6): 607-618.

Baglioni, A., and Monticini, A. (2010). The intraday interest rate under a liquidity crisis: the case of August 2007. Economics Letters, 107(2): 198-200.

Bai, Y., Green, C. J., and Leger, L. (2012). Industry and country factors in emerging market returns: Did the Asian crisis make a difference? Emerging Markets Review, 13(4): 559-580.

Bamiatzi, V., and Hall, G. (2009). Firm versus sector effects on profitability and growth: The importance of size and interaction. International Journal of the Economics of Business, 16(2): 205-220.

Bamiatzi, V., Bozos, K., Cavusgil, S. T., and Hult, G. (2016). Revisiting the firm, industry, and country effects on profitability under recessionary and expansion periods: A multilevel analysis. Strategic Management Journal, 37(7): 1,448-1,471.

Banalieva, E., and Santoro, M. (2009). Local, regional, or global? Geographic orientation and relative financial performance of emerging market multinationality enterprises. European Management Journal, 27(5): 344-355.

Bartlett, C. A. and Ghoshal, S., (2000). Going global: lessons from late movers. Reading: 1(3): 75-86.

Becker-Blease, J. R., Kaen, F. R., Etebari, A., and Baumann, H. (2010). Employees, firm size and profitability of US manufacturing industries. Investment Management and Financial Innovations, 7(2): 7-23.

Beiner, S., Drobetz, W., Markus, M. and Zimmermann, H. (2006). An Integrated Framework of Corporate Governance and Firm Valuation. European Financial Management, 12(2): 249-283.

Bekaert, G., Erb, C. B., Harvey, C. R. and Viskanta, T. E. (1998). Distributional characteristics of emerging market returns and asset allocation. The Journal of Portfolio Management, 24(2): 102-116.

Bekaert, G. and Harvey, C. R., (2002). Research in emerging markets finance: Looking to the future. Emerging Markets Review, 3(4): 429-448.

Bekaert, G., Harvey, C. R., Lundblad, C. T., and Siegel, S. (2011). What Segments Equity Markets? Review of Financial Studies, 24(12): 3,841-3,890.

Bekaert, G., Ehrmann, M., Fratzscher, M., and Mehl, A. (2014). The global crisis and equity market contagion. The Journal of Finance, 69(6): 2,597-2,649.

Bekaert, G., and Harvey, C. R. (2014). Emerging Equity Markets in a Globalizing World. Rochester, NY: Social Science Research Network.

Bell, J. (1995). The internationalization of small computer software firms. European Journal of Marketing, 29: 60–75.

Bello, D. C., and Williamson, N. C. (1985). Contractual arrangement and marketing practices in the indirect export channel. Journal of International Business Studies, 16: 65–82.

Benito, G., and Welch, L. (1997). De-internationalization. Management International Review, 37(2): 7-25.

Benito-Osorio, D., Colino, A., Guerras-Martín, L. Á., and Zúñiga-Vicente, J. Á. (2016). The international diversification-performance link in Spain: Does firm size really matter? International Business Review, 25(2): 548-558.

Berger, A. N., and Udell, G. F. (1990). Collateral, loan quality and bank risk. Journal of Monetary Economics, 25(1): 21-42.

Bilkey, W. J. (1985). Development of export marketing guidelines. International Marketing Review, 2: 31–40.

Berrill, J. (2009). Firm Level Multinationality in International Business and Finance. Ph.D. Thesis. Trinity College Dublin, Ireland.

Berrill, J. (2013). An Empirical Investigation into the Internationalisation Patters of UK Firms. In 26th Australasian Finance and Banking Conference.

Berrill, J. (2015). Are the World's Largest Firms Regional or Global? Thunderbird International Business Review, 57(2): 87-101.

Berry, J. M. (1999). On cross-cultural comparability. International Journal of Psychology, 4(2): 119-128.

Bhagat, S., and Bolton, B. (2019). Corporate governance and firm performance: The sequel. Journal of Corporate Finance, 58: 142-168.

Bharadwaj, A. S., Bharadwaj, S. G., and Konsynski, B. R. (1999). Information technology effects on firm performance as measured by Tobin's q. Management Science, 45(7): 1,008-1,024.

Bhattacharjee, A., Higson, C., Holly, S., and Kattuman, P. (2009). Macroeconomic instability and business exit: Determinants of failures and acquisitions of UK firms. Economica, 76(301): 108-131.

Black, B. S., Jang, H. and Kim, W. (2006): Does Corporate Governance Predict Firm's Market Values? Evidence from Korea, Journal of Law Economics and Organization, 22(2): 366-413.

Boone, A. L., Field, L. C., Karpoff, J. M., and Raheja, C. G. (2007). The determinants of corporate board size and composition: An empirical analysis. Journal of Financial Economics, 85(1): 66-101.

Borda, A., Geleilate, J. M. G., Newburry, W. and Kundu, S. K. (2017). Firm internationalization, business group diversification and firm performance: The case of Latin American firms. Journal of Business Research, 72: 104-113.

Boso, N., Adeleye, I., Ibeh, K., and Chizema, A. (2019). The internationalization of African firms: Opportunities, challenges, and risks. Thunderbird International Business Review, 61(1): 5-12.

Boston Consulting Group, (2006). The New Global Challengers: How 100 top companies from rapidly developing economies are changing the world.

Brouthers, E. L., and Nakos, G (2005). The role of systematic international market selection on small firms' export performance. Journal of Small Business Management, 43(4): 363–381.

Brüderl, J., and Ludwig, V. (2015). Fixed-effects panel regression. The Sage handbook of regression analysis and causal inference, Chapter 15, 327-357.

Buckley, P. J., Dunning, J. H., and Pearce, R. D. (1978). The influence of firm size, industry, nationality, and degree of multinationality on the growth and profitability of the World's largest firms, 1962–1972. Review of World Economics, 114(2): 243-257.

Buckley, P. J. and Casson, M. (2002). The Future of The Multinational Enterprise: 25th Anniversary Edition, Palgrave Macmillan, New York.

Buhner, R. (1987). Assessing international diversification of West German corporations. Strategic Management Journal, 8: 25-37.

Calof, J., and Beamish, P. (1995). Adapting to Foreign Markets: Explaining Internationalization. International Business Review, 4(2): 115-131.

Campa, J. M., and Kedia, S. (2002). Explaining the diversification discount. The Journal of Finance, 57(4): 1,731-1,762.

Cano, C. R., Carrillat, F. A., and Jaramillo, F. (2004). A meta-analysis of the relationship between market orientation and business performance: evidence from five continents. International Journal of Research in Marketing, 21(2): 179-200.

Capar, N., and Kotabe, M. (2003). The relationship between international diversification and performance in service firms. Journal of International Business Studies, 34(4): 345-355.

Carpenter, M.A., Pollock, T.G., and Leary, M.M. (2003). Testing a model of reasoned risk-taking: Governance, the experience of principals and agents, and global strategy in high-technology IPO firms. Strategic Management Journal, 24: 803–820.

Carr, J. C., Haggard, K. S., Hmieleski, K. M., and Zahra, S. A. (2010). A study of the moderating effects of firm age at internationalization on firm survival and short-term growth. Strategic Entrepreneurship Journal, 4(2): 183-192.

Casillas, J. C. and Acedo F. J. (2013). Speed in the internationalization process of the firm. International Journal of Management Reviews, 15(1): 15-29.

Castellani, D., and Zanfei, A. (2007). Internationalisation, innovation and productivity: How do firms differ in Italy? World Economy, 30(1): 156–176.

Cattell, R. B., (1950). The principal culture patterns discoverable in the syntal dimensions of existing nations. The Journal of Social Psychology, 32(2): 215-253.

Cavusgil, S. T., and Knight, G. A. (2015). The born-global firm: An entrepreneurial and capabilities perspective on early and rapid internationalization. Journal of International Business Studies, 46(1): 3–16.

Chadha P. and Berrill J. (2016). An empirical investigation into the internationalization patterns of Japanese firms. Asia Pacific Business Review: 22(4): 595-611.

Chao, M. C. H., and Kumar, V. (2010). The impact of institutional distance on the international diversity–performance relationship. Journal of World Business, 45(1): 93-103.

Chen, C. J., and Yu, C. M. J. (2012). Managerial ownership, diversification, and firm performance: Evidence from an emerging market. International Business Review, 21(3): 518-534.

Chen, Y., Jiang, Y., Wang, C., and Hsu, W. C. (2014). How do resources and diversification strategy explain the performance consequences of internationalization? Management Decision, 52(5): 897-915.

Cheng, S. T., and Yim, Y. K. (2008). Age differences in forgiveness: The role of future time perspective. Psychology and Aging, 23(3): 676.

Chiao, Y. C., Yang, K. P., and Yu, C. M. J. (2006). Performance, internationalization, and firm-specific advantages of SMEs in a newly-industrialized economy. Small Business Economics, 26(5): 475-492.

Clegg, J., Lin, H. M., Voss, H., Yen, I. F., and Shih, Y. T. (2016). The OFDI patterns and firm performance of Chinese firms: The moderating effects of multinationality strategy and external factors. International Business Review, 25(4): 971-985.

Coad, A., Segarra, A., and Teruel, M. (2016). Innovation and firm growth: Does firm age play a role? Research Policy, 45(2): 387–400.

Coles, J. L., Daniel, N. D., and Naveen, L. (2008). Boards: Does one size fit all? Journal of Financial Economics, 87(2): 329-356.

Collins, M. (1990). A market performance comparison of U.S. firms active in domestic, developed and developing countries. Journal of International Business Studies, 2: 271-287.

Collins, H. (2010). Creative Research: The Theory and Practice of Research for the Creative Industries. AVA Publications.

Contractor, F. J., Kundu, S. K., and Hsu, C. C. (2003). A three-stage theory of international expansion: The link between multinationality and performance. Journal of International Business Studies, 34: 5-18.

Contractor, F. J. (2007). The evolutionary or multi-stage theory of internationalization and its relationship to the regionalization of firms. In A.M. Rugman ed., Regional aspects of multinationality and performance. Emerald Group Publishing Limited: 11-29.

Contractor, F. J., Kumar, V., and Kundu, S. K. (2007). Nature of the relationship between international expansion and performance: The case of emerging market firms. Journal of World Business, 42(4): 401-417.

Contractor, F. J. (2012). Why do multinational firms exist? A theory note about the effect of multinational expansion on performance and recent methodological critiques. Global Strategy Journal, 2(4): 318-331.

Cuervo-Cazurra A., Dau L.A, (2009). Promarket reforms and firm profitability in developing countries. Academy of Management Journal, 52(6): 1,348-1,368.

Cuervo-Cazurra A., and Ramamurti R., (2014). Understanding multinationals from emerging markets. Cambridge University Press.

Dang, C., Li, Z. F., and Yang, C. (2018). Measuring firm size in empirical corporate finance. Journal of Banking & Finance, 86: 159-176.

Daniels, J. and Bracker, J. (1989). Profit performance: Do foreign operations make a difference? Management International Review, 29(1): 46-56.

De Jong, G., and Van Houten, J. (2014). The impact of MNE cultural diversity on the internationalization-performance relationship: theory and evidence from European multinational enterprises. International Business Review, 23(1): 313-326.

Delios, A., and Henisz, W. J. (2003). Political hazards, experience, and sequential entry strategies: The international expansion of Japanese firms, 1980–1998. Strategic Management Journal, 24(11): 1,153-1,164.

Dias, A. T., Rossi, F. S. M., Silva, J. T. M., De Camargos, M. A., and de-Carvalho, J. P. (2020). The Effects of Competitive Environment and Strategic Factors on US Firm Performance Before and After the Global Financial Crisis. Latin American Business Review: 21(1), 37-59.

Dolenc, P., Grum, A., and Laporsek, S. (2012). The effect of financial/economic crisis on firm performance in Solvania - A micro level, differency-in-differences approach. Montenegrin Journal of Economics, 8: 207-222.

Donadelli, M., and Persha, L. (2014). Understanding emerging market equity risk premia: Industries, governance and macroeconomic policy uncertainty. Research in International Business and Finance, 30: 284-309.

Dunning, J. H. (1979). Explaining changing patterns of international production: In defence of the eclectic theory. Oxford Bulletin of Economics and Statistics, 41(4): 269-296.

Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. Journal of International Business Studies, 11(1): 9-31.

Dunning, J. H. (1985). Multinational enterprises, economic structure, and international competitiveness. John Wiley & Sons Inc.

Dunning, J. H. (1988). The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions. Journal of International Business Studies, 19(1): 1-31.

Dunning, J. H. (1998). Location and multinational enterprise: A neglected factor. Journal of International Business Studies, 29(1): 45–66.

Dunning, J., Fujita, M. and Yakova, N. (2007). Some macro data on the regionalisation/globalisation debate. Journal of International Business Studies, 38(1): 177-199.

Dunning, J. H. and Lundan S. (2008). Multinational Enterprises and The Global Economy (2nd Edition). Edward Elgar, Cheltenham.

Earl, M. (2001). Knowledge management strategies: Towards a taxonomy. Journal of Management Information Systems, 18(1): 215-233.

Elango, B., and Sethi, S. P. (2007). An exploration of the relationship between country of origin (COE) and the internationalization-performance paradigm. Management International Review, 47(3): 369-392.

Eren-Erdogmus, I., Cobanoglu, E., Yalcin, M. and Ghauri, P.N. (2010). Internationalization of emerging market firms: the case of Turkish retailers. International Marketing Review, 27(3): 316-337.

Errunza, V. R., and Senbet, L. W. (1981). The effects of international operations on the market value of the firm: Theory and evidence. Journal of Finance, 36: 401–417.

European Union. (2015). European Union, About the EU, Countries. [Online] Available From: http://europa.eu/about-eu/countries/index_en.html [Accessed: 12th December, 2015].

Fama, E., and French, Kenneth R. (1992). The cross-section of expected stock returns. Journal of Finance, American Finance Association, 47(2): 427–465.

Fernández, E., Iglesias-Antelo, S., López-López, V., Rodríguez-Rey, M., and Fernandez-Jardon, C. M. (2019). Firm and industry effects on small, medium-sized and large firms' performance. Business Research Quarterly, 22(1): 25-35.

Field, A.P. (2009). Discovering statistics using SPSS: and sex and drugs and rock 'n' roll (3rd edition). London: Sage.

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

Fischer, S., Sahay, R., and Vegh, C. A. (1996). Stabilization and growth in transition economies: the early experience. Journal of Economic Perspectives, 10(2): 45-66.

Flores, R. and Aguilera, R. (2007). Globalization and location choice: an analysis of US multinational firms in 1980 and 2000. Journal of International Business Studies, 38(1): 1,187- 1,210.

FTSE Group, (2015). FTSE annual country classification review. September.

Gaba, V., Pan, Y., and Ungson, G. R. (2002). Timing of entry in international market: An empirical study of U.S. Fortune 500 firms in China. Journal of International Business Studies, 33: 39-55

Galli, A., Kitzes, J., Niccolucci, V., Wackernagel, M., Wada, Y. and Marchettini, N. (2012). Assessing the global environmental consequences of economic growth through the ecological footprint: a focus on China and India. Ecological Indicators, 17: 99-107.

Ganvir, M.B., and Dwivedi, N. (2017). Internationalization and performance of Indian born globals: Moderating role of presence of foreign equity. International Journal of Emerging Markets, 12(1): 108-124.

Gaur, A. S., and Kumar, V. (2009). International diversification, business group affiliation and firm performance: Empirical evidence from India. British Journal of Management, 20(2): 172-186.

George, G. (2005). Slack resources and the performance of privately held firms. Academy of Management Journal, 48: 661–676.

Geringer, M., Beamish, P., and DaCosta, R. (1989). Diversification strategy and internationalization: Implications for MNE Performance. Strategic Management Journal, 10(2): 109-119.

Geringer, J. M., Tallman, S., and Olsen, D. M. (2000). Product and international diversification among Japanese multinational firms. Strategic Management Journal, 21(1): 51-80.

Girod, S. J., and Whittington, R. (2017). Reconfiguration, restructuring and firm performance: Dynamic capabilities and environmental dynamism. Strategic Management Journal, 38(5): 1,121-1,133.

Gleason, K. C., Madura, J., and Wiggenhorn, J. (2006). Operating characteristics, risk, and performance of born-global firms. International Journal of Managerial Finance, 2(2): 96-120.

Gomes, L., and Ramaswany, K. (1999). An empirical examination of the form of the relationship between multinationality and performance. Journal of International Business Studies, 30(1): 173–188.

Graham, J. R., Harvey, C. R., and Puri, M. (2013). Managerial attitudes and corporate actions. Journal of Financial Economics, 109(1): 103-121.

Grant, R. (1987). Multinationality and performance among British manufacturing companies. Journal of International Business Studies, 18(3): 79-89.

Grant, R., Jammine, A., and Thomas, H. (1988). Diversity, diversification, and profitability among British manufacturing companies, 1972-1984. Academy of Management Journal, 31(4): 771-801.

Greenberg, J. (1987). A taxonomy of organisational structure theories. Academy of Management Review, 12(1): 9-22.

Gregor, A., and Kaplan, S. (1998). How Costly Is Financial (Not Economic) Distress? Evidence from Highly Leveraged Transactions That Became Distressed. Journal of Finance, 53: 1,443-1,494.

Gupta, A. K., Govindarajan, V., and Wang, H. (2008). The quest for global dominance: Transforming global presence into global competitive advantage. John Wiley & Sons.

Hausman, J. (1978). Specification tests in econometrics. Econometrica, 46: 1,251-1,271.

Hambrick, D. C. (1984). Taxonomic approaches to studying strategy: Some conceptual and methodological issues. Journal of Management, 10(1): 27-41.

Hanck, C., Arnold, M., Gerber, A., and Schmelzer, M. (2019). Introduction to Econometrics with R (1st ed.). University of Duisburg-Essen.

Hannan, M. T., and Freeman, J. (1984). Structural inertia and organizational change. American Sociological Review, 149-164.

Harmer, A., Folayinka, D. and Lesong, C. (2013). The BRICS: what is their contribution to global health. A Global Village, 9: 34-37.

Helwege, J., Pirinsky, C., and Stulz, R. M. (2007). Why do firms become widely held? An analysis of the dynamics of corporate ownership. The Journal of Finance, 62(3): 995-1,028.

Hennart, J. F. (2011). A theoretical assessment of the empirical literature on the impact of multinationality on performance. Global Strategy Journal, 1(1–2): 135–151.

Hill, C. (2007). International Business Competing in the Global Marketplace, 6th edition. McGraw-Hill. 168.

Hitt M.A., Hoskisson R.E., Kim H., (1997). International diversification: effects on innovation and firm performance in product-diversified firms. Academy of Management Journal 40: 767–798.

Hofstede, G. (2001). Culture's consequences: Comparing values, behaviors, institutions, and organizations across cultures. Sage Publications, Thousands Oaks, CA.

Holderness, C. G., Kroszner, R. S., and Sheehan, D. P. (1999). Were the good old days that good? Changes in managerial stock ownership since the great depression. The Journal of Finance, 54(2): 435-469.

Holderness, C. G. (2009). The myth of diffuse ownership in the United States. The Review of Financial Studies, 22(4): 1,377-1,408.

Horst, T. (1973). Firm and industry determinants of the decision to invest abroad. Review of Economics and Statistics, 54: 258-266.

Hoskisson, R. E. and Hitt, M. A. (1990). 'Antecedents and performance outcomes of diversification: Review and critique of theoretical perspectives', Journal of Management, 16: 461-509.

Hoskisson, R. E., Hitt, M. A., Johnson, R. A., and Moesel, D. D. (1993). Construct validity of an objective (entropy) categorical measure of diversification strategy. Strategic Management Journal, 14: 215-235

Hoskisson, R. E., Wright, M., Filatotchev, I., and Peng, M. W. (2013). Emerging multinationals from mid-range economies: The influence of institutions and factor markets. Journal of Management Studies, 50(7): 1,295-1,321.

Hossain, A. T., and Nguyen, D. X. (2016). Capital structure, firm performance and the recent financial crisis. Journal of Accounting and Finance, 16(1): 76-89.

Hsu, C. W., Lien, Y. C., and Chen, H. (2013). International ambidexterity and firm performance in small emerging economies. Journal of World Business, 48(1), 58-67.

Hughes, J. S., Logue, D. E., and Sweeney, R. J. (1975). Corporate international diversification and market assigned measures of risk and diversification. Journal of Financial and Quantitative Analysis, 627-637.

Hutzschenreuter, T., and Matt, T. (2017). MNE internationalization patterns, the roles of knowledge stocks, and the portfolio of MNE subsidiaries. Journal of International Business Studies, 48(9): 1,131-1,150.

Hymer, S. H. (1976). The International Operations of National Firms: A Study of Direct Foreign Investment, MIT Press, Cambridge.

James, C., and Wier, P. (1990). Borrowing relationships, intermediation, and the cost of issuing public securities. Journal of Financial Economics, 28(1-2): 149-171.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. The American Economic Rreview, 76(2): 323-329.

Johanson, J. and Vahlne, J. E. (1977). The internationalization process of the firm: a model of knowledge development and increasing foreign market commitments, Journal of International Business Studies, 8(1): 23-32.

Johanson, J. and Vahlne, J. E. (2009). The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership. Journal of International Business Studies, 40(9): 1,411-1,431.

Johnson, R. B. and Onwuegbuzie, A. J., 2004. Mixed methods research: A research paradigm whose time has come. Educational Researcher, 33(7): 14-26.

Jónsson, B. (2007). Does the size matter? The relationship between size and profitability of Icelandic firms. Bifrost Journal of Social Science, 1: 43–55.

Kang, C., Germann, F., and Grewal, R. (2016). Washing away your sins? Corporate social responsibility, corporate social irresponsibility, and firm performance. Journal of Marketing, 80(2): 59-79.

Kathuria, V. (2008). The impact of FDI inflows on R&D investment by medium-and high-tech firms in India in the post-reform period. Transnational Corporations, 17(2): 45.

Keats, B. W. (1990). 'Diversification and business economic performance revisited: Issues of measurement and causality', Journal of Management, 16: 61-72.

Kearney, C. (2012). Emerging markets research: Trends, issues, and futures directions. Emerging Markets Review, 13(2): 159-183.

Kiss, A. N., Danis, W. M. and Cavusgil, S. T., (2012). International entrepreneurship research in emerging economies: A critical review and research agenda. Journal of Business Venturing, 27(2): 266-290.

Knight, J. (2003). Updated definition of internationalization. International Higher Education, (33): 2-3.

Kogut, B., and Singh, H. (1988). The effect of national culture on the choice of entry mode. Journal of International Business Studies, 19(3): 411-432.

Kumar, Manmohan S. (1984). Growth acquisition and investment: An analysis of the growth of industrial firms and their overseas activities. Cambridge, U.K.: Cambridge University Press.

Kundu, S. K., and Katz, J. A. (2003). Born-international SMEs: Bi-level impacts of resources and intentions. Small Business Economics, 20: 25–47.

Kyaw, N. A., Manley, J., and Shetty, A. (2011). Factors in multinational valuations: Transparency, political risk and diversification. Journal of Multinational Financial Management, 21: 55–67.

Laeven, L., and Valencia, F. (2008). Systemic banking crises: A new database. http://www.imf.org/external/pubs/cat/longres.cfm?sk=22345.

Lampel, J., and Giachetti, C. (2013). International diversification of manufacturing operations: Performance implications and moderating forces. Journal of Operations Management, 31(4): 213-227.

Law, K. S., Wong, C. S., and Mobeley, W. H. (1998). Toward a taxonomy of multidimensional constructs. The Academy of Management Review, 23(4): 741-755.

Lee, J. (2009). Does size matter in firm performance? Evidence from US public firms. International Journal of the Economics of Business, 16(2): 189-203.

Lee, S., Kim, M., and Davidson, W. N, I. I. I. (2015). Value relevance of multinationality: Evidence from Korean firms. Journal of International Financial Management & Accounting, 26(2): 111–149.

Lee, S., Park, S. W., and Namgung, D. (2019). Internationalization and Performance of SMEs in Masan Free Trade Zone (Korea): The Direct and Moderating Effects of Firm Size. Journal of Korea Trade, 23: 30-57.

Li, L. (2007). Multinationality and performance: A synthetic review and research agenda. International Journal of Management Reviews, 9(2): 117–139.

Lin, W. T., Liu, Y., and Cheng, K. Y. (2011). The internationalization and performance of a firm: Moderating effect of a firm's behavior. Journal of International Management, 17(1): 83-95.

Loncan, T., and Nique, W. M. (2010). Degree of Internationalization and performance: Evidence from emerging Brazilian multinational firms. Journal of Globalization, Competitiveness & Governability 4(1): 40-51.

Lopez, L. E., Kundu, S. K., and Ciravegna, L. (2009). Born global or born regional? Evidence from an exploratory study in the Costa Rican software industry. Journal of International Business Studies, 40: 1,228–1,238.

Lu, J. W., and Beamish, P. W. (2001). The internationalization and performance of SMEs. Strategic Management Journal, 22(6-7): 565-586.

Lu, J. W., and Beamish, P. W. (2004). International diversification and firm performance: The S-curve hypothesis. Academy of Management Journal, 47(4): 598-609.

Lu, J. W., and Beamish, P. W. (2006). Partnering strategies and performance of SMEs' international joint ventures. Journal of Business Venturing, 21: 461–486.

Luo, Y., and Tung, R. (2018). A general theory of springboard MNEs. Journal of International Business Studies, 49(2): 129–152.

Maitland, E., and Nicholas, S. (2002). Internationalization of Australian firms in Asia. International Studies of Management & Organization, 32(1): 79-108.

Manolova, T. S., Manev, I. M., and Gyoshev, B. S. (2010). In good company: The role of personal and inter-firm networks for new-venture internationalization in a transition economy. Journal of World Business, 45: 257–265.

Marcelo, J. L. M., Quirós, J. L. M., and Martins, J. L. (2013). The role of country and industry factors during volatile times. Journal of International Financial Markets, Institutions and Money, 26: 273-290.

Marks, M. A., Mathieu, J. E., and Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. Academy of Management Review, 26(3): 356-376.

Mathews, J. A. (2002). Dragon multinational—a new model for global growth. Oxford and New York: Oxford University Press.

McGahan, A. M., and Porter, M. E. (2002). What do we know about variance in accounting profitability? Management Science, 48(7): 834-851.

Mendoza, X., Espinosa-Méndez, C., and Araya-Castillo, L. (2019). When geography matters: International diversification and firm performance of Spanish multinationals. Business Research Quarterly, 114.

Merchant, H. (2016). Handbook of Contemporary Research on Emerging Markets. Cheltenham, UK: Edward Elgar Publishing.

Merrett, D. T. (2002). The internationalization of Australian banks. Journal of International Financial Markets, Institutions and Money, 12(4-5), 377-397.

Meyer, K. E. and Gelbuda, M. (2006). Process perspective in international business research in CEE. Management International Review, 46(2): 143-164.

Meyer, K. E., and Grosse, R. (2018). Introduction to managing in emerging markets. Oxford Handbook of Managing in Emerging Markets: 3-34.

Meyer, K. E. and Peng, M. W. (2015). Theoretical foundations of emerging economy business research. Journal of International Business Studies, 47(1): 3-22.

Michel, A., and Shaked, I. (1986). Multinational corporations vs. domestic corporations: Financial performance and characteristics. Journal of International Business Studies, 18(3): 89-100.

Moen, O. (2002). The born globals – A new generation of small European exporters. International Marketing Review, 19: 156–175.

Moen, O., and Servais, P. (2002). Born global or gradual global? Examining the export behavior of small and medium-sized enterprises. Journal of International Marketing, 10(3): 49–72.

Morck, R., and Yeung, B. (2009). Metrics for international business research. In the Oxford Handbook of International Business, 2: 798–815.

Morrow, F. (1996). History of Emerging Markets. In AIMR Conference Proceedings. Association for Investment Management and Research, (9): 1-12.

Mullen, C. and Berrill, J. (2015). Minoritynationals: an empirical analysis of the concentration of geographic sales expansion in MNCs. Multinational Business Review, 23(4): 277-305.

Mullen, C. and O'Hagan Luff, M. (2018). Alphabet soup: the relationship between multinationality and firm performance. Transnational Corporations Review, 10(4): 409-423.

