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EFFECTS OF FOREIGN DIRECT INVESTMENTS ON HOME AND HOST ECONOMIES AND ON THE PROFITABILITY OF INVESTING FIRMS

BY

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Dedication

In the honour and memory of my grandfathers, M. Sultan, and G. M. Rabbani.

To my parents for planting in me the seeds of scholarship.

To the economists, past, present, future.

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Abstract

Over the last two decades, FDI flows have increased nearly six-fold across the world. These surges in FDI flows have led to extensive research on the topic in economics and business literature. However, the focus of existing research has mostly remained limited to the study of the relationship between total inward FDI flows and the host (FDI receiving) country's GDP. The current literature also points to the inconclusiveness and the uncertainty of the results of the existing empirical studies on this topic. Recent literature on this topic also indicates that the two distinct forms of FDIs, greenfield investments and cross-border mergers and acquisitions (CB-M&As), can have different effects on the domestic economies. Nevertheless, the effects of the two forms of FDI on the key macroeconomic variables of host economy such as competition, export propensity and productivity have largely remained under-researched.

Using a cross-country time series data, this dissertation contributes to the current literature through an integrated study, investigating the effects of both forms of FDI Inflows and Outflows on the host and the home economies and on the profitability of MNCs. The Autoregressive Distributed Lag (ARDL) estimates show the following results: (a) A negative long run relationship between CB-M&As and the welfare (per capita GDP) of the host economies; (b) a positive long run relationship between CB-M&As and the welfare (per capita GNI – Gross National Income) of home economies; (c) positive long run relationships between greenfield investments and welfare of both host and home economies; and (d) a positive long run relationship between CB-M&As and the long run profitability of MNCs. The country specific results show mixed trends but are found to be consistent with that of panel data results.

Based on country specific results this study provides an additional explanation for the uncertainty surrounding the effects of FDIs by showing that the two forms of FDI can have varying effects on individual countries. Therefore, for sustainable FDI benefits, in the long run, the host country's FDI policy should ensure the existence of efficient competition in its economy.

Key Word: FDI, Greenfield Investments, Cross-border M&As, Tobin's Q Ratio.

Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

Over the last two decades, foreign direct investments (FDIs), both greenfield investments and cross-border mergers and acquisitions, have increased about six times across the world. This phenomenon is closely tied to the speed at which globalisation has progressed. At the same time, FDI flows have increasingly been a topic of extensive research in economics and business literature. The research in this area has primarily remained in the study of overall FDI flows, their welfare effects on host countries, and the factors that influence the decisions of Multinational Corporations (MNCs) about the specific form of FDI.[1] Furthermore, the study of welfare effects of FDIs on host economies (see Borensztein, De Gregorio, and Lee, 1998; Hsio, and Shen, 2003; Srinivasan, Kalaivani, and Ibrahim, 2010; Li, and Liu, 2005) has mainly been limited to investigating its relationship with GDP growth, following the neo-classical economic growth model (see Solow, 1956). Nevertheless, the effects of the two aforementioned distinct forms of FDI on the key macroeconomic variables of host economy such as competition, export propensity, and productivity have largely remained under-researched. Another related but largely unexplored area is the effects of the two forms of outward FDI flows on the home economies of MNCs.[2]

It is generally believed that FDI flows are primarily driven by the commercial interests of MNCs. But the commercial interests of MNCs and the developmental objectives of host

[1] For example see Blomstrom, and Kokko (1997); Blonigen (2005); Carbonara, and Caiazza (2009); Enderwick (2005); Gorg (2000); Hanson (2001); Lim (2001); Mattoo, Olarreaga, and Saggi (2004); Müller (2007); Nocke, and Yeaple (2008); Wang, and Wong (2009); Wijeweera,Villano, and Dollery (2010).
[2] MNC is also referred to as MNE (Multinational Enteprise)

economies do not necessarily coincide (UNCTAD WIR-2000, p.16). It has also been argued that FDIs of the MNCs could be at the expense of domestic capital formation of their home countries (see Desai, Foley, and Hines Jr., 2005; Hejazi, and Pauly, 2003; Jackle and Wamser, 2009). Indeed, these observations and arguments lead us to ask a crucial question – namely, what are the factors behind the surge in world FDI flows over the last two decades? The existing literature, however, does not provide clear and adequate explanations for the rising trend of FDI flows, either from the perspective of host economies or from the standpoint of home economies. The goal of this dissertation is to fill these gaps in the current literature with an integrated study that simultaneously investigates the effects of FDIs on host and home economies and on the profitability of investing firms (MNCs).

1.1. Overview of FDI Trends

The broader concept of foreign investments may involve different forms of investment of a short run and long run nature. Portfolio investment is an example of short run investment, defined in the United Nations Conference on Trade and Development (UNTCAD) World Investment Report (WIR) as "non-residents buying less than 10% share of a domestic firm" (2000: xxiii). On the other hand, *multinational corporations'* (MNCs) expansion of international operations in view of their long-term strategic objectives is referred to as FDI (Foreign Direct Investments). The two modes of FDI[3] are:

[3] It is assumed that investment inflows (if any) associated with modernizing or upgrading of existing foreign facilities are not relevant in the context of FDI discussion in this dissertation. In my view, modernization and upgrades of pre-owned foreign assets are generally funded through internal funds and are not part of investments for acquisition of a existing business (cross-border M&A) or setting up a new business in a foreign market (greenfield investment). To the best of my knowledge, investment for modernization and upgrades of already owned foreign facilities has not been discussed in any of existing FDI related studies.

(a) Greenfield Investments - i.e., building a new facility in a foreign country, and

(b) Cross-border Mergers & Acquisitions (CB-M&As) i.e. buying an existing business located in a foreign country.

From 1990-2012, world FDI inflows constituted a major portion (72%) of the total foreign investments inflows as shown in Figure 1 below.[4] For "low income" and "middle income" country groups (according to the World Bank categorization) the shares of FDI inflows are 99% and 87% respectively in the same period. Considering the developing and transition economies, the share of FDI inflows is 87% of the total foreign investment inflows in that period. For developed countries, the share is a bit lower, about 66%.

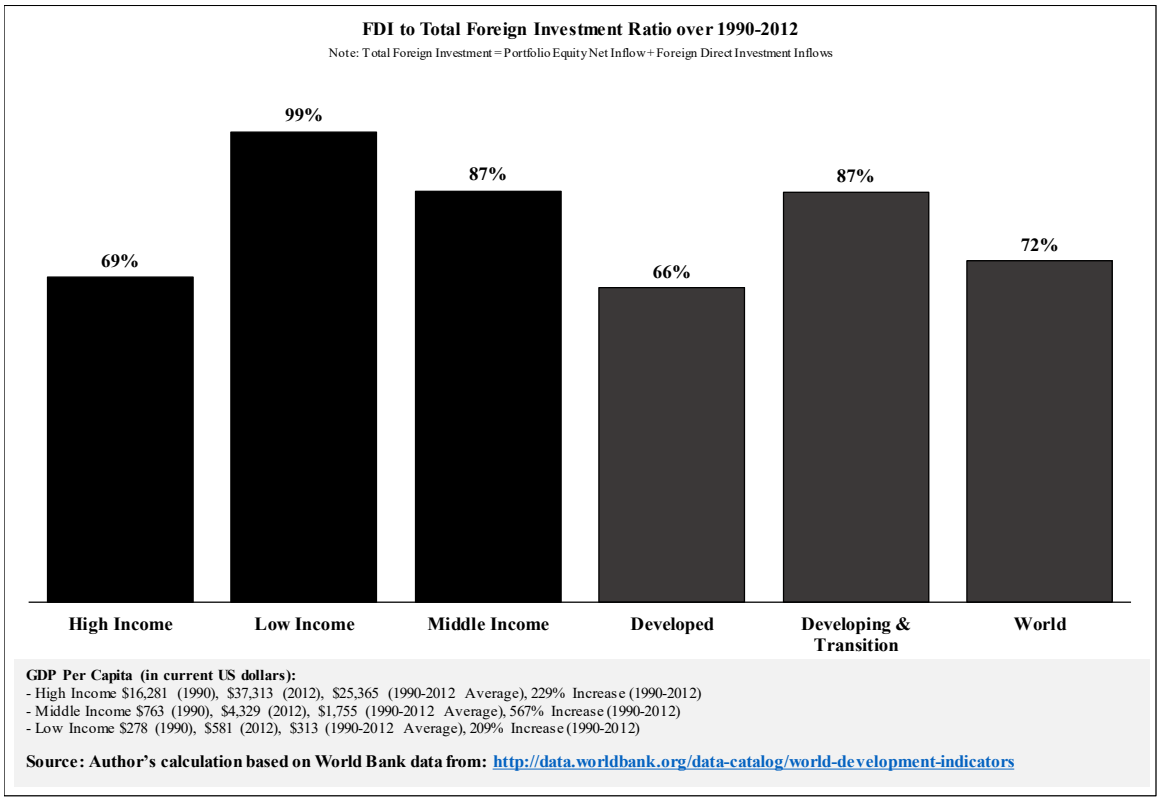

Figure 1: Share of FDI in Total Foreign Investment Flows (1990-2012)

[4] For calculations shown in Figure 1, "total foreign investment inflows" include "foreign direct investment net inflows" and "portfolio equity net inflows" in current US dollars provided in http://databank.worldbank.org/ddp/home.do?Step=3&id=4

In recent times, surges in FDI flows have been a remarkable phenomenon of the emerging global economy. As shown in Table 1 below, the total FDI annual flows in the world have grown by over six times from 1990 through 2012. At the same time, the percentage of the total world FDI flows to developed economies has fallen significantly from 83.2% in 1990 to 41.5% in 2012. This means that the percentage of total FDI flows to developing and transition economies has increased from 16.8% in 1990 to 58.5% in 2012. It is important to note that before the 2008 financial crises FDI flows increased by 9.7 times between the years of 1990 and 2007, reflecting a 19.6 times increase in FDI flows to developing and transition economies and an almost 7.7 times increase in FDI flows to developed economies. In other words, the FDI flows decreased by about 32.5% in the post-2008 financial crises period (from 2007-2012).

Table 1: FDI Flows (1990-2012) in Current US$ Billion

Econmy	Inward FDI Mode	Inward FDI Mix (current US $ billion)								
		1990		2007*		Change 1990 to 2006	2012		Change 1990 to 2012	Change 2007 to 2012
		$	%	$	%		$	%		
Developed	Greenfield	83.2	40.1%	428.0	21.4%	**5.2x**	300.4	22.2%	**3.7x**	**-29.8%**
	M&A	89.3	43.1%	891.9	44.5%	**10x**	260.3	19.3%	**3x**	**-70.8%**
	Total	172.5	83.2%	1,319.9	65.9%	**7.7x**	560.7	41.5%	**3.3x**	**-57.5%**
Developing & Transition	Greenfield	25.2	12.2%	552.0	27.6%	**21.9x**	742.4	55.0%	**29.5x**	**34.5%**
	M&A	9.6	4.6%	130.8	6.5%	**13.7x**	47.8	3.5%	**5x**	**-63.5%**
	Total	34.8	16.8%	682.8	34.1%	**19.6x**	790.2	58.5%	**22.7x**	**15.7%**
World	Greenfield	108.5	52.3%	980.0	48.9%	**9.1x**	1,042.9	77.2%	**9.7x**	**6.4%**
	M&A	98.9	47.7%	1,022.7	51.1%	**10.4x**	308.1	22.8%	**3.2x**	**-69.9%**
	Total	207.4	100.0%	2,002.7	100.0%	9.7x	1,350.9	100.0%	**6.6x**	**-32.5%**
***Pre-financial crises of 2008**										

The current literature notes different factors that drive MNCs to undertake FDI, which can be grouped as *internal or external.* Among the *internal factors* are the state of

technology, entrepreneurial capabilities, and product diversification[5]. The external factors include macroeconomic changes, global economic trends, and international trade relations. The internal factors, such as entrepreneurial capability, enable MNCs to pursue their commercial interests by responding to the favourable external factors, such as market accessibility and better growth opportunities. Hsiao and Shen (2003) discuss a broad array of external factors that are important in attracting FDI, such as economic growth, predictable behavior, trustworthiness, commitment from government institutions, infrastructure development of cities, and lower tax rates. Blomstrom and Kokko (1996, p. 33) conclude that the real benefits of FDI depend on the characteristics of the home country's industry and policy environment. Similarly, Zejan (1990, p. 350) point out that the choice of MNCs to expand into the foreign market may be determined by the market structure and demand in the host country. He suggests that the probability of entry by acquisition is higher if the degree of market concentration is higher and growth and elasticity of demand are lower.

It is generally believed that FDIs have favourable effects on host countries' welfare, mostly in the form of boosting economic growth. According to OECD (2002, p.13), most empirical studies conclude that the impact of FDIs on both factor productivity and income growth in host countries is higher than that of domestic investments.[6] The implications of these findings may be that both forms of FDI, i.e. greenfield investments and CB-M&As have equally favourable effects on the welfare of host economies. However, it can be argued that host countries will prefer greenfield investments, which

[5] For example see Blonigen (2005); Eun, Kolodny, and Scheraga (1996); Li, and Rugman (2007); Nocke, and Yeaple (2008); Shimizu, Hitt, Vaidyanath, and Pisano (2004).
[6] See also Wijeweera, Villano and Dollery (2010)

involve the establishment of new facilities that are likely to increase the productive capacity of host economies. Wang and Wong (2009. P.318) point out the concerns that "host countries have about the possible setbacks associated with CB-M&As, such as employee layoffs and transfer of ownership". Similar concerns noted in the UNCTAD World Investment Report 2000 are reproduced below.

> "*In a number of host countries concern is expressed in political discussions and the media that FDI entry through the takeover of domestic firms (CB-M&As) is less beneficial, if not positively harmful, for economic development than the entry by setting up new facilities. At the heart of these concerns is that foreign acquisitions do not add to productive capacity but simply transfer ownership and control from domestic to foreign hands. This transfer is often accompanied by layoffs of employees or closing of some production or functional activities (e.g. R&D capacities). It also entails servicing new owners in foreign exchange." (UNCTAD WIR-2000, p. 16)*

Thus, based on these arguments, one might conclude that host countries would prefer greenfield investments to CB-M&As. However, the difference in the share between greenfield investments and CB-M&As has been small. According to Table 1 the ratio between greenfield investments and CB-M&As was 52.2% : 47.7% in 1990 and 48.9% : 51.1% in 2007. However, before the 2008 financial crises the share of CB-M&A in the case of developed economies had been increasing. For example, $83.2B (48.2%) versus $89.3B (51.8%) in 1990 to $428B (32.4%) versus $891.9B (67.6%) in 2007. However, for the same period, the ratio of greenfield investments remained higher in the case of developing and transition economies: $25.2B (72.5%) versus $9.6B (27.5%), which

further increased to $552B (80.8%) versus $130.8B (19.2%) in 2007. Whereas with respect to CB-M&As flows, the post-2008 financial crises period reversed these trends. According to Table 1, the overall CB-M&A decreased by about 69.9% in 2012 versus 2007, reflecting 70.8% fall in case of developed economies and 63.5% fall in case of developing and transition economies. As a result, the overall ratio of greenfield investments increased to 77.2% in 2012 as compared to 22.8% for CB-M&As. It is pertinent to note that before the 2008 financial crises, historically CB-M&As have been the predominant factors in the overall FDI flows[7].

In theoretical terms, such trends in CB-M&A flows before the 2008 financial crises have been explained in terms of several factors, such as production cost/technology differences between MNC and local firms, as well as in terms of the nature of the host market. For example, Muller's (2007) theoretical study conclude that when MNCs possess superior technology than the local firms their preferred choice is greenfield investment acquisition (see Muller, 2007, p. 94).

This implies that the commercial interests of MNCs, and not the welfare interests of host countries, may be the primary factor in determining the FDI volumes and composition. Therefore, it can be argued that there are possible divergent welfare effects of different forms of FDI on the host economy vis-a-vis MNCs. In other words, the commercial interests of MNCs and the developmental objectives of host economies are not necessarily compatible (UNCTAD WIR-2000, p.16). In this sense, it can be further

[7] According to Ignat Stepanok (2015), "*the bulk of FDI however belongs to cross-border M&A activity, over 80% in 1999 according to the United Nations Conference on Trade and Development (UNCTAD, 2000), or according to Head and Ries (2008) for the years between 1987 and 2001 two thirds of total FDI.*"

argued that any divergence that may exist between the welfare interests of host countries and MNCs is due to CB-M&As.

1.2. Objectives

According to Lim (2001, p. 14), there is not yet a consensus in the empirical literature on all the important determinants of FDI flows. Similarly, Blonigen (2005, p. 397) conclude that while the literature on the determinants of MNC decisions is quite substantial, it is, nonetheless, still in its infancy. The implication is that the existing literature falls short of offering clear answers to some crucial questions regarding the effects of the two forms of FDIs on host economies, home economies and the profitability of MNCs. Given that a significant proportion of FDI flows are in the form of CB-M&As, and the indication in the literature that welfare interests of the host economies and of the MNCs might differ with respect to CB-M&As, these questions are crucial to better understanding of the economic implication of the two forms of FDIs (greenfield investments and CB-MNAs). In this context, the goal of this study is that its findings will lead to further research in this area for an even better understanding of the effects of FDI in the emerging global economic system.

Accordingly, this dissertation contributes by providing more meaningful answers to the following three central questions:

i) What are the effects of Inward CB-M&As on the welfare of host (FDI receiving) economies as compared to the effects of inward greenfield investments?

ii) What are the effects of Outward CB-M&As on the welfare of home (FDI investing) countries as compared to the effects of outward greenfield investments?

iii) What are the effects of CB-M&As on the profitability of MNCs (investing firms)?

1.3. Outline of the study

This dissertation is organized as follows. In Chapter 2, I provide a literature review and point out the gaps in the literature with respect to the effects of FDIs on the host and home economies and on the profitability of MNCs. In Chapter 3, I explain in detail the underlying theoretical frameworks for my empirical estimation models. The five (5) estimation models are presented in Chapter 4. In Chapter 5, I provide a detailed discussion on issues related to data, methodology and the estimation of results using Autoregressive Distributed Lag (ARDL) models. Chapter 6 provides a detailed analysis of the results of my five (5) estimation models. In Chapter 7, I provide a summary and main conclusions of my analyses, including, the contributions of this study to the existing literature, followed by a discussion on the direction of future research on this topic.

Chapter 2: Literature Review

In this section, I attempt to identify gaps in the existing literature with respect to the effects of FDI Flows. First, I provide theoretical accounts of MNCs and FDIs, followed by a review and identification of gaps in the existing literature with respect to *FDIs and Host Economies; FDIs and Home Economies*; and, *FDIs and Profitability of MNCs*.

2.1 MNCs and FDIs: A Theoretical Account

An MNC (also referred to as Multinational Enterprise or MNE) is a profit-seeking firm that continuously pursues strategies to develop and operate income generating assets in more than one country for returns over time (Teece, 2014)[8]. In other words, MNC is "an enterprise that engages in foreign direct investment (FDI) and owns or controls value-adding activities in more than one country" (Dunning 1993, p. 3). Indeed, as Moore and Lewis (1998) noted, when this definition is adopted, there were even MNEs in ancient Assyria around 2000 B.C. The authors also note: "Characteristics found in modern MNEs such as hierarchical organization, foreign employees, value-adding activities in multiple regions, common stock ownership, resource and market seeking behavior, were present in these ancient firms. These early MNEs successfully operated considerable business empires in multiple foreign locations from their corporate headquarters in the capital of Ashur" (p. 105).

[8] In other words, "*A multinational enterprise (MNE) is a business firm that sets strategy and manages operations for the development and utilization of income-generating assets in more than one country in the pursuit of profits over time."* (Teece, 2008, p.8)

Nevertheless, the evolution of modern MNCs is generally associated with the massive international movement of factors as a result of the 19th century industrial revolution. According to Dunning & Pitelis (2008, p.167), "Stephen H. Hymer was the first economist to address questions like "Why MNEs?" and "Why FDI?" vis-a-vis alternative forms of foreign operations". Buckly (2006, p.140), note "Stephen Hymer (1934–1974) is regarded as a seminal figure in the establishment of the theory of the multinational enterprise (MNE) and a founder of the academic subject of international business". Dunning and Rugman (1985, p.228), point out that "The great contribution of Stephen Hymer's seminal dissertation (1960) was to escape from the intellectual straightjacket of neoclassical-type trade and financial theory and move us towards an analysis of the multinational enterprise (MNE) based upon industrial organization theory". According to Dunning and Rugman (1985), "Hymer's work (1960) had a profound influence in the area by shifting the paradigm of the study of FDI from the neo-classical trade and financial theories to the analysis of MNCs with models of the theory of industrial organization." The authors note that Hymer makes a convincing case for depicting FDI as one form of international capital movement where the investor has direct control over the foreign enterprise. Therefore, the neoclassical theory of international capital movement, where the difference in interest rates plays a key role, may not offer a good explanation of FDI flows. In Hymer's view, FDI is a particular form of capital movement that is closely determined by the extent of cross-border operations of MNCs. Hymer (1960) further identify the following two main causes of cross-border operations.

1) Firms could have control over enterprises in a number of countries in order to increase market power by reducing competition among them, especially when the

enterprises share the same market or engage in buying and selling with each other in a market environment that is imperfectly competitive.

2) Firms could operate in a foreign country to maximize their returns from the use of their own set of abilities.

Dunning and Rugman (1985), note that Hymer, with his international extension of industrial organization theory, was the first to offer a satisfactory explanation as to why MNCs might transfer knowledge, technology, and other intangible intermediate products among its units operating in different nations while they continue to hold the property rights over those products. Thus, FDI is rightly considered as activities related to the transfer of nonfinancial and intangible assets by MNCs that are consonant with their interest to reap the maximum return from the use of their own advantages and abilities over which they seek to have control on a consistent basis.

According to Dunning & Pitelis (2008), Hymer formulated the "law of increasing firm size" and the "law of uneven development" with focus merely on "value capture" while underplaying "value creation". Therefore, they question the extent to which firms could continue to grow without creating value. Furthermore, they note that "Hymer's law of uneven development follows only under his very specific assumptions and assertions, namely the dominance of MNEs, the absence of learning by nation-states in developing countries, and the lack of "nationalism" on their part" (Dunning & Pitelis, 2008, p. 171). The surge in FDI flows vis-a-vis the lack of "value creation" focus in Hymer's theory led further advancements in the theory of MNC and FDI from the 1960s through 1990s. The major developments in the 1970s and 1980s were the "transaction costs" and John H. Dunning's "OLI - Ownership, Location and Internalization" framework, also known as

the Eclectic Paradigm.[9] Dunning & Pitelis (2008, p.171) further note that "In contrast to Hymer, the transaction costs theory and the OLI framework focused on efficiency creation and the deployment of the advantages". The eclectic paradigm provided a unifying framework since no single theory was able to fully explain the extent and pattern of foreign direct investments by MNCs (see Dunning, 1979, and Arnett & Madhavaram, 2012). In this paradigm, three conditions must be satisfied for a firm to engage in foreign direct investment:

(1) MNC must possess ownership competitive advantage(s) over domestic firms in serving the foreign market(s). That is the advantages, which may be in the form of intangible assets (e.g. patents, technical knowledge, management skills, etc.), are exclusive or specific to the firm possessing them for a certain period of time;

(2) It must be profitable for the MNC to utilize these advantages in conjunction with at least some factor inputs (including natural resources) outside its home country; and;

(3) It must be more beneficial to the MNC possessing these advantages to use them itself rather than to sell or lease them to foreign firms i.e. instead of direct investment, internalizing them through licensing and similar contracts with independent firms. (Dunning, 1979, p. 275).

Drawing on the macroeconomic theory of "international trade" (L - Location) and the microeconomic "theory of firm" (O - Ownership and I - Internalization), OLI provides a unifying framework for determining the extent and pattern of FDIs by MNCs (see Arnett & Madhavaram, 2012; Dunning, 1988; and; Dunning, 1979). In this context, Arnett &

[9] (see Dunning, 1980)

Madhavaram (2012, p.579), argue that "even though all of the elements of the eclectic paradigm are grounded in specific economic or organizational theories, no theory of the fundamental nature of competition in mainstream economics can provide a theoretical foundation for it". In this context, they further argue that "Resource-Advantage" (RA) theory provides a theoretical foundation to dynamism of eclectic paradigm framework.[10]

In the next sub-sections, I provide a review of the empirical literature and attempt to point out gaps in the literature with respect to the effects of FDIs on the host and home economies and on the profitability of MNCs.

2.2 FDI Inflows and Host Economies

With regard to the economic benefits of FDI to the host economies, the related research has mostly focused on the study of overall FDI volumes and their welfare implications for host countries. The welfare effects of FDI on host countries have mostly been measured in terms of economic growth. However, the literature to date has produced mixed findings. For example, Hanson (2001, p.23), notes that "There is weak evidence that FDI generates positive spillovers for host economies." Earlier Borensztein et al. (1998), in their empirical study found that "FDI is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment". On the other hand, Calderon, Loayza, and Serven (2004), conclude that "neither type of FDI precede economic growth in either developing or industrial countries, but FDI does

[10] RA is a general theory of competition that describes the process of competition as a constant struggle among firms for comparative advantages in resources that will yield marketplace position of competitive advantage and, thereby, superior financial performance (Hunt, 2007).

respond positively to increases in growth rate." According to an OECD study (2002, p. 68), "FDI inflows to developing countries often occur with unusually high growth rates triggered by unrelated factors". The main challenge that remained in the research is the lack of consistent empirical evidence to support these theoretical predictions of the positive relationship between GDP and FDI. According to Wijeweera et al. (2010), how to "best estimate the relationship between FDI and GDP has been an issue among the empirical economists for quite some time". The question arises due to the lack of compelling results on the direction of causality between these two variables. Some researchers argue that GDP growth induces FDI, while others believe that the causality is in the reverse direction. Wijeweera et al. (2010, p.145), note that "To date Granger causality tests have produced inconclusive results".

Mattoo, Olarreaga, and Saggi (2004), made an interesting contribution by examining the relationship between the MNCs' choice (direct entry or acquisition) and the host country's welfare in terms of transfer of technology. They define: i) host country welfare as the sum of consumer surplus and producer surplus, and ii) the cost of technology transfer as the knowledge gap between countries which can be proxied by national differences in stocks of Research and Development (R&D) expenditures. The study by Mattoo et al. (2004), is also a reflection of the differences in the conceptual understanding of host country's welfare as compared to many other studies that mostly considered economic growth.