Musteen, M., Datta, D.K. and Francis, J. (2014). Early internationalization by firms in transition economies into developed markets: The role of international networks. Global Strategy Journal, 4(3): 221-237.

Nassif, E. G., Al-Daeaj, H., Ebrahim, B., Thibodeaux, M. S. (1991) Methodology Problems in Cross Cultural Research: An Updated Review. Management International Review, 31: 79-91.

Niresh, J. A. and Velnampy, T. (2014). Firm size and profitability: A study of listed manufacturing firms in Sri Lanka. International Journal of Business and Management, 9(4): 57-64.

Nguyen, Q. T. K. (2017). Multinationality and performance literature: A critical review and future research agenda. Management International Review, 57: 311–347.

Oh H. C., and Rugman A. M., (2014). The dynamics of regional and global multinationals, 1999-2008. The Multinational Business Review, 22(2): 108-117.

Ohmae, K. (1985). Triad Power. The Coming Shape of Global Competition. New York Free Press.

Osegowitsch, T. and Sammartino, A. (2007). Exploring trends in regionalisation. Research in Global Strategic Management, 13: 45-64.

Osegowitsch, T. and Sammartino, A. (2008). Reassessing (home-) regionalisation. Journal of International Business Studies, 39(2): 184-196.

Ouimet, P. and Zarutskie, R. (2014). Who works for startups? The relation between firm age, employee age, and growth. Journal of Financial Economics, 112: 386-407.

O'Hagan Luff, M. and Berrill, J. (2016). US firms–How global are they? A longitudinal study. International Review of Financial Analysis, 44: 205-216.

Pangarkar, N. (2008). Internationalization and performance of small- and medium-sized enterprises. Journal of World Business, 43(4): 475–485.

Pástor, Ľ., and Pietro, V. (2003). Stock valuation and learning about profitability. The Journal of Finance, 58(5): 1,749-1,789.

Perryman, A. A., and Combs, J. G., (2012). Who should own it? An agency-based explanation for multi-outlet ownership and co-location in plural form franchising. Strategic Management Journal, 33(4): 368-386.

Peter, A. E., and Nelson, J. (2019). Empirical investigation of effective management of working capital on firm performance: Evidence from the Nigerian Agricultural Sector. Asian Journal of Economics, Business and Accounting, 13(4): 1-13.

Pouraghajan, A., Malekian, E., Emamgholipour, M., Lotfollahpour, V., and Bagheri, M. M. (2012). The relationship between capital structure and firm performance evaluation measures: Evidence from the Tehran Stock Exchange. International journal of Business and Commerce, 1(9): 166-181.

Qian, G. (2002). Multinationality, product diversification, and profitability of emerging US small-and medium-sized enterprises. Journal of Business Venturing, 17(6): 611-633.

Qian, G. M., Li, L., Li, J., and Qian, Z. M. (2008). Regional diversification and firm performance. Journal of International Business Studies, 39(2): 197–214.

Ramamurti, R. (2012). What is really different about emerging market multinationals? Global Strategy Journal, 2(1): 41.

Reuber, A.R. and Fischer, E. (1997). The influence of the management team's international experience on the internationalization behaviors of SMEs. Journal of International Business Studies, 28: 807–825.

Riahi-Belkaoui, A. (1998). The effects of the degree of internationalization on firm performance. International Business Review, 7: 315-321.

Ronen, S., and Kraut, A. I. (1977). Similarities among countries based on employee work values and attitudes. Columbia Journal of World Business, 12(2): 89-96.

Ronen, S., and Shenkar, O. (2013). Mapping world cultures: Cluster formation, sources and implications. Journal of International Business Studies, 44(9): 867-897.

Ruefli, T. W., and Wiggins, R. R. (2003). Industry, corporate, and segment effects and business performance: a non-parametric approach. Strategic Management Journal, 24(9): 861-879.

Rugman, A., Lecraw, D., and Booth, L. (1985). International business: Firm and environment. New York: McGraw-Hill.

Rugman, A. (2001). The End of Globalization: A new and radical analysis of globalization and what it means for business. Random House Business.

Rugman, A. M., and Brain, C. (2003). Multinational enterprises are regional, not global. Multinational Business Review, 11(1): 3-12.

Rugman, A., and Verbeke, A. (2004). Regional transnationals and triad strategy. Transnational Corporation, 13(3): 1-20.

Rugman, A. M., and Verbeke, A. (2004). A perspective on regional and global strategies of multinational enterprises. Journal of International Business Studies, 35(1): 3-18.

Rugman, A. M., (2005). The regional multinationals: MNEs and "global" strategic management. Cambridge University Press.

Rugman, A. M., and Verbeke, A. (2007). Liabilities of regional foreignness and the use of firm-level versus country-level data: A response to Dunning et al. (2007). Journal of International Business Studies, 38(1): 200-205.

Rugman, A. M., and Verbeke, A. (2008). A new perspective on the regional and global strategies of multinational service firms. Management International Review, 48(4): 397-411.

Rugman, A. M. (2010). Reconciling internalization theory and the eclectic paradigm. Multinational Business Review, 18(2): 1-12.

Rugman, A. M., and Oh, C. H. (2011). Methodological issues in the measurement of multinationality of US firms. Multinational Business Review. 19(3): 202-212.

Rugman, A. M., and Oh, C. H. (2013). Why the home region matters: Location and regional multinationals. British Journal of Management, 24(4): 463-479.

Rugman, A. M., (2016). Multinational enterprises from emerging markets. In Securing the Global Economy, Routledge: 81-100.

Ruigrok, W., and Wagner, H. (2003). Internationalization and performance: An organizational learning perspective. Management International Review, 43(1): 63-83.

Ruigrok, W., Amann, W., and Wagner, H. (2007). The internationalization-performance relationship at Swiss firms: A test of the S-shape and extreme degrees of internationalization. Management International Review, 47(3): 349-368.

Ryu, D., Kim, M. H., and Ryu, D. (2019). The Effect of International Strategic Alliances on Firm Performance before and after the Global Financial Crisis. Emerging Markets Finance and Trade, 55(15): 3,539-3,552.

Schmidt, A. (2016). Friends forever? The role of the Visegrád Group and European integration. Politics in Central Europe, 12(3): 113-140.

Serrano, R., Fernández-Olmos, M., and Pinilla, V. (2015). International diversification and performance in agri-food firms. Documento de Trabajo, 1: 1-32.

Shaked, I. (1986). Are multinational corporations safer? Journal of International Business Studies, 17(1): 75-80.

Shimizu, K., and Hitt, M. A. (2005). What constrains or facilitates divestitures of formerly acquired firms? The effects of organizational inertia. Journal of Management, 31(1): 50-72.

Shin, J., Mendoza, X., Hawkins, M. A. and Choi, C., (2017). The relationship between multinationality and performance: Knowledge-intensive vs. capital-intensive service micro-multinational enterprises. International Business Review, 26(5): 867-880.

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

Shrivastava, M., and Tamvada, J. P. (2019). Which green matters for whom? Greening and firm performance across age and size distribution of firms. Small Business Economics, 52(4): 951-968.

Shumway, T. (2001). Forecasting bankruptcy more accurately: A simple hazard model. The Journal of Business, 74(1): 101-124.

Siddharthan, N. and Sanjaya L. (1982). Recent growth of the largest U.S. multinationals. Oxford Bulletin of Economics and Statistics, 44: 1-13.

Singla, C., and George, R. (2013). Internationalization and performance: A contextual analysis of Indian firms. Journal of Business Research, 66(12): 2,500-2,506.

Smart, D. L., and Hitt, M. A. (1994). A mid-range theory regarding the antecedents of restructuring types: An integration of agency, upper echelon and resource-based perspectives. Advances in Strategic Management, 10: 159-186.

Soumadi, M. M., and Hayajneh, O. S. (2012). Capital structure and corporate performance empirical study on the public Jordanian share holding firms listed in the Amman stock market. European Scientific Journal, 8(22): 173-189.

Tallman, S. and Li, J.T. (1996). Effects of international diversity and product diversity on the performance of multinational firms. Academy of Management Journal 39: 179–196.

Tan, K. (2017). Generic Internationalization Strategies of Emerging Market Multinationals: The Case of Chinese Firms. Advances in Economics and Business, 5(2): 83-94.

Tang, Q., Gu, F. F., Xie, E., and Wu, Z. (2020). Exploratory and exploitative OFDI from emerging markets: Impacts on firm performance. International Business Review, 29(2): 1-16.

Tsao, S. M., and Lien, W. H. (2013). Family management and internationalization: The impact on firm performance and innovation. Management International Review, 53(2): 189-213.

Tsukanova, T., and Zhang, X. (2019). Early and Rapid Internationalization of Firms from Emerging Economies: Understanding the Heterogeneity of Chinese Exporters. Journal of East-West Business, 25(2): 194-224.

United Nations, (2019). Department of Economic and Social Affairs, Population Division. World Population Prospects, Highlights.

Uzzi, B. (1996). The sources and consequences of embeddedness for the economic performance of organizations: The network effect. American Sociological Review, 674-698.

Vallone, T., Elia, S., Greve, P., Longoni, L., and Marinelli, D. (2019). Top Management Team Influence on Firms' Internationalization Complexity. International Business in a VUCA World: The Changing Role of States and Firms (Progress in International Business Research). Emerald Publishing Limited, 14: 199-226.

Vernon, R. (1966). International investment and international trade in the product cycle. Quarterly Journal of Economics, 80(2): 190-207.

Vernon, R. (1971). Sovereignty at bay: The multinational spread of U.S. enterprises. New York: Basic Books.

Vernon, R. (1979). The product cycle hypothesis in a new international environment. Oxford Bulletin of Economics and Statistics, 42(4): 255-267.

Villalonga, B. (2004). Does diversification cause the" diversification discount"? Financial Management, 33(2): 5-27.

Vintila, G., and Duca, F. (2013). Does Firm Size Affect the Firm Profitability? Empirical Evidence from Romania. Romanian Statistical Review, 6: 87-92.

Vissak, T., and Francioni, B. (2013). Serial nonlinear internationalization in practice: A case study. International Business Review, 22(6): 951-962.

Vu, T. H., Nguyen, V. D., Ho, M. T., and Vuong, Q. H. (2019). Determinants of Vietnamese listed firm performance: Competition, wage, CEO, firm size, age, and international trade. Journal of Risk and Financial Management, 12(2): 1-19.

Wilkins, M. (1994). Comparative hosts. Business History, 36(1): 18-50.

Wolff, J. A., and Pett, T. L. (2000). Internationalization of small firms: An examination of export competitive patterns, firm size, and export performance. Journal of Small Business Management, 38(2): 34.

Xiao, S. S., Jeong, I., Moon, J. J., Chung, C. C., and Chung, J. (2013). Internationalization and performance of firms in China: Moderating effects of governance structure and the degree of centralized control. Journal of International Management, 19(2): 118-137.

Yang, F., Dolar, B., and Mo, L. (2014). CEO Compensation and Firm Performance: Did the 2007-2008 Financial Crisis Matter? Journal of Accounting and Finance, 14(1): 137.

Yang, Y., and Driffield, N. (2012). Multinationality-performance relationship: A meta-analysis. Management International Review, 52: 23–47.

Yasuda, T. (2005). Firm growth, size, age and behavior in Japanese manufacturing. Small Business Economics, 24(1): 1-15.

Young, S., Huang, C. H. and McDermott, M. (1996). Internationalization and competitive catch-up processes: Case study evidence on Chinese multinational enterprises. Management International Review: 295-314.

Yoshihara, H. (1985). Multinational growth of Japanese manufacturing enterprises in the postwar period. Proceedings of the Fuji International Conference on Business History. Tokyo: University of Tokyo Press.

Zagorchev, A., and Gao, L. (2015). Corporate governance and performance of financial institutions. Journal of Economics and Business, 82: 17-41.

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

Zaheer, S., and Mosakowski, E. (1997). The dynamics of the liability of foreignness: A global study of survival in financial services. Strategic Management Journal, 18(6): 439-463.

Zaheer, S., and Zaheer, A. (2001). Market microstructure in a global B2B network. Strategic Management Journal, 22(9): 859-873.

Zaheer, A., and Hernandez, E. (2011). The geographic scope of the MNC and its alliance portfolio: Resolving the paradox of distance. Global Strategy Journal, 1(1-2): 109-126.

Zahra, S. A., Ireland, R. D., and Hitt, M. A. (2000). International expansion by new venture firms: International diversity, mode of market entry, technological learning and performance. Academy of Management Journal, 43(5): 925–950.

Zahra S., George G. (2002). International Entrepreneurship: The Current Status of the Field and Future Research Agenda. M.A. Hitt, R.D. Ireland, S.M. Camp, D.L. Sexton (Eds.). Strategic Entrepreneurship: Creating a New Mindset, 255-288.

Zeitun, R., and Saleh, A.S. (2015). Dynamic performance, financial leverage and financial crisis: evidence from GCC countries. EuroMed Journal of Business, 10: 147-162.

Zhou, C. (2018). Internationalization and performance: evidence from Chinese firms. Chinese Management Studies, 12(1): 19-34.

Appendix 2.1

FTSE Russell Country Classification	
Criteria 1	A Quality of Markets matrix against which markets could be objectively judged and compared.
Criteria 2	A questionnaire with which to engage stock exchanges and regulatory authorities, the responses to which would help form the basis of the initial Quality of Markets assessment and subsequent upgrades.
Criteria 3	A new FTSE Russell Country Classification Advisory Committee reporting to the FTSE Russell Policy Advisory Board that would undertake objective assessments of markets against the Quality of Markets criteria.
Criteria 4	A Watch List consisting of those countries that are judged to meet, or to be close to meeting, the Quality of Markets criteria for promotion or demotion that would act as a staging post for subsequent country classification changes.
Criteria 5	A policy of engagement with markets that were placed on the Watch List to help them understand what steps would need to be taken to improve their current assessments to make them eligible for promotion (or to prevent their demotion)
Criteria 6	An annual schedule for determining country classification and Watch List changes culminating in country classification and Watch List changes being announced in September.
Criteria 7	A defined communication and implementation timetable to allow portfolio managers to make the necessary preparations for changes to classifications.
Criteria 8	GDP per capital as calculated by World Bank.

***Criteria's taken from "ftserussell.com/files/research/ftse-country-classification-process-2017".**

Appendix 4.1

Triad Results						
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Firm Total**
1998	770 (*53.5%*)	578 (*40.1%*)	49 (*3.4%*)	32 (*2.2%*)	11 (*0.8%*)	**1,440**
1999	879 (*55.1%*)	608 (*38.1%*)	56 (*3.5%*)	39 (*2.4%*)	14 (*0.9%*)	**1,596**
2000	837 (*50.4%*)	689 (*41.5%*)	82 (*4.9%*)	39 (*2.3%*)	15 (*0.9%*)	**1,662**
2001	816 (*47.7%*)	738 (*43.1%*)	84 (*4.9%*)	51 (*3.0%*)	22 (*1.3%*)	**1,711**
2002	811 (*45.1%*)	790 (*43.9%*)	110 (*6.1%*)	62 (*3.4%*)	26 (*1.4%*)	**1,799**
2003	849 (*45.3%*)	832 (*44.4%*)	93 (*5.0%*)	62 (*3.3%*)	37 (*2.0%*)	**1,873**
2004	905 (*46.2%*)	845 (*43.1%*)	107 (*5.5%*)	62 (*3.2%*)	41 (*2.1%*)	**1,960**
2005	914 (*45.3%*)	884 (*43.8%*)	121 (*6.0%*)	52 (*2.6%*)	47 (*2.3%*)	**2,018**
2006	923 (*44.8%*)	905 (*44.0%*)	132 (*6.4%*)	52 (*2.5%*)	47 (*2.3%*)	**2,059**
2007	938 (*44.4%*)	917 (*43.4%*)	146 (*6.9%*)	59 (*2.8%*)	54 (*2.6%*)	**2,114**
2008	942 (*43.6%*)	934 (*43.2%*)	164 (*7.6%*)	68 (*3.1%*)	52 (*2.4%*)	**2,160**
2009	948 (*43.1%*)	953 (*43.3%*)	176 (*8.0%*)	68 (*3.1%*)	57 (*2.6%*)	**2,202**
2010	948 (*42.0%*)	983 (*43.6%*)	181 (*8.0%*)	85 (*3.8%*)	58 (*2.6%*)	**2,255**
2011	960 (*41.7%*)	995 (*43.2%*)	196 (*8.5%*)	89 (*3.9%*)	62 (*2.7%*)	**2,302**
2012	905 (*38.7%*)	1,069 (*45.7%*)	211 (*9.0%*)	90 (*3.8%*)	65 (*2.8%*)	**2,340**
2013	886 (*37.7%*)	1,095 (*46.5%*)	203 (*8.6%*)	107 (4.5%)	62 (*2.6%*)	**2,353**
2014	869 (*36.9%*)	1,095 (*46.5%*)	214 (*9.1%*)	109 (*4.6%*)	69 (*2.9%*)	**2,356**
2015	860 (*36.5%*)	1,058 (*44.9%*)	272 (*11.5%*)	105 (*4.5%*)	63 (*2.7%*)	**2,358**

***Based on the Triad model modification for purely domestic firms, five categories are listed with the total number of firms in each category and the yearly percentage in brackets.**

Appendix 4.2

ABHK Results																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**Total**
1998	490 (*34.0%*)	55 (*3.8%*)	175 (*12.2%*)	132 (*9.2%*)	24 (*1.7%*)	21 (*1.5%*)	138 (*9.6%*)	55 (*3.8%*)	305 (*21.2%*)	5 (*0.3%*)	0 (*0.0%*)	8 (*0.6%*)	6 (*0.4%*)	3 (*0.2%*)	16 (*1.1%*)	7 (*0.5%*)	**1,440**
1999	593 (*37.2%*)	53 (*3.3%*)	188 (*11.8%*)	128 (*8.0%*)	30 (*1.9%*)	24 (*1.5%*)	152 (*9.5%*)	68 (*4.3%*)	311 (*19.5%*)	7 (*0.4%*)	0 (*0.0%*)	10 (*0.6%*)	4 (*0.3%*)	3 (*0.2%*)	19 (*1.2%*)	6 (*0.4%*)	**1,596**
2000	599 (*36.0%*)	66 (*4.0%*)	204 (*12.3%*)	99 (*6.0%*)	35 (*2.1%*)	39 (*2.3%*)	138 (*8.3%*)	89 (*5.4%*)	335 (*20.2%*)	10 (*0.6%*)	0 (*0.0%*)	12 (*0.7%*)	0 (*0.0%*)	6 (*0.4%*)	22 (*1.3%*)	8 (*0.5%*)	**1,662**
2001	586 (*34.2%*)	80 (*4.7%*)	194 (*11.3%*)	91 (*5.3%*)	33 (*1.9%*)	37 (*2.2%*)	137 (*8.0%*)	106 (*6.2%*)	365 (*21.3%*)	12 (*0.7%*)	1 (*0.1%*)	13 (*0.8%*)	1 (*0.1%*)	10 (*0.6%*)	37 (*2.2%*)	8 (*0.5%*)	**1,711**
2002	591 (*32.9%*)	109 (*6.1%*)	204 (*11.3%*)	103 (*5.7%*)	40 (*2.2%*)	36 (2.0%)	113 (*6.3%*)	108 (*6.0%*)	397 (*22.1%*)	15 (*0.8%*)	1 (*0.1%*)	9 (*0.5%*)	2 (*0.1%*)	6 (*0.3%*)	53 (*2.9%*)	12 (*0.7%*)	**1,799**
2003	621 (*33.2%*)	114 (*6.1%*)	200 (*10.7%*)	98 (5.2%)	47 (*2.5%*)	30 (*1.6%*)	130 (*6.9%*)	126 (*6.7%*)	409 (*21.8%*)	19 (*1.0%*)	1 (*0.1%*)	13 (*0.7%*)	0 (*0.0%*)	9 (*0.5%*)	46 (*2.5%*)	10 (*0.5%*)	**1,873**
2004	662 (*33.8%*)	115 (*5.9%*)	196 (*10.0%*)	107 (*5.5%*)	48 (*2.4%*)	38 (*1.9%*)	137 (*7.0%*)	120 (*6.1%*)	400 (*20.4%*)	19 (*1.0%*)	2 (*0.1%*)	13 (*0.7%*)	2 (*0.1%*)	14 (*0.7%*)	76 (3.9%)	11 (*0.6%*)	**1,960**
2005	675 (*33.4%*)	121 (*6.0%*)	194 (*9.6%*)	104 (*5.2%*)	61 (*3.0%*)	31 (*1.5%*)	130 (*6.4%*)	126 (*6.2%*)	420 (*20.8%*)	14 (*0.7%*)	1 (*0.0%*)	11 (*0.5%*)	6 (*0.3%*)	18 (*0.9%*)	93 (*4.6%*)	13 (*0.6%*)	**2,018**
2006	661 (*32.1%*)	117 (*5.7%*)	179 (*8.7%*)	120 (*5.8%*)	50 (*2.4%*)	28 (*1.4%*)	140 (*6.8%*)	159 (*7.7%*)	422 (*20.5%*)	15 (*0.7%*)	1 (*0.0%*)	15 (*0.7%*)	6 (*0.3%*)	27 (*1.3%*)	100 (*4.9%*)	19 (*0.9%*)	**2,059**
2007	684 (*32.4%*)	120 (*5.7%*)	187 (*8.8%*)	115 (5.4%)	62 (*2.9%*)	37 (*1.8%*)	134 (*6.3%*)	158 (*7.5%*)	429 (*20.3%*)	10 (*0.5%*)	2 (*0.1%*)	14 (0.7%)	4 (*0.2%*)	25 (*1.2%*)	118 (*5.6%*)	15 (*0.7%*)	**2,114**
2008	631 (*29.2%*)	121 (*5.6%*)	204 (*9.4%*)	129 (*6.0%*)	78 (*3.6%*)	46 (*2.1%*)	165 (*7.6%*)	158 (*7.3%*)	437 (*20.2%*)	14 (*0.6%*)	2 (*0.1%*)	13 (0.6%)	14 (*0.6%*)	22 (*1.0%*)	106 (*4.9%*)	20 (*0.9%*)	**2,160**
2009	636 (*28.9%*)	133 (*6.0%*)	201 (*9.1%*)	138 (*6.3%*)	74 (*3.4%*)	46 (*2.1%*)	154 (*7.0%*)	161 (*7.3%*)	463 (*21.0%*)	9 (*0.4%*)	1 (*0.0%*)	14 (*0.6%*)	21 (*1.0%*)	17 (*0.8%*)	109 (*5.0%*)	25 (*1.1%*)	**2,202**
2010	622 (*27.6%*)	137 (*6.1%*)	204 (*9.0%*)	137 (*6.1%*)	96 (*4.3%*)	43 (*1.9%*)	166 (*7.4%*)	169 (*7.5%*)	456 (*20.2%*)	11 (*0.5%*)	2 (*0.1%*)	15 (*0.7%*)	21 (0.9%)	25 (*1.1%*)	122 (*5.4%*)	29 (*1.3%*)	**2,255**
2011	612 (*26.6%*)	141 (*6.1%*)	210 (*9.1%*)	162 (*7.0%*)	93 (*4.0%*)	61 (*2.6%*)	163 (*7.1%*)	176 (*7.5%*)	468 (*20.3%*)	9 (*0.4%*)	4 (*0.2%*)	15 (*0.8%*)	22 (*1.0%*)	25 (*1.1%*)	116 (5.0%)	25 (*1.1%*)	**2,302**
2012	593 (25.3%)	180 (*7.7%*)	210 (*9.0%*)	129 (*5.5%*)	103 (*4.4%*)	61 (*2.6%*)	155 (6.6%)	182 (*7.6%*)	487 (*20.8%*)	12 (*0.5%*)	3 (*0.1%*)	19 (*0.8%*)	30 (*1.3%*)	25 (*1.1%*)	124 (*5.3%*)	27 (*1.2%*)	**2,340**
2013	558 (*23.7%*)	200 (*8.5%*)	236 (*10.0%*)	124 (*5.3%*)	102 (*4.3%*)	57 (*2.4%*)	179 (*7.6%*)	193 (*8.2%*)	473 (*20.1%*)	13 (*0.6%*)	3 (0.1%)	19 (*0.8%*)	31 (*1.3%*)	23 (*1.0%*)	115 (*4.9%*)	27 (*1.1%*)	**2,353**
2014	547 (*23.2%*)	203 (*8.6%*)	220 (*9.3%*)	136 (*5.8%*)	112 (*4.8%*)	55 (*2.3%*)	167 (*7.1%*)	194 (*8.2%*)	461 (*19.6%*)	7 (*0.3%*)	4 (*0.2%*)	13 (0.6%)	27 (*1.1%*)	31 (*1.3%*)	141 (*6.0%*)	38 (*1.6%*)	**2,356**
2015	518 (*22.0%*)	215 (*9.1%*)	210 (*8.9%*)	149 (*6.3%*)	124 (*5.3%*)	50 (*2.1%*)	169 (*7.2%*)	233 (*9.9%*)	437 (*18.5%*)	8 (*0.3%*)	3 (*0.1%*)	17 (*0.7%*)	31 (*1.3%*)	27 (*1.1%*)	134 (*5.7%*)	33 (*1.4%*)	**2,358**

***Total number of firms that are categorized in each of the 16 ABHK multinationality ranks with the percent of yearly total firms in brackets.**

Appendix 4.3

Advanced Market Triad Results						
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Firm Total**
1998	502 (*43.5%*)	560 (*48.6%*)	49 (*4.2%*)	32 (*2.8%*)	10 (*0.9%*)	**1,153**
1999	508 (*42.5%*)	581 (*48.7%*)	55 (*4.6%*)	37 (*3.1%*)	13 (*1.1%*)	**1,194**
2000	453 (*37.0%*)	647 (*52.8%*)	78 (*6.4%*)	34 (*2.8%*)	13 (*1.1%*)	**1,225**
2001	432 (*34.5%*)	676 (*54.0%*)	78 (*6.2%*)	45 (*3.6%*)	20 (*1.6%*)	**1,251**
2002	416 (*32.3%*)	696 (*54.1%*)	97 (*7.5%*)	54 (*4.2%*)	24 (*1.9%*)	**1,287**
2003	426 (*32.3%*)	719 (*54.6%*)	83 (*6.3%*)	54 (*4.1%*)	35 (*2.7%*)	**1,317**
2004	441 (*32.6%*)	724 (*53.6%*)	99 (*7.3%*)	51 (*3.8%*)	36 (*2.7%*)	**1,351**
2005	434 (*31.5%*)	743 (*54.0%*)	112 (*8.1%*)	43 (*3.1%*)	44 (*3.2%*)	**1,376**
2006	428 (*30.8%*)	754 (*54.2%*)	119 (*8.6%*)	46 (*3.3%*)	44 (*3.2%*)	**1,391**
2007	424 (*29.9%*)	761 (*53.7%*)	129 (*9.1%*)	54 (*3.8%*)	49 (*3.5%*)	**1,417**
2008	430 (*30.0%*)	753 (*52.5%*)	144 (*10.0%*)	57 (*4.0%*)	49 (*3.4%*)	**1,433**
2009	441 (30.3%)	751 (*51.6%*)	154 (*10.6%*)	57 (*3.9%*)	52 (*3.6%*)	**1,455**
2010	431 (*29.1%*)	768 (*29.1%*)	155 (*10.5%*)	73 (*4.9%*)	52 (*3.5%*)	**1,479**
2011	451 (*29.8%*)	760 (*50.3%*)	167 (*11.1%*)	77 (*5.1%*)	56 (*3.7%*)	**1,511**
2012	456 (*29.7%*)	772 (*50.2%*)	172 (*11.2%*)	78 (*5.1%*)	59 (*3.8%*)	**1,537**
2013	461 (*29.9%*)	769 (*49.8%*)	166 (*10.8%*)	91 (*5.9%*)	57 (*3.7%*)	**1,544**
2014	459 (*29.7%*)	755 (*48.8%*)	182 (*11.8%*)	89 (*5.8%*)	62 (*4.0%*)	**1,547**
2015	463 (*29.9%*)	705 (*45.5%*)	238 (*15.4%*)	84 (*5.4%*)	59 (*3.8%*)	**1,549**

***Total number of AM firms in each Triad category from 1998-2015 with the percentage of the yearly total firm count in brackets.**