The second major problem in the literature is that only limited attention has been paid to the effects of the individual form of FDI (greenfield or CB-M&As) on host countries. According to Nocke and Yeaple (2008, p.529), "the literature is preoccupied with

understanding the volume of FDI, neglecting its composition across modes". Muller (2007, p.100), also points out that the two individual forms of FDI received relatively little attention in the economics literature. Along this line, Hanson (2001, p. 24), suggests that countries need to be cautious about promoting FDI given the lack of strong empirical evidence that the social rate of return on FDI exceeds the private rate of return. Nevertheless, in the recent literature, there has been some focus on the study of the relationship between the individual form of FDI and economic growth. For example, while pointing out that greenfield investments and CB-M&As are potentially different in nature, and therefore not perfect substitutes, Wang and Wong (2009), showed that the uncertain relationship between FDI and economic growth is due to the offsetting effects of greenfield investments and CB-M&As. Their findings suggest significantly positive growth effect of greenfield investment and negative growth effects of CB-M&As. Kim (2009, p. 89), also point to the presence of positive correlation of greenfield investment with capital formation and a negative correlation between CB- M&As and capital formation in most industries in South Korea (manufacturing, wholesale & lodging services, and entertainment & cultural services). It appears that these studies mainly rely on the standard theories of growth, according to which capital accumulation and technological innovation are major factors of driving growth (Wang and Wong, 2009, p, 316). Calderon et al. (2004, p.17), conclude that both greenfield investment and CB-M&As "lead to domestic investments", but both are primarily caused by GDP growth. This means that economic growth serves as an effective "pull" factor for foreign investments. Subsequent studies, such as Wang and Wong (2009), have not challenged their findings. This raises the question: what causes economic growth? This is currently

the topic of a number of heated debates. According to the neoclassical (Solow) model, growth results from increases in investment (Hunt, 2007, p. 274). The other view, according to the dynamic competition model, is that "growth results from innovations that stem from the process of competition" (Ellig, 2001 as cited in Hunt, 2007, p. 274). This also suggests that the future theoretical research on this subject should consider expanding the scope of the theoretical foundation beyond the traditional theory of growth. For example, which form of FDI leads to competition intensity versus capital formation and technology improvement? Thus, the negative effects of CB-M&As on host economies, as pointed out by Wang and Wong (2009), and Kim (2009), may be due to the reason that CB-M&As, in fact, reduce, not increase, competition, given factors such as superior technological and entrepreneurial capabilities of MNCs. To the best of my knowledge, such questions have not been investigated in the current literature.

I argue that, due to these gaps in the literature, the policy makers in the host countries lack adequate guidelines to ensure long run benefits of FDI. Consequently, their response to FDI inflows is not necessarily consistent with their long run national economic interests. Thangavelu, Yong, and Chongvilaivan (2009, p. 1476), suggest that "There should be policies to coordinate the investment of local and foreign investors so as to align national interests with the private interests of MNCs". From a review of these studies, it can be argued that there is a need to expand the theoretical foundations in the current literature to study the effects of FDI on host countries. Without a sound theoretical foundation, it is difficult to develop effective FDI policies to ensure consistent FDI flows and its positive impacts on host countries. For example, unexpected economic events can cause significant fluctuations in FDI flows resulting in the misalignment of

macroeconomic factors of the host economy that can eventually lead to financial crises. Misalignment of macroeconomic factors refers to mismatch of variables such as current account deficit vis-à-vis foreign exchange reserves, country's import-export mix vis-à-vis international prices. For example, FDI inflows increase a country's foreign exchange reserves, which are critical to finance its imports, and thus the current account deficit. Imports play an important role in determining the magnitude of a country's current account deficit. Fluctuations in international prices can affect the relative volumes of exports and imports. A decline in international prices can cause a decrease in country's exports and increase in imports which in turn can result in an increase in its current account deficit. According to Frankel and Rose (1995, p.365), "crashes tend to occur when FDI flows dry up when reserves are low when domestic credit growth is high…". In their study of the impact of FDI on the Pakistan economy, Salman and Feng (2009, p. 279), conclude that FDI has a negative effect on the current account balance in the long run. In his paper titled "A Comparative Essay on the Causes of Recent Financial Crises" Selim (2005), also points out such negative implications of FDI. According to Selim (2005, p.305), "..the phenomenon of foreign capital flows to emerging market economies made a sudden reversal and Indonesia's economy was hardly hit by such an external shock". Therefore, it is argued that to ensure long run sustainable benefits of FDI to host economies, both the composition of FDI flows and the sectors of the economy they are directed to, are equally important. For example, does FDI result in the establishment of new industries that enhance host country's export capabilities and the competitiveness of its products? This implies that there is a need to investigate the effects of CB-M&As on

host economies relying on a combination of different theoretical bases such as standard (Solow) and dynamic competition model of economic growth.

2.3 FDI Outflows and MNCs' Home Economies

From the perspective of the home economy, it may be argued that the outward FDIs resulting from MNCs' FDI activities are made at the expense of domestic investment, expressed as gross domestic capital formation (GDCF), which is an important component of GDP. Hejazi and Pauly (2003, p. 282), note that if this argument is correct, then it would be of special concern to countries experiencing faster growth in outward investments than in inward investments. Given the general belief that inward FDIs have favourable effects on the welfare of host economies, it may further be argued that FDI, in general, is a zero sum game. This means that the gains of host economies through inward FDIs may occur at an equal expense of home economies of the MNCs. However, in view of the surges in FDI flows over the last 23 years, some intuitive arguments other than the "zero sum" one may also be made. As shown in Table 2, developing and transition economies with relatively higher overall GDP growth rates generally have been the net recipients of total FDI flows, whereas developed economies with lower GDP growth rates generally have been net investors. Particularly, during 1990-2007 (before the 2008 financial crises) developing and transition economies have been net recipients of both forms of FDI and developed economies have been net investors in both form of FDIs. With respect to greenfield investments, the same trend continued in the post-2008 financial crises period (2008-2012). However, in the post financial crises period, the trend in CB-M&As flows were reversed in developed economies vis-à-vis developing and

transition economies. That is, developed economies became net recipients of CB-M&As in 2008-2012 although in the same period their average growth rate reduced by 60% (or 3% points). On the other hand, average growth rate of developing and transition economies in the post financial crises period (2008-2012) further increased and instead became net investors of CB-M&As.

Table 2: Net FDI Flows (Inward FDIs minus Outward FDIs, in current US$ Billions)

Econmy	FDI Mode Netflows (Inward - Outward)	1990 - 2007*	2008 - 2012	1990 - 2012
Developed	Greenfield	(2,305)	(2,052)	(4,358)
	M&A	(31)	219	187
	Total FDI	**(2,337)**	**(1,834)**	**(4,171)**
	Average GDP Growth**	**5.1%**	**2.1%**	**4.4%**
Developing & Transition	Greenfield	2,113	1,697	3,810
	M&A	104	(148)	(45)
	Total FDI	**2,217**	**1,549**	**3,766**
	Average GDP Growth**	**7.5%**	**10.4%**	**8.1%**
World	Greenfield	(192)	(355)	(547)
	M&A	72	70	142
	Total FDI	**(120)**	**(285)**	**(405)**
	Average GDP Growth**	**5.7%**	**5.0%**	**5.5%**

*Pre-financial crises of 2008

** Average of years based on author's calculation of annual nominal growth = log difference between two years

***Source*: Author's calculations based on the data from:**
1): UNCTADSTAT at http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en
2): UNCTAD's Web table 9. Value of cross-border M&As by region/economy of seller, 1990-2013
3): UNCTAD's Web table 10. Value of cross-border M&As by region/economy of purchaser, 1990-2013

This may imply that MNCs of the developed economies generally direct their foreign investments to relatively higher growth economies for higher profits. In the words of Desai, Foley, and Hines Jr. (2005, p.37), "high FDI outflows might indicate that domestic investment opportunities are poor, and these poor opportunities could be the force behind lower domestic investment and reallocation of funds to more profitable foreign

opportunities"[11]. Thus, foreign investments of such MNCs might benefit their home economies in the form of foreign profits reflected in GNI (Gross National Income). The following observation noted in Cross P. (2004), lends credence to this idea: *"Nations such as Switzerland, Britain, and the U.S. all have a GNI larger than GDP because of their past investments abroad. Countries such as Ireland, which depend on large inflows of foreign investments to their development, have a smaller GNI than GDP."* (Cross P. 2004, p. 3.1).

On the other hand, using a sample data of OECD countries for 1980s and 1990s, Desai et al. (2005), estimate the relationship between gross domestic capital (dependent variable) with the three independent variables (all scaled by U.S. GDP): Outward FDI; Inward FDI; and Gross Savings, which shows significantly negative coefficient of outward FDI, indicating that outward FDI reduces domestic capital for almost dollar to dollar. Their regression results show positive effects of Inward FDI and Gross Savings. Desai et al. (2005), using US firms' data further estimate the relationship between the domestic capital expenditure of US firms on the three variables (all scaled by U.S. GDP): foreign capital expenditure of US multinationals, US capital expenditure of foreign multinationals, and US gross savings rate. Their results show positive effects of foreign capital expenditure of US multinationals and negative effects of US capital expenditure of foreign multinationals. The possible explanation in the words of Desai et al. (2005, p.36), is that "foreign and domestic investments are complements in the US economy, whereas they are substitutes in other OECD economies". Desai et al. (2005, p.37), further

[11] It is pertinent to note that the regression results provided in Desai, Foley, and Hines Jr. (2005) do not provide the direction of the causality of estimation variables. The causality may be on the opposite or both directions, such as the annual growth of China (according to World Bank Annual GDP growth data) increased from 3.8% in 1990 to 12.7% in 2006. In the same time period the outward FDI of China increased by 19 times, from $830M in 1990 to $16.13B in 2006 (according to UNCTAD data).

point out that the evidence from the analysis of US firms suggests that a greater foreign investment is associated with a higher level of domestic investment, which implies that "firms combine home production with foreign production to generate final output at a lower cost than would be possible with production in just one country, making each stage of production process more profitable, and therefore, in equilibrium, more abundant". Using Canada's FDI stocks data, Hejazi and Pauly (2003, p.288), also conclude that "One cannot predict whether growth in outward FDI will increase or decrease domestic gross fixed capital formation (GFCF)". According to Hejazi and Pauly (2003), to understand the link between FDI and GFCF, one must address the underlying motivation for investment, including "market access, "factor endowment difference", and "access to natural resources". They develop a hypothesis linking the impact of FDI to market access and factor endowment and show that there is far more heterogeneity on the outward side: a one-dollar increase in Canada's outward FDI to the US increases Canadian GFCF by 80.9 cents, whereas outward FDI to the rest of the world (ROW) reduces Canadian GFCF by $1.74. Outward FDI to the UK has no net impact (see Hejazi and Pauly, 2003, p. 286).

According to Nocke & Yeaple's (2008, p.529), assignment theory model, "cross-border acquisitions involve firms trading heterogeneous corporate assets to exploit complementarities". Their model predicts that the production cost differences between countries give rise to greenfield FDI and cross-border acquisitions, while cross-country differences in entrepreneurial abilities (or organizational capital) give rise only to cross-border acquisitions (Nocke & Yeaple, 2008, p. 551).

Based on the complementarity evidence in Desai et al (2005), and the estimation results in Hejazi & Pauly (2003), it may be argued that the model of Nocke & Neaple (2008),

suggests that cross-border M&As have positive relationship with domestic capital formation, and as a consequence have favourable impact on the gross national income (GNI) of home economies. However, depending on their motivation the outward greenfield investments may have a substitute or weak complementarity relationship with the domestic capital formation. The substitute or weak complementarity assumption may imply that greenfield investments may have a less favourable impact on the home economy's GNI. I believe a better understanding of the effects of the two forms of outward FDI on the domestic capital formation and GNI can make a useful contribution to the literature and can provide additional insights for policy making.

2.4 Cross-border M&As and profitability of MNCs

According to Nocke and Yeaple (2008, p.529), MNCs "play a dominant role in an increasingly globalized world". Consistent with this view is the suggestion by Carbonara & Caiazza (2009, p.188), that the "present boom" in CB-M&As is "driven primarily by strategic choices of firms in light of opportunities provided by economic growth".

Using a general-equilibrium model of the world economy consisting of two countries that can freely trade with one another, Nocke and Yeaple (2008), develop an assignment theory to explain the investment decision of multinationals in terms of characteristics of investing firms and the characteristics of host countries. For example, based on their own assignment model, Nocke and Yeaple (2008), using sales and value-added per employee data from Bureau of Economic Analysis (1994-1998), show that US *firms engaging in greenfield FDI are systematically more efficient than those engaging in cross-border acquisition*. Nocke and Yeaple (2008), further show that as production-cost differences

across countries vanish, all FDIs take the form of cross-border acquisitions. I believe that their Assignment Theory is an important contribution towards understanding FDI entry mode decisions of MNCs in terms of their individual characteristics (besides their motivation for investment) vis-à-vis the characteristics of the host country.

By examining the existing research on CB-M&As, Shimizu et al. (2004), identify three primary theoretical perspectives, including *mode of entry in a foreign market, dynamic learning process from a foreign culture*, and *value creating strategy*. In terms of these three perspectives, my investigation of the effects of CB-M&As on the profitability of MNCs falls under the "value creating strategy" theoretical framework, which is primarily a research on the performance of firms in the aftermath of CB-M&As. According to Eun et al. (1996, p.1581), "cross-border acquisitions are generally wealth-creating corporate activities". Under the value creating strategy theoretical perspective, Shimizu et al. (2004), further identify three streams of research on post CB-M&As performance comprising of (i) topics on the integration of acquirer and acquired firms; (ii) issues of wealth creation to shareholders; and (iii) examination of post-M&As performance. Research on issues of wealth creation (abnormal returns) to shareholders usually involves examination of stock market reactions to M&A announcements (Shimizu et al., 2004, p. 336). On the other hand, according to Shimizu et al. (2004), the research on post CM-M&A performance of firms uses measures other than abnormal stock returns, but its main focus has been on comparing CB-M&As with other entry mode choices i.e. greenfield investments and joint ventures mostly using transactions cost economics perspective (TCE). This implies that in the existing research little attention has been given to the study of the effects of CB-M&As on the profitability of MNCs. "The primary question of

this previous work (M&As as value-creating strategy) is do acquiring firms create value for their shareholders, or do they create value almost exclusively for the target firm's owners?" (Shimizu et al., 2004, p. 336).

In this context, the examination of the post-M&A performance within a framework of value creating firm investment can make a useful addition to the existing knowledge on this topic. To my best knowledge, this topic has remained largely unexplored, and the research to date in this area has been sparse. The work of Stiebale and Trax (2011), provides the first evidence on the impact of cross-border acquisitions on the domestic performance of investing firms. The authors use a sample of firms from two European countries (UK and France) with the highest volume of M&A activities. Using a combination of matching technique and difference-in-differences estimators, they examine the effects of cross-border M&A activities on several outcome variables including total productivity and growth rates of fixed assets, sales, and employment. Their main conclusion is that "cross-border deals yield higher growth rates of domestic sales, employment, and capital (fixed assets) in acquiring firms, which in some cases are accompanied by a higher productivity growth" (Stiebale and Trax, 2011, p. 986). Previously, Jackle and Wamser (2010), had shown somewhat opposite results with respect to the growth rates of domestic employment. Comparing the domestic (home-market) performance of German multinational enterprises (MNEs) to that of the national firms, they conclude that "newly founded MNEs substitute jobs at home with foreign employment" (Jackle and Wamser, 2009, p. 206). However, given that these analyses were done with the firm level data for only one or two developed countries, one can argue

that these studies have limited scope in terms of the effects of cross-border M&As in the global context.

To fill this gap, I examine post-M&A performance in terms of country level Tobin's ***q*** ratio and macroeconomic data (GDP, Domestic Capital Formation, Inward and Outward Cross-border M&As). Introduced by the Nobel prize-winning economist James Tobin, the ***q*** is the ratio of company's market value to the replacement cost of the capital. This theory of investment is summarized well in Yoshikawa (1980, p.739): "Economic logic indicates that a normal equilibrium value for ***q*** is 1 for reproducible assets which are in fact being reproduced, and less than 1 for others. Values of ***q*** above 1 should stimulate investment, in excess of requirements for replacement and normal growth, and values of ***q*** below 1 discourage investment. [Tobin and Brained, 1977, p. 238]".

From the perspective of the firm, acquisition of another company, like the purchase of new capital goods, can be regarded as an investment (Chappell and Cheng, 1984, p.31). Under the neo-classical framework, the investment decisions of the firms are subject to their value maximization objective function. Ciccolo and Fromm (1979, p.545), note that "Empirical studies have shown that ***q*** has a fairly good degree of reliability as an investment predictor". For example, according to Chirinko (1987, p.69), when ***q*** ratio exceeds unity, "investors in financial markets are indicating prospective cash flows are likely to be sufficiently high or discount rates sufficiently low to warrant additional capital spending". In other words, if ***q*** exceeded unity, "firms would have an incentive to invest, since the value of a new capital investment would exceed its cost" (Lindenberg and Ross, 1981, p. 2). Similarly, relying on the ***q***-theory of investment that a firm's investment rate is likely to rise with its ***q***, Jovanovic and Rousseau (2002, p. 198), argue

that this theory also explains why firms buy other firms: *high-**q** firms usually buy low-**q** firms*. In this regard, Lindenberg & Ross (1981, p.2), bring forward two basic arguments: (i) the ***q*** ratio is expected to be close to one for a firm that earns competitive returns; and (ii) the ***q*** ratio should increase for a firm that has increasing ability to earn above a competitive return. Relying on this argument and using the assumption that acquiring firms have the ability to earn above competitive returns, it may further be argued that the ***q*** ratio of MNCs will improve through their CB-M&As investments. Using this theoretical base, I investigate the strength of the relationship between CB-M&As and the profitability of investments undertaken by MNCs. My objective is to show evidence that will lead to a better explanation of the effects of CB-M&As on host economies. For example, if the evidence shows that the ***q*** ratio of MNCs improves then, based on Lindenberg & Ross (1981), argument, it would imply that CB-M&As increase the ability of MNCs to earn above competitive returns. In this regard, it can also be argued that firms' increasing ability to earn above competitive returns implies decreasing competition in the host economies. Therefore, it is hoped that this combined study of the effects of CB-M&As on host economies and on the profitability of MNCs provides a better explanation of why MNCs undertake CB-M&As investment rather than greenfield investments.

Chapter 3: The Theoretical Framework

My preceding discussion suggests that the existing research on FDI mostly remains in investigating its relationship with GDP growth in host economies within the framework of standard growth theories such as the neo-classical economic growth model. "*According to standard growth theories, capital accumulation and technological innovation are the major factors driving economic growth. Naturally, this has generated an extensive literature on the growth effect of FDI. Most studies focus on total inward FDI in the host country, and the empirical results on the growth effect of FDI remain uncertain in the literature*." (Wang & Wong, 2009, p.316). Wijeweera et al. (2010), also note that some researchers argue that GDP growth induces FDI, while others believe that the causality is in the reverse direction. Their observations also point to the limitation of using the traditional growth theories to explain the effects of FDIs. To explain the uncertainty associated with the results related to the growth effects of FDIs, Wang and Wong (2009), conclude that the two forms of FDIs - cross-border M&As and greenfield investments, are not perfect substitutes for each other, and thus have different growth effects, which may offset each other.

It appears that there is no single theoretical framework that can be taken as valid to better explain the economic effects of FDI. In this context, this integrated study on the effects of FDI Inflows and Outflows on host economy, home economy and the profitability of MNCs fills the gap within the standard growth theoretical framework. To explain the results better, I consider expanding the theoretical framework, beyond traditional growth theories, to rely on the dynamic competition model. The dynamic competition model is

based on resource-advantage (RA) theory, which predicts that most of the technological progress that drives economic growth stems from the (efficiency enhancing and effectiveness enhancing innovation) actions of profit-driven firms (Hunt, 2007, p. 285). According to Hunt (2007, p.278), the actions of profit-driven firms are driven by a competitive process whereby firms compete for "comparative advantages in resources that will yield marketplace positions of competitive advantage, and thereby superior financial performance". Using the dynamic competition model, I attempt to explain the different growth effects of greenfield investment and M&As on host economies in terms of their respective impacts on competition in the host markets. This also provides the framework to validate the prediction of assignment theory by Nocke and Yeaple (2008), that firms engaging in greenfield FDI are systematically more efficient than those engaging in cross-border acquisition, and as production-cost differences across countries vanish, all FDIs take the form of cross-border acquisitions. That is, greenfield investment may lead to enhancement in the innovation process that creates its positive relationship with GDP, whereas it may be reverse in the case of CB-M&A FDI.

Chapter 4: Empirical Analysis

The three sets of relationships to be estimated include (a) the effects of Inward FDIs on host economies (b) the effects of Outward FDI on home economies and (c) the effects of cross-border M&As on the profitability of MNC. Figure 2 below, provides an overview of the models I use to investigate these relations, which are explained in detail in the following sections.

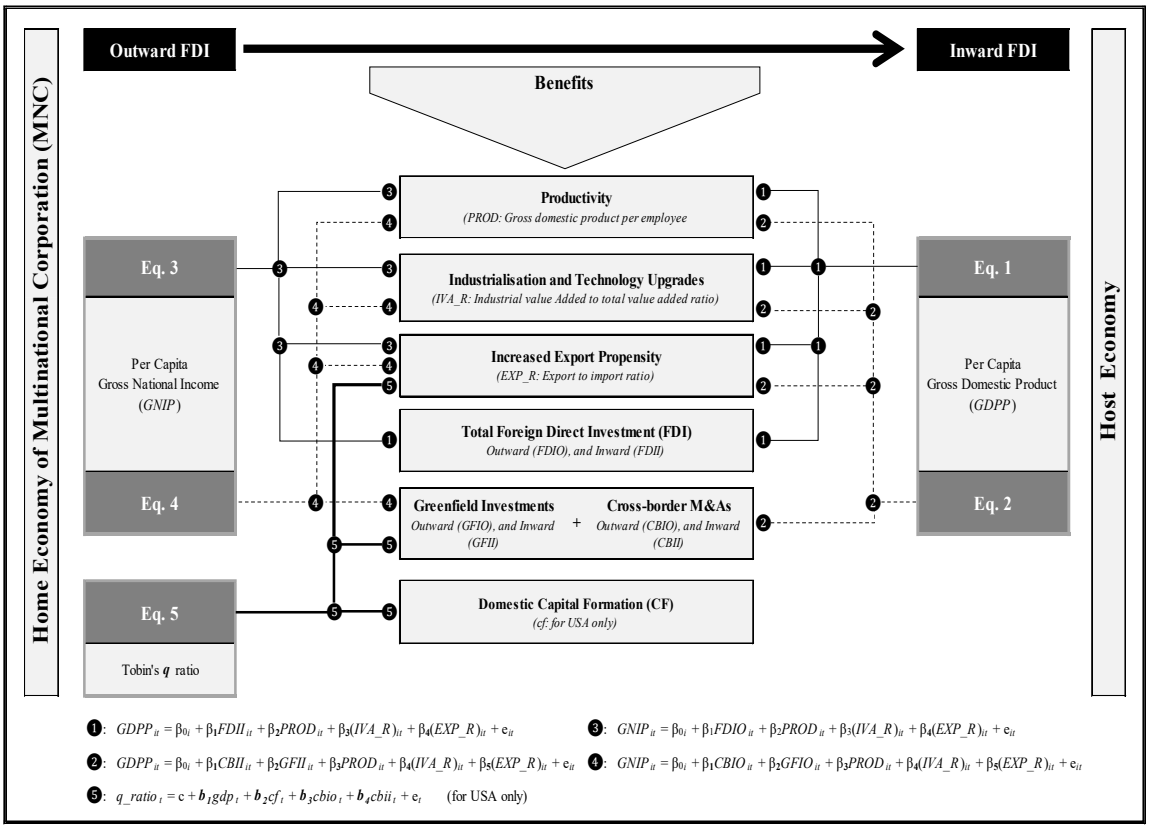

Figure 2: Overview of Empirical Models

4.1 Effects of FDI Inflows on Host Economies

Faeth (2009), provides an excellent review of the empirical studies on the determinants of FDI under nine categories, in terms of the theoretical developments as described in Section 2.1. The nine categories of empirical studies reviewed by Faeth (2009), include:

(1) Early studies (1960-70s)

(2) Neoclassical trade theory

(3) Ownership advantage theory

(4) Aggregate variables theory

(5) OLI framework

(6) Horizontal and vertical FDI models

(7) Knowledge capital model

(8) Diversified FDI and risk diversification models

(9) Policy Variables (e.g. fiscal/financial incentives) as determinants of FDI

The main focus of these empirical models is the determinants of FDI, rather than studying the economic effects of FDI on host and home economies, which is the purpose of this study. For this study, I develop an econometric model by relying on the conceptual work by Enderick (2005, pp: 103), which proposes that the primary direct benefits of FDI that affect the economic growth include:

(a) Development of new industries and activities

(b) Increased export propensity

(c) Increased productivity or competitiveness of resource use

(d) Upgrades to technological know-how and economic clustering

According to Li & Liu (2005, p.396) the core explanatory variables for economic growth identified in various studies "include investment, population growth, initial per capita GDP, and initial human capital". Relying on Enderick's concept of "FDI direct benefits" and the "core explanatory variables for economic growth" framework of Li and Liu, I include the following explanatory variables in my empirical models.

(a) GDP Measures: **Industrial Value Added to Total Value Added ratio (*IVA_R*)** for the development of new industries and activities for upgrading and economic clustering.

(b) **Exports to Imports Ratio (*EXP_R*)** for increased export propensity.

(c) **GDP per Employee (*PROD*)**[12] for increased productivity or competitiveness of resource use.

(d) The three forms of inward FDIs:

- **Total FDI (*FDII*)**
- **Cross-border Mergers and Acquisitions (*CBII*)**, and
- **Greenfield Investments (*GFII*)**.

[12] Total hours worked data is not available for all countries in the sample. Therefore, I use total number of employee data to compute the productivity variable. "*There are different measures of productivity and the choice between them depends either on the purpose of the productivity measurement and/or data availability. One of the most widely used measures of productivity is Gross Domestic Product (GDP) per hour worked. This measure captures the use of labour inputs better than just output per employee. Generally, the default source for total hours worked is the OECD Annual National Accounts database, though for a number of countries other sources have to be used. Despite the progress and efforts in this area, the measurement of hours worked still suffers from a number of statistical problems. Namely, different concepts and basic statistical sources are used across countries, which can hinder international comparability. In principle, the measurement of labour inputs should also take into account differences in workers' educational attainment, skills and experience…."* http://www.oecd.org/std/productivity-stats/40526851.pdf

Accordingly, my two empirical models using cross-country time series data are specified in eq. 1 and eq. 2 as follows:

Model 1: Effects of *Total FDI Inflows* on Host Economies

$$GDPP_{it} = \beta_{0i} + \boldsymbol{\beta_1} FDII_{it} + \boldsymbol{\beta_2} PROD_{it} + \beta_3 (IVA\_R)_{it} + \beta_4 (EXP\_R)_{it} + \varepsilon_{it} \quad \text{..... (Eq. 1)}$$

Model 2: Effects of *Individual Forms of FDI Inflows* on Host Economies

$$GDPP_{it} = \beta_{0i} + \beta_1 CBII_{it} + \beta_2 GFII_{it} + \beta_3 PROD_{it} + \beta_4 (IVA\_R)_{it} + \beta_5 (EXP\_R)_{it} + \varepsilon_{it} \quad \text{..... (Eq. 2)}$$

where,

- *GDPP*: the per capita GDP (Gross Domestic Product);
- *FDII*: Total inward foreign direct investments;
- *CBII*: Inward cross-border mergers & acquisition;
- *GFII*: Inward greenfield investments;
- *IVA_R*: Industrial value added to total value added ratio;
- *EXP_R*: Exports to imports ratio;
- *PROD*: GDP per employee;
- β_0 is constant term, β_1…… β_5 and are coefficients of explanatory variables; and;
- *i* is the cross-section unit (country) at time *t* (year).

4.2 Effects of FDI Outflows on Home Economies

Many argue that the possible gains of the *host* economies through FDI inflows may be, to a certain extent, at the expense of *home* economies (see Hejazi and Pauly, 2003; and; Desai et al., 2005). This may imply that MNCs prefer to invest abroad because of

relatively higher growth or return opportunities available in the foreign markets. Others note that countries that have GNI (Gross National Income) greater than their GDP is because of their investment abroad (see Cross P., 2004). In this context, it may further be argued that outward FDIs have a favourable impact on the GNI of the home economy. The estimation models used to investigate this relationship between the GNI and outward FDI are specified in eq. 3 and eq. 4, below:

Model 3: Effects of *Total FDI Outflows* on Home Economies

$$GNIP_{it} = \beta_{0i} + \beta_1 FDIO_{it} + \beta_2 PROD_{it} + \beta_3 (IVA\_R)_{it} + \beta_4 (EXP\_R)_{it} + \varepsilon_{it\,;} \quad \text{…… (Eq. 3)}$$

Model 4: Effects of *Individual Forms of FDI Outflows* on Home Economies

$$GNIP_{it} = \beta_{0i} + \beta_1 CBIO_{it} + \beta_2 GFIO_{it} + \beta_3 PROD_{it} + \beta_4 (IVA\_R)_{it} + \beta_5 (EXP\_R)_{it} + \varepsilon_{it;} \quad \text{…… (Eq. 4)}$$

where,

- *GNIP*: Per capita GNI (Gross National Income);
- *FDIO*: Total outward foreign direct investments;
- *CBIO*: Outward cross-border mergers & acquisition;
- *GFIO*: Outward greenfield investments;
- *IVA_R*: Industrial value Added to total value added ratio;
- *EXP_R*: exports to imports ratio;
- *PROD*: GDP per Employee;
- β_0 is constant term, β_1…… β_5 and are coefficients of explanatory variables; and;
- *i* is the cross-section unit (country) at time *t* (year).

4.3 Effects of Cross-border M&As on the profitability of MNCs

To investigate the effects of CB-M&As on the profitability of MNCs I heavily rely on (i) the ***q*** theory of investment that, according Jovanovic & Rousseau (2002), explains why firms buy other firms; and (ii) the argument by Lindenberg & Ross (1981), that the ***q*** ratio of the firm should increase if they have increasing ability to earn above competitive returns. Using this theoretical framework, I attempt to investigate the relationship between firms' CB-M&A investments (outward) and the ***q*** ratio (home economy) to explain why MNCs buy other firms in foreign countries.

That is, if it is found that the ***q*** ratio improves due to CB-M&A investments then it may imply that MNCs have increasing ability to earn above competitive returns through their CB-M&As investments. However, if the causality is found in the opposite direction (CB-M&A increase due to ***q*** ratio), then it may imply that MNCs seek to maximize their value through CB-M&As investments.

In other words, MNCs with high ***q*** ratio are value maximizing firms and CB-M&As are likely to be "driven by the degree of market imperfections across countries" (Doukas, 1995, p.1301)[13]. If that is the case, however, then the other implication, depending on the direction of the causality, may be that MNCs that undertake CB-M&As are overinvesting firms or CB-M&As are generally not value maximizing investments.

By using 463 US foreign acquisitions over the period 1975-1989 and applying an event study methodology to compute abnormal returns, Doukas (1995), studied the effects of foreign acquisitions on share prices. He used the ***q*** ratio to distinguish between value

[13] Doukas (1995), refers to foreign direct investments instead of CB-M&A as stated above.

maximizing firms (well managed or high ***q*** ratio firms) and over investors (poorly managed or low ***q*** ratio firms). One of the key conclusions of his study is that "foreign acquisitions create wealth for high ***q*** bidders by making them more efficient in the international use of target resources" (Doukas, 1995, p. 1301).

While I use a different methodology in my estimation models besides outward CB-M&As, I also include other factors that can affect country level ***q*** ratio, including domestic capital expenditure (investments), GDP, and inward CB-M&As. Since the calculation of ***q*** ratio relies on the availability of firm level accounting data, there are certain challenges associated with the calculation of ***q*** ratio at macroeconomic level for individual countries. Consequently, my analysis is based on U.S. as explained below.

Using previously published data sources (Federal Reserve's Flow of Funds Tables (Z1) and Bureau of Economic Analysis (BEA), Stephen Wright (2004), constructed a dataset relating to the U.S. nonfinancial corporate sector. The dataset includes measures such as dividend yields, earnings, and ***q*** ratio relying on a range of definitions. Wright (2004), notes that time series datasets for ***q*** have also been constructed in other studies (see Blanchard et al., 1993; Brainard et al., 1980; Bernanke et al. 1988; Hall, 2001; Laitner and Stolyarov, 2003).

However, I use the dataset found in Wright (2004), since it covers the longest period, 1871-2012, and relates to the U.S. total corporate sector instead of a smaller sample of quoted companies, and offers alternative (broad vs. narrow) measures of ***q*** and provides a comparison with past estimates of ***q***.[14] I believe Wright's ***q*** data provides a useful base to

[14] Particularly with that of Laitner and Stolyarove (2003)

understand the impact of outward FDIs on the profitability of MNCs (in US Corporate sector) in terms of ***q*** ratio as evident from Figure 3, below that depicts trends in ***q*** vis-a-vis the US outward M&As.

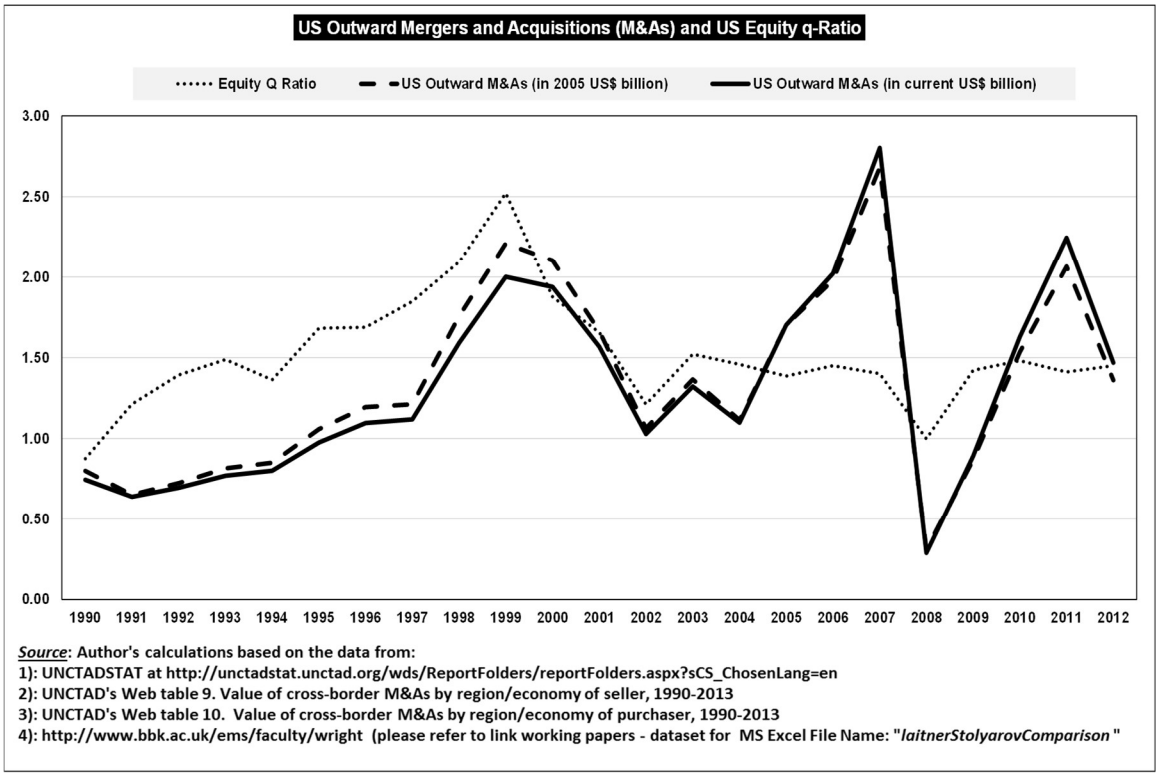

Figure 3: US Outward M&As and Equity q-ratio

Therefore, I rely on US time-series data to investigate the relationship between ***q*** ratio and outward CB-M&As using the following equation (Model 5 – eq. 5):

Model 5: Effects of *Cross-border M&As* on the profitability of MNCs

$$q\_ratio_t = c + \boldsymbol{b_1} gdp_t + \boldsymbol{b_2} cf_t + \boldsymbol{b_3} cbio_t + \boldsymbol{b_4} cbii_t + \varepsilon_{t;} \quad \text{..... (Eq. 5)}$$

where,

q_ratio*:* Tobin-***q*** ratio of US Nonfinancial corporate sector;
gdp*:* US gross domestic product;
cf*:* US Domestic capital expenditure;
cbio*:* US outward mergers and acquisitions;
cbii*:* US Inward mergers and acquisitions; and;
t: is the year

Chapter 5: Model estimation and results

5.1 Data and estimation issues

5.1.1 Data

For the estimation models specified in eqs. 1, 2, 3 and 4 I use cross-country time series (balanced panel) data for the period 1990-2012[15]. The cross-country sample includes 31countries, which are listed in Table 3 below:

Table 3: Sample Countries included for Panel Data

1 Australia	9 Japan	17 Belgium	25 Philippines
2 Brazil	10 Korea	18 Denmark	26 Portugal
3 Canada	11 Mexico	19 Finland	27 Singapore
4 China	12 Spain	20 Greece	28 South Africa
5 France	13 UK	21 Israel	29 Sweden
6 Germany	14 USA	22 Netherlands	30 Switzerland
7 India	15 Argentina	23 New Zealand	31 Thailand
8 Italy	16 Austria	24 Norway	

My selection of the balanced panel sample countries is based on the consideration of the following factors:

[15] Cross-border Mergers and Acquisition (CB-M&A) data are not available from the published sources for the years prior to 1990. Therefore the study period for all estimation equations is limited to the 23 year period (1990-2013).

- Availability of complete data for variables and all years of the study period (1990-2012)
- An appropriate representation of the world GDP and FDI flows over 1990-2012. I find that from 1990-2012 these countries represented:
  - 78% of world's real GDP (in 2005$s) ranging from 81% (1990) to 76% (2012)
  - 59% of world's Inward FDI (in 2005$s) ranging from 70% (1990) to 52% (2012) including 76% of world's inward cross-border M&As ranging from 79% (1990) to 67% (2012); and; 46% of world's inward greenfield investments ranging from 62% (1990) to 45% (2012)
  - 67% of world's outward FDI (in 2005$s) ranging from 77% (1993) to 51% (2005) – 76% in 1990 and 71% in 2012; 74% of world's outward cross-border M&As ranging from 57% (2008) to 88% (2003) – 68% in 1990 and 71% in 2012; and 63% of world's outward greenfield investments ranging from 16% (2000) to 80% (1990) – 71% in 2012.

Given that the length of the study period is only 23 years, I consider a balanced panel of data to ensure consistency in the results. However, data for the balanced panel is available only for 31 countries as listed above. In other words, complete 23-year data for each country on each variable in eqs. 1-4 are available only for a maximum of 31 countries. This sample is comprised of both developed and developing economies.[16] I use

[16] The sample countries are categorized into developed and developing economies according to the United Nations Conference on Trade and Development (UNTCAD) classification.

this classification to further interpret the results. Description of time-series variables and their data sources are provided in Appendix 1[17].

Also, as explained later, this sample is comprised of developing and developed economies including seven low risk, eleven medium risk, and thirteen high risk countries. Some empirical studies suggest that political risk is a significant determinant of the FDIs (see Baek and Qian, 2011). Based on the Political Risk Index compiled by ICRG (International Country Risk Guide), I classify sample countries into three risk categories (Low, Medium, and High). Accordingly, the criteria applied to categorize the individual country in my sample are provided in Table 4 below:

Table 4: Country Risk Score Categories of ICRG (International Country Risk Guide)

ICRG Classification		
Risk Classification	**ICRG Risk Score Category**	**Criteria Applied**
1) High Risk	Very High Risk (0% - 49.9%)	**60**
	High Risk (50% - 59.9%)	
2) Moderate Risk	Moderate Risk (60% - 69.9%)	60 < >70
3) Low Risk	Low Risk (70% - 79.9%)	**70**
	Very Low Risk (=> 80%)	

- ***Criteria Applied***: To limit the risk level only to three categories, I merged ICRG's "*Very High Risk*" and "*High Risk*" category into one as **High Risk (H)** and "*Low Risk*" and "*Very Low Risk*" into one as **Low Risk (L)**. The criteria applied
- ***Source***: https://www.prsgroup.com/about-us/our-two-methodologies/icrg. (*Citation: An Extract from International Country Risk Guide, Copyright, 1984-Present, The PRS Group, Inc*.)
- Based on the above criteria, I assigned risk level (L, M, and H) to the individual country in my sample using ICRG's 5-Year worse-case "Composite Risk Forecast" table downloaded from the above link on June 5, 2015.
- The table was downloaded from the above link, based on free-trial access.

[17] The input data for time-series variables for each sample country are expressed in US Dollars at constant prices (2005) and constant exchange rates (2005) in millions.

5.1.2 Methodology

To examine the effects of CB-M&As versus greenfield investments, I apply estimation procedure on total foreign direct investment flows as well as on the two forms of FDI as shown in eqs. 1-4. To investigate the relationship between variables I follow the process as below.

5.1.2.1 Panel Unit Root Tests

Presently in applied research, it is a typical practice to perform unit root tests in time series data (Baltagi, 2009, p. 275). The reason is that most economic variables that exhibit strong trends are not stationary (non-stationary)[18]. If variables (time-series) in a regression are non-stationary, then the standard assumptions for asymptotic inference may not be valid (see Greene, 2008, Johnston and DiNardo, 1997; Baltagi, 2009). The other related problem is the possibility of finding spurious regressions (Johnston and DiNardo, 1997, p. 260). To address such problems in time series data, the econometricians have developed dynamic regression modeling techniques that contain lagged variables or lagged effects (Greene, 2008, Chapter 19-21), that is the autoregressive (AR) models. However, the selection of such models also depends on the order of integration, I(d), of the times-series variables included in the regression[19].

Based on the trends depicted in the graphs (see Appendices 3.1 to 3.11) I suspect that some of the variables in eqs. 1-4 are non-stationary. Therefore, first I conduct panel unit

[18] Studies in empirical macroeconomics almost always involve nonstationary and trending variables, such as income, consumption, money, demand, the price level, trade flows, and exchange rates (Greene, 2008, p. 756)
[19] The order of integration, d, is the minimum number of times the series needs to be first differenced to yield a stationary series. In this sense a stationary series is said to be integrated of order zero, I(0) (Johnston and DiNardo, p. 220).

root tests to examine if the time-series data for the variables in eqs.1-4 is stationary or non-stationary. Levin and Lin (1992, 1993), Levin, Lin, and Chu (2002), and Im, Pesaran and Shin (1997, 2003), tests are widely used methods for panel data unit root tests in the literature (Li & Liu, 2005, p. 397). Some of the other commonly used panel unit root tests include Breitung (2002), Hadri (2000), and Fisher-type tests proposed by Maddala and Wu (1999), and Choi (2001)[20]. Tests such as Levin-Lin, Levin-Lin-Chu, Breitung, and Hadri crucially depend on the independence assumption across cross-sections and are not applicable if the cross-sectional correlation is present (Baltagi, 2009, p. 257). That is, these tests involve common root process which assumes that the autoregressive coefficients are same (ρ) instead of (ρ_i) across cross-sections. According to Maddala and Wu (1999), the assumption that all cross-sections have or do not have a unit root is restrictive. The advantage of the second category of tests such as Im-Pesaran-Shin (1997, 2003), Maddala-Wu (1999), and Choi (2001), is that their alternative hypothesis allows some cross-sections, not all, without unit root. To ensure the robustness of the results, I apply both common root and individual root panel unit root tests with assumptions including "individual effects (intercepts)", "individual effects (intercepts) and individual linear trends" and "without (none) individual effects (intercepts) and individual linear trends". For these panel unit root tests, I individually apply three lag selection criterion as follows:

a) Akaike Info Criterion (AIC)
b) Schwarz Info Criterion (SIC)
c) Hannan-Quinn Criterion (HDC)

[20] See Baltagi (2008), Chapter 12

All three lag criterion produce consistent results. In case unit roots (non-stationarity) are found in levels, I apply the same test procedures to the first difference to determine the variables' order of integration. The summary of panel unit tests results (order of integration) are summarized in Table 5 below.

Table 5: Summary of Panel Unit Root Tests

		Individual Intercept				Individual Intercept and Trend					None		
		Common Unit Roots	Individual Unit Roots			Common Unit Roots		Individual Unit Roots			Common Unit Roots	Individual Unit Roots	
Varibale	**Order**	LLC	IPS	ADF	PP	LLC	Breit.	IPS	ADF	PP	LLC	ADF	PP
GDPP	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(0)**	I(1)	I(1)	I(1)	I(1)
FDII	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)****	**I(1)**	**I(0)**	**I(0)**	**I(0)**	**I(1)**	**I(0)**	**I(0)**
CBII	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(1)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**
GFII	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**
PROD	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
IVA_R	I(1)	I(0)	I(1)	I(1)	I(0)	I(0)	I(1)	I(1)	I(1)	I(1)	I(0)	I(0)	I(0)
EXP_R	I(1)	I(0)	I(0)	I(0)	I(1)	I(0)	I(1)	I(0)	I(0)	I(1)	I(1)	I(1)	I(1)
GNIP	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
FDIO	**I(0)**	**I(1)**	**I(1)**	**I(0)**	**I(0)**	**I(0)**	**I(1)**	**I(0)**	**I(0)**	**I(0)**	**I(1)**	**I(0)****	**I(0)**
CBIO	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**
GFIO	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)**	**I(0)****	**I(0)**	**I(0)**	**I(0)**	**I(0)****	**I(0)**	**I(0)**

C. Roots: Common Unit Roots
LLC: Levin, Lin & Chu t-stat test
IPS: Im, Pesaran and Shin W-stat test
ADF: Augmented Dickey-Fuller Fisher Chi-square test
PP: Phillips-Perron Fisher Chi-square test
I(1): non-statrionary variable with unit roots (integrated to order of 1) at 5% or less level of significance
I(0):Satrionary variable with no unit roots (integrated to order of 0) t 5% or less level of significance
** at 10% level of significance

The above panel unit root test results show that each of the four estimation models (eqs. 1-4) consists of both non-stationary and stationary variables. This implies that the conventional OLS techniques may not provide efficient estimates of eqs. 1-4 due to the possibility of serial correlation and endogeneity problem.

The existence of cross-section dependence (correlation) is a potential challenge with respect to robustness and interpretation of the above panel unit test results. To ensure the

robustness, I repeat the unit roots for individual countries for the variables included in eqs. 1-4. Similar results are found when I perform unit roots in individual countries. Graphical depiction of all variables in eqs. 1-4 for individual countries is provided in Appendices 3.1 – 3.11

5.1.2.2 Cointegration Analysis

Based on the unit root tests, as shown in Table 5 above, all non-stationary variables are found to be ***I*(1)**. According to Greene (2008, p. 756), in the fully specified regression model $y_t = \beta x_t + \varepsilon_t$ there is a presumption that the disturbances ε_t are stationary, white noise series. But this presumption is unlikely to be true if y_t and x_t are integrated series. However, if the two series are both ***I*(1)** then there may be a β such that $\varepsilon_t = y_t - \beta x_t$ is ***I*(0)**. In other words, if there exists a long run relationship between such non-stationary time series then the resulting time series from their linear combination is stationary (deviation have finite variance and constant mean), that is the error term $\varepsilon_t \sim$ ***I*(0)** in the regression $\varepsilon_t = y_t - \beta x$. The possibility of the existence of a long run relationship between such non-stationary time series implies that they are influenced by the same forces, or they influence each other. For example, two series with ***I*(1)** order of integration and their linear combination has a lower order of integration, i.e. ***I*(0)**. This is because the time series which are ***I*(1)** tend to wander but if the linear combination of the two is stationary ***I*(0)** then they will tend to wander together since finite variance and the constant mean of $\varepsilon_t = y_t - \beta x$ prevent them from drifting too far apart. That is, the series are drifting together at roughly the same rate. *Two series that satisfy this requirement are said to be*

cointegrated (i.e. have a long run relationship), *and the vector [1 - β] (or multiple of it) is a cointegrating vector*. *(Greene, 2008, p. 756).*

In this context for ***I(1)*** variables I could apply panel cointegration test to determine the relationship among variables in each equation. The most common panel cointegration tests include Engle-Granger (residual) based Pedroni (1999, 2004), and Kao (1999) tests and Fisher-type Larsson, Lyhagen and Lothgren (2001) test also referred to as Johansen Cointegration test since it is based on likelihood inference for vector autoregressive models developed in Johansen (1995) (also see Johansen (1991), Johansen & Katarina (1990), and Maddala & Wu (1999)).

Kao (1999) and Pedroni (1999) tests assume null hypothesis of no cointegration. That is, their "tests assume either all the relationships are not cointegrated or all the relationships are cointegrated" (Baltagi, 2008, p. 297). The "Larsson et al. (2001) test assumes as null that *all* of the *N* cross-sections in the panel have a common cointegrating rank *r*, i.e. at most *r* cointegrating relationships, against the alternative that *all* the cross-sections have a higher rank" (Gutierrez, 2003, p. 106). According to Dibooglu & Enders (1995, p. 1101), the Johansen Cointegration test is useful as it can detect and estimate multiple cointegrating vectors and allows to test restrictions on the cointegrating vector(s). In this context, an appropriate cointegration test and estimation procedure such as Johansen panel cointegration VAR (Vector Autoregression) could be applied to study the relationship between the variables in the estimation model.

According to Banerjee, Marcellino, and Osbat (2004), "Existing panel cointegration tests rule out cross-unit cointegrating relationships, while economic theory and empirical observation argue strongly in favour of their presence". The cointegration tests with the

presence of cross-section dependencies (CSD) are subject to large size distortions, (see Banerjee et al. (2004), and Baltagi, Chapter 12 (2008)). Sarafidis and Wansbeek (2012, p. 527), note that there have been several major advances in the theoretical literature of panel data analysis with cross-section dependence (CSD) over the last ten years but also point out that there is yet a relatively small empirical literature that deals with CSD in practice.

Relying on Banerjee et al. (2004) approach, I consider the following three step procedure to address the potential cross-section dependency problem.

Step 1: Test the presence of cross-section dependence with null hypothesis of no cross-section dependence (correlation);

Step 2: Unit-by-unit cointegration analysis test of individual sample countries;

Step 3: Apply Larsson et al. (2001) cointegration test, provided the null hypothesis in Step 1 is accepted, and Step 2 analysis does indicate the presence of different ranks across units.

If the results of Step 1 and 2 do not satisfy the conditions to perform Step 3, then the other option is to adjust (reduce) the size of N to apply Kao (1999) and Pedroni (1999) tests[21]. "When N is small the presence of cross-section cointegration (dependence) is less harmful for single-equation tests than for the LL [Larsson et al. (2001)] test" (Banerjee et al., 2004, p. 323).

[21] *"By comparing results from individual countries and the panel as a whole, Pedroni (2001) rejects the strong PPP hypothesis and finds that no degree of cross-sectional dependency would be sufficient to overturn the rejection of strong PPP"* (Baltagi, B. H., 4th ed., 2008, p. 296)

The different tests for cross-section dependence provided in the literature include the following tests[22]:

1) Breusch-Pagan (1980) Lagrange Multiplier (LM) test in large N;
2) Pesaran (2004) scaled Lagrange Multiplier (LM) test in small N;
3) Baltagi, Feng, and Kao (2012) bias-corrected test of the above scaled Lagrange Multiplier (LM) test
4) Pesaran (2004) CD – to address the N size distortion of the above tests 1) and 2), Pesaran (2004) proposed an alternative test statistic which is based on the average of the pairwise correlation coefficient;

For all variables in eqs. 1-4 the above four cross-section dependence tests strongly reject the null of no correlation at conventional significance levels. The results confirm the existence of cross-section dependence in the panel data for all the variables in eqs. 1-4.

As a result, I conclude that cointegration analysis for the estimation models in eqs. 1-4 is not feasible due to the following two main reasons:

- Some of the variables are found to be stationary, whereas all variables must be non-stationary in the estimation model for valid cointegration test results. "…the cointegration test is not applicable in cases of variables that are integrated of different orders (say, series-A is I(1), and series-B is I(0))" (Shittu1, Yemitan, and Yaya, 2012)
- Strong presence of cross-section dependence in all variables.