Appendix 4.4

Emerging Market Triad Results						
	Rank-1	**Rank-2**	**Rank-3**	**Rank-4**	**Rank-5**	**Firm Total**
1998	268 (*93.4%*)	18 (*6.3%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.3%*)	**287**
1999	371 (*92.3%*)	27 (*6.7%*)	1 (*0.2%*)	2 (*0.5%*)	1 (*0.2%*)	**402**
2000	384 (*87.9%*)	42 (*9.6%*)	4 (*0.9%*)	5 (*1.1%*)	2 (*0.5%*)	**437**
2001	384 (*83.5%*)	62 (*13.5%*)	6 (*1.3%*)	6 (*1.3%*)	2 (*0.4%*)	**460**
2002	395 (*77.1%*)	94 (*18.4%*)	13 (*2.5%*)	8 (*1.6%*)	2 (*0.4%*)	**512**
2003	423 (*76.1%*)	113 (*20.3%*)	10 (*1.8%*)	8 (*1.4%*)	2 (*0.8%*)	**556**
2004	464 (*76.2%*)	121 (*19.9%*)	8 (*1.3%*)	11 (*1.8%*)	5 (*0.8%*)	**609**
2005	480 (*74.8%*)	141 (*22.0%*)	9 (*1.4%*)	9 (*1.4%*)	3 (*0.5%*)	**642**
2006	495 (*74.1%*)	151 (*22.6%*)	13 (*1.9%*)	6 (*0.9%*)	3 (*0.4%*)	**668**
2007	514 (*73.7%*)	156 (*22.4%*)	17 (*2.4%*)	5 (*0.7%*)	5 (*0.7%*)	**697**
2008	512 (*70.4%*)	181 (*24.9%*)	20 (*2.8%*)	11 (*1.5%*)	3 (*0.4%*)	**727**
2009	507 (*67.9%*)	202 (*27.0%*)	22 (*2.9%*)	11 (*1.5%*)	5 (*0.7%*)	**747**
2010	517 (*66.6%*)	215 (*27.7%*)	26 (*3.4%*)	12 (*1.5%*)	6 (*0.8%*)	**776**
2011	509 (*64.3%*)	235 (*29.7%*)	29 (*3.7%*)	12 (*1.5%*)	6 (*0.8%*)	**791**
2012	449 (*55.9%*)	297 (*37.0%*)	39 (*4.9%*)	12 (*1.5%*)	6 (*0.7%*)	**803**
2013	425 (*52.9%*)	326 (*40.3%*)	37 (*4.6%*)	16 (*2.0%*)	5 (*0.6%*)	**809**
2014	410 (*50.7%*)	340 (*42.0%*)	32 (*4.0%*)	20 (*2.5%*)	7 (*0.9%*)	**809**
2015	397 (*49.1%*)	353 (*43.6%*)	34 (*4.2%*)	21 (*2.6%*)	4 (*0.5%*)	**809**

***Total number of EM firms in each Triad category from 1998-2015 with the percentage of the yearly total firm count in brackets.**

Appendix 4.5

Advanced Market ABHK Results																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**Firm Total**
1998	280 (*24.3%*)	48 (*4.2%*)	165 (*14.3%*)	95 (*8.2%*)	19 (*1.6%*)	20 (*1.7%*)	124 (*10.8%*)	55 (*4.8%*)	303 (*26.3%*)	5 (*0.4%*)	0 (*0.0%*)	8 (*0.7%*)	5 (*0.4%*)	3 (*0.3%*)	16 (*1.4%*)	7 (*0.6%*)	**1,153**
1999	287 (*24.0%*)	43 (*3.6%*)	175 (*14.7%*)	88 (*7.4%*)	24 (*2.0%*)	22 (*1.8%*)	132 (*11.1%*)	68 (*5.7%*)	308 (*25.8%*)	6 (*0.5%*)	0 (*0.0%*)	10 (*0.8%*)	3 (*0.4%*)	3 (*0.3%*)	19 (*1.4%*)	6 (*0.6%*)	**1,194**
2000	276 (*22.5%*)	47 (*3.8%*)	184 (*15.0%*)	65 (*5.3%*)	28 (*2.3%*)	33 (*2.7%*)	114 (*9.3%*)	87 (*7.1%*)	335 (*27.3%*)	8 (*0.7%*)	0 (*0.0%*)	12 (*1.0%*)	0 (*0.0%*)	6 (*0.5%*)	22 (*1.8%*)	8 (*0.7%*)	**1,225**
2001	261 (*20.9%*)	50 (*4.0%*)	168 (*13.4%*)	60 (*4.8%*)	27 (*2.2%*)	32 (*2.6%*)	111 (*8.9%*)	102 (*8.2%*)	361 (*28.9%*)	10 (*0.8%*)	0 (*0.0%*)	13 (*1.0%*)	1 (*0.1%*)	10 (*0.8%*)	37 (*3.0%*)	8 (*0.6%*)	**1,251**
2002	251 (*19.5%*)	57 (*4.4%*)	168 (*13.1%*)	67 (*5.2%*)	28 (*2.2%*)	29 (*2.3%*)	96 (*7.5%*)	105 (*8.2%*)	390 (*30.3%*)	14 (*1.1%*)	1 (*0.1%*)	8 (*0.6%*)	2 (*0.2%*)	6 (*0.5%*)	53 (*4.1%*)	12 (*0.9%*)	**1,287**
2003	254 (*19.3%*)	56 (*4.3%*)	162 (*12.3%*)	66 (*5.0%*)	35 (*2.7%*)	26 (*2.0%*)	106 (*8.0%*)	118 (*9.0%*)	399 (*30.3%*)	17 (*1.3%*)	1 (*0.1%*)	12 (*0.9%*)	0 (*0.0%*)	9 (*0.7%*)	46 (*3.5%*)	10 (*0.8%*)	**1,317**
2004	261 (*19.3%*)	57 (*4.2%*)	158 (*11.7%*)	70 (*5.2%*)	34 (*2.5%*)	34 (*2.5%*)	108 (*8.0%*)	110 (*8.1%*)	385 (*28.5%*)	17 (*1.3%*)	2 (*0.1%*)	12 (*0.9%*)	2 (*0.1%*)	14 (*1.0%*)	76 (*5.6%*)	11 (*0.8%*)	**1,351**
2005	258 (*18.8%*)	52 (*3.8%*)	158 (*11.5%*)	66 (*4.8%*)	44 (*3.2%*)	28 (*2.0%*)	104 (*7.6%*)	114 (*8.3%*)	400 (*29.1%*)	11 (*0.8%*)	1 (*0.1%*)	10 (*0.7%*)	6 (*0.4%*)	18 (*1.3%*)	93 (*6.8%*)	13 (*0.9%*)	**1,376**
2006	225 (*16.2%*)	47 (*3.4%*)	143 (*10.3%*)	82 (*5.9%*)	40 (*2.9%*)	24 (*1.7%*)	115 (*8.3%*)	135 (*9.7%*)	403 (*29.0%*)	11 (*0.8%*)	1 (*0.1%*)	14 (*1.0%*)	6 (*0.4%*)	27 (*1.9%*)	99 (*7.1%*)	19 (*1.4%*)	**1,391**
2007	240 (*16.9%*)	48 (*3.4%*)	146 (*10.3%*)	72 (*5.1%*)	39 (*2.8%*)	27 (*1.9%*)	108 (*7.6%*)	134 (*9.5%*)	419 (*29.6%*)	9 (*0.6%*)	1 (*0.1%*)	13 (*0.9%*)	4 (*0.3%*)	25 (*1.8%*)	117 (*8.3%*)	15 (*1.1%*)	**1,417**
2008	206 (*14.4%*)	44 (*3.1%*)	153 (*10.7%*)	70 (*4.9%*)	44 (*3.1%*)	37 (*2.6%*)	140 (*9.8%*)	134 (*9.4%*)	418 (*29.2%*)	11 (*0.8%*)	2 (*0.1%*)	13 (*0.9%*)	14 (*1.0%*)	22 (*1.5%*)	105 (*7.3%*)	20 (*1.4%*)	**1,433**
2009	212 (*14.6%*)	50 (*3.4%*)	148 (*10.2%*)	79 (*5.4%*)	35 (*2.4%*)	35 (*2.4%*)	129 (*8.9%*)	139 (*9.6%*)	438 (*30.1%*)	6 (*0.4%*)	1 (*0.1%*)	13 (*0.9%*)	21 (*1.4%*)	17 (*1.2%*)	107 (*7.4%*)	25 (*1.7%*)	**1,455**
2010	202 (*13.7%*)	48 (*3.2%*)	151 (*10.2%*)	70 (*4.7%*)	47 (*3.2%*)	33 (*2.2%*)	139 (*9.4%*)	145 (*9.8%*)	428 (*28.9%*)	7 (*0.5%*)	2 (*0.1%*)	14 (*0.9%*)	21 (*1.4%*)	24 (*1.6%*)	119 (*8.0%*)	29 (*2.0%*)	**1,479**
2011	199 (*13.2%*)	44 (*2.9%*)	154 (*10.2%*)	93 (*6.2%*)	47 (*3.1%*)	42 (*2.8%*)	138 (*9.1%*)	152 (*10.1%*)	438 (*29.0%*)	5 (*0.3%*)	3 (*0.2%*)	14 (*0.9%*)	21 (*1.4%*)	23 (*1.5%*)	113 (*7.5%*)	25 (*1.7%*)	**1,511**
2012	221 (*14.4%*)	46 (*3.0%*)	154 (*10.0%*)	71 (*4.6%*)	43 (*2.8%*)	43 (*2.8%*)	134 (8.7%)	152 (*9.9%*)	442 (*28.8%*)	9 (*0.6%*)	2 (*0.1%*)	17 (*1.1%*)	30 (*2.0%*)	23 (*1.5%*)	123 (*8.0%*)	27 (*1.8%*)	**1,537**
2013	211 (*13.7%*)	45 (*2.9%*)	175 (*11.3%*)	65 (*4.2%*)	44 (*2.8%*)	37 (*2.4%*)	155 (*10.0%*)	160 (*10.4%*)	431 (*27.9%*)	11 (*0.7%*)	2 (*0.1%*)	19 (*1.2%*)	31 (*2.0%*)	22 (*1.4%*)	110 (*7.1%*)	26 (*1.7%*)	**1,544**
2014	206 (*13.3%*)	46 (*3.0%*)	164 (*10.6%*)	83 (*5.4%*)	42 (*2.7%*)	37 (*2.4%*)	143 (*9.2%*)	161 (*10.4%*)	417 (*27.0%*)	6 (*0.4%*)	3 (*0.2%*)	11 (*0.7%*)	27 (*1.7%*)	30 (*1.9%*)	134 (*8.7%*)	37 (*2.4%*)	**1,547**
2015	188 (*12.1%*)	59 (*3.8%*)	151 (*9.7%*)	100 (*6.5%*)	52 (*3.4%*)	29 (*1.9%*)	144 (*9.3%*)	189 (*12.2%*)	394 (*25.4%*)	7 (*0.5%*)	1 (*0.1%*)	16 (*1.0%*)	30 (*1.9%*)	27 (*1.7%*)	129 (*8.3%*)	33 (*2.1%*)	**1,549**

***Total number of AM firms in each ABHK category from 1998-2015 with the percentage of the yearly total firm count in brackets.**

Appendix 4.6

Emerging Market ABHK Results																	
	Domestic	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10	Rank 11	Rank 12	Rank 13	Rank 14	Rank 15	Global	Firm Total
1998	210 (*73.2%*)	7 (*2.4%*)	10 (*3.5%*)	37 (*12.9%*)	5 (*1.7%*)	1 (*0.3%*)	14 (*4.9%*)	0 (*0.0%*)	2 (*0.7%*)	0 (*0.0%*)	0 (0.0%)	0 (*0.0%*)	1 (*0.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	287
1999	306 (*76.1%*)	10 (*2.5%*)	13 (*3.2%*)	40 (*10.0%*)	6 (*1.5%*)	2 (*0.5%*)	20 (*5.0%*)	0 (*0.0%*)	3 (*0.7%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	402
2000	323 (*73.9%*)	19 (*4.3%*)	20 (*4.6%*)	34 (*7.8%*)	7 (*1.6%*)	6 (*1.4%*)	24 (*5.5%*)	2 (*0.5%*)	0 (*0.0%*)	2 (*0.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	437
2001	325 (*70.7%*)	30 (*6.5%*)	26 (*5.7%*)	31 (*6.7%*)	6 (*1.3%*)	5 (*1.1%*)	26 (*5.7%*)	4 (*0.9%*)	4 (*0.9%*)	2 (*0.4%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	460
2002	340 (*66.4%*)	52 (*10.2%*)	36 (*7.0%*)	36 (*7.0%*)	12 (*2.3%*)	7 (*1.4%*)	17 (*3.3%*)	3 (*0.6%*)	7 (*1.4%*)	1 (*0.2%*)	0 (*0.0%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	512
2003	367 (*66.0%*)	58 (*10.4%*)	38 (*6.8%*)	32 (*5.8%*)	12 (*2.2%*)	4 (*0.7%*)	24 (*4.3%*)	8 (*1.4%*)	10 (*1.8%*)	2 (*0.4%*)	0 (*0.0%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	556
2004	401 (*65.8%*)	58 (*9.5%*)	38 (*6.2%*)	37 (*6.1%*)	14 (*2.3%*)	4 (*0.7%*)	29 (*4.8%*)	10 (*1.6%*)	15 (*2.5%*)	2 (*0.3%*)	0 (*0.0%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	609
2005	417 (*65.0%*)	69 (*10.7%*)	36 (*5.6%*)	38 (*5.9%*)	17 (*2.6%*)	3 (*0.5%*)	26 (*4.0%*)	12 (*1.9%*)	20 (*3.1%*)	3 (*0.5%*)	0 (*0.0%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	642
2006	436 (*65.3%*)	70 (*10.5%*)	36 (*5.4%*)	38 (*5.7%*)	10 (*1.5%*)	4 (*0.6%*)	25 (*3.7%*)	24 (*3.6%*)	19 (*2.8%*)	4 (*0.6%*)	0 (*0.0%*)	1 (*0.1%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.1%*)	0 (*0.0%*)	668
2007	444 (*63.7%*)	72 (*10.3%*)	41 (*5.9%*)	43 (*6.2%*)	23 (*3.3%*)	10 (*1.4%*)	26 (*3.7%*)	24 (*3.4%*)	10 (*1.4%*)	1 (*0.1%*)	1 (*0.1%*)	1 (*0.1%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.1%*)	0 (*0.0%*)	697
2008	425 (*58.5%*)	77 (*10.6%*)	51 (*7.0%*)	59 (*8.1%*)	34 (*4.7%*)	9 (*1.2%*)	25 (*3.4%*)	24 (*3.3%*)	19 (*2.6%*)	3 (*0.4%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.1%*)	0 (*0.0%*)	727
2009	424 (*56.8%*)	83 (*11.1%*)	53 (*7.1%*)	59 (*7.9%*)	39 (*5.2%*)	11 (*1.5%*)	25 (*3.3%*)	22 (2.9%)	25 (*3.3%*)	3 (*0.4%*)	0 (*0.0%*)	1 (*0.1%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.3%*)	0 (*0.0%*)	747
2010	420 (*54.1%*)	89 (*11.5%*)	53 (*6.8%*)	67 (*8.6%*)	49 (*6.3%*)	10 (*1.3%*)	27 (*3.5%*)	24 (*3.1%*)	28 (*3.6%*)	4 (*0.5%*)	0 (*0.0%*)	1 (*0.1%*)	0 (*0.0%*)	1 (*0.1%*)	3 (*0.4%*)	0 (*0.0%*)	776
2011	413 (*52.2%*)	97 (*12.3%*)	56 (*7.1%*)	69 (*8.7%*)	46 (*5.8%*)	19 (*2.4%*)	25 (*3.2%*)	24 (*3.0%*)	30 (*3.8%*)	4 (*0.5%*)	1 (*0.1%*)	1 (*0.1%*)	1 (*0.1%*)	2 (*0.3%*)	3 (*0.4%*)	0 (*0.0%*)	791
2012	372 (*46.3%*)	134 (*16.7%*)	56 (*7.0%*)	58 (*7.2%*)	60 (*7.5%*)	18 (2.2%)	21 (*2.6%*)	30 (*3.7%*)	45 (*5.6%*)	3 (*0.4%*)	1 (*0.1%*)	2 (*0.2%*)	0 (*0.0%*)	2 (*0.2%*)	1 (*0.1%*)	0 (*0.0%*)	803
2013	347 (*42.9%*)	155 (*19.2%*)	61 (*7.5%*)	59 (*7.3%*)	58 (*7.2%*)	20 (*2.5%*)	24 (*3.0%*)	33 (*4.1%*)	42 (5.2%)	2 (*0.2%*)	1 (*0.1%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.1%*)	5 (*0.6%*)	1 (*0.1%*)	809
2014	341 (*42.2%*)	157 (*19.4%*)	56 (*6.9%*)	53 (*6.6%*)	70 (*8.7%*)	18 (*2.2%*)	24 (*3.0%*)	33 (*4.1%*)	44 (*5.4%*)	1 (*0.1%*)	1 (*0.1%*)	2 (*0.2%*)	0 (*0.0%*)	1 (*0.1%*)	7 (0.9%)	1 (*0.1%*)	809
2015	330 (*40.8%*)	156 (*19.3%*)	59 (*7.3%*)	50 (*6.2%*)	71 (*8.8%*)	21 (*2.6%*)	24 (*3.0%*)	44 (*5.4%*)	43 (*5.3%*)	1 (*0.1%*)	2 (*0.2%*)	1 (*0.1%*)	1 (*0.1%*)	0 (*0.0%*)	6 (*0.7%*)	0 (*0.0%*)	809

***Total number of AM firms in each ABHK category from 1998-2015 with the percentage of the yearly total firm count in brackets.**

Appendix 4.7

Multinationality Measuring																			
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average
Australia																			
Triad Score	1.59	1.61	1.60	1.84	2.05	1.96	1.97	1.98	1.98	1.98	2.01	2.06	2.13	2.07	2.02	2.08	1.94	1.99	**1.96**
Geographic Sales Location	2.79	2.73	3.02	2.94	2.96	2.44	2.71	2.87	2.88	2.90	2.93	2.84	2.78	2.76	2.78	2.78	2.64	2.63	**2.80**
Geographic Subsidiary Location	3.09	2.92	2.96	2.84	2.87	2.95	2.75	2.84	3.08	3.20	3.20	3.23	2.94	2.91	2.85	3.02	3.11	3.04	**2.99**
ABHK Score	4.27	4.42	4.68	4.89	5.05	5.03	5.01	5.05	4.96	5.29	5.81	5.74	5.64	5.43	5.44	5.73	5.91	5.74	**5.30**
Canada																			
Triad Score	1.57	1.41	1.57	1.60	1.72	1.66	1.71	1.73	1.73	1.74	1.81	1.79	1.86	1.86	1.87	1.83	1.85	1.92	**1.74**
Geographic Sales Location	2.26	2.16	2.38	2.31	2.24	2.25	2.24	2.36	2.40	2.39	2.57	2.57	2.71	2.59	2.72	2.83	2.78	2.24	**2.44**
Geographic Subsidiary Location	2.55	2.31	2.75	2.71	2.91	3.05	3.02	3.12	3.17	3.20	3.28	3.50	3.31	3.28	3.47	3.54	3.50	3.40	**3.10**
ABHK Score	4.11	4.16	4.39	4.67	5.09	5.36	5.18	5.51	5.89	5.70	5.86	5.88	5.93	6.02	6.30	6.20	6.25	6.35	**5.54**
France																			
Triad Score	1.76	1.80	1.88	1.97	2.02	1.96	2.01	2.07	2.16	2.24	2.21	2.11	2.20	2.21	2.32	2.36	2.30	2.24	**2.11**
Geographic Sales Location	3.50	3.57	3.64	3.61	3.87	3.63	3.76	3.66	3.76	3.58	3.68	3.76	3.76	3.66	3.80	3.81	3.88	3.54	**3.69**
Geographic Subsidiary Location	3.72	3.93	4.02	4.32	3.87	3.63	4.51	4.77	4.88	4.95	5.06	5.02	4.98	5.02	4.96	4.88	5.26	5.10	**4.58**
ABHK Score	5.24	5.78	6.20	6.84	7.31	6.85	7.18	7.80	8.16	8.13	8.27	8.16	8.31	8.11	8.11	8.37	8.78	8.63	**7.65**
Germany																			
Triad Score	1.64	1.67	1.92	2.00	2.08	2.08	2.06	2.08	2.07	2.00	2.01	2.06	2.19	2.15	2.20	2.16	2.35	2.54	**2.09**
Geographic Sales Location	4.39	4.45	4.28	4.45	4.59	4.55	4.43	4.29	4.25	4.25	4.29	4.13	4.28	4.47	4.42	4.92	4.07	3.97	**4.36**
Geographic Subsidiary Location	3.70	3.78	3.97	4.28	3.86	3.89	4.13	4.20	4.29	4.37	4.23	4.39	4.43	4.52	4.80	4.48	4.87	4.67	**4.26**
ABHK Score	6.81	6.51	6.94	7.41	7.42	7.06	7.74	7.90	7.64	7.70	7.92	8.25	8.55	8.54	8.79	8.35	8.66	8.73	**7.89**
Italy																			
Triad Score	1.50	1.52	1.65	1.69	1.73	1.81	1.80	1.71	1.76	1.76	1.83	1.85	1.81	1.80	1.94	1.92	1.80	2.02	**1.79**
Geographic Sales Location	2.56	2.74	2.68	2.80	2.91	2.82	2.96	2.88	2.96	2.88	2.95	2.99	3.00	3.00	3.03	3.03	2.96	3.72	**2.94**
Geographic Subsidiary Location	2.29	2.14	2.25	2.41	2.45	2.43	2.56	2.51	2.64	2.71	2.90	3.00	3.01	3.02	2.44	2.64	2.88	2.78	**2.59**
ABHK Score	3.45	3.38	3.49	3.65	4.03	3.69	3.93	3.72	4.00	4.30	4.62	4.35	4.72	5.19	4.68	4.76	4.90	5.74	**4.34**
Japan																			
Triad Score	1.77	1.76	1.77	1.76	1.82	1.83	1.82	1.83	1.84	1.87	1.88	1.88	1.81	1.85	1.83	1.83	1.91	2.00	**1.84**
Geographic Sales Location	3.60	3.70	3.77	3.99	4.08	4.05	4.09	4.12	4.10	4.09	4.12	4.12	4.10	4.10	4.15	3.33	3.23	2.83	**3.87**
Geographic Subsidiary Location	3.20	3.20	3.15	3.29	3.49	3.22	3.19	3.22	3.34	3.40	3.40	3.41	3.44	3.36	4.49	4.35	4.58	4.65	**3.58**
ABHK Score	7.10	7.09	7.33	7.34	7.34	7.38	7.47	7.53	8.18	8.04	7.98	7.75	8.03	8.13	8.17	7.94	8.21	8.28	**7.76**
United Kingdom																			
Triad Score	1.80	1.84	1.97	2.03	2.08	2.04	2.01	2.08	2.06	2.13	2.07	2.13	2.18	2.14	2.11	2.14	2.20	2.14	**2.08**
Geographic Sales Location	3.25	3.34	3.57	3.71	3.70	3.77	3.66	3.67	3.58	3.72	3.68	3.60	3.54	3.47	3.41	3.47	3.43	2.49	**3.50**
Geographic Subsidiary Location	2.63	2.81	2.53	2.85	2.89	2.75	2.85	3.21	3.38	3.27	3.41	3.56	3.48	3.42	3.45	3.59	3.52	3.31	**3.14**
ABHK Score	4.65	4.64	4.62	5.14	5.35	5.23	5.39	5.71	5.99	5.90	6.09	6.33	6.42	6.15	6.23	6.10	6.11	5.63	**5.72**
United States																			
Triad Score	1.64	1.70	1.71	1.76	1.78	1.84	1.85	1.86	1.88	1.92	1.96	1.95	1.97	2.01	2.00	2.00	2.00	1.97	**1.88**
Geographic Sales Location	2.30	2.33	2.36	2.39	2.38	2.41	2.49	2.52	2.56	2.61	2.58	2.59	2.61	2.65	2.69	2.77	2.79	2.38	**2.52**
Geographic Subsidiary Location	3.46	3.44	3.33	3.59	3.82	3.76	3.86	3.96	4.07	4.17	4.22	4.20	4.09	4.05	4.12	4.16	4.18	4.15	**3.91**
ABHK Score	5.03	5.14	5.37	5.76	5.96	6.28	6.50	6.72	7.14	7.24	7.29	7.35	7.51	7.42	7.61	7.57	7.74	7.83	**6.79**
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Average

China																			
Triad Score	1.10	1.02	1.03	1.05	1.10	1.08	1.10	1.14	1.17	1.17	1.18	1.20	1.22	1.22	1.40	1.51	1.53	1.59	**1.24**
Geographic Sales Location	1.33	1.08	1.18	1.17	1.24	1.17	1.12	1.12	1.15	1.18	1.24	1.23	1.24	1.21	1.22	1.16	1.19	1.21	**1.19**
Geographic Subsidiary Location	2.31	1.38	1.68	1.62	1.46	1.62	1.66	1.53	1.48	1.37	1.46	1.41	1.49	1.58	1.62	1.59	1.65	1.64	**1.59**
ABHK Score	2.00	1.27	1.31	1.43	1.41	1.55	1.56	1.65	1.61	1.56	1.78	1.83	1.92	2.10	2.36	2.38	2.62	2.78	**1.90**
India																			
Triad Score	1.00	1.05	1.08	1.05	1.44	1.43	1.43	1.41	1.46	1.54	1.66	1.69	1.71	1.71	1.78	1.78	1.88	1.86	**1.55**
Geographic Sales Location	1.06	1.04	1.11	1.05	1.22	1.20	1.22	1.22	1.31	1.30	1.32	1.42	1.41	1.47	1.48	1.50	1.53	1.51	**1.33**
Geographic Subsidiary Location	2.06	2.25	2.36	2.65	2.00	1.89	2.13	1.71	1.82	2.05	2.00	2.13	2.25	2.44	2.89	2.68	2.82	2.74	**2.27**
ABHK Score	1.82	2.06	2.08	1.98	2.15	2.24	2.65	2.60	2.84	3.16	3.13	3.30	3.74	3.86	4.08	4.17	4.35	4.38	**3.17**
Russia																			
Triad Score	1.14	1.11	1.10	1.09	1.12	1.15	1.14	1.21	1.22	1.39	1.45	1.64	1.68	1.89	1.89	1.89	1.84	1.86	**1.56**
Geographic Sales Location	1.00	1.44	1.25	1.20	1.33	1.76	1.70	1.61	1.97	2.29	2.27	2.24	2.20	2.40	2.37	2.21	2.16	2.10	**2.06**
Geographic Subsidiary Location	1.00	2.67	2.40	2.25	2.08	2.00	2.07	2.00	1.94	1.85	1.82	1.81	1.78	1.61	1.79	2.00	1.80	1.85	**1.94**
ABHK Score	1.57	3.44	3.20	3.55	3.53	3.10	2.82	2.67	2.61	2.34	2.83	3.40	3.32	3.14	3.34	3.61	3.34	3.39	**3.11**
South Africa																			
Triad Score	1.13	1.19	1.46	1.66	1.70	1.68	1.70	1.68	1.66	1.69	1.73	1.68	1.64	1.65	1.68	1.69	1.72	1.70	**1.63**
Geographic Sales Location	2.17	2.48	2.93	3.20	2.98	2.90	2.89	2.76	2.84	2.78	2.87	2.80	2.98	2.79	2.73	2.53	2.40	2.37	**2.72**
Geographic Subsidiary Location	1.60	1.69	1.69	2.15	1.89	2.38	2.27	1.88	1.95	1.68	1.71	1.78	1.81	1.75	1.83	1.86	1.98	1.91	**1.88**
ABHK Score	2.42	2.38	2.46	2.85	2.80	2.86	2.90	3.11	3.32	3.10	3.36	3.37	3.36	3.41	3.53	3.51	3.64	3.64	**3.19**
South America																			
Triad Score	1.07	1.10	1.10	1.18	1.17	1.19	1.25	1.18	1.15	1.10	1.13	1.18	1.25	1.28	1.36	1.39	1.43	1.43	**1.24**
Geographic Sales Location	1.21	1.34	1.47	1.67	1.65	1.69	1.68	1.74	1.57	1.41	1.58	1.66	1.83	1.90	1.78	1.56	1.56	1.61	**1.63**
Geographic Subsidiary Location	1.53	1.32	1.40	1.33	1.40	1.47	1.39	1.30	1.43	1.44	1.46	1.52	1.55	1.63	1.67	1.67	1.62	1.76	**1.52**
ABHK Score	1.79	1.80	1.83	1.86	1.87	1.91	1.90	1.88	1.88	1.85	2.00	2.08	2.27	2.36	2.43	2.48	2.48	2.58	**2.12**
Visegrád																			
Triad Score	1.08	1.16	1.20	1.16	1.18	1.24	1.24	1.27	1.27	1.26	1.26	1.35	1.38	1.41	1.53	1.54	1.53	1.53	**1.35**
Geographic Sales Location	1.08	1.23	1.31	1.30	1.24	1.36	1.43	1.43	1.47	1.44	1.55	1.67	1.65	1.66	1.61	1.55	1.55	1.60	**1.51**
Geographic Subsidiary Location	1.57	1.60	1.50	1.20	1.26	1.33	1.40	1.33	1.45	1.38	1.48	1.43	1.47	1.45	1.47	1.63	1.56	1.61	**1.45**
ABHK Score	1.65	1.87	1.80	1.86	1.67	1.92	2.02	2.01	2.02	2.05	2.25	2.27	2.41	2.45	2.62	2.88	2.82	2.83	**2.31**

***Each firm is assigned a rank based on its multinationality. The Annual averages are taken for each country that comprises each grouping for five measures of multinationality.**

Appendix 4.8

Industry Triad Results												
	Oil and Gas						Basic Materials					
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**	**Domestic**	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**
1998	32 (*47.1%*)	28 (*41.2%*)	4 (*5.9%*)	3 (*4.4%*)	1 (*1.5%*)	**1.72**	56 (*44.1%*)	55 (*43.3%*)	8 (*6.3%*)	7 (*5.5%*)	1 (*0.8%*)	**1.76**
1999	40 (*52.6%*)	29 (*38.2%*)	4 (*5.3%*)	2 (*2.6%*)	1 (*1.3%*)	**1.62**	63 (*45.7%*)	63 (*45.7%*)	6 (*4.3%*)	5 (*3.6%*)	1 (*0.7%*)	**1.68**
2000	37 (*48.1%*)	31 (*40.3%*)	6 (*7.8%*)	2 (*2.6%*)	1 (*1.3%*)	**1.69**	59 (*40.4%*)	70 (*47.9%*)	10 (*6.8%*)	5 (*3.4%*)	2 (*1.4%*)	**1.77**
2001	36 (*44.4%*)	37 (*45.7%*)	2 (*2.5%*)	5 (*6.2%*)	1 (*1.2%*)	**1.74**	56 (*37.3%*)	76 (*50.7%*)	12 (*8.0%*)	4 (*2.7%*)	2 (*1.3%*)	**1.80**
2002	34 (*41.0%*)	38 (*45.8%*)	5 (*6.0%*)	5 (*6.0%*)	1 (*1.2%*)	**1.81**	59 (*36.2%*)	78 (*47.9%*)	21 (*12.9%*)	3 (*1.8%*)	2 (*1.2%*)	**1.84**
2003	34 (*39.5%*)	43 (*50.0%*)	2 (*2.3%*)	6 (*7.0%*)	1 (*1.2%*)	**1.80**	63 (*35.8%*)	88 (*50.0%*)	17 (*9.7%*)	6 (*3.4%*)	2 (*1.1%*)	**1.84**
2004	35 (*38.5%*)	41 (*45.1%*)	9 (*9.9%*)	5 (*5.5%*)	1 (*1.1%*)	**1.86**	69 (*37.1%*)	88 (*47.3%*)	15 (*8.1%*)	9 (*4.8%*)	5 (*2.7%*)	**1.89**
2005	33 (*35.5%*)	46 (*49.5%*)	8 (*8.6%*)	4 (*4.3%*)	2 (*2.2%*)	**1.88**	69 (*36.3%*)	93 (*48.9%*)	16 (*8.4%*)	5 (*2.6%*)	7 (*3.7%*)	**1.88**
2006	35 (*37.2%*)	49 (*52.1%*)	6 (*6.4%*)	3 (*3.2%*)	1 (*1.1%*)	**1.79**	71 (*36.8%*)	97 (*50.3%*)	19 (*9.8%*)	2 (*1.0%*)	4 (*2.1%*)	**1.81**
2007	34 (*35.4%*)	47 (*49.0%*)	7 (*7.3%*)	6 (*6.3%*)	2 (*2.1%*)	**1.91**	76 (*38.4%*)	94 (*47.5%*)	14 (*7.1%*)	4 (*2.0%*)	10 (*5.1%*)	**1.88**
2008	36 (*36.4%*)	47 (*47.5%*)	7 (*7.1%*)	9 (*9.1%*)	0 (*0.0%*)	**1.89**	73 (*35.8%*)	100 (*49.0%*)	18 (*8.8%*)	7 (*3.4%*)	6 (*2.9%*)	**1.89**
2009	37 (*36.6%*)	48 (*47.5%*)	7 (*6.9%*)	7 (*6.9%*)	2 (*2.0%*)	**1.90**	68 (*33.0%*)	96 (*46.6%*)	26 (*12.6%*)	7 (*3.4%*)	9 (*4.4%*)	**2.00**
2010	38 (*37.3%*)	47 (*46.1%*)	10 (*9.8%*)	6 (*5.9%*)	1 (*1.0%*)	**1.87**	62 (*29.7%*)	102 (*48.8%*)	20 (*9.6%*)	13 (*6.2%*)	12 (*5.7%*)	**2.10**
2011	38 (*36.9%*)	49 (*47.6%*)	10 (*9.7%*)	5 (*4.9%*)	1 (*1.0%*)	**1.85**	56 (*26.5%*)	108 (*51.2%*)	20 (*9.5%*)	18 (*8.5%*)	9 (*4.3%*)	**2.13**
2012	36 (*35.0%*)	48 (*46.6%*)	11 (*10.7%*)	7 (*6.8%*)	1 (*1.0%*)	**1.92**	46 (*21.6%*)	119 (*55.9%*)	25 (*11.7%*)	15 (*7.0%*)	8 (*3.8%*)	**2.15**
2013	31 (*30.4%*)	53 (*52.0%*)	8 (*7.8%*)	8 (*7.8%*)	2 (*2.0%*)	**1.99**	35 (*16.3%*)	131 (*60.9%*)	20 (*9.3%*)	21 (*9.8%*)	8 (*3.7%*)	**2.24**
2014	33 (*32.4%*)	51 (*50.0%*)	7 (*6.9%*)	8 (*7.8%*)	3 (*2.9%*)	**1.99**	32 (*14.9%*)	131 (*60.9%*)	26 (*12.1%*)	18 (*8.4%*)	8 (*3.7%*)	**2.25**
2015	31 (*30.4%*)	52 (*51.0%*)	10 (*9.8%*)	6 (*5.9%*)	3 (*2.9%*)	**2.00**	31 (*14.4%*)	123 (*57.2%*)	41 (*19.1%*)	13 (*6.0%*)	7 (*3.3%*)	**2.27**
	Industrials						Consumer Goods					
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**	**Domestic**	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**
1998	106 (*34.6%*)	180 (*58.8%*)	11 (*3.6%*)	7 (*2.3%*)	2 (*0.7%*)	**1.75**	76 (*40.0%*)	99 (*52.1%*)	11 (*5.8%*)	2 (*1.1%*)	2 (*1.1%*)	**1.71**
1999	119 (*36.4%*)	179 (*54.7%*)	11 (*3.4%*)	15 (*4.6%*)	3 (*0.9%*)	**1.79**	94 (*43.9%*)	101 (*47.2%*)	14 (*6.5%*)	2 (*0.9%*)	3 (*1.4%*)	**1.69**
2000	111 (*33.3%*)	189 (*54.7%*)	20 (*6.0%*)	12 (*3.6%*)	1 (*0.3%*)	**1.81**	92 (*40.9%*)	108 (*48.0%*)	20 (*8.9%*)	3 (*1.3%*)	2 (*0.9%*)	**1.73**
2001	104 (*30.9%*)	196 (*58.2%*)	22 (*6.5%*)	14 (*4.2%*)	1 (*2.3%*)	**1.85**	91 (*39.7%*)	111 (*48.5%*)	18 (*7.9%*)	6 (*2.6%*)	3 (*1.3%*)	**1.77**
2002	108 (*30.7%*)	199 (*56.5%*)	21 (*6.0%*)	16 (*4.5%*)	8 (*2.3%*)	**1.91**	90 (*37.7%*)	116 (*48.5%*)	26 (*10.9%*)	5 (*2.1%*)	2 (*0.8%*)	**1.80**
2003	112 (*30.9%*)	208 (*57.5%*)	25 (*6.9%*)	13 (*3.6%*)	4 (*1.1%*)	**1.86**	97 (*39.3%*)	122 (*49.4%*)	14 (5.7%)	5 (*2.0%*)	9 (*3.6%*)	**1.81**
2004	120 (*31.8%*)	217 (*57.6%*)	22 (*5.8%*)	14 (*3.7%*)	4 (*1.1%*)	**1.85**	106 (*41.6%*)	119 (*46.7%*)	17 (*6.7%*)	5 (*2.0%*)	8 (*3.1%*)	**1.78**

2005	116 (*30.2%*)	219 (*57.0%*)	27 (*7.0%*)	13 (*3.4%*)	9 (*2.3%*)	**1.91**	97 (*37.0%*)	137 (*52.3%*)	16 (*6.1%*)	5 (*1.9%*)	7 (*2.7%*)	**1.81**
2006	120 (*30.8%*)	210 (*53.8%*)	31 (*7.9%*)	16 (*4.1%*)	13 (*3.3%*)	**1.95**	90 (*34.4%*)	134 (*51.1%*)	26 (*9.9%*)	3 (*1.1%*)	9 (*3.4%*)	**1.88**
2007	113 (*28.6%*)	216 (*54.7%*)	39 (*9.9%*)	15 (*3.8%*)	12 (*3.0%*)	**1.98**	96 (*35.7%*)	139 (*51.7%*)	21 (*7.8%*)	3 (*1.1%*)	10 (*3.7%*)	**1.86**
2008	118 (*29.1%*)	221 (*54.4%*)	40 (*9.9%*)	14 (*3.4%*)	13 (3.2%)	**1.97**	98 (*36.0%*)	138 (*50.7%*)	23 (*8.5%*)	4 (*1.5%*)	9 (*3.3%*)	**1.85**
2009	109 (*26.7%*)	231 (*56.5%*)	47 (*11.5%*)	11 (*2.7%*)	11 (*2.7%*)	**1.98**	97 (*34.8%*)	139 (*49.8%*)	26 (*9.3%*)	4 (*1.4%*)	13 (*4.7%*)	**1.91**
2010	117 (*27.9%*)	222 (*53.0%*)	51 (*12.2%*)	20 (*4.8%*)	9 (*2.1%*)	**2.00**	95 (*33.0%*)	148 (*51.4%*)	26 (*9.0%*)	6 (*2.1%*)	13 (*4.5%*)	**1.94**
2011	114 (*26.7%*)	234 (*54.8%*)	52 (*12.2%*)	16 (*3.7%*)	11 (*2.6%*)	**2.01**	90 (*30.9%*)	148 (*50.9%*)	32 (*11.0%*)	7 (*2.4%*)	14 (*4.8%*)	**1.99**
2012	104 (*24.1%*)	250 (*57.9%*)	50 (*11.6%*)	14 (*3.2%*)	14 (*3.2%*)	**2.04**	70 (*23.6%*)	166 (*56.1%*)	35 (*11.8%*)	11 (*3.7%*)	14 (*4.7%*)	**2.10**
2013	102 (*23.6%*)	245 (*56.6%*)	49 (*11.3%*)	18 (*4.2%*)	19 (*4.4%*)	**2.09**	61 (*20.6%*)	168 (*56.8%*)	*42 (14.2%)*	14 (*4.7%*)	11 (*3.7%*)	**2.14**
2014	96 (*22.2%*)	250 (*57.7%*)	51 (*11.8%*)	16 (*3.7%*)	20 (*4.6%*)	**2.11**	60 (*20.3%*)	171 (*58.0%*)	39 (*13.2%*)	14 (*4.7%*)	11 (*3.7%*)	**2.14**
2015	91 (*21.1%*)	240 (*55.6%*)	61 (*14.1%*)	20 (*4.6%*)	20 (*4.6%*)	**2.16**	60 (*20.3%*)	161 (*54.4%*)	49 (*16.6%*)	15 (*5.1%*)	11 (*3.7%*)	**2.18**
	Health Care						**Consumer Services**					
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**	**Domestic**	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**
1998	50 (*52.1%*)	39 (*40.6%*)	2 (*2.1%*)	3 (*3.1%*)	2 (*2.1%*)	**1.63**	111 (*63.1%*)	58 (*33.0%*)	4 (*2.3%*)	3 (*1.7%*)	0 (*0.0%*)	**1.43**
1999	64 (*55.7%*)	40 (*34.8%*)	5 (*4.3%*)	5 (*4.3%*)	1 (*0.9%*)	**1.60**	120 (*61.9%*)	66 (*34.0%*)	3 (*1.5%*)	4 (*2.1%*)	1 (*0.5%*)	**1.45**
2000	65 (*54.2%*)	42 (*35.0%*)	5 (*4.2%*)	6 (*5.0%*)	2 (*1.7%*)	**1.65**	114 (*55.9%*)	78 (*38.2%*)	6 (*2.9%*)	5 (*2.5%*)	1 (*0.5%*)	**1.53**
2001	62 (*50.4%*)	48 (*39.0%*)	5 (*4.1%*)	5 (*4.1%*)	3 (*2.4%*)	**1.69**	115 (*54.2%*)	*83 (39.2%)*	6 (*2.8%*)	7 (*3.3%*)	1 (*0.5%*)	**1.57**
2002	57 (*45.2%*)	52 (*41.3%*)	8 (*6.3%*)	7 (*5.6%*)	2 (*1.6%*)	**1.77**	111 (*49.8%*)	97 (*43.5%*)	8 (*3.6%*)	6 (*2.7%*)	1 (*0.4%*)	**1.61**
2003	59 (*44.4%*)	56 (*42.1%*)	6 (*4.5%*)	8 (*6.0%*)	4 (*3.0%*)	**1.81**	118 (*50.4%*)	99 (*42.3%*)	8 (*3.4%*)	7 (*3.0%*)	2 (*0.9%*)	**1.62**
2004	61 (*44.2%*)	55 (*39.9%*)	10 (*7.2%*)	5 (*3.6%*)	7 (*5.1%*)	**1.86**	130 (*52.8%*)	99 (*40.2%*)	9 (*3.7%*)	6 (*2.4%*)	2 (*0.8%*)	**1.58**
2005	59 (*42.1%*)	59 (*42.1%*)	12 (*8.6%*)	5 (*3.6%*)	5 (*3.6%*)	**1.84**	134 (*53.0%*)	97 (*38.3%*)	16 (*6.3%*)	5 (*2.0%*)	1 (*0.4%*)	**1.58**
2006	59 (*41.5%*)	59 (*41.5%*)	15 (*10.6%*)	4 (*2.8%*)	5 (*3.5%*)	**1.85**	141 (*54.2%*)	102 (*39.2%*)	9 (*3.5%*)	7 (*2.7%*)	1 (*0.4%*)	**1.56**
2007	54 (*37.2%*)	65 (*44.8%*)	16 (*11.0%*)	7 (*4.8%*)	3 (*2.1%*)	**1.90**	139 (*52.3%*)	106 (*39.8%*)	16 (*6.0%*)	4 (*1.5%*)	1 (*0.4%*)	**1.58**
2008	50 (*34.2%*)	62 (*42.5%*)	23 (*15.8%*)	6 (*4.1%*)	5 (*3.4%*)	**2.00**	137 (*50.6%*)	110 (*40.6%*)	18 (*6.6%*)	5 (*1.8%*)	1 (*0.4%*)	**1.61**
2009	56 (*36.8%*)	65 (*42.8%*)	20 (*13.2%*)	7 (*4.6%*)	4 (*2.6%*)	**1.93**	140 (*50.4%*)	112 (*40.6%*)	17 (*6.1%*)	8 (*2.9%*)	1 (*0.4%*)	**1.63**
2010	53 (*34.2%*)	67 (*43.2%*)	21 (*13.5%*)	8 (*5.2%*)	6 (*3.9%*)	**2.01**	142 (*49.3%*)	120 (*40.3%*)	18 (*6.3%*)	5 (*1.7%*)	3 (*1.0%*)	**1.64**
2011	55 (*34.4%*)	65 (*40.6%*)	25 (*15.6%*)	6 (*3.8%*)	9 (*5.6%*)	**2.06**	142 (*48.0%*)	125 (*42.2%*)	20 (*6.8%*)	7 (*2.4%*)	2 (*0.7%*)	**1.66**
2012	47 (*29.4%*)	71 (*44.4%*)	26 (*16.3%*)	8 (*5.0%*)	8 (*5.0%*)	**2.12**	141 (*46.1%*)	133 (*43.5%*)	20 (*6.5%*)	9 (*2.9%*)	3 (*1.0%*)	**1.69**
2013	42 (*26.3%*)	80 (*50.0%*)	28 (*17.5%*)	6 (*3.8%*)	4 (*2.5%*)	**2.06**	141 (*46.1%*)	135 (*44.1%*)	16 (*5.2%*)	10 (*3.3%*)	4 (*1.3%*)	**1.70**
2014	43 (*26.9%*)	71 (*44.4%*)	32 (*20.0%*)	8 (*5.0%*)	6 (*3.8%*)	**2.14**	137 (*44.8%*)	135 (*44.1%*)	21 (*6.9%*)	7 (*2.3%*)	6 (*2.0%*)	**1.73**
2015	38 (*23.8%*)	69 (*43.1%*)	34 (*21.3%*)	11 (*6.9%*)	8 (*5.0%*)	**2.26**	135 (*44.0%*)	128 (*41.7%*)	28 (*9.1%*)	12 (*3.9%*)	4 (*1.3%*)	**1.77**

Telecommunications							Utilities					
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**	**Domestic**	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**
1998	24 (*72.7%*)	8 (*24.2%*)	0 (*0.0%*)	1 (3.0%)	0 (*0.0%*)	**1.33**	52 (*76.5%*)	15 (*22.1%*)	1 (*1.5%*)	0 (*0.0%*)	0 (*0.0%*)	**1.25**
1999	27 (*77.1%*)	7 (*20.0%*)	1 (*2.9%*)	0 (*0.0%*)	0 (*0.0%*)	**1.26**	58 (*75.3%*)	18 (*23.4%*)	1 (*1.3%*)	0 (*0.0%*)	0 (*0.0%*)	**1.26**
2000	30 (*78.9%*)	8 (*21.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**1.21**	58 (*74.4%*)	18 (*23.1%*)	2 (*2.6%*)	0 (*0.0%*)	0 (*0.0%*)	**1.28**
2001	27 (*69.2%*)	12 (*30.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**1.31**	54 (*67.5%*)	25 (*31.3%*)	1 (*1.3%*)	0 (*0.0%*)	0 (*0.0%*)	**1.34**
2002	31 (*70.5%*)	12 (*27.3%*)	1 (*2.3%*)	0 (*0.0%*)	0 (*0.0%*)	**1.32**	57 (*67.1%*)	26 (*30.6%*)	1 (*1.2%*)	1 (*1.2%*)	0 (*0.0%*)	**1.36**
2003	30 (*68.2%*)	13 (*29.5%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.3%*)	**1.39**	58 (*68.2%*)	25 (*29.4%*)	1 (*1.2%*)	0 (*0.0%*)	1 (*1.2%*)	**1.36**
2004	30 (*66.7%*)	13 (*28.9%*)	2 (*4.4%*)	0 (*0.0%*)	0 (*0.0%*)	**1.38**	68 (*73.9%*)	23 (*25.0%*)	1 (*1.1%*)	0 (*0.0%*)	0 (*0.0%*)	**1.27**
2005	30 (*66.7%*)	13 (*28.9%*)	1 (*2.2%*)	0 (*0.0%*)	1 (*2.2%*)	**1.42**	71 (*72.4%*)	26 (*26.5%*)	1 (*1.0%*)	0 (*0.0%*)	0 (*0.0%*)	**1.29**
2006	29 (*61.7%*)	18 (*38.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**1.38**	75 (*73.5%*)	25 (*24.5%*)	2 (*2.0%*)	0 (*0.0%*)	0 (*0.0%*)	**1.28**
2007	29 (*58.0%*)	17 (*34.0%*)	2 (*4.0%*)	2 (*4.0%*)	0 (*0.0%*)	**1.54**	78 (*74.3%*)	25 (*23.8%*)	2 (*1.9%*)	0 (*0.0%*)	0 (*0.0%*)	**1.28**
2008	29 (*56.9%*)	18 (*35.3%*)	3 (*5.9%*)	0 (*0.0%*)	1 (*2.0%*)	**1.55**	81 (*75.0%*)	24 (*22.2%*)	2 (*1.9%*)	1 (*0.9%*)	0 (*0.0%*)	**1.29**
2009	32 (*59.3%*)	18 (*33.3%*)	3 (*5.6%*)	0 (*0.0%*)	1 (*1.9%*)	**1.52**	82 (*74.5%*)	24 (*21.8%*)	2 (*1.8%*)	2 (*1.8%*)	0 (*0.0%*)	**1.31**
2010	29 (*53.7%*)	22 (*40.7%*)	2 (*3.7%*)	0 (*0.0%*)	1 (*1.9%*)	**1.56**	81 (*73.0%*)	26 (*23.4%*)	1 (*0.9%*)	3 (*2.7%*)	0 (*0.0%*)	**1.33**
2011	33 (*60.0%*)	19 (*34.5%*)	3 (*5.5%*)	0 (*0.0%*)	0 (*0.0%*)	**1.45**	82 (*73.9%*)	25 (*22.5%*)	2 (*1.8%*)	2 (*1.8%*)	0 (*0.0%*)	**1.32**
2012	*31 (57.4%)*	21 (*38.9%*)	1 (*1.9%*)	0 (*0.0%*)	1 (*1.9%*)	**1.50**	83 (*73.5%*)	24 (*21.2%*)	4 (*3.5%*)	2 (*1.8%*)	0 (*0.0%*)	**1.34**
2013	32 (*59.3%*)	19 (*35.2%*)	1 (*1.9%*)	1 (*1.9%*)	1 (*1.9%*)	**1.52**	85 (*75.2%*)	23 (*20.4%*)	2 (*1.8%*)	3 (*2.7%*)	0 (*0.0%*)	**1.32**
2014	33 (*60.0%*)	19 (*34.5%*)	1 (*1.8%*)	1 (*1.8%*)	1 (*1.8%*)	**1.51**	85 (*75.2%*)	24 (*21.2%*)	1 (*0.9%*)	3 (*2.7%*)	0 (*0.0%*)	**1.31**
2015	33 (*60.0%*)	20 (*36.4%*)	2 (*3.6%*)	0 (*0.0%*)	0 (*0.0%*)	**1.44**	86 (*75.4%*)	25 (*21.9%*)	1 (*0.9%*)	2 (*1.8%*)	0 (*0.0%*)	**1.29**
Financials							**Technology**					
	Domestic	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**	**Domestic**	**Home Region**	**Bi-Regional**	**Host Region**	**Global**	**Triad Score**
1998	228 (*79.4%*)	52 (*18.1%*)	2 (*0.7%*)	3 (*1.0%*)	2 (*0.7%*)	**1.25**	35 (*39.3%*)	44 (*49.4%*)	6 (*6.7%*)	3 (*3.4%*)	1 (*1.1%*)	**1.78**
1999	259 (*80.4%*)	55 (*17.1%*)	5 (*1.6%*)	2 (*0.6%*)	1 (*0.3%*)	**1.23**	35 *(35.7%)*	50 (*51.0%*)	6 (*6.1%*)	4 (*4.1%*)	3 (*3.1%*)	**1.88**
2000	243 (*71.7%*)	86 (*25.4%*)	6 (*1.8%*)	2 (*0.6%*)	2 (*0.6%*)	**1.33**	28 (*27.5%*)	59 (*57.8%*)	7 (*6.9%*)	4 (*3.9%*)	4 (*3.9%*)	**1.99**
2001	244 (*68.9%*)	93 (*26.3%*)	10 (*2.8%*)	5 (*1.4%*)	2 (*0.6%*)	**1.38**	27 (*25.5%*)	57 (*53.8%*)	8 (*7.5%*)	5 (*4.7%*)	9 (*8.5%*)	**2.17**
2002	241 (*64.8%*)	115 (*30.9%*)	7 (*1.9%*)	7 (*1.9%*)	2 (*0.5%*)	**1.42**	23 (*20.5%*)	57 (*50.9%*)	12 (*10.7%*)	12 (*10.7%*)	8 (*7.1%*)	**2.33**
2003	250 (*63.8%*)	122 (*31.1%*)	12 (*3.1%*)	4 (*1.0%*)	4 (*1.0%*)	**1.44**	28 (*24.6%*)	56 (*49.1%*)	8 (*7.0%*)	13 (*11.4%*)	9 (*7.9%*)	**2.29**
2004	261 (*63.2%*)	129 (*31.2%*)	12 (*2.9%*)	5 (*1.2%*)	6 (*1.5%*)	**1.46**	25 (*21.4%*)	61 *(52.1%)*	10 (*8.5%*)	13 (*11.1%*)	8 (*6.8%*)	**2.30**
2005	281 (*64.7%*)	131 (30.2%)	14 (*3.2%*)	4 (*0.9%*)	4 (*0.9%*)	**1.43**	24 (*20.2%*)	63 (*52.9%*)	10 (*8.4%*)	11 (*9.2%*)	11 (*9.2%*)	**2.34**
2006	279 (*62.4%*)	143 (*32.0%*)	16 (*3.6%*)	5 (*1.1%*)	4 (*0.9%*)	**1.46**	24 (*19.7%*)	68 (*55.7%*)	8 (*6.6%*)	12 (*9.8%*)	10 (*8.2%*)	**2.31**

2007	294 (*63.1%*)	142 (*30.5%*)	19 (*4.1%*)	6 (*1.3%*)	5 (*1.1%*)	**1.47**	25 (*20.2%*)	66 (*53.2%*)	10 (*8.1%*)	12 (*9.7%*)	11 (*8.9%*)	**2.34**
2008	298 (*62.2%*)	150 (*31.3%*)	15 (*3.1%*)	9 (*1.9%*)	7 (*1.5%*)	**1.49**	22 (*17.7%*)	64 (*51.6%*)	15 (*12.1%*)	13 (*10.5%*)	10 (*8.1%*)	**2.40**
2009	305 (*62.4%*)	154 (*31.5%*)	15 (*1.8%*)	9 (*1.2%*)	6 (*1.2%*)	**1.48**	22 (*17.7%*)	66 (*53.2%*)	13 (*10.5%*)	13 (*10.5%*)	10 (*8.1%*)	**2.38**
2010	309 (*61.2%*)	164 (*32.5%*)	17 (*3.4%*)	8 (*1.6%*)	7 (*1.4%*)	**1.50**	22 (*17.7%*)	65 (*52.4%*)	15 (*12.1%*)	16 (*12.9%*)	6 (*4.8%*)	**2.35**
2011	329 (*62.8%*)	159 (*30.3%*)	18 (*3.4%*)	10 (*1.9%*)	8 (*1.5%*)	**1.49**	21 (*16.9%*)	63 (*50.8%*)	14 (*11.3%*)	18 (*14.5%*)	8 (*6.5%*)	**2.43**
2012	335 (*62.3%*)	168 (*31.2%*)	19 (*3.5%*)	8 (*1.5%*)	8 (*1.5%*)	**1.49**	12 (*9.6%*)	69 (*55.2%*)	20 (*16.0%*)	16 (*12.8%*)	8 (*6.4%*)	**2.51**
2013	340 (*62.2%*)	176 (*32.2%*)	16 (*2.9%*)	10 (*1.8%*)	5 (*0.9%*)	**1.47**	17 (*13.4%*)	65 (*51.2%*)	21 (*16.5%*)	16 (*12.6%*)	8 (*6.3%*)	**2.47**
2014	335 (*60.9%*)	177 *(32.2%)*	16 (*2.9%*)	16 (*2.9%*)	6 (*1.1%*)	**1.51**	15 (*11.8%*)	66 (*52.0%*)	20 *(15.7%)*	18 (*14.2%*)	8 (*6.3%*)	**2.51**
2015	339 (*61.6%*)	175 (*31.8%*)	24 (*4.4%*)	8 (*1.5%*)	4 (*0.7%*)	**1.48**	16 (*12.6%*)	65 (*51.2%*)	22 (*17.3%*)	18 (*14.2%*)	6 (*4.7%*)	**2.47**