[22] See Breusch, T., and A. Pagan (1980); Pesaran, M. H. (2004); and; Baltagi, B. H, Feng, Q., and C. Kao (2012)

5.2 Autoregressive Distributed Lag (ARDL) Models

As discussed above, the conventional methods of estimating cointegrating (long run) relationships require all variables to be **I*(1)*** in an estimation model[23]. To address this problem, Pesaran and Shin (1999) introduce the ARDL approach which allows the variables in the cointegrating relationship to be either **I*(0)*** or **I*(1)***. Pesaran et al. (1995, 1997, 1997, and 2001), are based on the re-parameterising of the traditional ARDL model to find an Error Correction Model (ECM) to determine the long run relationship between variables with a different order of integration. *The re-parameterized results show the short-run dynamics (equivalent to the ARDL) and long-run relationship between the variables* (Shittu et al. 2012).

Unlike conventional cointegration methods, ARDL estimation procedure does not require symmetry of lag lengths. That is ARDL allows each variable in the estimation model to have a different number of lag terms. *"The panel ARDL model is more advantageous than the cointegration analyses developed by Engle and Granger (1988) and Johansen (1995) because it can still be used even in case of different cointegration levels of variables" (Çınar et al., 2014, p. 195)*

An ARDL is a least squares regression containing lags of the dependent and explanatory variables, usually expressed with the notation ARDL($\boldsymbol{p, q_1, \ldots\ldots, q_k}$), where $\boldsymbol{p}$ is the

[23] *"Cointegration is concerned with the analysis of long-run relations between variables integrated of the same order (i.e. series made stationary at the same order of differencing) and the speed of return to equilibrium after a deviation is measured by the Error Correction Model (ECM). This raises another short fall in analyzing and establishing long-run relationships, the cointegration test is not applicable in cases of variables that are integrated of different orders (say, series-A is I(1) and series-B is I(0))."* **(Shittu1 et al. 2012)**. *According to Johansen (1995) and Philipps and Bruce (1990), a long-run relationships can exist only among variables with the same order of integration. Pesaran and Shin (1999, chap. 4), show that panel ARDL can be used even with variables with different orders of integration and irrespective of whether they are I(0) or I(1) or a mixture of the two. This is an important advantage of the ARDL model, as it makes testing for unit roots unnecessary. In addition, both the short-run and long-run effects can be estimated simultaneously from a data set with large cross-section and time dimensions.* (**Samargandi et al., 2015**)

number of lags of the dependent variable, q_1 is the number of lags of the first explanatory variable, and q_k is the number of lags of the *k*-th explanatory variable. That is dependent and independent variables are specified on the right hand side of the regression equation with the lag orders of p and q. The traditional ARDL model may be written as:

$$Y_{it} = C_0 + \sum_{j=1}^{p} \lambda_j \; Y_{t-j} + \sum_{j=0}^{q} \beta_j \; X_{t-j} + \varepsilon_j \qquad \text{(Eq. 6)}$$

Where c_0 is constant, λ and β are coefficients, and ε_t is error term assumed to be serially uncorrelated and homoscedastic. Eq. 6 can be modified for panel data. A basic regression panel data equation can be written as:

$$Y_{it} = \beta_{0i} + \beta_{1i} X_{it} + \varepsilon_{it} \qquad \text{(Eq. 7)}$$

Eq. 7 can be written in ARDL(p,q) form as below:

$$Y_{it} = \sum_{j=1}^{p} \alpha_{ij} \; Y_{i,t-j} + \sum_{j=0}^{q} \delta_{ij} \; X_{i,t-j} + \varepsilon_{ij} \qquad \text{(Eq. 8)}$$

Where Y_{it} is the dependent variable (for example, *GDPP*) in county *i* in year *t*, α_{ij} is scaler and δ_{ij} is a (k x 1) coefficient vector and X_{it} is a (k x 1) vector of explanatory variables which, for example, include $FDII_{it}$, $PROD_{it}$, IVA_R_{it} and EXP_R_{it} in terms of eq.1.

Based on Pesaran and Shin (1999), a dynamic panel data model (eq. 8) can be reparametrized into the error-correction form (for example, see Samargandi et al., 2014; Bildirici et al., 2012; Huang et al., 2015). The error correction form is obtained by transforming eq. 8 into differences as shown in eqs.9-11, below:

$$Y_{it} - Y_{it-1} = - Y_{it-1} + \sum_{j=1}^{p} \alpha_{ij} Y_{i,t-j} + \sum_{j=0}^{q} \delta_{ij} X_{i,t-j} + \varepsilon_{ij} \quad \text{..... (Eq. 9)}$$

$$\Delta Y_{it} = - Y_{it-1} + \sum_{j=1}^{p-1} \alpha_{ij} Y_{i,t-j-1} + \sum_{j=0}^{q-1} \delta_{ij} X_{i,t-j-1} + \sum_{j=1}^{p-1} \alpha^{*}_{ij} \left(Y_{i,t-j} - Y_{i,t-j-1} \right) + \sum_{j=0}^{q-1} \delta^{*}_{ij} \left(X_{i,t-j} - X_{i,t-j-1} \right) + \varepsilon_{ij} \quad \text{..... (Eq. 10)}$$

$$\Delta Y_{it} = \Phi_i \left[Y_{i,t-1} - \left(\beta_{0i} + \beta_{1i} X_{i,t-j-1} \right) \right] + \sum_{j=1}^{p-1} \alpha^{*}_{ij} \Delta Y_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*}_{ij} \Delta X_{i,t-j} + \varepsilon_{ij} \quad \text{..... (Eq. 11)}$$

Where,

$$\Phi_i = - \left(1 - \sum_{j}^{P} = {}_1\alpha_{ij} \right)$$

$$\beta_{1i} = \left(\sum_{j}^{q} = {}_0\delta_{ij} \right) \div \Phi_i$$

In eq. 11, Φ_i represents the error-correcting (speed of adjustment) coefficients; β_{0i} and β_{1i} respectively are intercept and long run coefficients in the long run equilibrium relationship; and; α^{*}_{ij} and δ^{*}_{ij} are the short run coefficients of lagged dependent and independent variables respectively. The speed of adjustment coefficients (Φ_i) are expected to have statistically significant negative sign to show that the variables converge to long run equilibrium (relationship). That is $\Phi_i = 0$ implies no long run relationship between the variables. I may write eq. 11 as:

$$\Delta Y_{it} = \Phi_i \left(ECT_{i,t-1} \right) + \sum_{j=1}^{p-1} \alpha^{*}_{ij} \Delta Y_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*}_{ij} \Delta X_{i,t-j} + \varepsilon_{ij} \quad \text{..... (Eq. 12)}$$

If there is a long-term association (cointegration) between the variables, then eq. 8 represents the long run model and eq. 12 estimates the short run dynamics.

There are two extreme estimation procedures for dynamic panel models (Pesaran et al., 1999):

i): Estimate separate ARDL models for each cross-section unit of the panel model and determine the mean of the estimates of such as Φi, βs, α* and δ* after examining the distribution of the estimated coefficients across cross-section units. This procedure has been called as mean group (MG) estimator.

ii): Estimate pooled estimates such as fixed and random effects estimators, where intercepts β_{io} are allowed to vary across cross-section units whereas all other coefficients and variances (Φi, β_{i1}, α* and δ*) are constrained to be the same.

Pesaran et al. (1999), further introduced an intermediate approach to the ARDL model which involves both pooling and averaging, which, therefore, is called as Pooled Mean Group (PMG) estimation of dynamic panel data. The main characteristic of PMG is that it allows short run estimators including the intercepts to vary across cross-sections (country), but constrains the long run estimates to be the same. Single panel estimates of the parameters in the short run panel equation are based on averages of short run coefficients of the individual cross-section, including the error correction term (speed of adjustment). This approach is based on the argument that, the effects of the variables may vary across countries in the short run, but in the long run they are similar due to factors such as budgetary constraints, arbitrage, and technology[24].

[24] *"This estimator allows the intercepts, short-run coefficients, and error variances to differ freely across groups, but constrains the long-run coefficients to be the same. There are often good reasons to expect the long-run equilibrium relationships between variables to be similar across groups, due to budget or solvency constraints, arbitrage conditions, or common technologies influencing all groups in a similar way. The reasons for assuming that short-run dynamics and error variances should be the same tend to be less compelling. Not imposing equality of short-run slope coefficients also allows the dynamic specification (e.g., the number of lags included) to differ across groups"* (Persaran et al. 1999).
"*The main characteristic of PMG is that it allows the short-run coefficients, including the intercepts, the speed of adjustment to the long-run equilibrium values and error variances to be heterogeneous country by country, while the long-run slope coefficients are homogeneous across countries. This is particularly useful when there are reasons to expect that the long-run equilibrium relationship between the variables is similar across countries or, at least, a sub-set of them. The shortrun adjustment is allowed to be country-specific, due to the widely different impact of the vulnerability to financial crises and external shocks, stabilization policies, monetary policy and so on"* (Samargandi, Fidrmuc, and Ghosh, 2015.

The short run dynamics of FDI flows can vary across countries due to country specific socio-economic factors, including but not limited to, *country risk*, *fiscal and monitory policies, developing versus developed economies*, and *regional and national politics*. As PMG approach allows the short run dynamics of FDI to differ from country to country, it provides an important advantage over the traditional Dynamic Fixed Effect model (see Chen and He, 2015, and Pesaran et al., 1999).

Samargandi et al. (2014) point out three critical conditions to ensure the validity and consistency of results using PMG approach, including:

- The existence of a long-term relationship among the variables of interest requires the coefficient of the error-correction term to be negative and not lower than -2;
- The residual of error-correction model should be serially uncorrelated, and the explanatory variables should be treated as exogenous; and;
- While the relative size of T (time) and N (cross-section units) is critical (T>N or T<N), both should be large enough to avoid bias in the average estimators.

Due to the data availability constraints described above, the balanced panel of data for the models (eqs. 1-4) have T=23 years N=31 for all countries in the sample. Although T is less than 30 in the data sets I believe, in light of the work by Pesaran et al. (1999), it is large enough to provide valid and consistent results. Pesaran et al. (1999), showed that PMG is reliable in large and small T panel data samples[25]. My sample size is consistent

[25] Pesaran et al (1999), provided two empirical applications to compare the MG, PMG, and dynamic fixed effect (DFE) estimators: (a) aggregate consumption functions for 24 Organization for Economic Cooperation and Development economies over the period 1962-1993 (N=24, T=32); and; (b) energy demand functions for 10 Asian developing economies over the period 1974-1990 (N=10, T=17).

with several empirical studies that used T<30 sample with N<T or N>T in their ARDL (PG, PMG) models[26].

5.3 Endogeneity Problem

It is worth noting that the presence of endogeneity may bias results of this study. For example, Wang and Wong (2010), point out potential problem of endogeneity with respect to the relationship between FDI and GDP growth:

> *"Foreign investments can promote economic growth while at the same time a country with faster growth rate may attract more MNCs"* (Wang and Wong, 2010, p. 326)

Based on Durbin-Wu-Hausman test they find evidence of endogeneity for greenfield investments. Relying on Borenztein et al. (1998), they applied instrumental variables (IV) to their estimation equations, including (1) greenfield investment, and (2) cross-border M&A, separately as explanatory variables beside other determinants of growth viz. inflation, government expenditure, volume of trade, parallel market premium on foreign exchange. They show IV results similar to their original WLS (Weight Least Square) estimates. Their finding suggests that it is unlikely that the results of this study are materially influenced by any potential endogeneity problem. I also note that IV estimates are highly sensitive to the selection of instrumental variables. Furthermore, Ahmed

[26] For example, Mamun et al (2015) used (N=8, T=19), Chen et al. (2014) used (N=23, T=16), Erdem et al. (2014) used (N=15, T=20), Bildirici et al. (2013) used (N=4, T=16) and Samargandi et al. (2014) used (N=52, T=28). Also, the panel ARL procedure produce consistent results when I reduce the sample to 14 countries i.e. sample size of N=14 and T=23 (N<T)

(1998), and Ericsson et al. (2001), point out that IV approach does not address the endogeneity problem for models that involve averaging of times series data over long periods[27], which is part of the method employed in the present study.

Based on these studies it seems the ARDL model will be more appropriate in the present context because by using lagged variables any potential endogeneity problem can be addressed more effectively, especially for the long run equations. [28] In the words of Pesaran & Shin (1999, p. 16): *"Appropriate modification of the orders of the ARDL model is sufficient to simultaneously correct for the residual serial correlation and the problem of endogenous regressors."*

5.4 Granger Causality

To better understand the relationships among variables it is useful to further investigate the direction of causality. If two variables (X and Y) are cointegrated i.e. a long run relationship exists between them, then in terms of eq. 12 and Granger representation theorem (Engle & Granger, 1987), the direction of their (pair-wise) causality can be investigated using eqs. 13-14, as below.

$$\Delta Y_t = C_{1,i} + \sum_{j=1}^{n} \alpha 1_{ij}\ \Delta Y_{i,t-j} + \sum_{j=1}^{n} \beta 2_{ij}\ \Delta X_{i,t-j} + \mathbf{\Phi_1}\ (\boldsymbol{ECT}_{i,t-j}) + \varepsilon 1_{it} \quad \text{.....} \quad \text{(Eq. 13)}$$

[27] see Samargandi et al., 2014, p. 68.
[28] See for example: Bildirici et al (2012), Pesaran & Shin (1999), Samargandi et al. (2014). and Vermeulen and Haan (2014).

$$\Delta X_t = C_{2,i} + \sum_{j=1}^{n} \beta 1_{ij} \Delta X_{i,t-j} + \sum_{j=1}^{n} \alpha 2_{ij} \Delta Y_{i,t-j} + \mathbf{\Phi_2} (ECT_{i,t-j}) + \varepsilon 2_{it} \quad \text{.....} \quad \text{(Eq. 14)}$$

Where, $ECT_{i,t-}$ $(j = 1,2, 3,\ldots\ldots n\text{-}1)$ is the error correction term and $\varepsilon 1_{ij}$, and $\varepsilon 2_{ij}$ are white noise disturbance terms. In terms of eqs.13-14, bi-variate (pairwise) Granger causality for panel data can be investigated using Wald F-Statistic test in three ways, as given below (Bildirici et al., 2012):

a) Short run causality: X does not Granger cause Y with null H_0: $\beta 2 = 0$, for all "*ij*" in eq. 13 and Y does not Granger cause X for null H_0: $\alpha 2 = 0$, for all "*ij*" in eq. 14[29].

b) Long run causality: X does not Granger cause Y with null H_0: $\Phi_1 = 0$ in eq. 13, and Y does not Granger cause X for null H_0: $\Phi_2 = 0$ in eq. 14.

c) Strong causality: X does not Granger cause Y with null H_0: $\beta 2 = \Phi_1 = 0$, for all "*ij*" in eq. 13 and Y does not Granger cause X for null H_0: $\alpha 2 = \Phi_2 = 0$, for all "*ij*" in eq. 14[30].

If the two variables are not cointegrated then Granger causality test a) is performed (Srinivasan et al., 2010)[31]. For example, in the case of eq. 1 the following hypotheses are tested using panel data[32]:

[29] Assuming all coefficients are same across all cross-sections
[30] Assuming all coefficients are same across all cross-sections
[31] Estimation of bi-variate (pairwise) cointegration (long run relationship) between variables in eqs.1-4 is not performed, being beyond the scope of this study
[32] Similar hypotheses tests are performed to examine pairwise Granger causality between variables in eqs. 2-4 (using panel data), and eq. 5 (using US only data).

(1)	*FDII* does not Granger Cause *GDPP* *GDPP* does not Granger Cause *FDII*	(6)	*IVA_R* does not Granger Cause *FDII* *FDII* does not Granger Cause *IVA_R*
(2)	*PROD* does not Granger Cause *GDPP* *GDPP* does not Granger Cause *PROD*	(7)	EXP_R does not Granger Cause *FDII* *FDII* does not Granger Cause *EXP_R*
(3)	*IVA_R* does not Granger Cause *GDPP* *GDPP* does not Granger Cause *IVA_R*	(8)	*IVA_R* does not Granger Cause *PROD* *PROD* does not Granger Cause *IVA_R*
(4)	*EXP_R* does not Granger Cause *GDPP* *GDPP* does not Granger Cause *EXP_R*	(9)	*EXP_R* does not Granger Cause *PROD* *PROD* does not Granger Cause *EXP_R*
(5)	*PROD* does not Granger Cause *FDII* *FDII* does not Granger Cause *PROD*	(10)	*EXP_R* does not Granger Cause *IVAR* *IVA_R* does not Granger Cause *EXP_R*

5.5 ARDL (PMG) Panel Data Results

I first re-write eqs.1-4 in ARDL (p,q) form as:

$$GDPP_{it} = \sum_{j=1}^{p} \alpha_{ij}\, GDPP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij}\, FDII_{i,t-j} + \sum_{j=0}^{q_2} \delta_{ij}\, PROD_{i,t-j} + \sum_{j=0}^{q_3} \Upsilon_{ij}\, IVA\_R_{i,t-j} + \sum_{j=0}^{q_4} \lambda_{ij}\, EXP\_R_{i,t-j} + \varepsilon_{ij} \quad \ldots \text{(Eq. 15)}$$

$$GDPP_{it} = \sum_{j=1}^{p} \alpha_{ij}\, GDPP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij}\, CBII_{i,t-j} + \sum_{j=0}^{q_2} \&_{ij}\, GFII_{i,t-j} + \sum_{j=0}^{q_3} \delta_{ij}\, PROD_{i,t-j} + \sum_{j=0}^{q_4} \Upsilon_{ij}\, IVA\_R_{i,t-j} + \sum_{j=0}^{q_5} \lambda_{ij}\, EXP\_R_{i,t-j} + \varepsilon_{ij} \quad \ldots \text{(Eq. 16)}$$

$$GNIP_{it} = \sum_{j=1}^{p} \alpha_{ij}\, GNIP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij}\, FDIO_{i,t-j} + \sum_{j=0}^{q_2} \delta_{ij}\, PROD_{i,t-j} + \sum_{j=0}^{q_3} \Upsilon_{ij}\, IVA\_R_{i,t-j} + \sum_{j=0}^{q_4} \lambda_{ij}\, EXP\_R_{i,t-j} + \varepsilon_{ij} \quad \ldots \text{(Eq. 17)}$$

$$GNIP_{it} = \sum_{j=1}^{p} \alpha_{ij}\, GNIP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij}\, CBIO_{i,t-j} + \sum_{j=0}^{q_2} \&_{ij}\, GFIO_{i,t-j} + \sum_{j=0}^{q_3} \delta_{ij}\, PROD_{i,t-j} + \sum_{j=0}^{q_4} \Upsilon_{ij}\, IVA\_R_{i,t-j} + \sum_{j=0}^{q_5} \lambda_{ij}\, EXP\_R_{i,t-j} + \varepsilon_{ij} \quad \ldots \text{(Eq. 18)}$$

Eqs. 15-18 can be reparametrized into error-correction form as:

$$\Delta GDPP_{it} = \varphi_i (ECT_{i,t-1}) + \sum_{j=1}^{p} \alpha_{ij} \Delta GDPP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij} \Delta FDII_{i,t-j} + \sum_{j=0}^{q_2} \delta_{ij} \Delta PROD_{i,t-j} + \sum_{j=0}^{q_3} \Upsilon_{ij} \Delta IVA\_R_{i,t-j} + \sum_{j=0}^{q_4} \lambda_{ij} \Delta EXP\_R_{i,t-j} + v_{ij} \quad \text{…..…. (Eq. 19)}$$

$$\Delta GDPP_{it} = \varphi_i (ECT_{i,t-1}) + \sum_{j=1}^{p} \alpha_{ij} \Delta GDPP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij} \Delta CBII_{i,t-j} + \sum_{j=0}^{q_1} \&_{ij} \Delta GFII_{i,t-j} + \sum_{j=0}^{q_2} \delta_{ij} \Delta PROD_{i,t-j} + \sum_{j=0}^{q_3} \Upsilon_{ij} \Delta IVA\_R_{i,t-j} + \sum_{j=0}^{q_4} \lambda_{ij} \Delta EXP\_R_{i,t-j} + 1 \quad \text{……. (Eq. 20)}$$

$$\Delta GNIP_{it} = \varphi_i (ECT_{i,t-1}) + \sum_{j=1}^{p} \alpha_{ij} \Delta GNIP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij} \Delta FDIO_{i,t-j} + \sum_{j=0}^{q_2} \delta_{ij} \Delta PROD_{i,t-j} + \sum_{j=0}^{q_3} \Upsilon_{ij} \Delta IVA\_R_{i,t-j} + \sum_{j=0}^{q_4} \lambda_{ij} \Delta EXP\_R_{i,t-j} + v_{ij} \quad \text{..... (Eq. 21)}$$

$$\Delta GNIP_{it} = \varphi_i (ECT_{i,t-1}) + \sum_{j=1}^{p} \alpha_{ij} \Delta GNIP_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij} \Delta CBIO_{i,t-j} + \sum_{j=0}^{q_1} \beta_{ij} \Delta GFIO_{i,t-j} + \sum_{j=0}^{q_2} \delta_{ij} \Delta PROD_{i,t-j} + \sum_{j=0}^{q_3} \Upsilon_{ij} \Delta IVA\_R_{i,t-j} + \sum_{j=0}^{q_4} \lambda_{ij} \Delta EXP\_R_{i,t-j} + v_{i} \quad \text{…….. (Eq. 22)}$$

The first step in estimating coefficients in eqs.15-22 is to determine the optimum number of lags in the ARDL models for eqs.1-4.

I then determine lags based on Akaike Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ). I begin with the maximum possible lag of (3,3) with and without constants and linear trend assumptions. My lag selection is based on the optimum value of the majority of the three criteria.

However, I apply the optimum lags based on Akaike Criterion (AIC) if a different number of lags are determined by the Schwarz Criterion (SC), and the Hannan-Quinn Criterion (HQ). Based on this procedure the optimum lags applied in the ARDL models are (3,2) for eqs. 1, 2 and 4 and (3,3) for eq. 3.

The panel ARDL (PMG) estimations of the long run and short run coefficients in eqs. 15-22, which are reparametrized versions of original eqs. 1-4, are provided in Table 6 and Table 7, respectively.

Table 6: Long Run Coefficients of Eqs.1-4 based Panel ARDL (PMG) Model

Variable	Inward FDI						Outward FDI					
	Eq. 1			Eq. 2			Eq. 3			Eq. 4		
	Coefficient	Std. Error	[t-stat]	Coefficient	Std. Error	[t-stat]	Coefficient	Std. Error	[t-stat]	Coefficient	Std. Error	[t-stat]
Long-run Coefficients												
FDII	**-0.001788** *	0.000664	[-2.7]									
CBII				**-0.001867** *	0.000475	[-3.94]						
GFII				**0.001563**	0.001244	[1.26]						
FDIO							**0.009407** *	0.0000000	[19.72]			
CBIO										**0.00649** *	0.000817	[7.95]
GFIO										**0.03275** *	0.002371	[13.82]
PROD	**0.597336** *	0.013381	[44.64]	**0.545607** *	0.012519	[43.59]	**0.759776** *	0.0000000	[61.4]	**0.43509** *	0.012103	[35.95]
IVA_R	**0.010862** *	0.003255	[3.34]	**0.000553**	0.001118	[0.5]	**0.001687** *	0.0000000	[3.67]	**-0.0018** *	0.000424	[-4.28]
EXP_R	**-0.002893** *	0.000492	[-5.88]	**-0.000712** *	0.000138	[-5.16]	**-0.000692** *	0.0000000	[-13.64]	**-0.0002** *	0.000053	[-4.08]
Dependent Variable	***GDPP***			***GDPP***			***GNIPP***			***GNIPP***		
Number of Observations	620			620			620			620		
ARDL Model	(3, 2, 2, 2, 2)			(3, 2, 2, 2, 2, 2)			(3, 3, 3, 3, 3)			(3, 2, 2, 2, 2, 2)		

Optimum lag order for the ARDL Model was selected using ***akaike info criterion*** *(AIC) method*
, **, and * indicate significance at 1%, 5% and 10% respectively*

The error correction (speed of adjustment) terms are statistically significant with negative signs and satisfy the criterion of not less than -2 (see Table 7 below). This confirms that the variables in eqs.1-4 have long run equilibrium relationship and leads us to analyze the relationships further.