***Triad Score is a weighted score assigning 1 to Domestic firms, 2 to Home Region firms, 3 to Bi-Regional firms, 4 to Host Region firms, and 5 to Global firms, giving a Triad score each year to each industry grouping of firms.**

Appendix 4.9

Industry ABHK Results

Oil and Gas

	Domestic	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10	Rank 11	Rank 12	Rank 13	Rank 14	Rank 15	Global	ABHK Score
1998	22 (*32.4%*)	4 (*5.9%*)	16 (*23.5%*)	6 (*8.8%*)	2 (*2.9%*)	1 (*1.5%*)	4 (*5.9%*)	2 (*2.9%*)	10 (*14.7%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.5%*)	0 (*0.0%*)	**3.93**
1999	29 (*38.2%*)	3 (*3.9%*)	14 (*18.4%*)	6 (*7.9%*)	2 (*2.6%*)	1 (*1.3%*)	5 (*6.6%*)	3 (*3.9%*)	8 (*10.5%*)	2 (*2.6%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*3.9%*)	0 (*0.0%*)	**4.12**
2000	28 (*36.4%*)	3 (*3.9%*)	11 (*14.3%*)	4 (*5.2%*)	5 (*6.5%*)	3 (*3.9%*)	5 (*6.5%*)	4 (*5.2%*)	11 (*14.3%*)	2 (*2.6%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.3%*)	0 (*0.0%*)	**4.25**
2001	25 (*30.9%*)	5 (*6.2%*)	11 (*13.6%*)	5 (*6.2%*)	6 (*7.4%*)	3 (*3.7%*)	6 (*7.4%*)	5 (*6.2%*)	9 (*11.1%*)	1 (*1.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.2%*)	4 (*4.9%*)	0 (*0.0%*)	**4.73**
2002	25 (*30.1%*)	6 (*7.2%*)	11 (*13.3%*)	6 (*7.2%*)	7 (*8.4%*)	3 (*3.6%*)	3 (*3.6%*)	4 (*4.8%*)	12 (*14.5%*)	1 (*1.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.2%*)	3 (*3.6%*)	1 (*1.2%*)	**4.79**
2003	27 (*31.4%*)	7 (*8.1%*)	8 (*9.3%*)	6 (*7.0%*)	10 (*11.6%*)	1 (*1.2%*)	1 (*1.2%*)	4 (*4.7%*)	17 (*19.8%*)	1 (*1.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.2%*)	2 (*2.3%*)	1 (*1.2%*)	**4.79**
2004	26 (*28.6%*)	5 (*5.5%*)	8 (*8.8%*)	7 (*7.7%*)	12 (*13.2%*)	4 (*4.4%*)	2 (*2.2%*)	5 (*5.5%*)	15 (*16.5%*)	1 (*1.1%*)	0 (*0.0%*)	1 (*1.1%*)	0 (*0.0%*)	1 (*1.1%*)	4 (*4.4%*)	0 (*0.0%*)	**5.02**
2005	25 (*26.9%*)	6 (*6.5%*)	9 (*9.7%*)	3 (*3.2%*)	13 (*14.0%*)	3 (*3.2%*)	5 (*5.4%*)	4 (4.3%)	17 (*18.3%*)	1 (*1.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (2.2%)	5 (*5.4%*)	0 (*0.0%*)	**5.20**
2006	26 (*27.7%*)	5 (*5.3%*)	5 (*5.3%*)	4 (*4.3%*)	10 (*10.6%*)	0 (*0.0%*)	5 (*5.3%*)	7 (*7.4%*)	22 (*23.4%*)	1 (*1.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (2.1%)	7 (*7.4%*)	0 (*0.0%*)	**5.75**
2007	25 (*26.0%*)	5 (*5.2%*)	7 (*7.3%*)	5 (*5.2%*)	12 (*12.5%*)	0 (*0.0%*)	4 (*4.2%*)	7 (*7.3%*)	21 (*21.9%*)	1 (*1.0%*)	0 (*0.0%*)	1 (*1.0%*)	0 (*0.0%*)	1 (2.1%)	6 (*6.3%*)	0 (*0.0%*)	**5.63**
2008	24 (*24.2%*)	8 (*8.1%*)	8 (*8.1%*)	6 (*6.1%*)	7 (*7.1%*)	2 (*2.0%*)	6 (*6.1%*)	9 (*9.1%*)	18 (*18.2%*)	1 (*1.0%*)	0 (*0.0%*)	1 (2.0%)	0 (*0.0%*)	1 (*1.0%*)	6 (*6.1%*)	1 (*1.0%*)	**5.70**
2009	26 (*25.7%*)	10 (*9.9%*)	10 (*9.9%*)	8 (*7.9%*)	8 (*7.9%*)	0 (*0.0%*)	2 (*2.0%*)	7 (*6.9%*)	22 (*21.8%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	1 (*1.0%*)	1 (*1.0%*)	4 (*4.0%*)	1 (*1.0%*)	**5.31**
2010	20 (*19.6%*)	9 (*8.8%*)	10 (*9.8%*)	10 (*9.8%*)	8 (*7.8%*)	0 (*0.0%*)	8 (*7.8%*)	7 (*6.9%*)	21 (*20.6%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	0 (*0.0%*)	1 (*2.0%*)	4 (*3.9%*)	2 (*2.0%*)	**5.73**
2011	20 (*19.4%*)	9 (*8.7%*)	11 (*10.7%*)	11 (*10.7%*)	9 (*8.7%*)	0 (*0.0%*)	7 (*6.8%*)	5 (*4.9%*)	21 (*20.4%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	0 (*0.0%*)	2 (*1.9%*)	5 (*4.9%*)	2 (*1.9%*)	**5.79**
2012	21 (*20.4%*)	10 (*9.7%*)	9 (*8.7%*)	9 (*8.7%*)	5 (*4.9%*)	4 (*3.9%*)	6 (*5.8%*)	7 (*6.8%*)	22 (*21.4%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	0 (*0.0%*)	2 (*1.9%*)	5 (*4.9%*)	2 (*1.9%*)	**5.90**
2013	17 (*16.7%*)	8 (*7.8%*)	10 (*9.8%*)	8 (*7.8%*)	8 (*7.8%*)	6 (*5.9%*)	6 (*5.9%*)	8 (*7.8%*)	21 (*20.6%*)	1 (*1.0%*)	1 (*1.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	6 (*5.9%*)	1 (1.0%)	**6.01**
2014	17 (*16.7%*)	8 (*7.8%*)	11 (*10.8%*)	10 (*9.8%*)	9 (*8.8%*)	3 (*2.9%*)	6 (*5.9%*)	10 (*9.8%*)	19 (*18.6%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	0 (*0.0%*)	1 (*1.0%*)	5 (*4.9%*)	2 (*2.0%*)	**5.95**
2015	15 (*14.7%*)	11 (*10.8%*)	5 (*4.9%*)	10 (*9.8%*)	7 (*6.9%*)	2 (*2.0%*)	5 (*4.9%*)	9 (*8.8%*)	24 (*23.5%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*2.9%*)	1 (*1.0%*)	2 (*2.0%*)	6 (*5.9%*)	2 (*2.0%*)	**6.61**

Basic Materials

	Domestic	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10	Rank 11	Rank 12	Rank 13	Rank 14	Rank 15	Global	ABHK Score
1998	33 (*35.5%*)	1 (*1.1%*)	22 (*23.7%*)	14 (*15.1%*)	1 (*1.1%*)	3 (*3.2%*)	7 (*7.5%*)	4 (*4.3%*)	35 (*37.6%*)	1 (*1.1%*)	0 (*0.0%*)	1 (*1.1%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.2%*)	3 (*3.2%*)	**5.45**
1999	41 (*44.1%*)	4 (*4.3%*)	19 (*20.4%*)	15 (*16.1%*)	1 (*1.1%*)	5 (*5.4%*)	7 (*7.5%*)	3 (*3.2%*)	35 (*37.6%*)	2 (*2.2%*)	0 (*0.0%*)	1 (*1.1%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.2%*)	3 (*3.2%*)	**5.18**
2000	46 (*48.4%*)	5 (*5.3%*)	22 (*23.2%*)	6 (*6.3%*)	1 (*1.1%*)	7 (*7.4%*)	7 (*7.4%*)	3 (*3.2%*)	42 (*44.2%*)	1 (*1.1%*)	0 (*0.0%*)	3 (*3.2%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.1%*)	1 (*1.1%*)	**5.08**
2001	45 (*46.4%*)	8 (*8.2%*)	20 (*20.6%*)	4 (*4.1%*)	0 (*0.0%*)	5 (*5.2%*)	7 (*7.2%*)	7 (*7.2%*)	41 (*42.3%*)	2 (*2.1%*)	1 (*1.0%*)	3 (*3.1%*)	0 (*0.0%*)	0 (*0.0%*)	6 (*6.2%*)	1 (*1.0%*)	**5.46**
2002	50 (*48.1%*)	9 (*8.7%*)	30 (*28.8%*)	3 (*2.9%*)	0 (*0.0%*)	6 (*5.8%*)	6 (*5.8%*)	6 (*5.8%*)	40 (*38.5%*)	1 (*1.0%*)	0 (*0.0%*)	2 (*1.9%*)	0 (*0.0%*)	0 (*0.0%*)	8 (*7.7%*)	2 (*1.9%*)	**5.23**
2003	53 (*48.6%*)	14 (*12.8%*)	30 (*27.5%*)	4 (*3.7%*)	2 (*1.8%*)	4 (*3.7%*)	5 (*4.6%*)	8 (*7.3%*)	43 (*39.4%*)	2 (*1.8%*)	0 (*0.0%*)	3 (*2.8%*)	0 (*0.0%*)	0 (*0.0%*)	6 (*5.5%*)	2 (*1.8%*)	**5.09**
2004	58 (*50.9%*)	14 (*12.3%*)	32 (*28.1%*)	4 (*3.5%*)	0 (*0.0%*)	5 (*4.4%*)	8 (*7.0%*)	4 (*3.5%*)	43 (37.7%)	4 (*3.5%*)	0 (*0.0%*)	2 (*1.8%*)	0 (*0.0%*)	1 (*0.9%*)	8 (*7.0%*)	3 (*2.6%*)	**5.19**
2005	55 (*47.0%*)	18 (*15.4%*)	29 (*24.8%*)	7 (*6.0%*)	0 (*0.0%*)	4 (*3.4%*)	7 (*6.0%*)	4 (*3.4%*)	44 (*37.6%*)	2 (*1.7%*)	0 (*0.0%*)	2 (*1.7%*)	1 (*0.9%*)	2 (*1.7%*)	12 (*10.3%*)	3 (*2.6%*)	**5.45**
2006	56 (*45.2%*)	13 (*10.5%*)	28 (*22.6%*)	9 (*7.3%*)	0 (*0.0%*)	2 (*1.6%*)	9 (*7.3%*)	7 (*5.6%*)	45 (*36.3%*)	3 (*2.4%*)	1 (*0.8%*)	3 (*2.4%*)	1 (*0.8%*)	2 (*1.6%*)	12 (*9.7%*)	2 (*1.6%*)	**5.59**
2007	56 (*42.7%*)	11 (*8.4%*)	29 (*22.1%*)	11 (*8.4%*)	2 (*1.5%*)	3 (*2.3%*)	11 (*8.4%*)	6 (*4.6%*)	43 (*32.8%*)	4 (*3.1%*)	1 (*0.8%*)	3 (*2.3%*)	0 (*0.0%*)	2 (*1.5%*)	13 (*9.9%*)	3 (*2.3%*)	**5.68**
2008	49 (*34.3%*)	12 (*8.4%*)	30 (*21.0%*)	14 (*9.8%*)	5 (*3.5%*)	6 (*4.2%*)	11 (*7.7%*)	4 (*2.8%*)	47 (*32.9%*)	7 (*4.9%*)	0 (*0.0%*)	4 (*2.8%*)	0 (*0.0%*)	2 (*1.4%*)	10 (*7.0%*)	3 (*2.1%*)	**5.75**
2009	43 (*28.7%*)	13 (*8.7%*)	33 (*22.0%*)	14 (*9.3%*)	2 (*1.3%*)	6 (*4.0%*)	13 (*8.7%*)	4 (*2.7%*)	49 (*32.7%*)	6 (*4.0%*)	0 (*0.0%*)	4 (*2.7%*)	0 (*0.0%*)	3 (*2.0%*)	12 (*8.0%*)	4 (*2.7%*)	**6.08**
2010	44 (*29.1%*)	14 (*9.3%*)	34 (*22.5%*)	9 (*6.0%*)	9 (*6.0%*)	2 (*1.3%*)	12 (*7.9%*)	7 (*4.6%*)	51 (*33.8%*)	6 (*4.0%*)	0 (*0.0%*)	4 (*2.6%*)	0 (*0.0%*)	3 (*2.0%*)	10 (*6.6%*)	4 (*2.6%*)	**6.00**
2011	40 (*25.3%*)	13 (*8.2%*)	36 (*22.8%*)	11 (*7.0%*)	9 (*5.7%*)	6 (*3.8%*)	8 (*5.1%*)	6 (*3.8%*)	53 (*33.5%*)	5 (*3.2%*)	1 (*0.6%*)	5 (*3.2%*)	0 (*0.0%*)	5 (*3.2%*)	10 (*6.3%*)	3 (*1.9%*)	**6.10**
2012	32 (*19.5%*)	17 (*10.4%*)	35 (*21.3%*)	6 (*3.7%*)	14 (*8.5%*)	4 (*2.4%*)	11 (*6.7%*)	9 (*5.5%*)	56 (*34.1%*)	4 (*2.4%*)	2 (*1.2%*)	6 (*3.7%*)	1 (*0.6%*)	3 (*1.8%*)	8 (*4.9%*)	5 (*3.0%*)	**6.40**
2013	23 (*13.7%*)	24 (*14.3%*)	43 (*25.6%*)	4 (*2.4%*)	13 (*7.7%*)	9 (*5.4%*)	12 (*7.1%*)	10 (*6.0%*)	49 (*29.2%*)	3 (*1.8%*)	1 (*0.6%*)	4 (*2.4%*)	1 (*0.6%*)	3 (*1.8%*)	9 (*5.4%*)	7 (*4.2%*)	**6.36**
2014	20 (*11.8%*)	25 (*14.7%*)	34 (*20.0%*)	5 (*2.9%*)	14 (*8.2%*)	10 (*5.9%*)	11 (*6.5%*)	13 (*7.6%*)	56 (*32.9%*)	1 (*0.6%*)	1 (*0.6%*)	1 (*0.6%*)	0 (*0.0%*)	3 (*1.8%*)	14 (*8.2%*)	7 (*4.1%*)	**6.75**
2015	19 (*11.0%*)	24 (*14.0%*)	33 (*19.2%*)	6 (*3.5%*)	15 (*8.7%*)	11 (*6.4%*)	8 (*4.7%*)	11 (*6.4%*)	64 (*37.2%*)	2 (*1.2%*)	0 (*0.0%*)	2 (*1.2%*)	2 (*1.2%*)	2 (*1.2%*)	14 (*8.1%*)	2 (*1.2%*)	**6.53**

Industrials

	Domestic	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	Rank 7	Rank 8	Rank 9	Rank 10	Rank 11	Rank 12	Rank 13	Rank 14	Rank 15	Global	ABHK Score

1998	66 (*21.6%*)	12 (*3.9%*)	47 (*15.4%*)	18 (*5.9%*)	8 (*2.6%*)	3 (*1.0%*)	22 (*7.2%*)	11 (*3.6%*)	110 (*35.9%*)	0 (*0.0%*)	0 (*0.0%*)	4 (*1.3%*)	0 (*0.0%*)	1 (*0.3%*)	2 (*0.7%*)	2 (*0.7%*)	**5.65**
1999	76 (*23.2%*)	10 (*3.1%*)	51 (*15.6%*)	18 (*5.5%*)	9 (*2.8%*)	4 (*1.2%*)	25 (*7.6%*)	12 (*3.7%*)	112 (*34.3%*)	0 (*0.0%*)	0 (*0.0%*)	6 (*1.8%*)	0 (*0.0%*)	1 (*0.3%*)	2 (*0.6%*)	1 (*0.3%*)	**5.52**
2000	74 (*22.2%*)	10 (*3.0%*)	52 (*15.6%*)	15 (*4.5%*)	3 (*0.9%*)	6 (*1.8%*)	24 (*7.2%*)	18 (*5.4%*)	113 (*33.9%*)	2 (*0.6%*)	0 (*0.0%*)	5 (*1.5%*)	0 (*0.0%*)	2 (*0.6%*)	6 (*1.8%*)	3 (*0.9%*)	**5.87**
2001	73 (*21.7%*)	12 (*3.6%*)	46 (*13.6%*)	12 (*3.6%*)	4 (*1.2%*)	7 (*2.1%*)	20 (*5.9%*)	20 (*5.9%*)	123 (*36.5%*)	2 (*0.6%*)	0 (*0.0%*)	4 (*1.2%*)	0 (*0.0%*)	2 (*0.6%*)	8 (*2.4%*)	4 (*1.2%*)	**6.10**
2002	75 (*21.3%*)	16 (*4.5%*)	41 (*11.6%*)	19 (*5.4%*)	6 (*1.7%*)	9 (*2.6%*)	14 (*4.0%*)	18 (*5.1%*)	126 (*35.8%*)	5 (*1.4%*)	0 (*0.0%*)	4 (*1.1%*)	0 (*0.0%*)	1 (*0.3%*)	16 (*4.5%*)	2 (*0.6%*)	**6.14**
2003	79 (*21.8%*)	17 (*4.7%*)	42 (*11.6%*)	15 (*4.1%*)	8 (*2.2%*)	6 (*1.7%*)	18 (*5.0%*)	23 (*6.4%*)	127 (*35.1%*)	6 (*1.7%*)	0 (*0.0%*)	4 (*1.1%*)	0 (*0.0%*)	2 (*0.6%*)	14 (*3.9%*)	1 (*0.3%*)	**6.07**
2004	88 (*23.3%*)	17 (*4.5%*)	46 (*12.2%*)	10 (*2.7%*)	8 (*2.1%*)	9 (*2.4%*)	21 (*5.6%*)	19 (*5.0%*)	121 (*32.1%*)	6 (*1.6%*)	1 (*0.3%*)	4 (*1.1%*)	1 (*0.3%*)	4 (*1.1%*)	21 (*5.6%*)	1 (*0.3%*)	**6.12**
2005	83 (*21.6%*)	19 (*4.9%*)	45 (*11.7%*)	14 (*3.6%*)	9 (*2.3%*)	9 (*2.3%*)	18 (*4.7%*)	22 (*5.7%*)	126 (*32.8%*)	5 (*1.3%*)	0 (*0.0%*)	5 (*1.3%*)	1 (*0.3%*)	4 (*1.0%*)	21 (*5.5%*)	3 (*0.8%*)	**6.27**
2006	81 (*20.8%*)	16 (*4.1%*)	43 (*11.0%*)	16 (*4.1%*)	6 (*1.5%*)	5 (*1.3%*)	23 (*5.9%*)	31 (*7.9%*)	121 (*31.0%*)	4 (*1.0%*)	0 (*0.0%*)	8 (*2.1%*)	1 (*0.3%*)	7 (*1.8%*)	22 (*5.6%*)	6 (*1.5%*)	**6.61**
2007	78 (*19.7%*)	21 (*5.3%*)	39 (*9.9%*)	17 (*4.3%*)	12 (*3.0%*)	9 (*2.3%*)	18 (*4.6%*)	27 (*6.8%*)	128 (*32.4%*)	2 (*0.5%*)	1 (*0.3%*)	8 (*2.0%*)	1 (*0.3%*)	6 (*1.5%*)	25 (*6.3%*)	3 (*0.8%*)	**6.53**
2008	81 (*20.0%*)	22 (*5.4%*)	45 (*11.1%*)	13 (*3.2%*)	12 (*3.0%*)	10 (*2.5%*)	22 (*5.4%*)	28 (*6.9%*)	128 (*31.5%*)	2 (*0.5%*)	1 (*0.2%*)	6 (*1.5%*)	1 (*0.2%*)	4 (*1.0%*)	27 (*6.7%*)	4 (*1.0%*)	**6.48**
2009	75 (*18.3%*)	23 (*5.6%*)	49 (*12.0%*)	14 (*3.4%*)	13 (*3.2%*)	10 (*2.4%*)	19 (*4.6%*)	28 (*6.8%*)	135 (*33.0%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*1.7%*)	2 (*0.5%*)	3 (*0.7%*)	25 (*6.1%*)	6 (*1.5%*)	**6.56**
2010	74 (*17.7%*)	24 (*5.7%*)	45 (*10.7%*)	20 (*4.8%*)	15 (*3.6%*)	9 (*2.1%*)	20 (*4.8%*)	31 (*7.4%*)	125 (29.8%)	1 (*0.2%*)	0 (*0.0%*)	8 (*1.9%*)	3 (*0.7%*)	4 (*1.0%*)	33 (*7.9%*)	7 (*1.7%*)	**6.76**
2011	67 (*15.7%*)	27 (*6.3%*)	47 (*11.0%*)	22 (*5.2%*)	19 (*4.4%*)	10 (*2.3%*)	23 (*5.4%*)	33 (*7.7%*)	126 (*29.5%*)	1 (*0.2%*)	0 (*0.0%*)	6 (*1.4%*)	3 (*0.9%*)	4 (*0.9%*)	32 (*7.5%*)	7 (*1.6%*)	**6.75**
2012	62 (*14.4%*)	35 (*8.1%*)	47 (*10.9%*)	17 (*3.9%*)	18 (*4.2%*)	10 (*2.3%*)	23 (*5.3%*)	32 (*7.4%*)	130 (*30.1%*)	3 (*0.7%*)	1 (*0.2%*)	6 (*1.4%*)	4 (*1.4%*)	3 (*0.7%*)	34 (*7.9%*)	7 (*1.6%*)	**6.84**
2013	58 (*13.4%*)	38 (*8.8%*)	45 (*10.4%*)	13 (*3.0%*)	22 (*5.1%*)	7 (*1.6%*)	27 (*6.2%*)	34 (*7.9%*)	132 (*30.5%*)	4 (*0.9%*)	0 (*0.0%*)	9 (*2.1%*)	6 (*1.4%*)	3 (*0.7%*)	31 (*7.2%*)	4 (*0.9%*)	**6.80**
2014	57 (*13.2%*)	39 (*9.0%*)	46 (*10.6%*)	11 (*2.5%*)	24 (*5.5%*)	9 (*2.1%*)	27 (*6.2%*)	33 (*7.6%*)	120 (*27.7%*)	3 (*0.7%*)	1 (*0.2%*)	7 (*1.6%*)	4 (*0.9%*)	4 (*0.9%*)	39 (*9.0%*)	9 (*2.1%*)	**7.04**
2015	56 (*13.0%*)	38 (*8.8%*)	52 (*12.0%*)	11 (*2.5%*)	22 (*5.1%*)	4 (*0.9%*)	25 (*5.8%*)	48 (*11.1%*)	115 (*26.6%*)	2 (*0.5%*)	1 (*0.2%*)	5 (*1.2%*)	4 (*0.9%*)	5 (*1.2%*)	36 (*8.3%*)	8 (*1.9%*)	**6.94**
Consumer Goods																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**ABHK Score**
1998	51 (*26.8%*)	10 (*5.3%*)	24 (*12.6%*)	10 (*5.3%*)	2 (*1.1%*)	5 (*2.6%*)	14 (*7.4%*)	12 (*6.3%*)	54 (*28.4%*)	1 (*0.5%*)	0 (*0.0%*)	1 (*0.5%*)	0 (*0.0%*)	2 (*1.1%*)	3 (*1.6%*)	1 (*0.5%*)	**5.37**
1999	66 (*30.8%*)	10 (*4.7%*)	27 (*12.6%*)	9 (*4.2%*)	5 (*2.3%*)	3 (*1.4%*)	18 (*8.4%*)	13 (*6.1%*)	56 (*26.2%*)	1 (*0.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.9%*)	3 (*1.4%*)	1 (*0.5%*)	**5.07**
2000	73 (*32.4%*)	14 (*6.2%*)	25 (*11.1%*)	7 (*3.1%*)	4 (*1.8%*)	6 (*2.7%*)	11 (*4.9%*)	13 (*5.8%*)	62 (*27.6%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.9%*)	0 (*0.0%*)	3 (*1.3%*)	3 (*1.3%*)	2 (*0.9%*)	**5.12**
2001	68 (*29.7%*)	15 (*6.6%*)	27 (*11.8%*)	9 (*3.9%*)	5 (*2.2%*)	7 (*3.1%*)	12 (*5.2%*)	13 (*5.7%*)	60 (*26.2%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.9%*)	1 (*0.4%*)	5 (*2.2%*)	3 (*1.3%*)	2 (*0.9%*)	**5.26**
2002	69 (*28.9%*)	20 (*8.4%*)	30 (*12.6%*)	11 (*4.6%*)	6 (*2.5%*)	3 (*1.3%*)	8 (*3.3%*)	8 (*3.3%*)	67 (*28.0%*)	1 (*0.4%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.4%*)	4 (*1.7%*)	7 (*2.9%*)	4 (*1.7%*)	**5.37**
2003	69 (*27.9%*)	16 (*6.5%*)	29 (*11.7%*)	11 (*4.5%*)	5 (*2.0%*)	3 (*1.2%*)	17 (*6.9%*)	9 (*3.6%*)	70 (*28.3%*)	1 (*0.4%*)	0 (*0.0%*)	2 (*0.8%*)	0 (*0.0%*)	4 (*1.6%*)	9 (*3.6%*)	2 (*0.8%*)	**5.52**
2004	76 (*29.8%*)	13 (*5.1%*)	27 (*10.6%*)	12 (*4.7%*)	7 (*2.7%*)	6 (*2.4%*)	18 (*7.1%*)	11 (*4.3%*)	61 (*23.9%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	0 (*0.0%*)	3 (*1.2%*)	14 (*5.5%*)	5 (*2.0%*)	**5.57**
2005	77 (*29.4%*)	14 (*5.3%*)	28 (*10.7%*)	9 (*3.4%*)	10 (*3.8%*)	3 (*1.1%*)	11 (4.2%)	10 (*3.8%*)	68 (*26.0%*)	1 (*0.4%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*2.7%*)	20 (*7.6%*)	4 (*1.5%*)	**5.95**
2006	70 (*26.7%*)	15 (*5.7%*)	28 (*10.7%*)	8 (*3.1%*)	8 (*3.1%*)	3 (*1.1%*)	12 (*4.6%*)	18 (*6.9%*)	63 (*24.0%*)	2 (*0.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*2.7%*)	23 (*8.8%*)	5 (*1.9%*)	**6.27**
2007	78 (*29.0%*)	17 (*6.3%*)	25 (*9.3%*)	8 (*3.0%*)	6 (*2.2%*)	5 (*1.9%*)	8 (*3.0%*)	18 (*6.7%*)	62 (*23.0%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	0 (*0.0%*)	7 (*2.6%*)	30 (*11.2%*)	3 (*1.1%*)	**6.22**
2008	70 (*25.7%*)	16 (*5.9%*)	32 (*11.8%*)	13 (*4.8%*)	7 (*2.6%*)	5 (*1.8%*)	14 (*5.1%*)	18 (*6.6%*)	66 (*24.3%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	0 (*0.0%*)	5 (*1.8%*)	19 (*7.0%*)	5 (*1.8%*)	**6.02**
2009	71 (*25.4%*)	16 (*5.7%*)	31 (*11.1%*)	12 (*4.3%*)	11 (*3.9%*)	4 (*1.4%*)	14 (*5.0%*)	18 (*6.5%*)	67 (*24.0%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	0 (*0.0%*)	5 (*1.8%*)	22 (*7.9%*)	6 (*2.2%*)	**6.18**
2010	60 (*20.8%*)	18 (*6.3%*)	33 (*11.5%*)	13 (*4.5%*)	17 (*5.9%*)	7 (*2.4%*)	18 (*6.3%*)	17 (*5.9%*)	68 (*23.6%*)	1 (*0.3%*)	0 (*0.0%*)	1 (*0.3%*)	2 (*0.7%*)	6 (*2.1%*)	21 (*7.3%*)	6 (*2.1%*)	**6.35**
2011	56 (*19.2%*)	19 (*6.5%*)	31 (*10.7%*)	15 (*5.2%*)	14 (*4.8%*)	12 (*4.1%*)	17 (*5.8%*)	24 (*8.2%*)	68 (*23.4%*)	1 (*0.3%*)	1 (*0.3%*)	2 (*0.7%*)	1 (*0.3%*)	4 (*1.4%*)	21 (*7.2%*)	5 (*1.7%*)	**6.37**
2012	41 (*13.9%*)	33 (*11.1%*)	33 (*11.1%*)	8 (*2.7%*)	16 (*5.4%*)	10 (*3.4%*)	19 (*6.4%*)	23 (*7.8%*)	70 (*23.6%*)	2 (*0.7%*)	0 (*0.0%*)	3 (*1.0%*)	2 (*0.7%*)	6 (*2.0%*)	25 (*8.4%*)	5 (*1.7%*)	**6.69**
2013	35 (*11.8%*)	39 (*13.2%*)	42 (*14.2%*)	8 (*2.7%*)	14 (*4.7%*)	9 (*3.0%*)	14 (*4.7%*)	26 (*8.8%*)	72 (*24.3%*)	1 (*0.3%*)	1 (*0.3%*)	1 (*0.3%*)	4 (*1.4%*)	5 (*1.7%*)	20 (*6.8%*)	5 (*1.7%*)	**6.47**
2014	32 (*10.8%*)	40 (*13.6%*)	38 (*12.9%*)	12 (*4.1%*)	14 (*4.7%*)	11 (*3.7%*)	15 (*5.1%*)	22 (*7.5%*)	72 (*24.4%*)	1 (*0.3%*)	1 (*0.3%*)	1 (*0.3%*)	2 (*0.7%*)	6 (*2.0%*)	22 (*7.5%*)	6 (*2.0%*)	**6.60**
2015	35 (*11.8%*)	43 (*14.5%*)	35 (*11.8%*)	12 (*4.1%*)	18 (*6.1%*)	7 (*2.4%*)	11 (*3.7%*)	25 (*8.4%*)	69 (*23.3%*)	1 (*0.3%*)	2 (*0.7%*)	2 (*0.7%*)	2 (*0.7%*)	4 (*1.4%*)	23 (*7.8%*)	7 (*2.4%*)	**6.57**
Health Care																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**ABHK Score**
1998	30 (*31.3%*)	5 (*5.2%*)	11 (*11.5%*)	11 (*11.5%*)	3 (*3.1%*)	1 (*1.0%*)	8 (*8.3%*)	1 (*1.0%*)	19 (*19.8%*)	2 (*2.1%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.1%*)	0 (*0.0%*)	3 (*3.1%*)	0 (*0.0%*)	**4.83**
1999	41 (*35.7%*)	6 (*5.2%*)	14 (*12.2%*)	12 (*10.4%*)	3 (*2.6%*)	3 (*2.6%*)	10 (*8.7%*)	4 (*3.5%*)	14 (*12.2%*)	2 (*1.7%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	5 (*4.3%*)	0 (*0.0%*)	**4.45**
2000	44 (*36.7%*)	5 (*4.2%*)	15 (*12.5%*)	10 (*8.3%*)	4 (*3.3%*)	2 (*1.7%*)	11 (*9.2%*)	7 (*5.8%*)	15 (*12.5%*)	2 (*1.7%*)	0 (*0.0%*)	1 (*0.8%*)	0 (*0.0%*)	0 (*0.0%*)	4 (*3.3%*)	0 (*0.0%*)	**4.43**
2001	42 (*34.1%*)	6 (*4.9%*)	15 (*12.2%*)	10 (*8.1%*)	4 (*3.3%*)	0 (*0.0%*)	10 (*8.1%*)	7 (*5.7%*)	21 (*17.1%*)	2 (*1.6%*)	0 (*0.0%*)	1 (*0.8%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*4.1%*)	0 (*0.0%*)	**4.72**
2002	39 (*31.0%*)	8 (*6.3%*)	15 (*11.9%*)	7 (*5.6%*)	3 (*2.4%*)	1 (*0.8%*)	11 (*8.7%*)	7 (*5.6%*)	26 (*20.6%*)	2 (*1.6%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	6 (*4.8%*)	1 (*0.8%*)	**5.14**

2003	45 (*33.8%*)	8 (*6.0%*)	17 (*12.8%*)	5 (*3.8%*)	3 (*2.3%*)	1 (*0.8%*)	9 (*6.8%*)	11 (*8.3%*)	26 (*19.5%*)	2 (*1.5%*)	0 (*0.0%*)	1 (*0.8%*)	0 (*0.0%*)	1 (*0.8%*)	4 (*3.0%*)	0 (*0.0%*)	**4.84**
2004	45 (*32.6%*)	8 (*5.8%*)	15 (*10.9%*)	6 (*4.3%*)	1 (*0.7%*)	1 (*0.7%*)	11 (*8.0%*)	12 (*8.7%*)	26 (*18.8%*)	2 (*1.4%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.4%*)	8 (*5.8%*)	1 (*0.7%*)	**5.34**
2005	43 (*30.7%*)	6 (*4.3%*)	15 (*10.7%*)	5 (*3.6%*)	3 (*2.1%*)	3 (*2.1%*)	10 (*7.1%*)	15 (*10.7%*)	26 (*18.6%*)	1 (*0.7%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.7%*)	1 (*0.7%*)	10 (*7.1%*)	1 (*0.7%*)	**5.61**
2006	43 (*30.3%*)	6 (*4.2%*)	15 (*10.6%*)	7 (*4.9%*)	3 (*2.1%*)	5 (*3.5%*)	9 (*6.3%*)	15 (*10.6%*)	26 (*18.3%*)	1 (*0.7%*)	0 (*0.0%*)	1 (*0.7%*)	0 (*0.0%*)	2 (*1.4%*)	8 (*5.6%*)	1 (*0.7%*)	**5.50**
2007	39 (*26.9%*)	7 (*4.8%*)	11 (*7.6%*)	6 (*4.1%*)	3 (*4.1%*)	6 (*4.1%*)	8 (*5.5%*)	17 (*11.7%*)	33 (*22.8%*)	1 (*0.7%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.7%*)	1 (*0.7%*)	10 (*6.9%*)	2 (*1.4%*)	**5.75**
2008	34 (*23.3%*)	8 (*5.5%*)	13 (*8.9%*)	6 (*4.1%*)	6 (*2.6%*)	6 (*4.1%*)	8 (*5.5%*)	17 (*11.6%*)	32 (*21.9%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.4%*)	1 (*0.7%*)	10 (*6.8%*)	3 (*2.1%*)	**6.27**
2009	35 (*23.0%*)	6 (*3.9%*)	10 (*6.6%*)	7 (*4.6%*)	4 (*2.6%*)	8 (*5.3%*)	11 (*7.2%*)	18 (*11.8%*)	35 (*23.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*2.0%*)	0 (*0.0%*)	12 (*7.9%*)	3 (*2.0%*)	**6.55**
2010	34 (*21.9%*)	8 (*5.2%*)	11 (*7.1%*)	8 (*5.2%*)	4 (*2.6%*)	6 (*3.9%*)	9 (*5.8%*)	16 (*10.3%*)	38 (*24.5%*)	1 (*0.6%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.3%*)	0 (*0.0%*)	15 (*9.7%*)	3 (*1.9%*)	**6.66**
2011	38 (*23.8%*)	9 (*5.6%*)	12 (*7.5%*)	7 (*4.4%*)	4 (*2.5%*)	6 (*3.8%*)	7 (*4.4%*)	17 (*10.6%*)	42 (*26.3%*)	1 (*0.6%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*1.9%*)	0 (*0.0%*)	12 (*7.5%*)	2 (*1.3%*)	**6.33**
2012	34 (*21.3%*)	10 (*6.3%*)	13 (*8.1%*)	5 (*3.1%*)	5 (*3.1%*)	6 (*3.8%*)	7 (*4.4%*)	19 (*11.9%*)	41 (*25.6%*)	1 (*0.6%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.6%*)	2 (*1.3%*)	13 (*8.1%*)	3 (*1.9%*)	**6.61**
2013	29 (*18.1%*)	12 (*7.5%*)	19 (*11.9%*)	6 (*3.8%*)	3 (*1.9%*)	5 (*3.1%*)	6 (*3.8%*)	20 (*12.5%*)	42 (*26.3%*)	1 (*0.6%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.6%*)	2 (*1.3%*)	12 (*7.5%*)	2 (*1.3%*)	**6.47**
2014	28 (*17.5%*)	13 (*8.1%*)	15 (*9.4%*)	7 (*4.4%*)	1 (*0.6%*)	5 (*3.1%*)	6 (*3.8%*)	20 (*12.5%*)	38 (*23.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.3%*)	1 (*0.6%*)	21 (*13.1%*)	3 (*1.9%*)	**7.06**
2015	18 (*11.3%*)	15 (*9.4%*)	14 (*8.8%*)	11 (*6.9%*)	3 (*1.9%*)	9 (*5.6%*)	10 (*6.3%*)	25 (*15.6%*)	35 (*21.9%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.3%*)	0 (*0.0%*)	3 (*1.9%*)	14 (*8.8%*)	1 (*0.6%*)	**6.79**
Consumer Services																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**ABHK Score**
1998	73 (*41.5%*)	6 (*3.4%*)	20 (*11.4%*)	21 (*11.9%*)	3 (*1.7%*)	3 (*1.7%*)	17 (*9.7%*)	8 (*4.5%*)	22 (*12.5%*)	1 (*0.6%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.1%*)	0 (*0.0%*)	**3.88**
1999	80 (*41.2%*)	7 (*3.6%*)	22 (*11.3%*)	21 (*10.8%*)	4 (*2.1%*)	3 (*1.5%*)	19 (*9.8%*)	11 (*5.7%*)	24 (*12.4%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.5%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.0%*)	0 (*0.0%*)	**3.92**
2000	79 (*38.7%*)	10 (*4.9%*)	27 (*13.2%*)	16 (*7.8%*)	7 (*3.4%*)	2 (*1.0%*)	19 (*9.3%*)	10 (*4.9%*)	28 (*13.7%*)	2 (*1.0%*)	0 (*0.0%*)	1 (*0.5%*)	0 (*0.0%*)	1 (*0.5%*)	2 (*1.0%*)	0 (*0.0%*)	**4.08**
2001	75 (*35.4%*)	11 (*5.2%*)	32 (*15.1%*)	18 (*8.5%*)	2 (*0.9%*)	3 (*1.4%*)	22 (*10.4%*)	16 (*7.5%*)	29 (*13.7%*)	1 (*0.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.5%*)	2 (*0.9%*)	0 (*0.0%*)	**4.20**
2002	72 (*32.3%*)	20 (*9.0%*)	30 (*13.5%*)	16 (*7.2%*)	4 (*1.8%*)	4 (*1.8%*)	23 (*10.3%*)	16 (*7.2%*)	31 (*13.9%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*2.2%*)	0 (*0.0%*)	**4.37**
2003	77 (*32.9%*)	22 (*9.4%*)	29 (*12.4%*)	16 (*6.8%*)	5 (*2.1%*)	3 (*1.3%*)	25 (*10.7%*)	16 (*6.8%*)	32 (*13.7%*)	3 (*1.3%*)	0 (*0.0%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	3 (*1.3%*)	1 (*0.4%*)	**4.39**
2004	88 (*35.8%*)	23 (*9.3%*)	24 (*9.8%*)	20 (*8.1%*)	5 (*2.0%*)	4 (*1.6%*)	22 (*8.9%*)	18 (*7.3%*)	34 (*13.8%*)	2 (*0.8%*)	0 (*0.0%*)	2 (*0.8%*)	0 (*0.0%*)	0 (*0.0%*)	4 (*1.6%*)	0 (*0.0%*)	**4.24**
2005	90 (*35.6%*)	22 (*8.7%*)	20 (*7.9%*)	22 (*8.7%*)	9 (*3.6%*)	2 (*0.8%*)	21 (*8.3%*)	18 (*7.1%*)	38 (*15.0%*)	1 (*0.4%*)	0 (*0.0%*)	2 (*0.8%*)	1 (*0.4%*)	0 (*0.0%*)	7 (*2.8%*)	0 (*0.0%*)	**4.44**
2006	92 (*35.4%*)	19 (*7.3%*)	15 (*5.8%*)	23 (*8.8%*)	7 (*2.7%*)	4 (*1.5%*)	24 (*9.2%*)	21 (*8.1%*)	42 (*16.2%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	2 (*0.8%*)	3 (*1.2%*)	6 (*2.3%*)	0 (*0.0%*)	**4.69**
2007	90 (*33.8%*)	13 (*4.9%*)	22 (*8.3%*)	24 (*9.0%*)	10 (*3.8%*)	4 (*1.5%*)	25 (*9.4%*)	24 (*9.0%*)	40 (*15.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	4 (*1.5%*)	9 (*3.4%*)	1 (*0.4%*)	**4.85**
2008	81 (*29.9%*)	11 (*4.1%*)	18 (*6.6%*)	23 (*8.5%*)	15 (*5.5%*)	5 (*1.8%*)	30 (*11.1%*)	23 (*8.5%*)	45 (*16.6%*)	1 (*0.4%*)	0 (*0.0%*)	0 (*0.0%*)	4 (*1.5%*)	5 (*1.8%*)	8 (*3.0%*)	2 (*0.7%*)	**5.34**
2009	85 (*30.6%*)	17 (*6.1%*)	17 (*6.1%*)	27 (*9.7%*)	12 (*4.3%*)	6 (*2.2%*)	24 (*8.6%*)	26 (*9.4%*)	44 (*15.8%*)	1 (*0.4%*)	0 (*0.0%*)	1 (*0.4%*)	4 (*1.4%*)	3 (*1.1%*)	10 (*3.6%*)	1 (*0.4%*)	**5.16**
2010	91 (*31.6%*)	19 (*6.6%*)	21 (*7.3%*)	22 (*7.6%*)	15 (*5.2%*)	5 (*1.7%*)	25 (*8.7%*)	25 (*8.7%*)	42 (*14.6%*)	1 (*0.3%*)	0 (*0.0%*)	1 (*0.3%*)	4 (*1.4%*)	5 (*1.7%*)	10 (*3.5%*)	2 (*0.7%*)	**5.12**
2011	90 (*30.4%*)	18 (*6.1%*)	25 (*8.4%*)	26 (*8.8%*)	13 (*4.4%*)	8 (*2.7%*)	23 (*7.8%*)	25 (*8.4%*)	48 (*16.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*1.0%*)	6 (*2.0%*)	9 (*3.0%*)	2 (*0.7%*)	**5.11**
2012	91 (*29.7%*)	18 (*5.9%*)	26 (*8.5%*)	17 (*5.6%*)	17 (*5.6%*)	10 (*3.3%*)	26 (*8.5%*)	29 (*9.5%*)	49 (*16.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*2.3%*)	3 (*1.0%*)	11 (*3.6%*)	2 (*0.7%*)	**5.27**
2013	80 (*26.1%*)	24 (*7.8%*)	24 (*7.8%*)	19 (*6.2%*)	14 (*4.6%*)	7 (*2.3%*)	40 (*13.5%*)	32 (*10.5%*)	43 (*14.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*1.0%*)	5 (*1.6%*)	11 (*3.6%*)	4 (*1.3%*)	**5.46**
2014	85 (*27.8%*)	22 (*7.2%*)	25 (*8.2%*)	22 (*7.2%*)	16 (*5.2%*)	7 (*2.3%*)	27 (*8.8%*)	34 (*11.1%*)	43 (*14.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*1.0%*)	8 (*2.6%*)	8 (*2.6%*)	6 (*2.0%*)	**5.43**
2015	81 (*26.4%*)	27 (*8.8%*)	21 (*6.8%*)	21 (*6.8%*)	21 (*6.8%*)	7 (*2.3%*)	27 (*8.8%*)	40 (*13.0%*)	39 (*12.7%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.3%*)	5 (*1.6%*)	6 (*2.0%*)	6 (*2.0%*)	5 (*1.6%*)	**5.36**
Telecommunications																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**ABHK Score**
1998	17 (*51.5%*)	2 (*6.1%*)	2 (*6.1%*)	4 (*12.1%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*9.1%*)	2 (*6.1%*)	3 (*9.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.24**
1999	21 (*60.0%*)	0 (*0.0%*)	2 (*5.7%*)	3 (*8.6%*)	0 (*0.0%*)	0 (*0.0%*)	4 (*11.4%*)	1 (*2.9%*)	4 (*11.4%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.17**
2000	21 (*55.3%*)	1 (*2.6%*)	2 (*5.3%*)	3 (*7.9%*)	0 (*0.0%*)	0 (*0.0%*)	6 (*15.8%*)	1 (*2.6%*)	4 (*10.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.34**
2001	21 (*53.8%*)	2 (*5.1%*)	2 (*5.1%*)	4 (*10.3%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*5.1%*)	3 (*7.7%*)	3 (*7.7%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*5.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.49**
2002	26 (*59.1%*)	2 (*4.5%*)	2 (*4.5%*)	3 (*6.8%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*4.5%*)	3 (*6.8%*)	4 (*9.1%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.3%*)	**3.49**
2003	22 (*50.0%*)	4 (*9.1%*)	2 (*4.5%*)	3 (*6.8%*)	0 (*0.0%*)	1 (*2.3%*)	5 (*11.4%*)	2 (*4.5%*)	3 (*6.8%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.3%*)	**3.72**
2004	19 (*42.2%*)	4 (*8.9%*)	1 (*2.2%*)	6 (*13.3%*)	1 (*2.2%*)	1 (*2.2%*)	5 (*11.1%*)	2 (*4.4%*)	4 (*8.9%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.2%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.2%*)	0 (*0.0%*)	**3.98**
2005	21 (*46.7%*)	4 (*8.9%*)	0 (*0.0%*)	3 (*6.7%*)	1 (*2.2%*)	0 (*0.0%*)	6 (*13.3%*)	2 (*4.4%*)	7 (*15.6%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.98**
2006	20 (*42.6%*)	7 (*14.9%*)	1 (*2.1%*)	3 (*6.4%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*10.6%*)	3 (*6.4%*)	6 (*12.8%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.1%*)	1 (*2.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.98**
2007	22 (*44.0%*)	8 (*16.0%*)	4 (*8.0%*)	2 (*4.0%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*10.0%*)	2 (*4.0%*)	5 (*10.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*2.0%*)	0 (*0.0%*)	**3.62**

2008	20 (*39.2%*)	7 (*13.7%*)	5 (*9.8%*)	1 (*2.0%*)	1 (*2.0%*)	0 (*0.0%*)	7 (*13.7%*)	2 (*3.9%*)	4 (*7.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*3.9%*)	0 (*0.0%*)	2 (3.9%)	0 (*0.0%*)	**4.22**
2009	22 (*40.7%*)	8 (*14.8%*)	4 (*7.4%*)	4 (*7.4%*)	0 (*0.0%*)	1 (*1.9%*)	7 (*13.0%*)	3 (*5.6%*)	3 (*5.6%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.9%*)	1 (*1.9%*)	**3.83**
2010	18 (*33.3%*)	9 (*16.7%*)	5 (*9.3%*)	4 (*7.4%*)	2 (*3.7%*)	1 (*1.9%*)	7 (*13.0%*)	3 (*5.6%*)	3 (*5.6%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.9%*)	1 (*1.9%*)	**4.04**
2011	19 (*34.5%*)	8 (*14.5%*)	3 (*5.5%*)	6 (*10.9%*)	2 (*3.6%*)	1 (*1.8%*)	8 (*14.5%*)	2 (*3.6%*)	4 (*7.3%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.8%*)	**4.07**
2012	17 (*31.5%*)	10 (*18.5%*)	3 (*5.6%*)	5 (*9.3%*)	2 (*3.7%*)	0 (*0.0%*)	7 (*13.0%*)	2 (*3.7%*)	5 (*9.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*3.7%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.9%*)	**4.30**
2013	19 (*35.2%*)	8 (*14.8%*)	3 (*5.6%*)	4 (*7.4%*)	2 (*3.7%*)	0 (*0.0%*)	5 (*9.3%*)	3 (*5.6%*)	6 (*11.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*5.6%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.9%*)	**4.49**
2014	21 (*38.2%*)	7 (*12.7%*)	2 (*3.6%*)	3 (*5.5%*)	3 (*5.5%*)	0 (*0.0%*)	7 (*12.7%*)	4 (*7.3%*)	5 (*9.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.8%*)	1 (*1.8%*)	1 (*1.8%*)	0 (*0.0%*)	**4.29**
2015	19 (*34.5%*)	5 (*9.1%*)	3 (*5.5%*)	2 (*3.6%*)	5 (*9.1%*)	0 (*0.0%*)	9 (*16.4%*)	5 (*9.1%*)	3 (*5.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.8%*)	1 (*1.8%*)	2 (*3.6%*)	0 (*0.0%*)	**4.69**
Utilities																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**ABHK Score**
1998	40 (*58.8%*)	3 (*4.4%*)	4 (*5.9%*)	5 (*7.4%*)	0 (*0.0%*)	1 (*1.5%*)	7 (*10.3%*)	3 (*4.4%*)	4 (*5.9%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.5%*)	**3.12**
1999	47 (*61.0%*)	2 (*2.6%*)	6 (*7.8%*)	6 (*7.8%*)	0 (*0.0%*)	1 (*1.3%*)	5 (*6.5%*)	3 (*3.9%*)	6 (*7.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.3%*)	**3.00**
2000	47 (*60.3%*)	2 (*2.6%*)	6 (*7.7%*)	4 (*5.1%*)	1 (*1.3%*)	1 (*1.3%*)	7 (*9.0%*)	2 (*2.6%*)	6 (*7.7%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.6%*)	**3.25**
2001	45 (*56.3%*)	3 (*3.8%*)	4 (*5.0%*)	3 (*3.8%*)	0 (*0.0%*)	3 (*3.8%*)	6 (*7.5%*)	3 (*3.8%*)	12 (*15.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.3%*)	**3.58**
2002	46 (*54.1%*)	4 (*4.7%*)	3 (*3.5%*)	4 (*4.7%*)	0 (*0.0%*)	2 (*2.4%*)	7 (*8.2%*)	6 (*7.1%*)	13 (*15.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.59**
2003	47 (*55.3%*)	2 (*2.4%*)	5 (*5.9%*)	5 (*5.9%*)	0 (*0.0%*)	2 (*2.4%*)	6 (*7.1%*)	7 (*8.2%*)	10 (*11.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.2%*)	**3.60**
2004	54 (*58.7%*)	1 (*1.1%*)	3 (*3.3%*)	9 (*9.8%*)	1 (*1.1%*)	1 (*1.1%*)	5 (*5.4%*)	5 (*5.4%*)	13 (*14.1%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.30**
2005	58 (*59.2%*)	2 (*2.0%*)	2 (*2.0%*)	7 (*7.1%*)	1 (*1.0%*)	1 (*1.0%*)	6 (*6.1%*)	7 (*7.1%*)	11 (*11.2%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	1 (*1.0%*)	1 (*1.0%*)	**3.60**
2006	58 (*56.9%*)	4 (*3.9%*)	2 (*2.0%*)	10 (*9.8%*)	0 (*0.0%*)	1 (*1.0%*)	7 (*6.9%*)	7 (*6.9%*)	12 (*11.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*1.0%*)	0 (*0.0%*)	**3.39**
2007	64 (*61.0%*)	5 (*4.8%*)	4 (*3.8%*)	7 (*6.7%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*6.7%*)	6 (*5.7%*)	10 (*9.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.9%*)	0 (*0.0%*)	**3.15**
2008	56 (*51.9%*)	4 (*3.7%*)	4 (*3.7%*)	9 (*8.3%*)	3 (*2.8%*)	1 (*0.9%*)	14 (*13.0%*)	5 (*4.6%*)	8 (*7.4%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	2 (*1.9%*)	0 (*0.0%*)	**3.68**
2009	55 (*50.0%*)	7 (*6.4%*)	4 (*3.6%*)	8 (*7.3%*)	3 (*2.7%*)	0 (*0.0%*)	15 (*13.6%*)	3 (*2.7%*)	9 (*8.2%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	3 (*2.7%*)	0 (*0.0%*)	2 (*1.8%*)	0 (*0.0%*)	**3.80**
2010	53 (*47.7%*)	5 (*4.5%*)	6 (*5.4%*)	8 (*7.2%*)	3 (*2.7%*)	0 (*0.0%*)	15 (*13.5%*)	4 (*3.6%*)	10 (*9.0%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	4 (*3.6%*)	1 (*0.9%*)	1 (*0.9%*)	0 (*0.0%*)	**4.03**
2011	48 (*43.2%*)	5 (*4.5%*)	6 (*5.4%*)	12 (*10.8%*)	3 (*2.7%*)	1 (*0.9%*)	17 (*15.3%*)	4 (*3.6%*)	8 (*7.2%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	4 (*3.6%*)	1 (*0.9%*)	1 (*0.9%*)	0 (*0.0%*)	**4.14**
2012	56 (*49.6%*)	4 (*3.5%*)	5 (*4.4%*)	10 (*8.8%*)	6 (*5.3%*)	0 (*0.0%*)	11 (*9.7%*)	3 (*2.7%*)	9 (*8.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.9%*)	5 (*4.4%*)	1 (*0.9%*)	2 (*1.8%*)	0 (*0.0%*)	**4.00**
2013	55 (*48.7%*)	2 (*1.8%*)	4 (*3.5%*)	10 (*8.8%*)	5 (*4.4%*)	1 (*0.9%*)	17 (*15.0%*)	2 (*1.8%*)	9 (*8.0%*)	1 (*0.9%*)	0 (*0.0%*)	0 (*0.0%*)	4 (*3.5%*)	1 (*0.9%*)	2 (*1.8%*)	0 (*0.0%*)	**4.11**
2014	54 (*47.8%*)	4 (*3.5%*)	4 (*3.5%*)	9 (*8.0%*)	5 (*4.4%*)	0 (*0.0%*)	18 (*15.9%*)	2 (*1.8%*)	8 (*7.1%*)	1 (*0.9%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*4.4%*)	2 (*1.8%*)	1 (*0.9%*)	0 (*0.0%*)	**4.14**
2015	52 (*45.6%*)	6 (*5.3%*)	4 (*3.5%*)	13 (*11.4%*)	4 (*3.5%*)	0 (*0.0%*)	15 (*13.2%*)	4 (*3.5%*)	8 (*7.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*6.1%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	**4.06**
Financials																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**ABHK Score**
1998	145 (*50.5%*)	8 (*2.8%*)	16 (*5.6%*)	33 (*11.5%*)	2 (*0.7%*)	4 (*1.4%*)	44 (*15.3%*)	7 (*2.4%*)	21 (*7.3%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.7%*)	4 (*1.4%*)	0 (*0.0%*)	1 (*0.3%*)	0 (*0.0%*)	**3.55**
1999	173 (*53.7%*)	6 (*1.9%*)	17 (*5.3%*)	30 (*9.3%*)	2 (*0.6%*)	4 (*1.2%*)	51 (*15.8%*)	10 (*3.1%*)	24 (*7.5%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.6%*)	3 (*0.9%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	**3.43**
2000	170 (*50.1%*)	12 (*3.5%*)	22 (*6.5%*)	30 (*8.8%*)	7 (*2.1%*)	8 (*2.4%*)	41 (*12.1%*)	19 (*5.6%*)	27 (*8.0%*)	1 (*0.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.6%*)	0 (*0.0%*)	**3.50**
2001	173 (*48.9%*)	13 (*3.7%*)	23 (*6.5%*)	24 (*6.8%*)	8 (*2.3%*)	4 (*1.1%*)	46 (*13.0%*)	21 (*5.9%*)	33 (*9.3%*)	3 (*0.8%*)	0 (*0.0%*)	1 (*0.3%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*1.4%*)	0 (*0.0%*)	**3.76**
2002	174 (*46.8%*)	15 (*4.0%*)	24 (*6.5%*)	32 (*8.6%*)	11 (*3.0%*)	3 (*0.8%*)	33 (*8.9%*)	28 (*7.5%*)	40 (*10.8%*)	4 (*1.1%*)	0 (*0.0%*)	1 (*0.3%*)	1 (*0.3%*)	0 (*0.0%*)	6 (*1.6%*)	0 (*0.0%*)	**3.89**
2003	185 (*47.2%*)	17 (*4.3%*)	24 (*6.1%*)	29 (*7.4%*)	11 (*2.8%*)	4 (*1.0%*)	37 (*9.4%*)	32 (*8.2%*)	44 (*11.2%*)	3 (*0.8%*)	0 (*0.0%*)	1 (*0.3%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*1.3%*)	0 (*0.0%*)	**3.86**
2004	192 (*46.5%*)	22 (*5.3%*)	25 (*6.1%*)	33 (*8.0%*)	10 (*2.4%*)	3 (*0.7%*)	36 (*8.7%*)	31 (*7.5%*)	45 (*10.9%*)	3 (*0.7%*)	0 (*0.0%*)	1 (*0.2%*)	1 (*0.2%*)	1 (*0.2%*)	10 (*2.4%*)	0 (*0.0%*)	**3.96**
2005	208 (*47.9%*)	19 (*4.4%*)	30 (*6.9%*)	32 (*7.4%*)	11 (*2.5%*)	3 (*0.7%*)	39 (*9.0%*)	31 (*7.1%*)	45 (*10.4%*)	2 (*0.5%*)	1 (*0.2%*)	0 (*0.0%*)	2 (*0.5%*)	0 (*0.0%*)	10 (*2.3%*)	1 (*0.2%*)	**3.89**
2006	200 (*44.7%*)	23 (*5.1%*)	29 (*6.5%*)	37 (*8.3%*)	12 (*2.7%*)	5 (*1.1%*)	40 (*8.9%*)	35 (*7.8%*)	46 (*10.3%*)	2 (*0.4%*)	0 (*0.0%*)	1 (*0.2%*)	1 (*0.2%*)	2 (*0.4%*)	12 (*2.7%*)	2 (*0.4%*)	**4.11**
2007	214 (*45.9%*)	25 (*5.4%*)	33 (*7.1%*)	33 (*7.1%*)	13 (*2.8%*)	4 (*0.9%*)	43 (*9.2%*)	36 (*7.7%*)	48 (*10.3%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*0.4%*)	1 (*0.2%*)	11 (*2.4%*)	2 (*0.4%*)	**3.99**
2008	201 (*42.0%*)	26 (*5.4%*)	35 (*7.3%*)	41 (*8.6%*)	15 (*3.1%*)	5 (*1.0%*)	50 (*10.4%*)	36 (*7.5%*)	46 (*9.6%*)	2 (*0.4%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*0.6%*)	3 (*0.6%*)	14 (*2.9%*)	2 (*0.4%*)	**4.24**
2009	209 (*42.7%*)	27 (*5.5%*)	31 (*6.3%*)	41 (*8.4%*)	16 (*3.3%*)	5 (*1.0%*)	46 (*9.4%*)	35 (*7.2%*)	51 (*10.4%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*1.4%*)	2 (*0.4%*)	15 (*3.1%*)	3 (*0.6%*)	**4.31**
2010	213 (*42.2%*)	25 (*5.0%*)	29 (*5.7%*)	40 (*7.9%*)	19 (*3.8%*)	6 (*1.2%*)	49 (*9.7%*)	40 (*7.9%*)	55 (*10.9%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	5 (*1.0%*)	3 (*0.6%*)	16 (*3.2%*)	4 (*0.8%*)	**4.43**
2011	219 (*41.8%*)	27 (*5.2%*)	28 (*5.3%*)	51 (*9.7%*)	17 (*3.2%*)	10 (*1.9%*)	49 (*9.4%*)	39 (*7.4%*)	56 (*10.7%*)	1 (*0.2%*)	0 (*0.0%*)	0 (*0.0%*)	7 (*1.3%*)	2 (*0.4%*)	15 (*2.9%*)	3 (*0.6%*)	**4.35**
2012	230 (*42.8%*)	30 (*5.6%*)	27 (*5.0%*)	51 (*9.5%*)	18 (*3.3%*)	12 (*2.2%*)	44 (*8.2%*)	39 (*7.2%*)	57 (*10.6%*)	1 (*0.2%*)	0 (*0.0%*)	1 (*0.2%*)	7 (*1.3%*)	4 (*0.7%*)	15 (*2.8%*)	2 (*0.4%*)	**4.28**