Table 7: Short Run Coefficients of Eqs.1-4 based Panel ARDL (PMG) Model

Variable	Inward FDI						Outward FDI					
	Eq. 1			Eq. 2			Eq. 3			Eq. 4		
	Coefficient	Std. Error	[t-stat]	Coefficient	Std. Error	[t-stat]	Coefficient	Std. Error	[t-stat]	Coefficient	Std. Error	[t-stat]
Short-run Coefficients												
Δ *GDPP(-1)*	**0.229162** *	0.081527	[2.81]	**0.217189** **	0.084127	[2.58]						
Δ *GDPP(-2)*	**0.042317**	0.040366	[1.04]	**0.0637**	0.04717	[1.35]						
Δ *GNIP(-1)*							**-0.313845** *	0.103726	[-3.02]	**0.28224**	0.183129	[1.54]
Δ *GNIP(-2)*							**0.282243**	0.183129	[1.54]	**0.00302**	0.081972	[0.03]
Δ *FDII*	**0.002801**	0.001866	[1.5]									
Δ *FDII (-1)*	**0.007976** ***	0.004395	[1.81]									
Δ *CBII*				**0.007071**	0.004968	[1.42]						
Δ *CBII (-1)*				**0.010137**	0.006237	[1.62]						
Δ *GFII*				**0.002479**	0.004841	[0.51]						
Δ *GFII (-1)*				**0.011582** ***	0.005957	[1.94]						
Δ *FDIO*							**0.003641**	0.005047	[0.72]			
Δ *FDIO (-1)*							**-0.000462**	0.008769	[-0.05]			
Δ *FDIO (-2)*							**-0.000881**	0.006404	[-0.13]			
Δ *CBIO*										**-0.0028**	0.010002	[-0.28]
Δ *CBIO (-1)*										**0.00379**	0.004867	[0.77]
Δ *GFIO*										**-0.0062**	0.008482	[-0.72]
Δ *GFIO (-1)*										**0.00826**	0.013561	[0.6]
Δ *PROD*	**0.26387** *	0.048041	[5.49]	**0.294256** *	0.046511	[6.32]	**0.064216**	0.080215	[0.8]	**0.25901** *	0.077045	[3.36]
Δ *PROD (-1)*	**-0.061397**	0.041816	[-1.46]	**-0.039107**	0.04675	[-0.83]	**0.162944**	0.101159	[1.61]	**-0.04**	0.082943	[-0.48]
Δ *PROD (-2)*							**-0.02084**	0.063507	[-0.32]			
Δ *IVA_R*	**0.018714** *	0.004719	[3.96]	**0.019097** *	0.004779	[3.99]	**0.014836**	0.010543	[1.4]	**0.00928**	0.008487	[1.09]
Δ *IVA_R (-1)*	**0.000253**	0.004372	[0.05]	**-0.001673**	0.00437	[-0.38]	**0.014076**	0.010428	[1.34]	**0.00918**	0.006943	[1.32]
Δ *IVA_R (-2)*							**-0.008657**	0.009196	[-0.94]			
Δ *EXP_R*	**-0.000878**	0.000567	[-1.54]	**-0.001384** **	0.000613	[-2.25]	**-0.001848**	0.001236	[-1.49]	**-0.0016**	0.001089	[-1.44]
Δ *EXP_R (-1)*	**-0.000582**	0.000500	[-1.16]	**-0.000935**	0.000671	[-1.39]	**-0.002449** **	0.001185	[-2.06]	**-0.0013**	0.001223	[-1.05]
Δ *EXP_R (-2)*							**-0.00376** **	0.0016	[-2.38]			
C	**-1658.772** *	431.0966	[-3.84]	**-933.752** *	285.159	[-3.27]	**-3517.364** **	1388.9690	[-2.53]	**-103.18**	204.3871	[-0.5]
Trend	**20.13879** *	6.579607	[3.06]	**20.58044** **	8.075104	[2.54]	**-5.14714**	16.1205	[-0.31]	**66.6725** *	25.5218	[2.61]
Error Correction	**-0.162612** *	0.046933	[-3.46]	**-0.136221** *	0.04621	[-2.94]	**-0.218961** **	0.0000000	[-2.56]	**-0.3138** *	0.000000	[-3.02]
Dependent Variable	***GDPP***			***GDPP***			***GNIPP***			***GNIPP***		
Number of Obervations	620			620			620			620		
ARDL Model*	(3, 2, 2, 2, 2, 2)			(3, 2, 2, 2, 2, 2)			(3, 3, 3, 3, 3)			(3, 2, 2, 2, 2, 2)		

Optimum lag order for the ARDL Model was selected using ***akaike info criterion*** *(AIC) method*
, **, and * indicate significance at 1%, 5% and 10% respectively*

5.5.1 Inward Foreign Direct Investments

All the long run coefficients of the explanatory variables in eq. 1 are strongly significant. The negative sign of the total inward foreign direct investments (*FDII*) indicates its negative long run relationship with per capita GDP (*GDPP*). However, based on the results in Table 7, *FDII* has slightly significant positive relationship with per capita GDP in the short run. To investigate the direction of causality I apply Granger Causality test, as described in section 5.4, above. The summary of results is provided in Table 8, below.

The Granger causality test results suggest a possible two-way causality between *FDII* and *GDPP*. The results also suggest a possible two-way causality between *FDII* and Productivity (*PROD*) and a possible one-directional causality from *FDII* to (*IVA_R*)[33]. These results do not indicate a significant causality between *FDII* and export intensity (*EXP_R*). The eq. 1 results indicate that *FDII* has negative long-term direct effects on GDP. However, *FDII* may have some positive indirect effects on *GDPP* given the positive sign of long run coefficients of *PROD* and *IVA_R* in eq.1 and *FDII* Granger causes these two variables.

Table 8: Granger Causality (Eq. 1) - Total Inward FDI

Granger Causes	Eq. #	*GDPP*	*FDII*	*PROD*	*IVA_R*	*EXP_R*
GDPP →	1		***	*	*	
FDII →	1	*		*	**	
PROD →	1	*	***		*	
IVA_R →	1	***		*		
EXP_R →	1	*			*	
, **, and * indicate significance at 1%, 5% and 10% respectively*						

Further analysis shows the divergent effects of the two individual forms of inward foreign direct investments on per capita GDP. The eq. 2 results in Table 6 show that inward cross-border merger and acquisitions (*CBII*) have significant negative effects on *GDPP* in the long run. But its short run positive effects on *GDPP* is statistically not significant.

[33] As described in Section 4.1 Industrial Value Added to Total Value Added ratio (*IVA_R*) is referred to as the development of new industries and activities for upgrading and economic clustering

Inward greenfield investments (*GFII*) have a positive relationship with *GDPP* in the long run as well as in the short run. However, its long run relationship is not significant. To further analyze the implications of these results I apply Granger Causality test on eq. 2.

The summary of results is provided in Table 9 below.

Table 9: Granger Causality (Eq. 2) - Inward Cross-border M&As Vs. Greenfield

Granger Causes	Eq. #	*GDPP*	*CBII*	*GFII*	*PROD*	*IVA_R*	*EXP_R*
GDPP →	2		**		*	*	
CBII →	2	**		**		**	
GFII →	2		*		***		
PROD →	2	*	**			*	
IVA_R →	2	***			*		
EXP_R →	2	*				*	
, **, and * indicate significance at 1%, 5% and 10% respectively*							

The Granger causality test results suggest a possible two-way causality between *GDPP* and *CBII* and between *CBII* and *GFII*. In terms of primary benefits of inward foreign direct investments (*PROD*, *IVA_R*, *EXP_R*), the results indicate only significant causality from *CBII* to *IVA_R* and from *GFII* to *PROD*.

5.5.2 Outward Foreign Direct Investments

All the long run coefficients of the explanatory variables in eq. 3 are strongly significant. The positive sign of total outward foreign direct investments (*FDIO*) indicates its positive long run relationship with per capita gross national income (*GNI*P). However, the results

in Table 7 show that short run effects of outward FDI on *GNIP* (potentially positive) are not significant. To investigate the direction of causality I apply the Granger Causality test. The summary of results is provided in Table 10 below.

Table 10: Granger Causality (Eq. 3) - Total Outward FDI

Granger Causes	Eq. #	*GNIP*	*FDIO*	*PROD*	*IVA_R*	*EXP_R*
GNIP →	3		*	*	*	
FDIO →	3	*		*	**	
PROD →	3	*	**		*	
IVA_R →	3	***		*		
EXP_R →	3	*			*	
, **, and * indicate significance at 1%, 5% and 10% respectively*						

The Granger causality test results suggest a possible two-way causality between *FDIO* and *GNIP*. The results also indicate significant causality from *FDIO* to *PROD*, which has a positive long-term relationship with *GNIP*. Given a possible causality from *PROD* to industrialization (*IVA_R*), these results imply that outward FDIs have favourable effects on home countries' overall economic welfare (*GNIP*). That is, the results indicate that outward foreign direct investments do not substitute domestic capital.

Further analysis (eq. 4 – Table 6) show that the two individual forms of outward foreign direct investments (*CBIO* and *GFIO*) have strongly significant positive long run relationship with *GNIP*. However, their short run effects on *GNIP* are not significant. To further analyze the implications of these results I conduct Granger Causality tests for the variables in eq. 4. The summary of results is provided in Table 11 below:

Table 11: Granger Causality (Eq. 4) - Outward Cross-border M&As Vs. Greenfield

Granger Causes	Eq. #	*GNIP*	*CBIO*	*GFIO*	*PROD*	*IVA_R*	*EXP_R*
GNIP →	4		*	*	*	*	
CBIO →	4			*	*		
GFIO →	4	**	*				
PROD →	4	*	*	***		*	
IVA_R →	4	***	**		*		
EXP_R →	4	*				*	
, **, and * indicate significance at 1%, 5% and 10% respectively*							

The results suggest possible two-way causalities between *GNIP* and *GFIO*, between *GFIO* and *CBIO*, and between *CBIO* and *PROD*. However, the results suggest a possible one-way causality from *GNIP* to *CBIO*. This implies *CBIO* drives indirect benefits to the welfare of home economies, as indicated by a possible one-way causality from *CBIO* to *PROD*, and from *PROD* to *GFIO* and *IVA_R*.

5.6 Country Specific ARDL Bound Testing

For completeness and to check the robustness of the panel results I perform ARDL procedures with eqs. 1-4 for the individual countries in the sample. Using Pesaran et al. (2001), ARDL Bound Testing approach, eqs.1-4 can be written in ARDL form as shown below (see eq. 2, page 1939 - Ozturk and Acaravci, 2010).

$$\Delta Y_t = c + \sum_{j=1}^{p} \alpha_j \Delta Y_{t-j} + \sum_{j=0}^{q} \delta_{1,j} \Delta X_{1,t-j} + ... + \sum_{j=0}^{q} \delta_{n,j} \Delta X_{n,t-j} + \beta_0 Y_{t-j} + \beta_1 X_{1,t-j} + ... + \beta_n X_{n,t-j} + \varepsilon_t \quad \text{..... (Eq. 23)}$$

Where, Y is the dependent variable: *GDPP* in eqs. 1 and 3 and *GNIP* in eq. 2 and eq. 3. X_1…… X_n represent explanatory variables such as *FDII*, *FDIO*, *CBII*, *CBIO*, *GFII*, *GFIO*, *PROD*, *IVA_R* and *EXP_R* in eqs. 1-4 and ε_t is white noise error term.

To test the existence of long run association (cointegration) between variables Pesaran et al. (2001), introduced bound testing procedure for the ARDL model in eq. 23. The bound testing, which is based on joint F-statistic, tests the joint null hypothesis of "no-cointegration" against the joint alternative hypothesis of "cointegration"[34], as below:

H_0: $\beta_0 = \beta_1 = \ldots\ldots = \beta_n = 0$

H_1: $\beta(j) \neq 0$, where $j = 0$ to n

Under the null hypothesis of no-cointegration, two asymptotic critical values are generated, assuming all underlying regressors are either ***I***(0) or ***I***(1). In other words, the test provides two critical values: one for the upper limit (bound), assuming all variables are ***I***(1) series; and; the other for the lower limit (bound), assuming all variables are ***I***(0) series. If the calculated *F-statistics* exceeds the upper bound critical value, then I reject the null hypothesis, which provides evidence of co-integration (long-term association) between the variables). If the calculated *F-statistics* is below the lower bound critical value, then I cannot reject the null hypothesis of no-cointegration. If the calculated *F-statistics* falls between the upper bound and lower bound critical values, then the test is inconclusive.

[34] Does not require that all betas are zero. Only that at least one beta is non-zero for a cointegrating relationship. H1: beta(j) not equal to 0

For each estimation model (eqs. 1-4) I apply ARDL bound testing procedure (eq. 23) to all the individual country variables. For ARDL bound testing procedure I apply country specific lag order, which is consistent with the approaches used in other similar empirical studies[35]. Pesaran et al. (1999), point out that the homogeneity restrictions and dynamic specification interact in a complex way. They conclude that what might be the optimal (lag) order for the country-specific estimates may not be the optimal order when cross-country homogeneity restrictions are imposed. The ARDL bound testing results for each sample country for eqs. 1-4 are provided in Appendices 2.1 - 2.4. In all cases, the calculated F-statistics exceed the upper bound critical value at 5% or lower level of significance, with very few at 10% level of significance.[36] The results confirm the existence of co-integration between variables in eqs.1 – 4 in the case of all 31 sample countries and further validate the panel ARDL cointegration results provided in tables 8, and 9 above. Following Pesaran et al. (2001), ARDL Bound Testing approach, the next step is to estimate the speed of adjustment coefficient (**Φ**) of the error correction term (ECT), and the short run and long run coefficients and intercepts. Long run and short run models are specified in eq. 24 and eq. 25, respectively.

$$Y_t = c + \sum_{j=1}^{p} \alpha_j \; Y_{t-j} + \sum_{j=0}^{q} \delta_{1,j} \; X_{1,t-j} + ... + \sum_{j=0}^{q} \delta_{n,j} \; X_{n,t-j} + v_t \qquad \text{(Eq. 24)}$$

$$\Delta Y_t = c + \sum_{j=1}^{p} \alpha_j \; \Delta Y_{t-j} + \sum_{j=0}^{q} \delta_{1,j} \; X_{1,t-j} + ... + \sum_{j=0}^{q} \delta_{n,j} \; X_{n,t-j} + \mathbf{\Phi} \; (ECT_{t-1}) + \mu_t \qquad \text{(Eq. 25)}$$

[35] See for example, Kollias et al (2008)
[36] For Thailand (eq. 1), Israel (eq. 2),Brazil, Italy and Philippines (eq. 3), and Switzerland (eq. 4) the Bound Testing calculated F-Statistics exceed upper bound critical value at 10% level of significance.

The detailed estimation results for eqs. 24-25 are provided in Appendices 2.1-2.4. The results show that Φ is statistically significant with a negative sign for four models (eqs. 1-4) for all sample 31 countries, with the only exception being Thailand for eq. 4. To confirm the robustness of the results I apply CUSUM stability and serial-correlation tests for all countries. As shown in Appendices 2.1-2.4, the CUSU stability test statistics are found to be statistically significant in all cases at 5% level of significance. I apply Breusch-Godfrey Serial Correlation LM Test (χ^2) for testing of no residual correlations. No correlation is found with very few exceptions including Spain and Thailand for eq. 1, Brazil and Thailand for eq. 3 and eq. 4. I believe the country specific ARDL estimation results are robust, which further validate the robustness of panel ADRL results for the Models 1-4.

5.7 ARDL Bound Testing: Cross-border M&As and profitability of MNCs

As explained earlier, ***q-***ratio data for sample countries with the exception of USA is not available. To investigate the effects of the cross-border M&As on the profitability of MNCs, this analysis is restricted to US data. Accordingly, I estimate Model 5 (eq. 5) using Pesaran et al. (2001), ARDL Bound Testing procedures.

I generate five scenarios (5a – 5d) representing some modifications in the original Model 5 (eq. 5). The modifications included (a) some original variable(s) removed from the model, and (b) US GDP replaced with another US GDP based measure ***iva_exp***, which is

the combined ratio of US *industrial-value-added-to-total-value-added-ratio* and US *export-to-import-ratio*[37]:

$$q\_ratio_t = c + \boldsymbol{b_1} cbio_t + \boldsymbol{b_2} iva\_exp_t + \varepsilon_t \quad \text{..... (Eq. 5a)}$$

$$q\_ratio_t = c + \boldsymbol{b_1} cbio_t + \boldsymbol{b_2} cbii_t + \boldsymbol{b_3} iva\_exp_t + \varepsilon_t \quad \text{..... (Eq. 5b)}$$

$$q\_ratio_t = c + \boldsymbol{b_1} cbio_t + \boldsymbol{b_2} gfio_t + \boldsymbol{b_3} iva\_exp_t + \varepsilon_t \quad \text{..... (Eq. 5c)}$$

$$q\_ratio_t = c + \boldsymbol{b_1} cbio_t + \boldsymbol{b_2} cbii_t + \boldsymbol{b_3} gdp_t + \boldsymbol{b_4} cf_t + \varepsilon_t \quad \text{..... (Eq. 5d)}$$

The results are provided in Table 12, below.

Table 12: Cross-border M&As and Profitability of MNCs

Model 5: (ARDL Short-run Coefficients)								
Dependent Variable:	**5a**		**5b**		**5c**		**5d**	
***q_ratio* (USA)**	**SRCE**	**t-stat**	**SRCE**	**t-stat**	**SRCE**	**t-stat**	**SRCE**	**t-stat**
D(cbio)	0.000004	[4.63] *	0.000004	[4.33] *	0.000004	[4.37] *	0.000003	[4.37] *
D(gfio)					0.000000	[0.29]		
D(cbii)			-0.000001	[-0.89]			0.000001	[1.26]
D(gdp)							-0.000001	[-1.64]
D(cf)							0.000001	[1.46]
D(iva_exp)	-0.000006	[-0.98]	-0.000005	[-0.78]	-0.000005	[-0.84]		
c							5.007637	[3.91] *
CointEq(-1)	-0.636961	[-3.86] *	-0.540383	[-3.47] *	-0.605286	[-3.58] *	-0.936840	[-3.71] *
Bound Test	5.020557	***	3.569311	*	3.573940	*	3.641888	*
ADRL Model	(1, 0, 0)		(1, 0, 0, 0)		(1, 0, 0, 0)		(1, 0, 0, 0, 0)	
CUSUM Stability	**		**		**		**	
Correlation (χ^2)	78%		84%		85%		39%	
Model 5: (ARDL Long-run Coefficients)								
Dependent Variable:	**5a**		**5b**		**5c**		**5d**	
***q_ratio* (USA)**	**LRCE**	**t-stat**	**LRCE**	**t-stat**	**LRCE**	**t-stat**	**LRCE**	**t-stat**
cbio	0.000005	[3.13] *	0.000006	[2.27] **	0.000005	[3.05] *	0.000003	[1.5]
gfio					0.000000	[-0.25]		
cbii			-0.000001	[-0.54]			0.000002	[1.6]
gdp							-0.000002	[-3.09] *
cf							0.000002	[2.72] **
iva_exp	0.000007	[10.57] *	0.000007	[7.62] *	0.000007	[8.62] *		
@TREND							0.377389	[2.95] **
"","**", "#", * significant at 10%, 5%, 2.5% and 1%, respectively***								
iva_exp is based on GDP measures so in 5d not included given GDP is inluded								

[37] *iva_exp* = (*iva_r*: US industrial value added to total value added ratio) x (*exp_r*: US exports to imports ratio)

Statistically strong bound testing results and negative sign of error correction (speed of adjustment) coefficient (**Φ**) suggests the existence of cointegration among variables in all scenarios (5a – 5d). Statistically significant CUSUM stability test and Breusch-Godfrey Serial Correlation LM Test (χ^2) for testing of no residual correlations results confirm the robustness of the estimation results in 5a-5d.

The statistically significant (except in 5d) positive sign of the short run and long run coefficient of outward cross-border M&As (*cbio*) indicate its positive relationship with firm's profitability (*q_ratio*) in the short run as well as in the long run.

It is pertinent to note that while outward cross-border M&As are undertaken by home MNC, the q-ratio in my estimation model represents national profitability of home firms, including non-MNCs. This also explains the significantly low estimated value of *cbio* coefficients in the short run and long run relationships.

To further investigate the relationship between the above variables I apply Granger causality tests using lag order (2). Granger causality results are shown in Table 13 below. The results in Table 13 indicate that outward cross-border M&A (*cbio*) Granger causes firm's profitability. The positive sign of its statistically short run and long run coefficients imply that outward cross-border M&As have favourable impacts on the home firm's overall profitability (*q_ratio*).

Table 13: Granger Causality (Eq. 5): Cross-border M&As and Profitability of MNCs

Granger Causes	*q_ratio*	*cbio*	*cbii*	*gdp*	*cf*	*iva_exp*
q_ratio →			**	**	**	
cbio →	***		**	*	*	
cbii →				***	***	
gdp →		***				
cf →	***					
iva_exp →						
, **, and * indicate significance at 1%, 5% and 10% respectively*						

Except for *EXP_R*, all long run, and short run coefficients in eqs.1-4 have expected signs. Intuitively, both long run and short run coefficients of *EXP_R* are expected to be positive. Using panel data averages, Figure 4 below provides a graphical view of the trends in real *GDPP*, *GNIP*, and *EXP_R* for 1990-2012. Figure 4 shows a significant decline in *EXP_R* since 2002, whereas *GDPP* and *GNIP* continued to increase in the same period. This trend provides some explanation of negative sign of *EXP_R* coefficient. It is pertinent to note that *EXP_R* coefficient is positive in case of countries that show continued increases *EXP_R* alongside *GDPP*, and *GNIP* over 1990-2012. For example, Austria and Israel (see Appendices 3.1, 3.7, and 3.8).

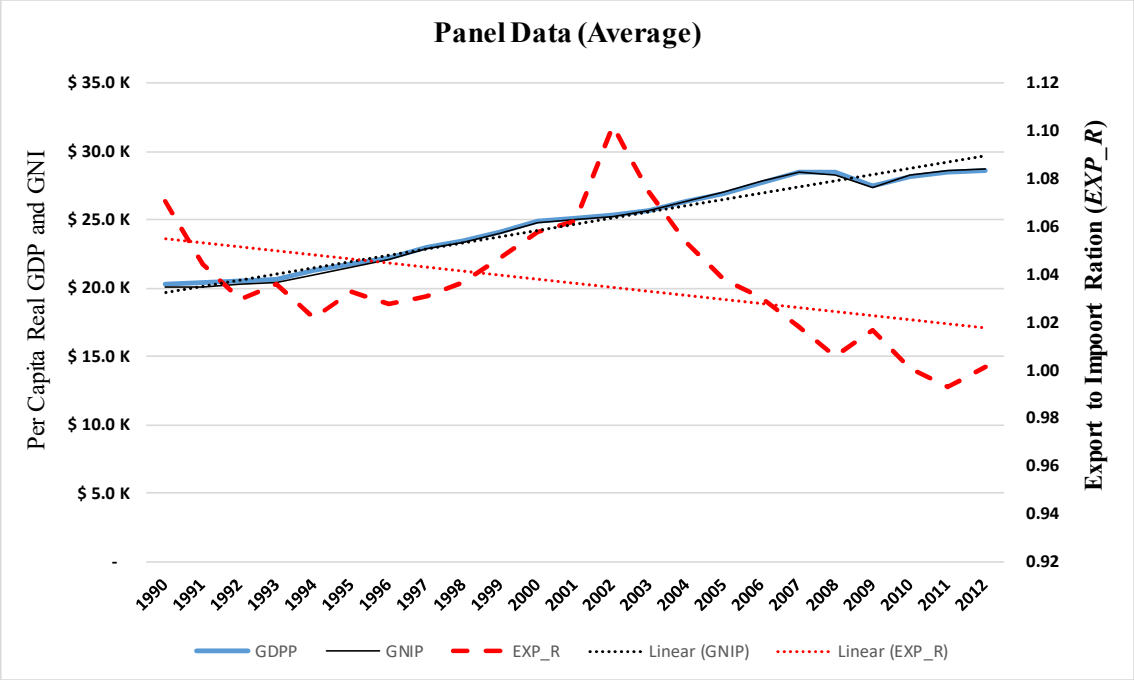

Figure 4: Per Capita Real GDP and GNI versus Export to Import Ratio Trend

I also find some evidence in the literature that supports the possibility of a negative relationship between GDP growth and exports. For example, Vermeulen and Haan (2014), show a small negative correlation between net exports / GDP and GDP growth for their panel data comprising of 50 countries for 1970-2007[38]. In this regard, Huchet-Bourdon, Mouel, and VIJIL (2011), in their study: *The relationship between trade openness and economic growth"*[39], conclude as below:

> *"Our results confirm that countries exporting higher quality products grow more rapidly. More importantly, we find an interesting non-linear pattern between the trade dependency ratio and trade in quality, suggesting that trade may impact*

[38] See Table 3 in Vermeulen and Haan, 2014 (p. 96)
[39] Study funded by the French National Research Agency project: ANR-12-JSH1-0002-01.

growth negatively for countries which have specialized in low quality products. A non-linear relationship between exports variety, trade ratio and growth is also found, suggesting that countries exporting a wider range of products will grow more rapidly until a certain threshold in terms of dependency of the economy to trade." (Huchet-Bourdon et al., 2011, p.1)[40]

[40] See tables 2 and 3 in Huchet-Bourdon et al, 2011 (source: https://ideas.repec.org/p/hal/journl/hal-00729399.html)

Chapter 6: Discussion of results

This section provides an analysis of the results of my five estimation models, categorized as *The Effects of Inward FDI Flows on Host Economies*; *The Effect of Outward FDIs on Home Economies*; and; *The Effects of Cross-border M&As on MNC's Profitability*.

6.1 Effects of *Inward-FDI* Flows

My panel ARDL results show that the total inward FDI and *GDPP* have a statistically significant two-way Granger causal relationship. Significant long-term *FDII* coefficient with a negative sign indicates unfavourable effects on host economy (per capita GDP) in the long run. However, the country specific analysis shows mixed ARDL results. The long-term *FDII* coefficient is negative for nine (9) countries, including Brazil, Canada, Japan, Korea, Mexico, Argentina, Austria, South Africa, and Sweden, but it is positive for the remaining twenty-two countries in my sample. I find similar mixed results when I consider country specific results according to their ICRG risk category. Among six high risk countries (*China, India, Argentina, Greece, South Africa, and Thailand*), ARDL (eq. 1) results for Argentina and South Africa show negative long run *FDII* co-efficient. Similarly, medium and low risk countries show both negative and positive relationships. For example, low risk countries including Canada, Korea, Austria, and Sweden show a negative long run relationship between *FDII* and *GDPP*.

These results imply that in aggregate the long run effects of *FDII* are robustly negative. Statistically, significant positive short run coefficient shown in eq. 2 panel ARDL results

indicate that *FDII* has favourable effects on *GDPP* with a lag of one year. It is important to note that, as shown in my results, these effects can vary by country, depending on the individual characteristics of their economies. This further explains the uncertainty associated with the relationship between inward FDI and *GDPP*[41].

Wang and Wong (2009), argue that this uncertainty is due to the offsetting effects of the two forms of FDIs (cross-border M&As and greenfield investment)[42]. The panel (eq. 2) ARDL estimates show similar results – *negative long run CBII coefficient versus positive long run GFII coefficient*. These results confirm the offsetting effects of the forms of inward FDI on GDP. However, only the long run relationship between *GDPP* and *CBII* is found to be statistically significant with bi-directional Granger causality. However, the results show statistically significant one-way Granger causality from inward greenfield investments (*GFII*) to productivity (*PROD*), which has robustly positive relationship with per capita GDP. This indicates an indirect positive effect of *GFII* on GDP in terms of increased productivity[43]. Furthermore, *GFII* show statistically significant positive short run effects (with a lag of one year) on *GDPP*. Like total *FDII*, the two forms show mixed results by country. However, the averages of *CBII* and *GFII* long run country specific coefficients are found to be consistent with that of panel-ARDL results. The country specific results show another interesting trend: The negative relationship between *CBII* and *GDPP* seems to be influenced by high and medium risk countries – *the long run CBII coefficients of high and medium risk countries average to a negative sign. Also, the long*

[41] See for example Wang & Wong (2009), Wijeweera et al (2010) and Kim (2009)
[42] Wang & Wong (2009), used a panel data of 84 countries ranging 1986-2001 and Weighted Least Squares (WLS) estimation procedure. It is important to note that the trends in FDI in my data range (1990-2012), particularly post 2008 financial crises were significantly different from that of 1986-2001 period.
[43] For example, according to Calderon et al (2004), macroeconomic analysis suggests that for some economies FDI boosts economic growth by increasing productivity and/or investment in physical capital.

run GFII coefficients of high risk countries average to negative, but not significant enough to offset its aggregate positive sign.