2013	233 (*42.6%*)	34 (*6.2%*)	32 (*5.9%*)	51 (*9.3%*)	18 (*3.3%*)	11 (*2.0%*)	46 (*8.4%*)	38 (*6.9%*)	52 (*9.5%*)	1 (*0.2%*)	0 (*0.0%*)	3 (*0.5%*)	9 (*1.6%*)	2 (*0.4%*)	14 (*2.6%*)	3 (*0.5%*)	**4.23**
2014	225 (*40.9%*)	35 (*6.4%*)	30 (*5.5%*)	53 (*9.6%*)	23 (*4.2%*)	8 (*1.5%*)	48 (*8.7%*)	39 (*7.1%*)	51 (*9.3%*)	1 (*0.2%*)	1 (*0.2%*)	1 (*0.2%*)	9 (*1.6%*)	4 (*0.7%*)	18 (*3.3%*)	4 (*0.7%*)	**4.41**
2015	216 (*39.3%*)	39 (*7.1%*)	26 (*4.7%*)	57 (*10.4%*)	23 (*4.2%*)	9 (*1.6%*)	57 (*10.4%*)	45 (*8.2%*)	39 (*7.1%*)	3 (*0.5%*)	0 (*0.0%*)	1 (*0.2%*)	8 (*1.5%*)	3 (*0.5%*)	20 (*3.6%*)	4 (*0.7%*)	**4.45**
Technology																	
	Domestic	**Rank 2**	**Rank 3**	**Rank 4**	**Rank 5**	**Rank 6**	**Rank 7**	**Rank 8**	**Rank 9**	**Rank 10**	**Rank 11**	**Rank 12**	**Rank 13**	**Rank 14**	**Rank 15**	**Global**	**ABHK Score**
1998	13 (*14.6%*)	4 (*4.5%*)	13 (*14.6%*)	10 (*11.2%*)	3 (*3.4%*)	0 (*0.0%*)	12 (*13.5%*)	5 (*5.6%*)	27 (*30.3%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.2%*)	0 (*0.0%*)	**5.75**
1999	19 (*19.4%*)	5 (*5.1%*)	16 (*16.3%*)	8 (*8.2%*)	4 (*4.1%*)	0 (*0.0%*)	8 (*8.2%*)	8 (*8.2%*)	28 (*28.6%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.0%*)	0 (*0.0%*)	**5.42**
2000	17 (*16.7%*)	4 (*3.9%*)	22 (*21.6%*)	4 (*3.9%*)	3 (*2.9%*)	4 (*3.9%*)	7 (*6.9%*)	12 (*11.8%*)	27 (*26.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*2.0%*)	0 (*0.0%*)	**5.53**
2001	19 (*17.9%*)	5 (*4.7%*)	14 (*13.2%*)	2 (*1.9%*)	4 (*3.8%*)	5 (*4.7%*)	6 (*5.7%*)	11 (*10.4%*)	34 (*32.1%*)	1 (*0.9%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.9%*)	4 (*3.8%*)	0 (*0.0%*)	**6.12**
2002	15 (*13.4%*)	9 (*8.0%*)	18 (*16.1%*)	2 (*1.8%*)	3 (*2.7%*)	5 (*4.5%*)	6 (*5.4%*)	12 (*10.7%*)	38 (*33.9%*)	0 (*0.0%*)	1 (*0.9%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.8%*)	1 (*0.9%*)	**6.10**
2003	17 (*14.9%*)	7 (*6.1%*)	14 (*12.3%*)	4 (*3.5%*)	3 (*2.6%*)	5 (*4.4%*)	7 (*6.1%*)	14 (*12.3%*)	37 (*32.5%*)	1 (*0.9%*)	1 (*0.9%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	3 (*2.6%*)	1 (*0.9%*)	**6.28**
2004	16 (*13.7%*)	8 (*6.8%*)	15 (*12.8%*)	0 (*0.0%*)	3 (*2.6%*)	4 (*3.4%*)	9 (*7.7%*)	13 (*11.1%*)	38 (*32.5%*)	0 (*0.0%*)	1 (*0.9%*)	1 (*0.9%*)	0 (*0.0%*)	2 (*1.7%*)	6 (*5.1%*)	1 (*0.9%*)	**6.74**
2005	15 (*12.6%*)	11 (*9.2%*)	16 (*13.4%*)	2 (*1.7%*)	4 (*3.4%*)	3 (*2.5%*)	7 (*5.9%*)	13 (*10.9%*)	38 (*31.9%*)	1 (*0.8%*)	0 (*0.0%*)	1 (*0.8%*)	0 (*0.0%*)	1 (*0.8%*)	7 (*5.9%*)	0 (*0.0%*)	**6.45**
2006	15 (*12.3%*)	9 (*7.4%*)	13 (*10.7%*)	3 (*2.5%*)	4 (*3.3%*)	3 (*2.5%*)	6 (*4.9%*)	15 (*12.3%*)	39 (*32.0%*)	1 (*0.8%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.6%*)	9 (*7.4%*)	3 (*2.5%*)	**7.19**
2007	18 (*14.5%*)	8 (*6.5%*)	13 (*10.5%*)	2 (*1.6%*)	4 (*3.2%*)	6 (*4.8%*)	5 (*4.0%*)	15 (*12.1%*)	39 (*31.5%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.6%*)	11 (*8.9%*)	1 (*0.8%*)	**6.93**
2008	15 (*12.1%*)	7 (*5.6%*)	14 (*11.3%*)	3 (*2.4%*)	7 (*5.6%*)	6 (*4.8%*)	3 (*2.4%*)	16 (*12.9%*)	43 (*34.7%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.8%*)	1 (*0.8%*)	8 (*6.5%*)	0 (*0.0%*)	**6.75**
2009	15 (*12.1%*)	6 (*4.8%*)	12 (*9.7%*)	3 (*2.4%*)	5 (*4.0%*)	6 (*4.8%*)	3 (*2.4%*)	19 (*15.3%*)	48 (*38.7%*)	0 (*0.0%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.8%*)	0 (*0.0%*)	6 (*4.8%*)	0 (*0.0%*)	**6.81**
2010	15 (*12.1%*)	6 (*4.8%*)	10 (*8.1%*)	3 (*2.4%*)	4 (*3.2%*)	7 (*5.6%*)	3 (*2.4%*)	19 (*15.3%*)	43 (*34.7%*)	0 (*0.0%*)	1 (*0.8%*)	0 (*0.0%*)	1 (*0.8%*)	1 (*0.8%*)	11 (*8.9%*)	0 (*0.0%*)	**7.21**
2011	15 (*12.1%*)	6 (*4.8%*)	11 (*8.9%*)	1 (*0.8%*)	3 (*2.4%*)	7 (*5.6%*)	4 (*3.2%*)	21 (*16.9%*)	42 (*33.9%*)	0 (*0.0%*)	1 (*0.8%*)	0 (*0.0%*)	1 (*0.8%*)	1 (*0.8%*)	11 (*8.9%*)	0 (*0.0%*)	**7.24**
2012	9 (*7.2%*)	13 (*10.4%*)	12 (*9.6%*)	1 (*0.8%*)	2 (*1.6%*)	5 (*4.0%*)	1 (*0.8%*)	19 (*15.2%*)	48 (*38.4%*)	1 (*0.8%*)	0 (*0.0%*)	1 (*0.8%*)	1 (*0.8%*)	1 (*0.8%*)	11 (*8.8%*)	0 (*0.0%*)	**7.36**
2013	9 (*7.1%*)	11 (*8.7%*)	14 (*11.0%*)	1 (*0.8%*)	3 (*2.4%*)	2 (*1.6%*)	6 (*4.7%*)	20 (*15.7%*)	47 (*37.0%*)	1 (*0.8%*)	0 (*0.0%*)	2 (*1.6%*)	0 (*0.0%*)	1 (*0.8%*)	10 (*7.9%*)	0 (*0.0%*)	**7.30**
2014	8 (*6.3%*)	10 (*7.9%*)	15 (*11.8%*)	4 (*3.1%*)	3 (*2.4%*)	2 (*1.6%*)	2 (*1.6%*)	17 (13.4%)	49 (*38.6%*)	0 (*0.0%*)	0 (*0.0%*)	2 (*1.6%*)	1 (*0.8%*)	1 (*0.8%*)	12 (*9.4%*)	1 (*0.8%*)	**7.57**
2015	7 (*5.5%*)	7 (*5.5%*)	17 (*13.4%*)	7 (*5.5%*)	5 (*3.9%*)	1 (*0.8%*)	1 (*0.8%*)	21 (*16.5%*)	41 (*32.3%*)	0 (*0.0%*)	0 (*0.0%*)	1 (*0.8%*)	1 (*0.8%*)	1 (*0.8%*)	13 (*10.2%*)	4 (*3.1%*)	**7.91**

***ABHK Score is a weighted score assigning 1 to domestic firms, 2 through 15 to Rank 2 through Rank 15 firms, and 16 to Global firms giving an ABHK score each year to each industry grouping of firms.**

Appendix 4.10

Advanced Market Industry Level Multinationality Averages										
	Industry Type	**Australia**	**Canada**	**France**	**Germany**	**Italy**	**Japan**	**U.K.**	**U.S.**	**Avg.**
Triad	Basic Materials	**2.32** (7.1)	**2.00** (9.4)	**2.58** (5.0)	**2.50** (10.7)	**3.18** (1.0)	**1.94** (25.7)	**3.08** (14.4)	**2.04** (17.2)	**2.16**
	Consumer Goods	**1.99** (3.3)	**2.24** (2.8)	**2.36** (13.2)	**2.28** (8.8)	**2.40** (12.2)	**2.36** (34.3)	**2.15** (22.7)	**1.79** (53.3)	**2.11**
	Consumer Service	**1.82** (10.7)	**1.40** (7.3)	**2.15** (13.8)	**2.01** (7.9)	**2.30** (3.3)	**1.28** (15.0)	**2.06** (48.2)	**1.74** (63.3)	**1.84**
	Financials	**1.80** (21.0)	**2.17** (8.9)	**2.40** (15.5)	**2.14** (10.0)	**1.63** (18.6)	**1.80** (9.8)	**1.88** (54.7)	**1.85** (83.9)	**1.90**
	Health Care	**2.61** (8.4)	**2.00** (1.0)	**2.13** (7.6)	**2.69** (7.6)	**2.28** (2.7)	**2.23** (8.3)	**2.93** (9.2)	**1.76** (44.4)	**2.13**
	Industrials	**2.43** (7.1)	**2.19** (3.8)	**2.29** (23.5)	**2.32** (16.7)	**2.23** (15.4)	**2.05** (60.1)	**2.66** (54.4)	**1.87** (70.3)	**2.20**
	Oil & Gas	**1.94** (4.6)	**1.63** (8.7)	**2.55** (2.9)	**2.17** (1.4)	**2.50** (3.6)	**1.43** (1.8)	**3.19** (6.7)	**1.80** (33.2)	**2.01**
	Technology	**NA**	**2.04** (2.6)	**2.19** (9.4)	**2.15** (14.4)	**1.42** (3.3)	**2.52** (12.3)	**2.84** (6.6)	**2.11** (45.3)	**2.20**
	Telecommunications	**1.68** (2.1)	**1.13** (2.4)	**1.78** (1.0)	**2.00** (3.2)	**2.00** (1.0)	**1.72** (1.8)	**2.14** (4.1)	**2.01** (4.8)	**1.86**
	Utilities	**1.45** (3.8)	**1.25** (2.7)	**2.84** (4.3)	**2.00** (1.3)	**1.18** (6.4)	**1.00** (2.9)	**1.83** (6.2)	**1.73** (26.7)	**1.73**
	Service	**1.92** (49.3)	**1.75** (25.1)	**2.31** (55.4)	**2.24** (38.8)	**1.88** (44.2)	**1.97** (72.1)	**2.05** (145.1)	**1.79** (276.4)	**1.94**
	Non-Service	**2.27** (18.8)	**1.90** (24.5)	**2.32** (40.8)	**2.30** (43.2)	**2.20** (23.3)	**2.07** (99.9)	**2.79** (82.1)	**1.94** (166.0)	**2.19**
Sales Geographic Location	Basic Materials	**3.32** (11.0)	**3.13** (11.7)	**4.56** (4.6)	**4.16** (10.4)	**5.94** (1.0)	**3.50** (26.3)	**4.94** (13.3)	**3.36** (16.0)	**3.76**
	Consumer Goods	**2.53** (4.0)	**2.18** (2.9)	**3.81** (13.6)	**3.82** (10.2)	**3.98** (12.0)	**4.43** (35.1)	**3.31** (25.3)	**2.62** (50.2)	**3.43**
	Consumer Service	**2.09** (15.0)	**1.79** (6.3)	**3.90** (16.2)	**3.40** (8.6)	**2.79** (3.8)	**1.66** (15.1)	**2.86** (48.7)	**1.66** (61.8)	**2.35**
	Financials	**2.15** (28.0)	**2.34** (8.4)	**3.27** (16.0)	**3.71** (11.4)	**1.87** (19.4)	**4.07** (10.6)	**2.91** (55.9)	**1.78** (82.6)	**2.43**
	Health Care	**3.04** (8.0)	**2.28** (1.0)	**3.29** (7.2)	**4.24** (9.9)	**2.96** (2.5)	**4.21** (8.4)	**3.72** (8.8)	**2.06** (43.4)	**2.88**
	Industrials	**2.72** (11.0)	**3.38** (3.9)	**4.13** (23.2)	**3.69** (21.1)	**3.67** (17.1)	**4.27** (59.1)	**4.18** (56.4)	**2.72** (69.7)	**3.66**
	Oil and Gas	**1.92** (5.0)	**1.67** (6.4)	**3.99** (2.1)	**2.67** (1.9)	**4.89** (3.7)	**2.52** (1.8)	**4.37** (7.3)	**2.60** (32.2)	**2.85**
	Technology	**NA**	**2.07** (1.9)	**3.44** (11.2)	**3.32** (15.1)	**1.80** (3.2)	**4.50** (13.1)	**3.98** (7.7)	**3.05** (45.2)	**3.35**
	Telecommunications	**1.19** (3.0)	**1.41** (2.8)	**1.94** (1.0)	**4.11** (3.2)	**3.06** (1.0)	**3.09** (1.9)	**4.05** (5.1)	**1.49** (5.0)	**2.59**
	Utilities	**1.31** (5.0)	**1.24** (2.8)	**3.57** (4.8)	**5.00** (1.1)	**1.82** (6.3)	**1.18** (3.1)	**2.65** (6.3)	**1.63** (27.2)	**1.92**
	Service	**2.16** (63.0)	**1.94** (24.2)	**3.57** (58.8)	**3.85** (44.4)	**2.59** (45.0)	**3.62** (74.2)	**3.04** (150.1)	**1.93** (270.2)	**2.64**
	Non-Service	**2.82** (27.0)	**2.70** (23.9)	**3.98** (41.1)	**3.64** (48.5)	**3.70** (25.0)	**4.07** (100.3)	**4.30** (84.7)	**2.85** (163.1)	**3.53**
Subsidiary Geographic Location	Basic Materials	**3.05** (11.0)	**2.82** (9.6)	**4.61** (3.3)	**4.34** (13.8)	**NA**	**3.67** (27.6)	**4.21** (9.9)	**4.72** (15.3)	**3.88**
	Consumer Goods	**2.15** (4.0)	**3.50** (2.4)	**5.74** (10.1)	**4.42** (11.1)	**2.54** (8.8)	**4.24** (41.1)	**3.21** (22.5)	**4.27** (46.6)	**4.04**
	Consumer Service	**2.18** (15.0)	**2.15** (4.9)	**4.91** (11.3)	**2.41** (8.8)	**2.55** (2.5)	**2.46** (22.0)	**2.61** (47.0)	**3.23** (51.9)	**2.88**
	Financials	**2.16** (30.0)	**4.49** (9.2)	**3.73** (9.4)	**2.82** (12.8)	**2.30** (15.1)	**2.82** (21.8)	**2.47** (65.7)	**3.31** (71.8)	**2.86**
	Health Care	**2.50** (9.0)	**5.25** (0.3)	**4.64** (3.9)	**3.31** (12.0)	**2.17** (1.4)	**3.25** (9.6)	**3.55** (7.0)	**3.91** (37.7)	**3.56**
	Industrials	**2.45** (11.0)	**3.83** (3.4)	**4.72** (15.0)	**3.85** (23.6)	**2.96** (10.1)	**4.21** (64.7)	**3.99** (49.6)	**3.98** (62.8)	**3.96**
	Oil and Gas	**1.92** (5.0)	**2.36** (7.2)	**5.32** (2.4)	**2.11** (2.9)	**4.13** (3.3)	**1.67** (3.0)	**3.73** (5.8)	**3.09** (28.6)	**2.99**
	Technology	**NA**	**2.91** (1.1)	**3.46** (7.7)	**2.89** (15.7)	**1.49** (2.4)	**4.15** (12.9)	**3.75** (6.3)	**4.30** (39.9)	**3.81**
	Telecommunications	**2.12** (3.0)	**2.83** (2.9)	**3.25** (1.0)	**2.25** (3.9)	**4.29** (1.0)	**3.18** (3.8)	**3.44** (4.5)	**4.19** (3.5)	**3.10**
	Utilities	**1.47** (5.0)	**1.71** (2.6)	**4.90** (3.2)	**4.79** (2.0)	**2.12** (3.6)	**2.65** (4.9)	**2.91** (5.6)	**2.47** (25.1)	**2.61**
	Service	**2.16** (66.0)	**3.34** (22.3)	**4.77** (38.9)	**3.25** (48.5)	**2.42** (32.4)	**3.35** (103.2)	**2.72** (152.3)	**3.50** (236.6)	**3.18**
	Non-Service	**2.60** (27.0)	**2.83** (21.3)	**4.42** (38.9)	**3.61** (56.0)	**3.32** (14.4)	**3.99** (108.2)	**3.98** (71.6)	**3.97** (146.6)	**3.82**
ABHK	Basic Materials	**6.12** (11.0)	**6.87** (8.9)	**9.85** (2.9)	**8.73** (10.3)	**NA**	**8.60** (24.8)	**10.43** (9.1)	**8.81** (14.1)	**8.38**
	Consumer Goods	**5.16** (4.0)	**7.44** (2.4)	**10.73** (9.2)	**8.92** (9.1)	**6.19** (6.8)	**9.21** (33.4)	**6.92** (20.0)	**7.79** (39.0)	**8.15**
	Consumer Service	**4.30** (15.0)	**3.57** (3.7)	**10.11** (10.4)	**5.24** (7.0)	**6.67** (1.9)	**4.85** (11.8)	**6.32** (36.1)	**5.78** (43.8)	**5.94**
	Financials	**4.23** (27.0)	**8.13** (7.6)	**8.01** (8.8)	**6.83** (11.4)	**4.92** (12.4)	**7.41** (7.6)	**6.06** (40.0)	**6.00** (61.9)	**5.97**
	Health Care	**5.26** (8.0)	**8.00** (0.3)	**10.02** (3.5)	**8.08** (9.3)	**5.94** (1.3)	**7.90** (8.1)	**8.30** (5.9)	**7.33** (33.8)	**7.45**
	Industrials	**4.82** (11.0)	**7.96** (3.3)	**9.39** (13.9)	**7.85** (18.2)	**7.31** (8.5)	**9.11** (56.8)	**8.65** (45.9)	**7.58** (57.9)	**8.21**
	Oil and Gas	**3.81** (5.0)	**5.57** (4.5)	**11.70** (1.9)	**4.77** (2.0)	**10.50** (2.4)	**5.18** (1.5)	**9.35** (4.7)	**6.58** (26.1)	**6.75**
	Technology	**NA**	**8.00** (0.1)	**7.44** (6.8)	**6.51** (14.0)	**3.56** (2.3)	**9.04** (11.8)	**8.02** (5.4)	**8.24** (36.4)	**7.82**
	Telecommunications	**3.27** (3.0)	**5.33** (2.8)	**7.25** (1.0)	**5.59** (3.1)	**8.17** (1.0)	**7.42** (1.6)	**7.40** (4.4)	**6.77** (3.5)	**6.16**
	Utilities	**2.40** (5.0)	**3.38** (2.4)	**9.75** (3.3)	**8.85** (1.1)	**4.03** (3.4)	**6.13** (2.9)	**7.01** (5.1)	**4.59** (22.3)	**5.09**
	Service	**4.25** (62.0)	**6.16** (19.2)	**9.64** (36.2)	**7.27** (41.0)	**5.42** (26.8)	**7.87** (65.4)	**6.51** (111.5)	**6.37** (204.3)	**6.55**
	Non-Service	**5.16** (27.0)	**6.74** (16.8)	**9.09** (25.5)	**7.49** (44.5)	**7.24** (13.2)	**8.91** (94.9)	**8.90** (65.1)	**7.69** (134.5)	**8.00**

***Each multinationality score is shown in bold with the number of firms on average over the 18-years in brackets. The Triad score is from 1-5, sales and subsidiary geographic location scores are from 1-7, and the ABHK score is from 1-16. Australia's stock market index did not contain firms from the Technology sector while Italy's stock market index did not contain firms with subsidiary data from the Basic Materials sector rendering each category to be not applicable (NA).**

Appendix 4.11

Emerging Market Industry Level Multinationality Averages								
	Industry Type	**China**	**India**	**Russia**	**South Africa**	**South America**	**Visegrád**	**Average**
Triad	Basic Materials	**1.69** (7.61)	**1.51** (10.61)	**2.30** (8.72)	**2.72** (19.22)	**2.25** (11.00)	**1.78** (6.72)	**2.16**
	Consumer Goods	**1.67** (9.47)	**1.65** (14.67)	**1.38** (1.62)	**2.08** (7.39)	**1.83** (11.83)	**1.88** (7.00)	**1.63**
	Consumer Service	**1.45** (8.61)	**1.78** (1.00)	**1.42** (3.79)	**2.00** (14.50)	**1.07** (9.22)	**1.56** (7.56)	**1.57**
	Financials	**1.47** (18.29)	**1.14** (16.56)	**1.53** (2.94)	**1.87** (22.50)	**1.26** (16.94)	**1.36** (15.22)	**1.45**
	Health Care	**1.58** (5.92)	**2.33** (7.17)	**NA**	**2.09** (3.53)	**1.18** (2.00)	**1.68** (2.38)	**1.90**
	Industrials	**1.63** (15.28)	**1.54** (17.22)	**1.00** (1.00)	**1.88** (12.72)	**1.67** (10.33)	**1.69** (9.11)	**1.66**
	Oil and Gas	**1.75** (1.65)	**1.32** (6.56)	**1.96** (6.89)	**NA**	**2.14** (6.17)	**1.80** (3.59)	**1.80**
	Technology	**1.77** (3.13)	**3.85** (4.11)	**2.00** (1.00)	**3.00** (1.20)	**1.23** (1.86)	**1.58** (2.89)	**2.38**
	Telecommunications	**1.00** (1.00)	**1.48** (2.86)	**1.49** (2.83)	**1.71** (3.11)	**1.64** (3.39)	**1.17** (2.40)	**1.48**
	Utilities	**1.14** (5.18)	**1.10** (4.44)	**1.38** (2.64)	**NA**	**1.06** (11.94)	**1.40** (5.67)	**1.17**
	Service	**1.47** (48.47)	**1.52** (46.69)	**1.41** (11.98)	**1.94** (51.03)	**1.33** (55.33)	**1.50** (40.22)	**1.55**
	Non-Service	**1.67** (27.67)	**1.74** (38.50)	**2.05** (19.44)	**2.40** (33.14)	**1.99** (29.26)	**1.72** (22.31)	**1.93**
Sales Geographic Location	Basic Materials	**1.28** (7.06)	**1.29** (10.67)	**3.26** (8.50)	**4.24** (19.22)	**3.11** (11.00)	**1.79** (6.72)	**2.82**
	Consumer Goods	**1.02** (8.18)	**1.14** (14.67)	**1.00** (1.62)	**2.32** (7.50)	**1.66** (13.06)	**1.63** (6.44)	**1.48**
	Consumer Service	**1.57** (8.00)	**1.00** (1.00)	**1.11** (3.18)	**1.84** (14.72)	**1.02** (9.44)	**1.48** (7.39)	**1.48**
	Financials	**1.13** (16.00)	**1.00** (16.56)	**1.32** (2.44)	**2.26** (22.56)	**1.15** (16.31)	**1.39** (15.22)	**1.45**
	Health Care	**1.00** (5.67)	**2.12** (7.17)	**NA**	**2.53** (3.40)	**1.00** (2.00)	**1.51** (2.19)	**1.70**
	Industrials	**1.22** (14.11)	**1.14** (17.22)	**1.00** (1.00)	**2.69** (12.78)	**1.95** (10.44)	**1.66** (8.89)	**1.67**
	Oil and Gas	**1.00** (1.65)	**1.00** (6.61)	**1.63** (7.11)	**NA**	**1.68** (5.44)	**1.63** (3.35)	**1.43**
	Technology	**1.00** (2.53)	**3.91** (4.11)	**2.38** (1.00)	**4.44** (1.20)	**1.00** (1.00)	**1.65** (2.89)	**2.52**
	Telecommunications	**1.00** (1.00)	**1.23** (2.86)	**2.04** (2.61)	**1.63** (3.11)	**1.53** (3.44)	**1.00** (2.40)	**1.12**
	Utilities	**1.12** (4.59)	**1.00** (4.72)	**1.67** (3.00)	**NA**	**1.12** (12.00)	**1.19** (5.67)	**1.17**
	Service	**1.18** (43.43)	**1.23** (46.97)	**1.26** (11.24)	**2.12** (51.29)	**1.27** (56.26)	**1.41** (21.85)	**1.45**
	Non-Service	**1.20** (25.35)	**1.45** (38.61)	**2.45** (19.22)	**3.65** (33.20)	**2.36** (27.89)	**1.69** (39.31)	**2.11**
Subsidiary Geographic Location	Basic Materials	**1.43** (7.19)	**2.38** (4.29)	**2.38** (5.50)	**2.29** (10.71)	**1.50** (7.24)	**1.75** (7.25)	**1.94**
	Consumer Goods	**1.60** (7.35)	**2.09** (10.12)	**1.00** (1.00)	**1.66** (8.20)	**1.58** (15.24)	**1.60** (5.82)	**1.70**
	Consumer Service	**1.79** (6.06)	**1.09** (1.22)	**1.87** (1.94)	**1.66** (12.38)	**1.23** (4.41)	**1.41** (5.65)	**1.57**
	Financials	**1.51** (22.00)	**2.01** (8.47)	**1.70** (1.77)	**1.71** (17.47)	**1.45** (20.24)	**1.25** (14.06)	**1.55**
	Health Care	**1.10** (4.56)	**2.96** (7.76)	**NA**	**1.31** (3.71)	**1.81** (1.23)	**1.65** (3.44)	**1.97**
	Industrials	**1.78** (11.41)	**2.28** (11.18)	**2.00** (1.00)	**1.99** (12.59)	**1.94** (8.47)	**1.37** (8.76)	**1.90**
	Oil and Gas	**2.12** (2.73)	**1.89** (4.71)	**1.88** (4.41)	**NA**	**1.57** (2.18)	**1.88** (3.13)	**1.88**
	Technology	**1.12** (3.50)	**3.96** (3.73)	**NA**	**4.22** (1.53)	**2.43** (1.17)	**1.81** (2.64)	**2.61**
	Telecommunications	**1.67** (1.00)	**1.67** (1.75)	**1.35** (2.50)	**1.02** (2.65)	**1.16** (1.46)	**1.19** (1.86)	**1.30**
	Utilities	**1.55** (2.38)	**1.13** (2.21)	**1.47** (1.50)	**NA**	**1.20** (7.18)	**1.20** (4.31)	**1.26**
	Service	**1.53** (43.35)	**2.20** (31.54)	**1.70** (7.21)	**1.61** (44.42)	**1.44** (49.75)	**1.36** (35.14)	**1.60**
	Non-Service	**1.64** (24.83)	**2.46** (23.91)	**1.97** (12.41)	**2.24** (24.83)	**1.73** (19.05)	**1.61** (21.78)	**1.95**
ABHK	Basic Materials	**3.18** (4.09)	**4.07** (3.53)	**6.21** (4.00)	**5.76** (9.82)	**3.14** (4.44)	**4.56** (4.67)	**4.71**
	Consumer Goods	**3.21** (4.69)	**3.90** (7.82)	**1.00** (1.00)	**4.10** (6.10)	**4.03** (6.87)	**3.18** (3.67)	**3.68**
	Consumer Service	**4.00** (4.60)	**1.33** (1.00)	**4.46** (1.60)	**3.48** (9.69)	**1.73** (3.42)	**2.95** (3.94)	**3.22**
	Financials	**2.73** (10.92)	**3.74** (7.41)	**3.36** (1.56)	**3.85** (12.00)	**2.09** (9.75)	**2.17** (6.06)	**2.99**
	Health Care	**1.54** (3.90)	**7.64** (5.12)	**NA**	**3.59** (3.09)	**2.71** (1.17)	**5.62** (0.93)	**4.55**
	Industrials	**3.09** (5.73)	**4.30** (9.35)	**4.00** (1.00)	**4.87** (8.94)	**4.75** (5.25)	**2.78** (4.76)	**4.10**
	Oil and Gas	**3.05** (1.58)	**3.23** (4.59)	**3.67** (4.36)	**NA**	**5.14** (1.56)	**4.47** (2.43)	**3.76**
	Technology	**1.41** (2.00)	**9.46** (3.20)	**NA**	**10.94** (1.21)	**5.00** (1.00)	**5.91** (1.83)	**6.73**
	Telecommunications	**4.00** (1.00)	**3.82** (1.89)	**3.40** (1.67)	**1.64** (2.59)	**1.50** (1.23)	**1.20** (1.36)	**2.53**
	Utilities	**1.10** (1.11)	**1.39** (2.21)	**3.20** (1.67)	**NA**	**2.00** (3.00)	**1.96** (3.47)	**1.96**
	Service	**2.90** (26.23)	**4.40** (25.46)	**3.69** (6.82)	**3.53** (33.47)	**2.62** (25.43)	**2.56** (19.42)	**3.27**
	Non-Service	**2.90** (13.41)	**4.74** (20.67)	**4.67** (10.02)	**5.62** (19.98)	**4.12** (12.24)	**3.99** (13.69)	**4.46**

***Multinationality score is in bold with the average number of firms across the 18-year period shown in brackets. My dataset of firms did not include any Russian firms from the Health Care industry sector as well as South African firms from the Oil and Gas and Utilities sectors. Furthermore, there are no Russian firms from the Technology sector with subsidiary data available, thus resulting in no data (NA).**

Appendix 5.1

	Hausman Test: ICB Industry Sectors					
	LnABHK		LnTriad		FS	
	Basic Materials					
Outcome Variables	**Chi²**	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	5.83	0.2124	5.83	0.2121	5.96	0.2021
LnROA	8.35	0.0795	8.09	0.0884	9.44	0.0510
LnROE	2.55	0.6356	2.26	0.6879	2.64	0.6192
	Consumer Goods					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	4.32	0.7423	4.34	0.7401	4.12	0.7653
LnROA	3.57	0.8277	3.36	0.8503	3.33	0.8534
LnROE	2.10	0.9543	1.78	0.9710	1.86	0.9672
	Consumer Services					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	72.82	0.0000	77.41	0.0000	77.00	0.0000
LnROA	46.72	0.0000	48.24	0.0000	45.52	0.0000
LnROE	15.91	0.0031	19.58	0.0006	17.12	0.0018
	Financials					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	98.66	0.0000	117.95	0.0000	112.65	0.0000
LnROA	126.20	0.0000	136.77	0.0000	141.27	0.0000
LnROE	37.56	0.0000	39.46	0.0000	37.38	0.0000
	Health Care					
Outcome Variables	**Chi²**	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	12.40	0.0146	12.30	0.0153	12.03	0.0171
LnROA	2.70	0.6083	4.60	0.3310	3.85	0.4270
LnROE	19.18	0.0007	19.46	0.0006	18.57	0.0010
	Industrials					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	39.95	0.0000	43.93	0.0000	44.07	0.0000
LnROA	107.08	0.0000	123.25	0.0000	114.21	0.0000
LnROE	67.70	0.0000	82.21	0.0000	72.99	0.0000
	Oil and Gas					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	8.77	0.0670	9.11	0.0585	9.01	0.0609
LnROA	2.20	0.6986	3.05	0.5489	2.90	0.5746
LnROE	3.22	0.5225	2.95	0.5670	3.29	0.5100
	Technology					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	41.69	0.0000	46.11	0.0000	43.57	0.0000
LnROA	21.88	0.0027	22.39	0.0022	24.98	0.0008
LnROE	11.69	0.1113	19.79	0.0005	11.86	0.1053
	Telecommunications					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	3.92	0.2050	4.07	0.3960	3.74	0.4424
LnROA	21.19	0.0003	25.37	0.0000	22.90	0.0001
LnROE	14.64	0.0055	19.58	0.0006	13.91	0.0076
	Utilities					
	Chi²	**Probability**	**Chi²**	**Probability**	**Chi²**	**Probability**
LnRI	9.72	0.0455	9.29	0.0543	9.45	0.0507

LnROA	1.28	0.8644	1.01	0.9078	1.53	0.8219
LnROE	4.86	0.3023	5.09	0.2784	6.47	0.1667

***Chi² that is greater than the critical value results in a rejection of the null hypothesis. This is also the case when the P-value is greater than five percent.**

Appendix 5.2

Industry Regression Results

Basic Materials

		DLnRI			DLnROA			DLnROE	
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	-0.10[4]	-0.10[4]	-0.10[4]	-0.05	-0.05	-0.05	-0.03	-0.03	-0.03
DLnmcap	0.35[4]	0.35[4]	0.35[4]	0.29[4]	0.29[4]	0.29[4]	0.43[4]	0.43[4]	0.43[4]
DLeverage	0.01	0.01[1]	0.01[1]	-0.02	-0.02	-0.02	-0.01[2]	-0.01[2]	-0.01[2]
DLnage	0.37	0.38	0.38	0.78[3]	0.76[3]	0.75	-0.71	-0.73	-0.78
Multinationality	**0.04[3]**	**0.01**	**-0.10**	**0.03**	**0.10**	**0.29[2]**	**-0.02**	**-0.04**	**0.29[2]**
1998-2001	0.11[2]	0.11[2]	0.11[2]	0.01	0.01	0.01	0.05	0.04	0.04
2002-2006	0.04	0.04	0.04	0.02	0.02	0.02	0.01	0.01	0.01
2007-2009	0.17[4]	0.17[4]	0.17[4]	-0.18[2]	-0.18[2]	-0.18[2]	-0.21[3]	-0.21[3]	-0.21[3]
Observations	1,930	1,930	1,930	1,681	1,681	1,681	1,570	1,570	1,570
R^2	0.07	0.07	0.07	0.09	0.09	0.09	0.06	0.06	0.07
Adjusted R^2	0.07	0.07	0.07	0.09	0.09	0.09	0.06	0.06	0.06
F-Statistic	20.64	20.45	20.62	23.76	23.98	24.67	15.47	15.48	16.20
Durbin-Watson	2.96	2.96	2.96	2.44	2.44	2.44	2.30	2.30	2.30

Consumer Goods

		DLnRI			DLnROA			DLnROE	
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	-0.08[4]	-0.08[4]	-0.08[4]	0.03	0.03	0.02	-0.01	-0.01	-0.01
DLnmcap	0.38[4]	0.38[4]	0.38[4]	0.24[4]	0.24[4]	0.24[4]	0.30[4]	0.30[4]	0.30[4]
DLeverage	0.01[1]	0.01[1]	0.01[2]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01[4]
DLnage	-0.13	-0.13	-0.13	0.39	0.39	0.40	0.34	0.34	0.35
Multinationality	**0.04[1]**	**0.10[2]**	**0.15[1]**	**0.01**	**0.01**	**0.18[1]**	**0.05**	**0.05**	**0.30[2]**
1998-2001	0.09[3]	0.09[3]	0.09[3]	-0.09[2]	-0.09[2]	-0.09[2]	-0.10[2]	-0.10[2]	-0.10[2]
2002-2006	0.05[2]	0.05[2]	0.05[2]	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01
2007-2009	0.16[4]	0.16[4]	0.16[4]	-0.11[3]	-0.11[3]	-0.11[3]	-0.08[2]	-0.08[2]	-0.08[2]
Observations	3,035	3,035	3,035	2,755	2,755	2,755	2,645	2,645	2,645
R^2	0.08	0.08	0.08	0.04	0.04	0.04	0.05	0.04	0.05
Adjusted R^2	0.08	0.08	0.08	0.04	0.04	0.04	0.04	0.04	0.04
F-Statistic	38.56	38.91	38.53	17.93	17.92	18.34	17.76	17.56	18.31
Durbin-Watson	2.88	2.88	2.88	2.57	2.57	2.57	2.27	2.27	2.27

Consumer Services

		LnRI			LnROA			LnROE	
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-1.87[4]	-1.90[4]	-1.88[4]	-5.89[4]	-5.92[4]	-5.94[4]	-6.96[4]	-7.03[4]	-7.04[4]
Lnmcap	0.10[4]	0.10[4]	0.10[4]	0.17[4]	0.17[4]	0.17[4]	0.17[4]	0.18[4]	0.18[4]
Leverage	-0.01[1]	-0.01[1]	-0.01[1]	-0.01	-0.01	-0.01	0.01[1]	0.01	0.01[1]
Lnage	-0.05	-0.05[3]	-0.05	-0.15[1]	-0.15[1]	-0.14[1]	0.27[2]	0.28[3]	0.29[3]
Multinationality	**-0.01**	**-0.08[2]**	**-0.14[2]**	**-0.02**	**-0.08**	**-0.39[4]**	**-0.02**	**-0.19[3]**	**-0.50[4]**
1998-2001	0.02	0.02	0.02	0.12[3]	0.12[3]	0.11[2]	0.22[4]	0.20[4]	0.20[4]
2002-2006	0.03	0.03	0.03	0.06[1]	0.06[1]	0.06[1]	0.11[2]	0.10[2]	0.10[2]
2007-2009	-0.15[4]	-0.15[4]	-0.15[4]	0.06[1]	0.05	0.05	0.06	0.05	0.05
Observations	2,971	2,971	2,971	2,903	2,903	2,903	2,817	2,817	2,817
R^2	0.09	0.09	0.09	0.56	0.57	0.57	0.42	0.42	0.42
Adjusted R^2	0.04	0.04	0.04	0.54	0.54	0.54	0.38	0.38	0.39
F-Statistic	1.63	1.63	1.65	20.03	20.04	20.18	10.90	10.96	11.01
Durbin-Watson	2.21	2.21	2.21	1.25	1.25	1.26	1.20	1.20	1.20

Financials

		LnRI			LnROA			LnROE	
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-2.54[4]	-2.60[4]	-2.54[4]	-8.24[4]	-8.31[4]	-8.22[4]	-8.73[4]	-8.82[4]	-8.71[4]
Lnmcap	0.10[4]	0.11[4]	0.11[4]	0.20[4]	0.20[4]	0.20[4]	0.23[4]	0.23[4]	0.23[4]
Leverage	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.01	0.01	0.01
Lnage	0.07[2]	0.07[2]	0.07[2]	-0.04	0.01	0.01	0.31[4]	0.28[4]	0.28[4]
Multinationality	**-0.03[3]**	**-0.09[4]**	**-0.14[3]**	**-0.10[4]**	**-0.14[3]**	**-0.26[3]**	**-0.12[4]**	**-0.16[3]**	**-0.29[3]**

1998-2001	0.09[4]	0.08[4]	0.09[4]	0.16	0.18	0.18	0.27[4]	0.28[4]	0.28[4]
2002-2006	0.14[4]	0.14[4]	0.14[4]	0.11	0.12	0.12	0.24[4]	0.25[4]	0.25[4]
2007-2009	-0.19[4]	-0.18[4]	-0.19[4]	0.06[1]	0.06[2]	0.06[2]	0.10[3]	0.11[3]	0.11[3]
Observations	4,832	4,832	4,832	4,628	4,628	4,628	4,467	4,467	4,467
R^2	0.14	0.15	0.14	0.69	0.69	0.69	0.40	0.40	0.40
Adjusted R^2	0.09	0.09	0.09	0.67	0.67	0.67	0.36	0.36	0.36
F-Statistic	2.74	2.77	2.74	34.88	34.67	34.65	10.07	9.97	9.96
Durbin-Watson	2.26	2.26	2.26	1.04	1.04	1.03	1.07	1.07	1.07
Health Care									
		DLnRI			**DLnROA**			**DLnROE**	
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Random**	**Random**	**Random**	**Fixed**	**Fixed**	**Fixed**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	-0.12[4]	-0.12[4]	-0.12[4]	-0.07[3]	-0.07[3]	-0.07[3]	-0.16[4]	-0.16[4]	-0.16[4]
DLnmcap	0.55[4]	0.55[4]	0.55[4]	0.10[2]	0.10[2]	0.10[2]	0.09[2]	0.09[2]	0.09[1]
DLeverage	0.01	0.01	0.01	-0.01[4]	-0.01[4]	-0.01[4]	-0.01	-0.01	-0.01
DLnage	0.81	0.81	0.82	0.11	0.11	0.11	3.80[4]	3.83[4]	3.81[4]
Multinationality	**0.02**	**-0.01**	**-0.09**	**-0.05**	**-0.05**	**-0.05**	**-0.06**[1]	**-0.02**[1]	**-0.16**[1]
1998-2001	-0.09[2]	-0.09[2]	-0.09[2]	0.08	0.08	0.08	0.01	-0.02	-0.01
2002-2006	0.02	0.02	0.02	0.11[3]	0.11[3]	0.11[3]	0.07	0.01	0.07
2007-2009	0.14[4]	0.14[4]	0.14[4]	0.11[2]	0.11[2]	0.11[2]	0.08	0.07	0.08
Observations	1,564	1,564	1,564	1,392	1,392	1,392	1,363	1,363	1,363
R^2	0.16	0.16	0.16	0.04	0.04	0.04	0.07	0.06	0.06
Adjusted R^2	0.11	0.11	0.11	0.03	0.03	0.03	-0.01	-0.01	-0.01
F-Statistic	2.94	2.94	2.94	7.64	7.64	7.64	0.90	0.87	0.89
Durbin-Watson	2.78	2.78	2.78	2.34	2.34	2.35	2.41	2.41	2.42
Industrials									
		LnRI			**LnROA**			**LnROE**	
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-1.38[4]	-1.36[4]	-1.34[4]	-7.91[4]	-7.89[4]	-7.85[4]	-7.03[4]	-7.03[4]	-7.00[4]
Lnmcap	0.07[4]	0.07[4]	0.07[4]	0.26[4]	0.27[4]	0.26[4]	0.27[4]	0.27[4]	0.27[4]
Leverage	-0.01[2]	-0.01[2]	-0.01[2]	-0.01[4]	-0.01[4]	-0.01[4]	-0.01	-0.01	-0.01
Lnage	0.01	-0.01	-0.01	-0.17[3]	-0.18[3]	-0.19[3]	-0.24[3]	-0.23[3]	-0.24[3]
Multinationality	**-0.02**[1]	**-0.04**	**-0.03**	**-0.05**[2]	**-0.14**[4]	**0.01**	**-0.01**	**-0.07**	**-0.06**
1998-2001	-0.01	-0.01	-0.01	0.18[4]	0.17[4]	0.19[4]	0.16[4]	0.15[4]	0.16[4]
2002-2006	0.13[4]	0.13[4]	0.12[4]	0.11[4]	0.10[4]	0.11[4]	0.13[4]	0.13[4]	0.13[4]
2007-2009	-0.15[4]	-0.15[4]	-0.15[4]	0.18[4]	0.18[4]	0.18[4]	0.19[4]	0.18[4]	0.18[4]
Observations	5,151	5,151	5,151	4,823	4,823	4,823	4,638	4,638	4,638
R^2	0.09	0.09	0.09	0.56	0.56	0.56	0.44	0.44	0.44
Adjusted R^2	0.03	0.03	0.03	0.53	0.53	0.53	0.40	0.40	0.40
F-Statistic	1.61	1.60	1.60	19.31	19.36	19.28	11.54	11.55	11.54
Durbin-Watson	2.34	2.34	2.33	1.16	1.17	1.16	1.15	1.15	1.15
Oil and Gas									
		DLnRI			**DLnROA**			**LnROE**	
Model Effects	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	-0.07[2]	-0.07[2]	-0.07[2]	-0.07	-0.07	-0.07	-0.05	-0.05	-0.05
DLnmcap	0.75[4]	0.75[4]	0.75[4]	0.15[2]	0.15[2]	0.14[2]	0.15[2]	0.16[2]	0.15[2]
DLeverage	0.01[4]	0.01[4]	0.01[4]	-0.02[4]	-0.02[4]	-0.02[4]	-0.02	-0.02[4]	-0.02[4]
DLnage	0.35	0.35	0.35	-0.61	-0.60	-0.62	-0.64	-0.66	-0.66
Multinationality	**0.01**	**0.08**	**0.05**	**-0.06**[4]	**-0.19**	**-0.68**[4]	**0.01**	**-0.18**	**-0.52**
1998-2001	0.07	0.07	0.07	0.18[2]	0.19[2]	0.19[2]	0.19[2]	0.20[2]	0.20[2]
2002-2006	-0.09[2]	-0.09[2]	-0.09[2]	0.10	0.11	0.11	0.10[4]	0.10	0.11
2007-2009	0.13[3]	0.13[3]	0.13[3]	-0.19[3]	-0.20[3]	-0.19[3]	-0.26[3]	-0.26[3]	-0.25[3]
Observations	1,066	1,066	1,066	946	946	946	918	918	918
R^2	0.27	0.27	0.27	0.12	0.12	0.13	0.10	0.10	0.11
Adjusted R^2	0.27	0.27	0.27	0.12	0.12	0.13	0.10	0.10	0.10
F-Statistic	56.59	56.79	56.59	18.58	18.79	20.60	14.83	15.08	15.69
Durbin-Watson	2.67	2.67	2.67	2.30	2.30	2.32	2.37	2.37	2.37
Technology									
		LnRI			**LnROA**			**LnROE**	
Model Effects	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Random**	**Random**	**Random**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**

Constant	-2.57[4]	-2.55[4]	-2.50[4]	-6.57[4]	-6.42[4]	-6.40[4]	-4.80[4]	-4.75[4]	-4.75[4]
Lnmcap	0.14[4]	0.14[4]	0.14[4]	0.20[4]	0.20[4]	0.20[4]	0.16[4]	0.16[4]	0.16[4]
Leverage	0.01	0.01	0.01	0.01	0.01	0.01	0.01[2]	0.01[2]	0.01[2]
Lnage	-0.12	-0.14	-0.16[1]	-0.08	-0.16	-0.15	-0.20[3]	-0.23[3]	-0.22[3]
Multinationality	**-0.04**	**-0.11**[2]	**0.04**	**-0.11**[2]	**-0.03**	**-0.13**[2]	**-0.11**[2]	**-0.11**	**-0.20**[1]
1998-2001	-0.01	-0.01	0.01	0.09	0.08	0.07	0.02	0.02	0.01
2002-2006	0.02[4]	0.02	0.02	0.04	0.03	0.02	-0.04	-0.04	-0.05
2007-2009	-0.11[3]	-0.12[3]	-0.11[3]	0.01	0.01	-0.01	0.05	0.05	0.05
Observations	1,482	1,482	1,482	1,343	1,343	1,343	1,334	1,334	1,334
R^2	0.07	0.07	0.07	0.55	0.54	0.55	0.05	0.05	0.05
Adjusted R^2	0.01	0.01	0.01	0.51	0.51	0.51	0.04	0.04	0.04
F-Statistic	1.16	1.20	1.15	16.76	16.64	16.67	9.62	9.35	9.42
Durbin-Watson	2.19	2.19	2.18	1.32	1.31	1.31	1.20	1.19	1.19
Telecommunications									
		LnRI			**LnROA**			**LnROE**	
Model Effects	**Random**	**Random**	**Random**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**	**Fixed**
	LnABHK	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**	**LnABHK**	**LnTriad**	**FS**
Constant	-0.13	-0.01	-0.04	-7.55[4]	-7.71[4]	-7.63[4]	-7.39[4]	-7.72[4]	-7.56[4]
Lnmcap	0.01	0.01	0.01	0.22[4]	0.22[4]	0.22[4]	0.21[4]	0.22[4]	0.21[4]
Leverage	-0.01[2]	-0.01[3]	-0.01[3]	-0.01[1]	-0.01[1]	-0.01[1]	0.01[3]	0.01[3]	0.01[3]
Lnage	0.01	0.01	0.01	-0.05	-0.02	-0.02	0.04[4]	0.09[4]	0.10[4]
Multinationality	**-0.02**	**-0.01**	**-0.05**	**-0.08**	**-0.12**	**-0.24**	**-0.06**	**-0.30**[1]	**-0.77**[2]
1998-2001	-0.07	-0.07	-0.07	0.06	0.11	0.10	0.08	0.10	0.08
2002-2006	0.06	0.06	0.06	0.07	0.10	0.09	0.05	0.07	0.05
2007-2009	-0.15[2]	-0.15[2]	-0.15[3]	0.07	0.09	0.08	0.11	0.13	0.11
Observations	576	576	576	521	521	521	499	499	499
R^2	0.04	0.04	0.04	0.40	0.40	0.40	0.29	030	0.30
Adjusted R^2	0.03	0.03	0.03	0.35	0.35	0.35	0.23	0.24	0.24
F-Statistic	3.31	3.22	3.28	8.50	8.47	8.47	5.00	5.10	5.14
Durbin-Watson	1.99	1.99	1.99	1.43	1.42	1.42	1.52	1.51	1.52
Utilities									
		DLnRI			**DLnROA**			**DLnROE**	
Model Effects	**Fixed**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**	**Random**
	DLnABHK	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**	**DLnABHK**	**DLnTriad**	**DFS**
Constant	-0.04	-0.04[1]	-0.04[1]	-0.05	-0.05	-0.05	-0.04	-0.04	-0.04
DLnmcap	0.54[4]	0.53[4]	0.52[4]	0.37[4]	0.38[4]	0.37[4]	0.19[2]	0.19[3]	0.19[3]
DLeverage	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
DLnage	0.07	0.11	0.09	0.22	0.23	0.22	0.53	0.53	0.53
Multinationality	**0.01**	**-0.20**[2]	**-0.14**	**-0.01**	**-0.29**[2]	**-0.42**	**0.03**	**-0.12**	**-0.97**[3]
1998-2001	-0.01	0.01	-0.01	0.08	0.09	0.08	0.03	0.04	0.04
2002-2006	0.03	0.03	0.03	-0.02	-0.02	-0.01	0.04	0.04	0.04
2007-2009	0.02	0.02	0.02	-0.04[1]	-0.04	-0.04	-0.12[1]	-0.11[1]	-0.11
Observations	1,139	1,139	1,139	1,020	1,020	1,020	925	925	925
R^2	0.21	0.20	0.20	0.04	0.04	0.04	0.02	0.02	0.03
Adjusted R^2	0.15	0.20	0.19	0.03	0.03	0.03	0.01	0.01	0.02
F-Statistic	3.80	41.01	39.96	5.37	6.04	5.68	2.21	2.22	3.67
Durbin-Watson	2.85	2.83	2.83	2.93	2.94	2.94	2.37	2.37	2.35

***Model effects are determined by the Hausman test in Table 5.5. Coefficient is depicted for each variable along with the significance level using a 2-tailed t-test where [1]<.10, [2]<.05, [3]<0.01, [4]<.001.**