Finally, the negative effects of the inward cross-border M&As provide evidence for my argument, which I base on the "dynamic competition model": *Inward cross-border M&As reduce competition in domestic (host) economy, which negatively affects its GDP growth in the long run; on the other hand, greenfield investments increase competition and leads to improvement in the innovation process, and thus creates its positive relationship with GDP*[44].

The results are also consistent with the Assignment Theory by Nocke and Yeaple (2008), which predicts that firms engaging in greenfield FDI are systematically more efficient than those engaging in cross-border acquisition. This implies that greenfield FDIs are undertaken by more efficient firms, which therefore, create a favourable impact on the domestic productivity levels and thus on GDP. This also explains one-way Granger causality from *GFII* to *PROD*.

6.2 Effects of *Outward-FDI* Flows

My panel results show that total outward FDI (*FDIO*) (foreign direct investments) and *GNIP* (per capita gross national income) have a statistically significant two-way Granger causal relationship. Significantly positive long run *FDIO* coefficient indicates favourable

[44] For example, greenfield investment results in a new entrant(s) in the market that increases the number of competitors for the given market. The increased competition then can disturb the existing market equilibrium, causing firms to gain or lose in terms of their competitive advantage. This causes the competing firms to increase their struggle for competitive advantage to ensure superior financial performance. For example, losing firm(s) increase their efforts to acquire the same resources as the more advantaged firm(s), and/or they attempt to innovate by imitating their resources, finding equivalent resources, or finding (creating) superior resources. (Hunt, 2007 p. 280)

effects of outward foreign direct investments on national income in the long run. However, as noted in the previous section, the country specific analysis shows mixed ARDL results. That is, the long run *FDIO* coefficient is negative in case of eleven countries including Canada, China, Italy, Japan, Mexico, UK, USA, New Zealand, Norway, Portugal, and Sweden. Whereas it is positive in the case of remaining twenty countries in my sample. I find similar mixed results when I consider country specific results according to their ICRG risk category. It is interesting to note that among eleven countries with negative long run *FDIO* coefficient, one country (*China*) is high risk. The other ten include five medium risk (I*taly, Japan, Mexico, UK, Portugal*) countries and five low risk countries (*Canada, USA, New Zealand, and, Norway*).

These results imply that, in aggregate, the long run effects of *FDIO* are robustly positive. These results provide evidence in support of the argument that in the long run, aggregate outward-FDIs do not substitute domestic investments[45]. The effects in the short run are also positive but statistically not significant. The results also show that these effects can vary by country, depending on the individual characteristics of their economies. In other words, substitutability or complementarity effects can vary across countries.

It is pertinent to note that in the case of outward total foreign direct investments, the averages of (all risk level) country specific long run ARDL coefficients of eq. 1 are consistent with that of panel-ARDL results. This indicates that uncertainty, in terms of

[45] See for example, Desai et al (2005) and Hejazi & Pauly (2003). Based on their analyses I assume complementarity relationship between outward cross-border M&As the domestic capital expenditure. Which implies outward cross-border M&As in aggregate have favourable effects on the home country's GNI (Gross National Income). In other words, presence of a positive relationship between *CBIO* and *GNIP*. Relying on these studies I also assume existence of substitutability or weak complementarity between outward greenfield investments and domestic capital expenditures.

variability of effects by country, is higher for *outward-FDI* than for *inward-FDI*. At the same time, the uncertainty cannot be completely ruled out even for *inward-FDI*.

My results also show that, unlike *inward-FDIs*, the long run effects of the individual forms of *outward-FDIs (CBIO versus GFIO)* are robustly positive and not offsetting. For fifteen countries in my sample, both forms of outward-FDIs have long run positive effects. These countries include *Australia, Brazil, France, India, Mexico, Spain, UK, Austria, Finland, Greece, Israel, Philippines, South Africa, Switzerland, and Thailand.* However, five countries indicate the existence of substitutability of domestic investment in both forms of outward-FDI. These countries include *Canada, Japan, Norway, Portugal, and Sweden*. The remaining eleven, however, indicate offsetting effects of the two forms of outward-FDIs. *Italy, USA, Belgium* are interesting cases given that the long run (outward) coefficients of greenfield investments are negative, whereas the coefficients of cross-border M&As are positive. According to Nocke & Neaple (2008), firms engaging in greenfield FDIs are systematically more efficient than those engaging in cross-border acquisitions. This implies that if outward greenfield investments do not substitute domestic capital expenditure, a positive relationship can be assumed between outward greenfield investment and home country's GNI[46]. In this sense, the presence of a negative relationship between *GFIO* and *GNIP* suggest that for these three countries outward greenfield investments substitute their domestic capital expenditures. Similarly, for the other remaining eight countries (*China, Germany, Korea, Argentina, Denmark,*

[46] According to Desai et al (2005), firms combine home production with foreign production to generate final output at a lower cost than would be possible with production in just one country

Netherlands, New Zealand, and. Singapore), the results (*negative CBIO coefficient*) show that outward cross-border M&As substitute domestic capital expenditures.

6.3 Effects of FDI on MNC's profitability

My results show statistically significant short run as well as the long run relationship between the US outward cross-border M&As and Tobin's ***q*** ratio. Lindenberg & Ross (1981, p.2), argue that the ***q*** ratio should increase for a firm that has increasing ability to earn above a competitive return. Relying on their argument, I anticipated a positive relationship between outward cross-border M&As and Tobin's ***q*** ratio. The results provide strong evidence to support this hypothesis. However, my analysis is limited to the US because of a lack of data from other countries to estimate Tobin's ***q*** ratio. The results are further supported by statistically significant one-way Granger causality from outward cross-border M&As to Tobin's ***q*** ratio.

These results are consistent with my analysis in sections 6.1 and 6.2 above. Since MNCs engaging in outward cross-border M&As generate higher than competitive returns, their long-term profitability improves. As a result, outward cross-border M&As have a positive effect on the home country's economy. However, this occurs at the expense of host economies, as demonstrated by the negative relationship between inward cross-border M&As and per capita GDP of the host economy.

Chapter 7: Summary and conclusion

I contribute to the existing literature by providing a better explanation of the effects of FDI flows. Although this topic has been extensively researched in the existing literature, its main focus has mostly remained limited to the study of the relationship between total inward FDI flows and the host country's GDP. The existing empirical studies generally point to the inconclusiveness and uncertainty of the results, which I believe is due to the narrow scope, pointing to the gap in the current literature on this topic.[47] The explanation of the effects of FDIs in the existing economics literature primarily remained within the neo-classical growth model, which also accounts for the uncertainty associated with the findings of the existing empirical studies on this topic. To overcome this problem in explaining the results of this study I expand the theoretical framework beyond the traditional growth theories to rely on the dynamic competition model. Based on resource-advantage (RA) theory, the dynamic competition model predicts that innovation drives economic growth and innovation stems from the process of competition (Hunt, 2007).

I also point out another gap in the current literature, which is a lack of understanding of the varying effects of the two individual form of FDIs: *Cross-border Mergers and Acquisitions (CB-M&As)* and *Greenfield Investments*.

The review of existing literature also leads us to point out that that *host economies*, *home economies,* and *MNCs* jointly influence the global FDI volumes. Therefore, there is a need for an integrated study, which I believe is lacking in the existing literature to the

[47] See for example Lim (2001), Blonigen (2005), Hansen (2001), Calderon et al (2004) and so forth.

best of my knowledge. That is, for a better understanding of the effects of worldwide FDI flows it is critical to include all three main drivers (*Host economies*; *Home economies*, and *MNCs*) of foreign direct investments in a single study framework. In other words, to provide a better understanding of the effects of FDIs, an integrated study approach is required to simultaneously examine the relative effects of the two forms of FDI on *host economies*, *home economies* and the profitability of *MNCs.*

Accordingly, for this integrated study, I pose three questions. *Firstly,* I investigate the relative effects of the two forms of *inward* FDIs on *host economies. Secondly,* I investigate the relative effects of the two forms of *outward* FDIs on *home economies. Finally*, to provide a better explanation of why MNCs undertake CB-M&A instead of Greenfield investment, I investigate the effects of CB-M&As on the profitability of investing firms (MNC).

To investigate these questions, I use panel data comprising of a sample of thirty-one countries for the period 1990-2012[48]. To confirm the robustness of the panel results I also estimate country specific results, categorized according to *country-risk* levels – *low risk*, *medium risk,* and *high risk.*

My panel results show: (a) a negative long run relationship between CB-M&As and the welfare (*GDPP*) of the host economies; (b) a positive long run relationship between CB-M&As and the welfare (*GNIP*) of home economies; (c) positive long run relationships between Greenfield Investments and welfare of both host and home economies; and (d) a positive long run relationship between CB-M&As and the long run profitability of

[48] Due to non-availability of data for other countries I use USA only data to study effects of CB-M&As on profitability of MNCs.

MNCs. The country specific results show mix trend but are found to be consistent with that of panel data results. I do not find any evidence to suggest that the specific country results vary due to the differences in the *country-risk* levels. That is, my results, although based on a different methodology, do not provide support in favor of the view: "*.....political risk is a significant determinant of FDI in both industrialized and developing nations*" (Baek and Qian, 2011).

My study is motivated by the underlying argument that MNCs' commercial interests do not necessarily align with the welfare interests of host economies. Therefore, the notion that FDIs generally have positive effects on host economies may not always be true. That is, I first introduce the notion, as pointed out by Nocke & Yeaple (2008), that MNCs play a dominant role in an increasingly globalised world. Then I develop the argument by furthering Wang & Wong (2009), conclusion that the two forms of FDI have offsetting effects on the host economies. My first contribution is that I provide new evidence in favour of this argument. That is, using a different data set and estimation methodology I provide evidence to support their findings: (a) negative relationship between inward cross-border M&As and GDP growth; and; (b) positive relationship between greenfield investment and GDP growth.

I also provide new evidence to support the conclusions of Doukas (1995), that MNCs are value maximizing firms. For example, the indication of a possible one-way causality from outward cross-border M&As to MNCs' long-term profitability (Tobin's ***q*** ratio) in a positive long run and short run relationships. These results provide evidence in favor of the notion noted in Nocke & Yeaple (2008), that MNCs play a dominant role in determining FDI volumes globally.

My results show that outward cross-border M&As have a positive long run relationship with home country's national income (welfare). But the inward cross-border M&As have a negative long run relationship with host country's GDP (welfare). My contribution is that using the same data set and estimation methodology; I show that the effects of cross-border M&As are not the same in terms of the welfare of host economies vis-à-vis the welfare of home economies and the profitability of MNCs.

To provide a better explanation of the results of this study I adopt a new theoretical model - the *dynamic competition model.* This model provides a more meaningful framework to explain the negative long run relationship between the inward cross-border M&As and the host GDP. That is, in terms of dynamic competition model, my results suggest that the acquisition of existing firms by MNCs leads to a reduction in competition in the host economy and therefore has negative effects on its GDP in the long run.

The presence of mixed results in the existing literature points to the uncertainty associated with explaining the effects of FDIs[49]. Using data for the period 1986-2002, Wang & Wong (2010), concluded that this uncertainty is due to the offsetting effects of the two forms of FDIs. I provide new evidence to support their findings[50]. Based on country specific results I provide an additional explanation for the uncertainty about the effects of FDIs by showing that the two forms of FDI can have varying effects on individual countries. That is, the effects of greenfield investment and cross-border M&As could be offsetting or same, where the effects of both greenfield investments and cross-border M&As could be either positive or negative. Therefore, policies to attract or

[49] See, for example, Wijeweera et al (2010) and Wang & Wong (2009)
[50] I use latest available data for the period 1990-2012, introduced new variables (productivity, industrial value added, net export etc., and different methodology: ARDL based cointegration)

encourage FDIs should be carefully framed to ensure that its benefits are sustainable in the long run.

For example, from Table 1 above, we know that over 51% of the world's total FDI flows in 2007 (pre-2008 financial crises) was in the form of Cross-border Mergers and Acquisitions. My study shows the presence of a long run negative relationship between CB-M&As and the welfare interest of host economies. Hence, if FDI policies are not framed carefully, it may lead to situations as described in Srinivasan et al. (2010, p.39-40), in the following words:

> *"……. the FDI can exert a negative impact on the economic growth of the recipient countries. The dependency school theory argues that foreign investment from developed countries is harmful to the long-term economic growth of developing nations…. Further, the neoclassical growth models of Solow (1956) typically ascribe negligible long-run growth effects for the FDI inflows and, with its usual assumption of diminishing returns to physical capital, these inflows can only have short-run impacts on the level of income, leaving long-run growth unchanged. Moreover, FDI flows may have a negative effect on growth prospects of a country if they give rise to substantial reverse flows in the form of remittances of profits and dividends and/or if the MNCs obtain substantial tax or other concessions from the host country".*

In this context, it is reasonable to argue that with the increasing role of FDIs in the emerging global economy, possible significant negative effects of CB-M&As on individual host economies would limit opportunities for MNCs to pursue their profit maximization objectives.

Finally, I also contribute by examining the country specific results in terms of their risk levels. My results show that the mixed trends in the country specific effects of FDI are not necessarily influenced by their risk levels.

Based on the country specific results I conclude that the effects of FDI can vary across countries. This may be due to two reasons: (a) relative significance of FDI net flows between receiving and investing countries (b) socio-economic characteristics of individual countries in the given sample[51]. I believe the inclusion of these two factors in future studies will help further explain the effects of FDI in a more meaningful way.

My results are based on the data for the period 1990-2012 (23 years). This data reflects, both pre and post 2008 financial crisis scenarios. I believe, a similar study based on the longer period up to 30 or more years will further enhance the robustness of results and may provide more meaningful insights.

Finally, it has been argued that FDIs generally have positive effects on the host economies. My study results provide evidence that this may not always be the case. Therefore, there is a need to manage the potential risk of inward FDIs by ensuring efficient competition in the host economies (Thangavelu et al., 2009). This policy objective could be obtained by ensuring an optimal balance between domestic investments and FDIs. In this context, I believe the findings of this study will lead to future research in the area of determining optimal levels of inward FDI flows for a country.

[51] Socio-economic factors may include taxes, market structure, industry concentration, demographics, geographic and so forth

7.1. Direction of future research

I believe the findings of this study set a new direction for future research in studying the FDI activities in the global context and in framing suitable policies. This study provides a framework for research in determining optimal FDI policy according to the unique characteristics of each country. For example, in the emerging global economic trends effective competitive environment in different sectors of the economy are critical for its long run sustainable growth. This objective could be achieved through framing inward FDI policy that is based on an optimum mix of cross-border M&As and greenfield investments. Research in this direction will help domestic governments pursue FDI policies to avoid potential financial crises resulting from FDI flow reversals or even from a major shift in FDI inflows. Research in policy analysis with respect to the effects of outward FDI on home economies has been sparse. The findings of this research underscore the importance of future research in outward policy analysis. That is, determining optimal policies for a country that will ensure its outward FDI are not undertaken at the expense of the welfare of home economies. Finally, due to data limitation, it was not possible to provide comparative results for the periods before and after 2008 financial crises[52]. This comparison may provide useful insights for policy analysis in terms of the possible role of FDI flows in financial crises. The availability of data for a greater number of years in the post financial period will allow such an analysis to be carried out in future.

[52] For the post 2008 financial crises period data for only four years was available - 2009-2012.

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Appendix 1 - Variable Description and Data Sources

Description	Data Source
Total Foreign Direct Investment (Inward and Outward)	United Nations Conference on Trade and Development (UNCTAD) http://stats.unctad.org/FDI/TableViewer/tableView.aspx?ReportId=3084
Cross-border Mergers and Acquisitions (Inward and Outward)	United Nations Conference on Trade and Development (UNCTAD) http://stats.unctad.org/FDI/TableViewer/dimView.aspx
Greenfield Investments (Inward and Outward)	= Total Foreign Direct Investments (Inward and Outward) - Cross-border Mergers and Acquisitions (Inward and Outward)
Aggregate Capital Flows (Inward and Outward)	International Monetary Fund (IMF) http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx
Capital Formation: Gross capital formation at current prices in US$ (million)	United Nations Conference on Trade and Development (UNCTAD) http://unstats.un.org/unsd/snaama/dnlList.asp
Imports and Exports	United Nations Conference on Trade and Development (UNCTAD) http://unstats.un.org/unsd/snaama/dnlList.asp
Gross Domestic Per Capita: Per capita GDP at current prices in US$	United Nations Conference on Trade and Development (UNCTAD) http://unstats.un.org/unsd/snaama/dnlList.asp
Productivity: Labour productivity per person	Conference Board of Canada http://www.conference-board.org/data/economydatabase/
Employment (in thousands of persons) used to recalculate Productivity of the sample countries	Conference Board of Canada http://www.conference-board.org/data/economydatabase/
Population (Mid Year)	Conference Board of Canada http://www.conference-board.org/data/economydatabase/
Tobin ***q*** Ratio of US Non-financial Corporate Sector	Bureau of Economic Analysis (BEA) http://www.bea.gov/itable/ US Federal Reserve (Flow of Funds Accounts) http://www.federalreserve.gov/pubs/research.htm Professor Stephen Wright, Birkbeck College, University of London http://www.ems.bbk.ac.uk/faculty/wright/
Firm Level Financial Data: Common Stock; Preferred Stock; Short-term Debt; Total Assets; Net Profit	Compustat; Thomson Reuters; Bloomberg

FDI: Foreign Direct Investments
GFI: Greenfield Investments
CB: Cross-border
M&As: Mergers and Acquisitions

Appendix 2.1 - Country Specific ARDL Bound Testing Results (Eq. 1)

Equation 1: (ARDL Short-run Coefficients)				D(FDII)			D(PROD)			D(IVA_R)			D(EXP_R)			C			CointEq(-1)			Bound Test		Prob.	CUSUM
Country	#	Risk	ARDL Model	SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		Adj CE	t-stat		F-Stat		χ^2	(Stability)
Australia	1	L	(1, 0, 0, 0, 0)	0.0018	[1.02]		0.2951	[7.66]	*	0.0267	[2.05]	***	-0.0017	[-2.68]	**				-0.3607	[-8.21]	*	17.89	*	10%	**
Brazil	1	M	(1, 0, 0, 0, 0)	0.0012	[0.57]		0.2069	[2.21]	**	0.0107	[3.71]	*	0.0000	[0.08]					-0.0200	[-4.26]	*	4.86	*	63%	**
Canada	1	L	(1, 0, 0, 0, 0)	-0.0012	[-0.69]		0.4659	[10.2]	*	0.0376	[5.37]	*	-0.0045	[-4.56]	*				-0.3923	[-8.24]	*	8.19	*	89%	**
China	1	H	(1, 0, 0, 0, 0)	0.0001	[3.14]	*	0.5743	[153.52]	*	-0.0003	[-8.11]	*	-0.0000	[-1.3]		119	[6.96]	*	-0.8919	[-6.68]	*	31.20	*	52%	**
France	1	M	(1, 1, 1, 1, 0)	0.0073	[3.72]	*	0.4303	[14.99]	*	0.0367	[4.03]	*	-0.0018	[-1.6]					-0.3841	[-7.22]	*	7.39	*	38%	**
Germany	1	L	(1, 0, 0, 1, 0)	0.0012	[1.68]		0.1344	[1.89]	***	0.0661	[5.91]	*	-0.0006	[-0.27]					-0.1025	[-6.54]	*	25.45	*	36%	**
India	1	H	(1, 0, 0, 0, 0)	0.0005	[1.83]	***	0.3561	[18.22]	*	0.0005	[1.25]		0.0000	[1.36]					-0.2958	[-2.34]	**	20.09	*	39%	**
Italy	1	M	(1, 1, 0, 1, 1)	0.0092	[5.61]	*	0.2246	[9.38]	*	0.0342	[7.09]	*	-0.0023	[-5.83]	*				-0.4230	[-13.11]	*	16.19	*	35%	**
Japan	1	M	(1, 1, 1, 1, 0)	-0.0001	[-0.03]		0.2898	[6.63]	*	0.0382	[5.73]	*	-0.0011	[-1.49]					-0.3420	[-6.17]	*	5.84	*	10%	**
Korea	1	L	(1, 0, 0, 0, 0)	-0.0066	[-0.7]		0.4438	[14.09]	*	0.0061	[1.24]		-0.0023	[-5.93]	*				-0.7127	[-6.36]	*	12.12	*	34%	**
Mexico	1	M	(1, 0, 0, 0, 0)	-0.0029	[-0.67]		0.5395	[7.76]	*	0.0124	[1.99]	***	0.0004	[0.94]					-0.3681	[-3.04]	*	4.43	#	12%	**
Spain	1	M	(1, 0, 1, 1, 0)	0.0053	[2.11]	***	-0.2700	[-2.39]	**	0.0195	[2.71]	**	-0.0050	[-4.02]	*				-0.2226	[-7.82]	*	15.31	*	27%	**
UK	1	M	(1, 0, 0, 0, 0)	0.0013	[1.4]		0.4408	[16.58]	*	0.0264	[4]	*	-0.0048	[-3.31]	*				-0.6075	[-6.45]	*	4.88	*	72%	**
USA	1	L	(1, 0, 0, 0, 0)	0.0026	[2.91]	**	0.2221	[4.25]	*	0.0451	[2.9]	**	-0.0035	[-1.59]					-0.5237	[-5.84]	*	7.15	*	50%	**
Argentina	1	H	(1, 0, 1, 1, 1)	-0.0002	[-0.07]		0.4795	[12.94]	*	-0.0052	[-2.75]	**	-0.0001	[-1.18]		-1,307	[-6.98]	*	-0.2944	[-7.24]	*	6.81	*	74%	**
Austria	1	L	(1, 0, 0, 0, 0)	-0.0052	[-0.65]		0.3347	[4.83]	*	0.0650	[4.18]	*	0.0034	[1.14]					-0.1114	[-3.8]	*	4.90	*	11%	**
Belgium	1	M	(1, 0, 0, 0, 0)	0.0013	[1.4]		0.4242	[9.01]	*	0.0060	[0.56]		-0.0109	[-1.62]					-0.2476	[-4.83]	*	5.49	*	81%	**
Denmark	1	L	(1, 0, 0, 0, 0)	0.0043	[0.71]		0.3250	[6.63]	*	0.0385	[2.96]	*	-0.0034	[-1.38]					-0.5084	[-5.54]	*	5.68	*	51%	**
Finland	1	L	(1, 0, 0, 0, 0)	-0.0026	[-0.16]		0.3211	[5.12]	*	0.0376	[3.43]	*	-0.0044	[-2.05]	***				-0.4886	[-6.73]	*	4.55	*	82%	**
Greece	1	H	(1, 0, 0, 1, 0)	0.0219	[0.48]		0.2134	[3.48]	*	0.0264	[3.15]	*	-0.0079	[-5.42]	*				-0.4134	[-6.25]	*	6.27	*	41%	**
Israel	1	M	(1, 0, 0, 0, 0)	0.0504	[2.25]	**	0.0477	[0.63]		0.0159	[1.88]	***	0.0022	[1.39]					-0.1332	[-5.56]	*	3.77	**	89%	**
Netherlands	1	L	(1, 0, 0, 0, 0)	0.0027	[2.07]	***	0.6220	[13.37]	*	0.0086	[0.66]		-0.0158	[-4.34]	*				-0.6205	[-6.44]	*	9.61	*	56%	**
New Zealand	1	L	(1, 0, 0, 0, 0)	0.0078	[0.4]		0.4104	[8.77]	*	0.0214	[2.84]	**	-0.0015	[-2.29]	**				-0.4279	[-6.99]	*	8.01	*	44%	**
Norway	1	L	(1, 0, 0, 0, 0)	-0.0167	[-0.59]		0.1798	[3.46]	*	0.0420	[2.67]	**	-0.0055	[-3.85]	*				-0.4181	[-7.71]	*	21.73	*	25%	**
Philippines	1	M	(1, 1, 0, 1, 1)	-0.0030	[-0.9]		0.0911	[1.59]		0.0020	[2.45]	**	0.0001	[0.78]					-0.0464	[-4.18]	*	16.48	*	11%	**
Portugal	1	M	(1, 0, 0, 0, 0)	0.0062	[0.6]		0.2764	[4.01]	*	0.0104	[2.07]	***	-0.0039	[-3.52]	*				-0.2446	[-4.12]	*	4.59	*	41%	**
Singapore	1	L	(1, 0, 0, 0, 0)	0.0296	[2.09]	***	0.3161	[4.38]	*	0.0374	[2.83]	**	-0.0068	[-1.53]					-0.2030	[-4.46]	*	4.41	*	52%	**
South Africa	1	H	(1, 0, 0, 0, 0)	-0.0014	[-0.37]		0.1575	[4.85]	*	0.0031	[1.21]		-0.0001	[-0.45]					-0.5862	[-5.58]	*	8.47	*	46%	**
Sweden	1	L	(1, 0, 0, 0, 0)	-0.0066	[-1.9]	***	0.2290	[5.49]	*	0.0694	[8.59]	*	-0.0098	[-5.09]	*				-0.4933	[-9.6]	*	4.70	*	80%	**
Switzerland	1	L	(1, 0, 0, 0, 0)	0.0051	[0.87]		0.4045	[6.97]	*	0.0441	[2.95]	*	0.0069	[2.73]	**				-0.3838	[-6.52]	*	4.19	#	53%	**
Thailand	1	H	(1, 0, 1, 1, 1)	0.0011	[0.33]		0.3576	[6.96]	*	0.0025	[2]	***	-0.0003	[-3.86]	*				-0.0035	[-4.41]	*	3.20	***	42%	**
Average	**31**			**0.0037**			**0.3079**			**0.0253**			**-0.0027**			**-38**			**-0.3636**						

Equation 1: (ARDL Long-run Coefficients)				FDII			PROD			IVA_R			EXP_R			C			@TREND		
Country	#	Risk	Dependent	LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat	
Australia	1	L	GDPP	0.0035	[0.41]		0.7552	[5.6]	*	0.0650	[1.13]		-0.0048	[-4.54]	*	-32,027	[-1.21]				
Brazil	1	M	GDPP	-0.0863	[-0.12]		6.5723	[0.13]		0.1912	[0.11]		0.0096	[0.12]		-120,309	[-0.11]				
Canada	1	L	GDPP	-0.0019	[-0.41]		0.9249	[15.79]	*	0.0730	[2.92]	**	-0.0093	[-3.94]	*	-42,055	[-4.5]	*			
China	1	H	GDPP	0.0001	[2.29]	**	0.5482	[744.03]	*	-0.0003	[-10.17]	*	-0.0000	[-1.65]					6	[21.66]	*
France	1	M	GDPP	0.0418	[2.98]	**	0.3792	[4.13]	*	-0.0287	[-0.79]		-0.0033	[-1.34]		10,083	[0.68]				
Germany	1	L	GDPP	0.0168	[0.93]		2.0126	[1.5]		0.3726	[1.15]		-0.0202	[-0.62]		-191,065	[-1.22]				
India	1	H	GDPP	0.0008	[1.27]		0.4290	[24.51]	*	0.0013	[1.53]		0.0001	[3.26]	*	-549	[-2.19]	**			
Italy	1	M	GDPP	0.0478	[3.93]	*	0.4906	[8.88]	*	0.0240	[2.14]	***	-0.0077	[-5.36]	*	-5,133	[-0.98]				
Japan	1	M	GDPP	-0.0557	[-1.86]	***	0.4293	[10.9]	*	0.0303	[6.32]	*	-0.0020	[-0.92]							
Korea	1	L	GDPP	-0.0201	[-1.22]		0.5896	[22.85]	*	0.0162	[3.34]	*	-0.0027	[-3.11]	*	-6,975	[-5.25]	*			
Mexico	1	M	GDPP	-0.0038	[-0.3]		0.9503	[5.61]	*	0.0137	[1.38]		0.0014	[1.91]	***	-17,808	[-2.53]	**			
Spain	1	M	GDPP	0.0158	[0.89]		0.7238	[4.46]	*	0.0070	[0.23]		-0.0164	[-4.16]	*	-4,128	[-0.22]				
UK	1	M	GDPP	0.0013	[0.83]		0.6287	[14.02]	*	0.0456	[2.88]	**	-0.0076	[-4.82]	*	-16,223	[-2.27]	**			
USA	1	L	GDPP	0.0021	[1.06]		0.5119	[7.18]	*	0.1134	[2.48]	**	-0.0071	[-2.88]	**	-22,417	[-1.31]				
Argentina	1	H	GDPP	-0.0082	[-0.34]		0.4387	[3.94]	*	0.0068	[0.72]		0.0005	[1.14]					78	[3.79]	*
Austria	1	L	GDPP	-0.0389	[-0.39]		0.8057	[2.25]	**	0.2804	[1.34]		-0.0019	[-0.07]		-104,697	[-1.57]				
Belgium	1	M	GDPP	0.0021	[0.53]		0.7361	[9.69]	*	-0.0021	[-0.06]		-0.0258	[-1.77]	***						
Denmark	1	L	GDPP	0.0169	[1.11]		0.5601	[9.52]	*	0.0548	[3.63]	*	-0.0094	[-2.09]	***	-7,055	[-0.65]				
Finland	1	L	GDPP	0.0662	[1.21]		0.6030	[13.64]	*	0.0439	[2.38]	**	-0.0107	[-3.03]	*	-12,582	[-2.71]	**			
Greece	1	H	GDPP	0.0487	[0.27]		0.5983	[18.33]	*	0.0334	[1.96]	***	-0.0218	[-4.06]	*						
Israel	1	M	GDPP	0.5086	[1.47]		-0.2246	[-0.33]		0.0423	[0.8]		0.0224	[0.95]							
Netherlands	1	L	GDPP	0.0081	[2.32]	**	0.8894	[12.47]	*	0.0178	[0.7]		-0.0270	[-4.03]	*	-2,585	[-0.24]				
New Zealand	1	L	GDPP	0.0321	[0.4]		0.9446	[7.95]	*	0.0315	[1.65]		-0.0049	[-2.58]	**	-26,365	[-2.25]	**			
Norway	1	L	GDPP	0.1408	[1.46]		0.5143	[7.88]	*	0.0486	[1.22]		-0.0126	[-2.48]	**	2,102	[0.27]				
Philippines	1	M	GDPP	0.1110	[0.18]		1.3605	[0.28]		0.0021	[0.18]		-0.0038	[-0.2]							
Portugal	1	M	GDPP	0.0108	[0.2]		0.5082	[8.12]	*	0.0433	[1.94]	***	-0.0076	[-2.29]	**	-6,196	[-0.75]				
Singapore	1	L	GDPP	0.2245	[1.94]	***	0.5209	[2.8]	**	0.0343	[0.51]		-0.0124	[-0.39]		820	[0.02]				
South Africa	1	H	GDPP	-0.0008	[-0.07]		0.3278	[4.32]	*	0.0023	[0.4]		-0.0008	[-1.93]	***	-236	[-0.08]				
Sweden	1	L	GDPP	-0.0178	[-1.7]		0.5769	[16.03]	*	0.0982	[4.16]	*	-0.0295	[-6.05]	*	1,812	[0.6]				
Switzerland	1	L	GDPP	0.0238	[0.94]		0.8797	[7.42]	*	0.0513	[1.32]		0.0058	[0.73]		-47,331	[-3.21]	*			
Thailand	1	H	GDPP	0.1980	[0.03]		5.1334	[0.04]		-0.0275	[-0.04]		-0.0018	[-0.04]							
Average (All)	**31**	**All**		**0.0415**			**1.0038**			**0.0544**			**-0.0068**			**-20,997**					
Average (Low)	14	L		0.0326			0.7920			0.0929			-0.0105			-35,030					
Average (Medium)	11	M		0.0539			1.1413			0.0335			-0.0037			-14,519					
Average (High)	6	H		0.0398			1.2459			0.0027			-0.0040			-131					
Number of negative Long run coefficients				**9**			**1**			**4**			**25**			**19**					

Significance Level
*"***" at 10%*
*"**" at 5%*
"#" at 2.5%
"" at 1%*

Country Risk: Based on Five Year Forecast of Composite Risk Index compiled by ICRG (International Country Risk Guide) - source www.prsgroup.com

Appendix 2.2 - Country Specific ARDL Bound Testing Results (Eq. 2)

Equation 2: (ARDL Short-run Coefficients)				D(CBII)			D(GFII)			D(PROD)			D(IVA_R)			D(EXP_R)			C			CointEq(-1)			Bound Test		Prob.	CUSUM
Country	#	Risk	ARDL Model	SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		Adj CE	t-stat		F-Stat		χ^2	(Stability)
Australia	1	L	(1, 0, 0, 0, 0, 0)	0.0152	[3.43]	*	0.0004	[0.25]		0.3219	[9.85]	*	0.0171	[1.56]		-0.0020	[-3.79]	*				-0.4504	[-9.13]	*	14.39	*	11%	**
Brazil	1	M	(1, 0, 0, 0, 0, 0)	-0.0040	[-1.24]		0.0053	[2.51]	**	0.1995	[2.11]	***	0.0116	[4.14]	*	-0.0000	[-0.06]					-0.0048	[-4.44]	*	3.91	#	53%	**
Canada	1	L	(1, 0, 0, 0, 0, 0)	-0.0014	[-0.72]		0.0006	[0.13]		0.4680	[10.47]	*	0.0383	[5.53]	*	-0.0044	[-4.56]	*				-0.3947	[-8.32]	*	6.67	*	65%	**
China	1	H	(1, 0, 0, 0, 0, 0)	0.0001	[1.9]	***	0.0001	[3.07]	*	0.5730	[158.72]	*	-0.0003	[-8.21]	*	-0.0000	[-1.18]		114	[6.87]	*	-0.8640	[-6.58]	*	25.27	*	77%	**
France	1	M	(1, 1, 1, 1, 1, 0)	0.0114	[5.15]	*	0.0024	[1.67]		0.4553	[21.12]	*	0.0259	[3.72]	*	-0.0024	[-2.79]	**				-0.3229	[-10.29]	*	9.89	*	87%	**
Germany	1	L	(1, 1, 1, 0, 0, 0)	0.0026	[3.97]	*	0.0065	[3.39]	*	0.0888	[1.49]		0.0361	[5.83]	*	0.0016	[1]		-1,661	[-6.18]	*	-0.6360	[-7.48]	*	10.61	*	87%	**
India	1	H	(1, 0, 0, 0, 0, 0)	-0.0005	[-0.88]		0.0011	[2.5]	**	0.3512	[16.54]	*	0.0003	[1.29]		0.0000	[1.25]		-152	[-2.18]	**	-0.5190	[-2.27]	**	4.28	#	5%	**
Italy	1	M	(1, 1, 1, 0, 1, 1)	0.0058	[2.81]	**	0.0108	[6.36]	*	0.2195	[8.57]	*	0.0392	[6.52]	*	-0.0025	[-6.71]	*	-2,831	[-10.68]	*	-0.4514	[-11.56]	*	5.36	*	39%	**
Japan	1	M	(1, 1, 1, 1, 1, 0)	-0.0031	[-0.78]		0.0078	[1.44]		0.3955	[12.15]	*	0.0346	[6.01]	*	-0.0017	[-2.37]	**				-0.2655	[-7.07]	*	4.02	#	20%	**
Korea	1	L	(1, 0, 0, 0, 0, 0)	-0.0070	[-0.67]		-0.0057	[-0.51]		0.4465	[12.22]	*	0.0056	[0.99]		-0.0023	[-5.77]	*				-0.6905	[-5.59]	*	9.91	*	27%	**
Mexico	1	M	(1, 0, 0, 0, 0, 0)	-0.0034	[-0.77]		0.0034	[0.71]		0.4025	[6.8]	*	0.0117	[2.28]	**	-0.0001	[-0.4]		-4,035	[-2.38]	**	-0.5779	[-2.42]	**	5.46	*	33%	**
Spain	1	M	(1, 0, 0, 0, 0, 0)	0.0106	[2.3]	**	0.0085	[2.09]	***	0.3389	[3.17]	*	0.0274	[2.61]	**	-0.0071	[-4]	*				-0.3910	[-4.35]	*	5.87	*	3%	**
UK	1	M	(1, 0, 0, 0, 0, 0)	0.0020	[1.97]	***	-0.0001	[-0.09]		0.4284	[15.74]	*	0.0213	[2.97]	*	-0.0045	[-3.16]	*				-0.5990	[-6.56]	*	6.36	*	66%	**
USA	1	L	(1, 0, 0, 0, 0, 0)	0.0032	[2.92]	**	0.0013	[0.83]		0.2332	[4.36]	*	0.0432	[2.73]	**	-0.0036	[-1.63]					-0.4987	[-5.16]	*	6.91	*	43%	**
Argentina	1	H	(1, 1, 0, 1, 1, 1)	-0.0019	[-0.42]		0.0023	[0.5]		0.4616	[13.31]	*	-0.0083	[-4.13]	*	-0.0002	[-3.66]	*	-388	[-6.67]	*	-0.4004	[-7.69]	*	5.57	*	69%	**
Austria	1	L	(1, 0, 0, 0, 0, 0)	-0.0177	[-1.31]		-0.0010	[-0.1]		0.3180	[4.39]	*	0.0705	[4.16]	*	0.0034	[1.11]					-0.1112	[-3.91]	*	3.95	#	10%	**
Belgium	1	M	(1, 0, 0, 0, 0, 0)	-0.0290	[-2.54]	**	0.0025	[2.57]	**	0.3976	[8.58]	*	-0.0044	[-0.4]		-0.0051	[-0.76]					-0.2735	[-5.37]	*	7.37	*	78%	**
Denmark	1	L	(1, 0, 0, 0, 0, 0)	-0.0049	[-0.22]		0.0085	[0.74]		0.3375	[6.14]	*	0.0394	[3.05]	*	-0.0038	[-1.4]					-0.4810	[-5.18]	*	4.59	*	41%	**
Finland	1	L	(1, 0, 0, 0, 0, 0)	0.0079	[0.34]		-0.0112	[-0.56]		0.3209	[5.19]	*	0.0395	[3.62]	*	-0.0048	[-2.22]	**				-0.4764	[-6.6]	*	3.66	**	77%	**
Greece	1	H	(1, 0, 0, 0, 0, 0)	-0.0273	[-0.51]		-0.1233	[-1.24]		0.2375	[3.47]	*	0.0265	[3.1]	*	-0.0058	[-3.85]	*				-0.4122	[-5.57]	*	3.65	**	6%	**
Israel	1	M	(1, 0, 0, 0, 0, 0)	-0.0131	[-0.52]		0.1253	[4.5]	*	0.1108	[1.78]	***	0.0072	[1]		0.0001	[0.05]					-0.1516	[-6.49]	*	2.96	***	34%	**
Netherlands	1	L	(1, 0, 0, 0, 0, 0)	0.0026	[1.93]	***	0.0047	[1.69]		0.6288	[12.91]	*	0.0087	[0.64]		-0.0146	[-3.7]	*				-0.6331	[-6.13]	*	7.81	*	57%	**
New Zealand	1	L	(1, 0, 0, 0, 0, 0)	0.0216	[0.94]		0.0091	[0.46]		0.4164	[9.01]	*	0.0220	[2.89]	**	-0.0016	[-2.51]	**				-0.4124	[-7.02]	*	7.09	*	39%	**
Norway	1	L	(1, 0, 0, 0, 0, 0)	-0.0174	[-0.56]		-0.0146	[-0.48]		0.1817	[3.4]	*	0.0420	[2.59]	**	-0.0057	[-3.81]	*				-0.4191	[-7.48]	*	19.07	*	24%	**
Philippines	1	M	(1, 0, 0, 0, 0, 0)	-0.0068	[-1.41]		-0.0059	[-1.44]		0.2736	[6.95]	*	0.0006	[0.74]		0.0000	[0.28]					-0.4870	[-2.47]	**	12.70	*	19%	**
Portugal	1	M	(1, 0, 0, 0, 0, 0)	-0.0014	[-0.08]		0.0069	[0.65]		0.2868	[3.75]	*	0.0101	[1.94]	***	-0.0038	[-3.28]	*				-0.2473	[-3.88]	*	3.86	#	44%	**
Singapore	1	L	(1, 0, 0, 0, 0, 0)	0.0634	[0.96]		0.0270	[1.77]	***	0.3344	[4.08]	*	0.0418	[2.64]	**	-0.0058	[-1.2]					-0.1918	[-3.56]	*	3.57	**	47%	**
South Africa	1	H	(1, 0, 0, 0, 0, 0)	0.0000	[0.01]		0.0106	[1.65]		0.1825	[5.57]	*	0.0033	[1.31]		0.0000	[0.05]					-0.6169	[-5.21]	*	7.13	*	44%	**
Sweden	1	L	(1, 0, 0, 0, 0, 0)	-0.0033	[-0.39]		-0.0073	[-1.74]		0.2299	[5.39]	*	0.0689	[8.36]	*	-0.0098	[-4.92]	*				-0.4916	[-9.38]	*	4.28	*	86%	**
Switzerland	1	L	(1, 0, 0, 0, 0, 0)	0.0044	[0.73]		0.0062	[0.98]		0.4017	[6.64]	*	0.0415	[2.5]	**	0.0063	[2.29]	**				-0.3784	[-6.3]	*	6.77	*	48%	**
Thailand	1	H	(1, 0, 0, 0, 0, 0)	-0.0102	[-1.27]		-0.0016	[-0.39]		0.5076	[10.12]	*	0.0007	[0.47]		-0.0002	[-1.75]					-0.2371	[-2.57]	**	4.46	*	1%	
Average	**31**			**-0.0001**			**0.0026**			**0.3403**			**0.0233**			**-0.0026**			**-289**			**-0.4222**						

Equation 2: (ARDL Long-run Coefficients)				CBII			GFII			PROD			IVA_R			EXP_R			C			@TREND		
Country	#	Risk	Dependent	LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat	
Australia	1	L	*GDPP*	0.0299	[2.77]	**	-0.0005	[-0.09]		0.6657	[7.18]	*	0.0247	[0.62]		-0.0046	[-5.97]	*	-14,628	[-0.8]					
Brazil	1	M	*GDPP*	-1.2328	[-0.03]		0.2406	[0.03]		22.2469	[0.03]		1.0603	[0.03]		0.0288	[0.03]		-536,021	[-0.03]					
Canada	1	L	*GDPP*	-0.0015	[-0.32]		0.0077	[0.57]		0.9206	[15.58]	*	0.0726	[2.88]	**	-0.0092	[-3.83]	*	-41,921	[-4.44]	*				
China	1	H	*GDPP*	0.0001	[1.31]		0.0001	[2.06]	***	0.5481	[729.71]	*	-0.0003	[-9.98]	*	-0.0000	[-1.5]					6	[21.61]	*
France	1	M	*GDPP*	0.0765	[3.2]	*	0.0203	[1.49]		0.4324	[5.06]	*	-0.0032	[-0.1]		-0.0055	[-2.32]	**	2,910	[0.21]					
Germany	1	L	*GDPP*	0.0092	[3.88]	*	0.0239	[3.01]	**	0.1890	[1.73]		0.0595	[3.6]	*	0.0002	[0.06]					394	[7.51]	*
India	1	H	*GDPP*	-0.0006	[-0.42]		0.0015	[2.51]	**	0.3668	[28.14]	*	0.0004	[0.98]		0.0001	[3.76]	*				4	[4.39]	*
Italy	1	M	*GDPP*	0.0417	[2.24]	**	0.0417	[3.26]	*	0.4641	[7.64]	*	0.0339	[1.32]		-0.0076	[-5.48]	*				36	[0.57]		
Japan	1	M	*GDPP*	-0.0799	[-1.71]		-0.0190	[-0.4]		0.5789	[3.64]	*	0.0595	[1.69]		-0.0056	[-1.29]		-14,728	[-0.89]					
Korea	1	L	*GDPP*	-0.0185	[-0.89]		-0.0215	[-1.07]		0.5897	[21.97]	*	0.0168	[2.57]	**	-0.0027	[-2.85]	**	-7,129	[-3.95]	*				
Mexico	1	M	*GDPP*	-0.0078	[-1.01]		-0.0001	[-0.01]		0.4786	[4.62]	*	0.0122	[2.37]	**	0.0002	[0.48]					54	[3.86]	*
Spain	1	M	*GDPP*	0.0165	[1.05]		0.0073	[0.48]		0.9072	[10.06]	*	0.0701	[4.15]	*	-0.0137	[-4.79]	*	-37,977	[-4.3]	*				
UK	1	M	*GDPP*	0.0014	[0.81]		0.0009	[0.29]		0.6263	[12.87]	*	0.0448	[2.61]	**	-0.0076	[-4.63]	*	-15,863	[-2.06]	***				
USA	1	L	*GDPP*	0.0023	[0.96]		0.0015	[0.27]		0.5129	[6.96]	*	0.1131	[2.41]	**	-0.0070	[-2.68]	**	-22,473	[-1.28]					
Argentina	1	H	*GDPP*	-0.0316	[-1.37]		0.0090	[0.32]		0.3957	[4.68]	*	-0.0006	[-0.09]		0.0002	[0.56]					70	[4.43]	*
Austria	1	L	*GDPP*	-0.1496	[-0.79]		0.0013	[0.02]		0.8265	[2.13]	***	0.3134	[1.31]		-0.0023	[-0.08]		-115,475	[-1.51]					
Belgium	1	M	*GDPP*	-0.0559	[-1.37]		0.0041	[1.01]		0.7260	[10.33]	*	-0.0087	[-0.24]		-0.0233	[-1.74]								
Denmark	1	L	*GDPP*	0.0388	[0.62]		0.0097	[0.38]		0.5562	[8.89]	*	0.0548	[3.46]	*	-0.0088	[-1.77]	***	-7,451	[-0.65]					
Finland	1	L	*GDPP*	0.0469	[0.56]		0.0750	[1.18]		0.6006	[12.93]	*	0.0452	[2.31]	**	-0.0105	[-2.81]	**	-13,025	[-2.59]	**				
Greece	1	H	*GDPP*	-0.0289	[-0.15]		-0.1948	[-0.6]		0.6089	[11.84]	*	0.0547	[1.74]		-0.0164	[-3.68]	*	-8,200	[-1.16]					
Israel	1	M	*GDPP*	-0.0706	[-0.3]		0.8355	[2.18]	**	0.0812	[0.19]		0.0289	[0.82]		0.0095	[0.61]								
Netherlands	1	L	*GDPP*	0.0076	[2.06]	***	0.0104	[1.78]	***	0.8972	[12.06]	*	0.0186	[0.72]		-0.0253	[-3.33]	*	-5,325	[-0.43]					
New Zealand	1	L	*GDPP*	0.0680	[0.72]		0.0211	[0.26]		0.9514	[7.73]	*	0.0320	[1.63]		-0.0048	[-2.48]	**	-26,923	[-2.22]	**				
Norway	1	L	*GDPP*	0.1461	[1.39]		0.1328	[1.18]		0.5142	[7.67]	*	0.0477	[1.15]		-0.0126	[-2.41]	**	2,436	[0.29]					
Philippines	1	M	*GDPP*	-0.0123	[-0.95]		-0.0089	[-0.8]		0.4295	[9.22]	*	0.0004	[0.45]		-0.0000	[-0.2]		-323	[-0.74]					
Portugal	1	M	*GDPP*	-0.0044	[-0.05]		0.0144	[0.25]		0.5102	[7.97]	*	0.0423	[1.86]	***	-0.0074	[-2.1]	***	-6,196	[-0.74]					
Singapore	1	L	*GDPP*	0.2349	[0.62]		0.2219	[1.5]		0.5193	[2.62]	**	0.0359	[0.41]		-0.0117	[-0.29]		-407	[-0.01]					
South Africa	1	H	*GDPP*	0.0016	[0.14]		0.0159	[0.79]		0.3344	[4.7]	*	0.0024	[0.45]		-0.0006	[-1.29]		-657	[-0.23]					
Sweden	1	L	*GDPP*	-0.0133	[-0.38]		-0.0194	[-1.23]		0.5777	[15.35]	*	0.0975	[3.94]	*	-0.0295	[-5.82]	*	1,819	[0.59]					
Switzerland	1	L	*GDPP*	0.0232	[0.88]		0.0250	[0.89]		0.8812	[7.13]	*	0.0511	[1.27]		0.0053	[0.6]		-46,891	[-3]	*				
Thailand	1	H	*GDPP*	-0.0335	[-1.36]		0.0017	[0.12]		0.7097	[10.83]	*	-0.0009	[-0.21]		-0.0003	[-1.19]		-58	[-0.04]					
Average (All)	**31**	**All**		**-0.0321**			**0.0471**			**1.2789**			**0.0767**			**-0.0056**			**-29,500**						
Average (Low)	14	L		0.0303			0.0349			0.6573			0.0702			-0.0088			-21,242						
Average (Medium)	11	M		-0.1207			0.1034			2.4983			0.1219			-0.0029			-55,291						
Average (High)	6	H		-0.0155			-0.0278			0.4939			0.0093			-0.0028			-1,486						
Number of negative Long run coefficients				**15**			**7**			**0**			**5**			**24**			**20**						

Significance Level
*"***" at 10%*
*"**" at 5%*
"#" at 2.5%
"" at 1%*

Country Risk:
Based on Five Year Forecast of Composite Risk Index compiled by ICRG (International Country Risk Guide) - source www.prsgroup.com

Appendix 2.3 - Country Specific ARDL Bound Testing Results (Eq. 3)

Equation 3: (ARDL Short-run Coefficients)				D(FDIO)			D(PROD)			D(IVA_R)			D(EXP_R)			C			CointEq(-1)			Bound Test		Prob.	CUSUM
Country	#	Risk	ARDL Model	SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		Adj CE	t-stat		F-Stat		c^2	(Stability)
Australia	1	L	(1, 0, 0, 0, 0)	0.0014	[0.48]		0.3616	[7.31]	*	0.0364	[2.16]	**	-0.0007	[-0.83]					-0.3105	[-5.83]	*	11.71	*	63%	**
Brazil	1	M	(1, 0, 1, 1, 0)	0.0026	[1.67]		0.1988	[1.87]	***	0.0031	[1.06]		-0.0003	[-1.72]		3,305	[6.1]	*	-0.3268	[-6]	*	3.75	***	2%	**
Canada	1	L	(1, 0, 0, 0, 0)	-0.0005	[-0.18]		0.4491	[10.17]	*	0.0427	[5.93]	*	-0.0051	[-5.28]	*				-0.3339	[-8.27]	*	9.26	*	82%	**
China	1	H	(1, 0, 1, 0, 0)	-0.0006	[-0.55]		0.7562	[14.97]	*	-0.0003	[-0.59]		0.0000	[0.77]					-0.7814	[-4.36]	*	4.04	#	40%	**
France	1	M	(1, 1, 1, 0, 0)	0.0032	[5.01]	*	0.4318	[8.35]	*	0.0518	[4.11]	*	0.0002	[0.17]		-9,444	[-6.43]	*	-0.5974	[-6.52]	*	6.79	*	19%	**
Germany	1	L	(1, 0, 0, 0, 0)	0.0009	[0.83]		0.0878	[1.7]		0.0479	[7.96]	*	0.0003	[0.18]		-4,759	[-7.25]	*	-0.5682	[-7.91]	*	14.69	*	98%	**
India	1	H	(1, 0, 0, 0, 0)	0.0015	[2.63]	**	0.3452	[17.08]	*	0.0003	[0.78]		0.0000	[1.11]					-0.2768	[-2.41]	**	18.86	*	29%	**
Italy	1	M	(1, 1, 0, 0, 1)	-0.0000	[-0.01]		0.1733	[4.45]	*	0.0657	[7.16]	*	-0.0020	[-3.58]	*	-15,465	[-8.05]	*	-0.3735	[-8.13]	*	3.81	***	11%	**
Japan	1	M	(1, 1, 1, 0, 0)	-0.0083	[-3.47]	*	0.5406	[16.05]	*	0.0385	[5.87]	*	-0.0020	[-2.48]	**				-0.0891	[-7.61]	*	4.69	*	10%	**
Korea	1	L	(1, 0, 0, 0, 0)	0.0166	[1.13]		0.4547	[10.68]	*	-0.0014	[-0.22]		-0.0035	[-6.59]	*				-0.5809	[-5.26]	*	10.00	*	27%	**
Mexico	1	M	(1, 0, 0, 0, 0)	-0.0034	[-0.68]		0.3743	[7.11]	*	0.0104	[2.21]	**	-0.0004	[-1.8]	***	-4,193	[-3.07]	*	-0.8155	[-3.13]	*	4.39	#	80%	**
Spain	1	M	(1, 0, 0, 0, 0)	0.0076	[4.72]	*	0.3172	[4.48]	*	0.0209	[3.04]	*	-0.0060	[-4.94]	*				-0.3911	[-6.34]	*	5.67	*	32%	**
UK	1	M	(1, 0, 0, 0, 0)	0.0002	[0.37]		0.4475	[11.86]	*	0.0403	[4.5]	*	-0.0058	[-3.17]	*				-0.6690	[-6.82]	*	7.53	*	20%	**
USA	1	L	(1, 0, 0, 0, 0)	-0.0003	[-0.37]		0.2493	[4.18]	*	0.0609	[3.41]	*	-0.0044	[-1.72]					-0.4931	[-6.77]	*	8.17	*	81%	**
Argentina	1	H	(1, 0, 1, 1, 1)	0.0271	[1.02]		0.4934	[14.22]	*	-0.0070	[-3.14]	*	-0.0001	[-3.42]	*	-477	[-7.47]	*	-0.3084	[-8.2]	*	8.24	*	35%	**
Austria	1	L	(1, 0, 0, 0, 0)	0.0005	[0.04]		0.3160	[3.97]	*	0.0684	[3.57]	*	0.0059	[1.68]					-0.1535	[-3.67]	*	4.14	#	31%	**
Belgium	1	M	(1, 0, 0, 0, 0)	0.0029	[2.36]	**	0.5443	[8.22]	*	0.0044	[0.26]		-0.0105	[-1.06]					-0.2848	[-2.25]	**	3.67	**	68%	**
Denmark	1	L	(1, 0, 0, 0, 0)	0.0020	[0.24]		0.3545	[6.64]	*	0.0277	[1.97]	***	-0.0051	[-1.85]	***				-0.5824	[-5.08]	*	6.64	*	46%	**
Finland	1	L	(1, 0, 0, 0, 0)	0.0063	[0.67]		0.3101	[4.79]	*	0.0380	[3.42]	*	-0.0032	[-1.45]					-0.4876	[-8.26]	*	4.20	#	10%	**
Greece	1	H	(1, 0, 0, 1, 0)	0.0703	[1.4]		0.2113	[3.91]	*	0.0235	[3.35]	*	-0.0061	[-4.84]	*				-0.5465	[-5.83]	*	5.89	*	35%	**
Israel	1	M	(1, 0, 0, 0, 0)	0.0330	[1.78]	***	0.2022	[3.16]	*	0.0168	[2.17]	**	-0.0016	[-1.14]					-0.2192	[-6.01]	*	4.99	*	63%	**
Netherlands	1	L	(1, 0, 0, 0, 0)	-0.0063	[-1.84]	***	0.8846	[9.39]	*	0.0262	[0.97]		-0.0146	[-1.87]	***				-0.5484	[-3.48]	*	6.48	*	62%	**
New Zealand	1	L	(1, 0, 0, 0, 0)	-0.0028	[-0.1]		0.4487	[6.55]	*	-0.0046	[-0.43]		-0.0018	[-1.92]	***				-0.7602	[-4.75]	*	7.02	*	37%	**
Norway	1	L	(1, 0, 1, 1, 0)	-0.0325	[-1.7]		0.3474	[6.06]	*	0.0909	[3.81]	*	-0.0066	[-3.65]	*				-0.1705	[-6.63]	*	4.38	*	60%	**
Philippines	1	M	(1, 0, 0, 0, 0)	0.0021	[0.27]		0.2305	[2.46]	**	-0.0018	[-1.3]		-0.0000	[-0.14]					-0.3226	[-2.37]	**	3.44	***	13%	**
Portugal	1	M	(1, 0, 0, 0, 0)	-0.0065	[-0.99]		0.2648	[4.06]	*	0.0119	[2.52]	**	-0.0025	[-2.43]	**				-0.2312	[-4.33]	*	4.37	#	72%	**
Singapore	1	L	(1, 1, 1, 1, 1)	0.0917	[4.47]	*	0.3203	[4.05]	*	0.0475	[3.04]	*	-0.0062	[-1.16]					-0.1734	[-5.24]	*	4.20	#	6%	**
South Africa	1	H	(1, 0, 0, 0, 0)	0.0029	[0.55]		0.1083	[3.68]	*	0.0030	[1.38]		-0.0003	[-1.15]					-0.5877	[-6.71]	*	13.26	*	36%	**
Sweden	1	L	(1, 0, 0, 0, 0)	-0.0159	[-2.61]	**	0.2794	[4.99]	*	0.0796	[7.58]	*	-0.0156	[-5.82]	*				-0.4960	[-8.94]	*	4.88	*	78%	**
Switzerland	1	L	(1, 0, 0, 0, 0)	0.0787	[6.74]	*	-0.5208	[-2.47]	**	-0.1050	[-3]	*	-0.0140	[-2.35]	**	103,912	[4.11]	*	-0.5088	[-4.1]	*	4.17	**	89%	**
Thailand	1	H	(1, 0, 0, 0, 0)	0.0126	[1.32]		0.4710	[8.57]	*	-0.0002	[-0.17]		-0.0004	[-3.52]	*				-0.2499	[-1.85]	***	5.30	*	0%	**
Average	**31**			**0.0093**			**0.3372**			**0.0238**			**-0.0036**			**2,351**			**-0.4270**						

Equation 3: (ARDL Long-run Coefficients)				FDIO			PROD			IVA_R			EXP_R			C			@TREND		
Country	#	Risk	Dependent	LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat	
Australia	1	L	GNIP	0.0047	[0.33]		0.8537	[4.19]	*	0.1124	[1.28]		-0.0038	[-2.46]	**	-55,175	[-1.37]				
Brazil	1	M	GNIP	0.0103	[0.99]		-0.1721	[-0.35]		-0.0143	[-1.17]		-0.0008	[-1.14]					95	[1.68]	
Canada	1	L	GNIP	-0.0071	[-0.64]		1.0231	[11.39]	*	0.1037	[3.15]	*	-0.0121	[-4.22]	*	-55,964	[-4.23]	*			
China	1	H	GNIP	-0.0018	[-1.23]		0.5703	[28.59]	*	-0.0004	[-1.74]		0.0001	[1.28]							
France	1	M	GNIP	0.0081	[4.45]	*	0.3315	[2.59]	**	0.0833	[4.3]	*	0.0015	[0.84]					275	[2.36]	**
Germany	1	L	GNIP	0.0057	[1.92]	***	0.1721	[1.62]		0.0857	[6.26]	*	-0.0020	[-0.57]					558	[10.24]	*
India	1	H	GNIP	0.0024	[2.11]	***	0.4228	[30.72]	*	0.0010	[1.26]		0.0001	[2.76]	**	-463	[-1.88]	***			
Italy	1	M	GNIP	-0.0361	[-2.44]	**	0.4813	[6.97]	*	0.1578	[3.93]	*	-0.0091	[-5.48]	*				359	[3.72]	*
Japan	1	M	GNIP	-0.1682	[-0.72]		2.7306	[0.86]		0.4372	[0.76]		-0.0217	[-0.68]		-242,819	[-0.72]				
Korea	1	L	GNIP	0.0349	[3.1]	*	0.6715	[21.73]	*	-0.0051	[-3.89]	*	-0.0051	[-6.1]	*						
Mexico	1	M	GNIP	-0.0009	[-0.13]		0.4059	[5.4]	*	0.0114	[3.43]	*	-0.0003	[-0.95]					67	[7.04]	*
Spain	1	M	GNIP	0.0187	[2.83]	**	0.8175	[12.23]	*	0.0565	[5.68]	*	-0.0104	[-4.11]	*	-32,513	[-5.87]	*			
UK	1	M	GNIP	-0.0008	[-0.6]		0.7417	[11.06]	*	0.0781	[3.15]	*	-0.0106	[-4.81]	*	-29,456	[-2.71]	**			
USA	1	L	GNIP	-0.0035	[-1.01]		0.7040	[5.89]	*	0.1933	[2.97]	*	-0.0037	[-0.92]		-58,021	[-2.2]	**			
Argentina	1	H	GNIP	0.1091	[0.65]		0.3653	[3.82]	*	0.0011	[0.11]		0.0002	[0.57]					81	[3.98]	*
Austria	1	L	GNIP	0.1007	[1.07]		0.6113	[2.37]	**	0.1251	[0.75]		0.0021	[0.09]		-49,778	[-0.86]				
Belgium	1	M	GNIP	0.0032	[0.94]		0.7039	[10.84]	*	-0.0382	[-1.1]		-0.0251	[-1.51]		10,702	[0.82]				
Denmark	1	L	GNIP	0.0129	[0.73]		0.5655	[9.65]	*	0.0274	[1.9]	***	-0.0123	[-2.87]	**	2,898	[0.28]				
Finland	1	L	GNIP	0.0425	[1.57]		0.6523	[14.14]	*	0.0499	[2.64]	**	-0.0090	[-2.19]	**	-20,135	[-4.09]	*			
Greece	1	H	GNIP	0.0498	[0.39]		0.5160	[17.87]	*	0.0254	[2.62]	**	-0.0140	[-4.44]	*						
Israel	1	M	GNIP	0.1960	[1.07]		1.0577	[2.3]	**	0.0311	[0.99]		-0.0029	[-0.23]		-35,062	[-2.1]	***			
Netherlands	1	L	GNIP	0.0050	[0.71]		0.9159	[6.73]	*	0.0288	[0.62]		-0.0310	[-2.39]	**	-2,774	[-0.14]				
New Zealand	1	L	GNIP	-0.0419	[-0.66]		0.6640	[44.72]	*	-0.0215	[-3.27]	*	-0.0045	[-3.42]	*						
Norway	1	L	GNIP	-0.1555	[-0.71]		0.5437	[2.57]	**	0.2228	[0.99]		-0.0452	[-1.33]		-14,516	[-0.58]				
Philippines	1	M	GNIP	0.0246	[0.64]		0.4572	[3.97]	*	-0.0049	[-1.75]		-0.0005	[-0.81]		2,066	[1.52]				
Portugal	1	M	GNIP	-0.0427	[-0.87]		0.4792	[7.27]	*	0.0597	[2.17]	**	-0.0039	[-1.12]		-12,446	[-1.23]				
Singapore	1	L	GNIP	0.8555	[1.92]	***	0.1132	[0.31]		-0.0299	[-0.28]		0.0198	[0.49]							
South Africa	1	H	GNIP	0.0143	[0.75]		0.3185	[3.98]	*	0.0008	[0.16]		-0.0007	[-1.28]		98	[0.04]				
Sweden	1	L	GNIP	-0.0419	[-2.22]	**	0.6831	[17.28]	*	0.1217	[4.38]	*	-0.0377	[-6.77]	*	-2,678	[-0.77]				
Switzerland	1	L	GNIP	0.1301	[3.71]	*	-1.2336	[-2.48]	**	-0.1603	[-2.48]	**	-0.0134	[-1.35]					1,191	[3.95]	*
Thailand	1	H	GNIP	0.0327	[1.98]	***	0.5921	[7.73]	*	0.0010	[0.26]		-0.0004	[-2]	***						
Average (All)	**31**	**All**		**0.0374**			**0.5729**			**0.0561**			**-0.0083**			**-19,227**					
Average (Low)	14	L		0.0673			0.4957			0.0610			-0.0113			-18,296					
Average (Medium)	11	M		0.0011			0.7304			0.0780			-0.0076			-30,866					
Average (High)	6	H		0.0344			0.4642			0.0048			-0.0025			-61					
Number of negative Long run coefficients				**11**			**2**			**8**			**25**			**14**					

Significance Level
*"***" at 10%*
*"**" at 5%*
"#" at 2.5%
"" at 1%*

Country Risk: Based on Five Year Forecast of Composite Risk Index compiled by ICRG (International Country Risk Guide) - source www.prsgroup.com

Appendix 2.4 - Country Specific ARDL Bound Testing Results (Eq. 4)

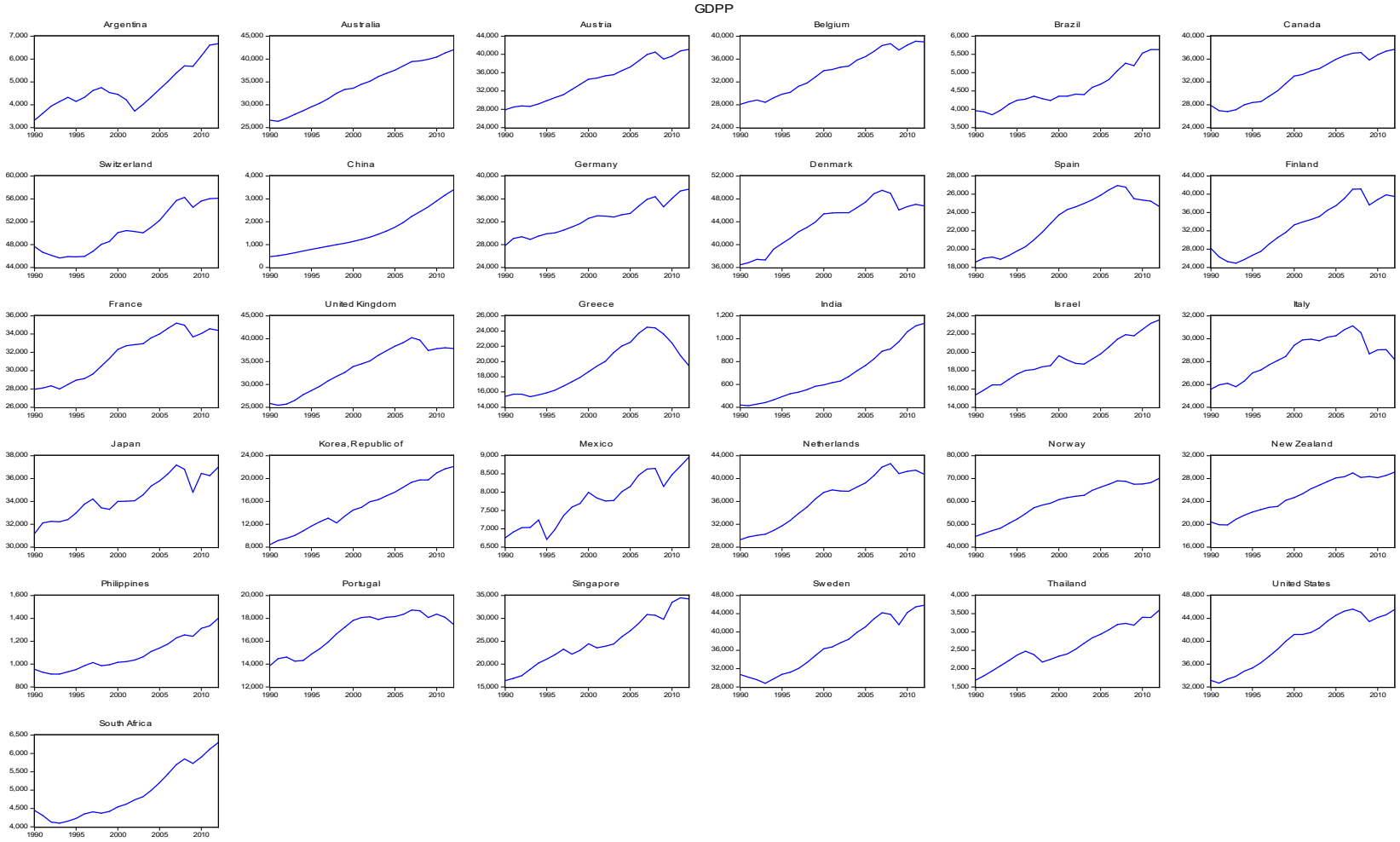
Equation 4: (ARDL Short-run Coefficients)				*D(CBIO)*			*D(GFIO)*			*D(PROD)*			*D(IVA_R)*			*D(EXP_R)*			C			CointEq(-1)			Bound Test	Prob.	CUSUM
Country	Check	Risk	ARDL Model	SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		SRCE	t-stat		Adj CE	t-stat		F-Stat		c^2	(Stability)
Australia	1	L	(1, 0, 0, 0, 0, 0)	0.0065	[1.46]		0.0002	[0.08]		0.3603	[7.36]	*	0.0467	[2.6]	**	-0.0005	[-0.58]					-0.2930	[-6.03]	*	9.74	*	53%	**
Brazil	1	M	(1, 1, 0, 0, 1, 1)	0.0048	[1.78]		0.0046	[2.35]	**	0.2317	[2.93]	**	0.0006	[0.28]		-0.0003	[-1.86]	***				-0.3570	[-7.64]	*	6.96	*	2%	**
Canada	1	L	(1, 0, 0, 0, 0, 0)	-0.0004	[-0.13]		0.0003	[0.07]		0.4497	[9.94]	*	0.0427	[5.78]	*	-0.0051	[-5.11]	*				-0.3262	[-7.97]	*	7.45	*	84%	**
China	1	H	(1, 1, 1, 1, 0, 1)	-0.0041	[-4.8]	*	-0.0008	[-0.74]		0.7027	[29.36]	*	-0.0004	[-1.2]		0.0000	[1.22]					-0.8399	[-8.11]	*	8.00	*	18%	**
France	1	M	(1, 1, 0, 1, 0, 0)	0.0033	[5.11]	*	0.0054	[3.22]	*	0.4506	[8.61]	*	0.0459	[3.49]	*	0.0001	[0.08]		-8,033	[-6.18]	*	-0.5491	[-6.26]	*	6.44	*	18%	**
Germany	1	L	(1, 0, 0, 0, 0, 0)	-0.0011	[-0.44]		0.0040	[1.84]	***	0.2716	[3.88]	*	0.0379	[3.87]	*	-0.0001	[-0.06]					-0.1748	[-5.32]	*	6.87	*	47%	**
India	1	H	(1, 0, 0, 0, 0, 0)	0.0016	[2.56]	**	0.0015	[2.48]	**	0.3429	[16]	*	0.0003	[0.74]		0.0000	[1.03]					-0.2780	[-2.38]	**	23.20	*	28%	**
Italy	1	M	(1, 1, 1, 0, 1, 0)	0.0109	[3.8]	*	0.0044	[1.35]		0.0881	[1.63]		0.0484	[4.77]	*	-0.0020	[-2.82]	**				-0.2905	[-6.67]	*	10.31	*	13%	**
Japan	1	M	(1, 1, 0, 1, 1, 0)	-0.0155	[-3.72]	*	-0.0019	[-0.81]		0.6841	[19.21]	*	0.0276	[5.03]	*	-0.0018	[-2.61]	**				-0.0241	[-8.88]	*	6.99	*	9%	**
Korea	1	L	(1, 0, 0, 0, 0, 0)	0.0061	[0.42]		0.0342	[2.05]	***	0.4621	[12.42]	*	-0.0025	[-0.41]		-0.0038	[-6.97]	*				-0.6363	[-6.25]	*	7.92	*	85%	**
Mexico	1	M	(1, 0, 0, 0, 0, 0)	-0.0014	[-0.23]		0.0045	[0.7]		0.4804	[7.53]	*	0.0052	[0.97]		-0.0005	[-1.67]					-0.2269	[-2.99]	*	4.27	*	19%	**
Spain	1	M	(1, 0, 0, 0, 0, 0)	0.0073	[3.4]	*	0.0081	[3.52]	*	0.3218	[4.35]	*	0.0211	[2.96]	*	-0.0060	[-4.83]	*				-0.3889	[-5.61]	*	10.03	*	21%	**
UK	1	M	(1, 0, 0, 0, 0, 0)	0.0010	[1.13]		0.0034	[2.17]	**	0.4261	[8.59]	*	0.0081	[0.78]		-0.0042	[-1.87]	***				-0.8617	[-5.01]	*	7.64	*	40%	**
USA	1	L	(1, 0, 0, 0, 0, 0)	0.0033	[1.8]	***	0.0002	[0.26]		0.1819	[2.47]	**	0.0173	[0.85]		-0.0069	[-2.46]	**				-0.7185	[-5.98]	*	6.76	*	23%	**
Argentina	1	H	(1, 0, 1, 1, 0, 1)	-0.0027	[-0.06]		0.0770	[2.24]	**	0.4652	[12.54]	*	-0.0041	[-1.49]		-0.0000	[-0.48]					-0.1127	[-6.23]	*	3.98	#	31%	**
Austria	1	L	(1, 0, 0, 0, 0, 0)	-0.0029	[-0.06]		0.0015	[0.1]		0.3179	[3.62]	*	0.0680	[3.29]	*	0.0058	[1.58]					-0.1550	[-3.45]	*	4.81	*	32%	**
Belgium	1	M	(1, 0, 0, 0, 0, 0)	0.0439	[3.2]	*	-0.0032	[-1.42]		0.5091	[8.39]	*	-0.0169	[-0.99]		-0.0019	[-0.2]					-0.2992	[-2.67]	**	3.79	#	93%	**
Denmark	1	L	(1, 0, 0, 0, 0, 0)	-0.0272	[-1]		0.0108	[0.94]		0.3450	[6.18]	*	0.0281	[1.97]	***	-0.0049	[-1.76]	***				-0.5856	[-5.03]	*	8.42	*	55%	**
Finland	1	L	(1, 0, 0, 0, 0, 0)	0.0403	[2.41]	**	-0.0121	[-1.08]		0.3232	[5.17]	*	0.0383	[3.55]	*	-0.0037	[-1.76]	***				-0.4863	[-8.11]	*	5.00	*	14%	**
Greece	1	H	(1, 0, 0, 0, 1, 0)	0.0657	[1.27]		0.0359	[0.58]		0.2100	[3.79]	*	0.0226	[3.19]	*	-0.0061	[-4.67]	*				-0.5392	[-5.72]	*	4.66	*	31%	**
Israel	1	M	(1, 0, 0, 0, 0, 0)	-0.0042	[-0.23]		0.0814	[2.93]	**	0.3253	[4.72]	*	0.0168	[2.34]	**	-0.0028	[-2.08]	***				-0.2543	[-6.6]	*	6.56	*	99%	**
Netherlands	1	L	(1, 0, 0, 0, 0, 0)	-0.0096	[-2.53]	**	0.0020	[0.34]		0.8789	[9.11]	*	0.0210	[0.76]		-0.0154	[-1.92]	***				-0.5365	[-3.12]	*	5.22	*	56%	**
New Zealand	1	L	(1, 0, 0, 0, 0, 0)	-0.0404	[-1.2]		0.0334	[1.13]		0.4787	[7.1]	*	-0.0076	[-0.73]		-0.0025	[-2.37]	**				-0.6755	[-3.77]	*	5.51	*	88%	**
Norway	1	L	(1, 0, 0, 0, 0, 0)	-0.0355	[-0.95]		-0.0154	[-0.56]		0.2315	[2.51]	**	0.0339	[1.28]		-0.0038	[-1.54]					-0.2826	[-4.32]	*	4.08	#	65%	**
Philippines	1	M	(1, 0, 0, 0, 0, 0)	0.0206	[0.9]		0.0095	[0.83]		0.2076	[2.11]	***	-0.0018	[-1.28]		-0.0000	[-0.24]					-0.3076	[-2.35]	**	2.80		19%	**
Portugal	1	M	(1, 0, 0, 0, 0, 0)	-0.0087	[-0.64]		-0.0061	[-0.59]		0.2615	[3.84]	*	0.0119	[2.45]	**	-0.0026	[-2.41]	**				-0.2291	[-4.22]	*	3.54	**	73%	**
Singapore	1	L	(1, 0, 0, 0, 0, 0)	-0.0019	[-0.07]		0.0582	[1.7]		0.3575	[3.94]	*	0.0506	[2.76]	**	-0.0029	[-0.44]					-0.3033	[-3.97]	*	5.51	*	38%	**
South Africa	1	H	(1, 1, 1, 1, 1, 0)	0.0102	[2.29]	**	0.0004	[0.11]		0.0023	[0.1]		0.0013	[0.84]		-0.0005	[-2.65]	**				-0.7077	[-10.39]	*	9.81	*	20%	**
Sweden	1	L	(1, 0, 0, 0, 0, 0)	-0.0306	[-4.22]	*	-0.0009	[-0.13]		0.2274	[4.2]	*	0.0888	[8.76]	*	-0.0150	[-6.06]	*				-0.4911	[-9.87]	*	4.09	#	56%	**
Switzerland	1	L	(1, 0, 0, 0, 0, 0)	0.0641	[5.1]	*	0.0811	[7.09]	*	-0.4291	[-1.92]	***	-0.1182	[-3.41]	*	-0.0143	[-2.48]	**	100,394	[3.84]	*	-0.5242	[-3.83]	*	3.55	***	7%	**
Thailand	1	H	(1, 0, 0, 0, 0, 0)	0.0171	[0.76]		0.0116	[1.13]		0.4668	[7.91]	*	-0.0000	[-0.02]		-0.0003	[-3.22]	*				-0.2452	[-1.75]		4.27	*	0%	**
Average	**31**			**0.0039**			**0.0140**			**0.3430**			**0.0172**			**-0.0033**			**2,979**			**-0.4097**					

Equation 4: (ARDL Long-run Coefficients)				*CBIO*			*GFIO*			*PROD*			*IVA_R*			*EXP_R*			C			@TREND		
Country	Check	Risk	Dependent	LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat		LRCE	t-stat	
Australia	1	L	*GNIP*	0.0128	[0.55]		0.0026	[0.16]		0.9217	[3.32]	*	0.1486	[1.16]		-0.0037	[-2.16]	**	-70,704	[-1.23]					
Brazil	1	M	*GNIP*	0.0412	[1.56]		0.0106	[0.95]		0.4947	[3.25]	*	-0.0289	[-4.16]	*	-0.0001	[-0.24]		8,179	[2.34]	**				
Canada	1	L	*GNIP*	-0.0073	[-0.63]		-0.0117	[-0.54]		1.0328	[10.07]	*	0.1069	[2.88]	**	-0.0124	[-3.82]	*	-57,261	[-3.84]	*				
China	1	H	*GNIP*	-0.0084	[-2.87]	**	0.0038	[1.41]		0.5851	[44.27]	*	-0.0005	[-3.03]	**	0.0001	[2.24]	**							
France	1	M	*GNIP*	0.0086	[3.97]	*	0.0104	[1.97]	***	0.3409	[2.32]	**	0.0754	[3.19]	*	0.0014	[0.68]					255	[1.92]	***	
Germany	1	L	*GNIP*	-0.0014	[-0.09]		0.0265	[1.58]		1.3417	[2.86]	**	0.1607	[2.06]	***	-0.0065	[-0.4]		-99,517	[-2.38]	**				
India	1	H	*GNIP*	0.0024	[2.01]	***	0.0023	[1.75]		0.4231	[28.85]	*	0.0010	[1.22]		0.0001	[2.65]	**	-465	[-1.81]	***				
Italy	1	M	*GNIP*	0.0151	[0.73]		-0.0394	[-1.2]		0.5382	[11.63]	*	-0.0028	[-0.25]		-0.0078	[-3.12]	*							
Japan	1	M	*GNIP*	-1.3813	[-0.22]		-0.1027	[-0.18]		10.4935	[0.23]		2.0074	[0.22]		-0.0604	[-0.22]		-1,166,685	[-0.22]					
Korea	1	L	*GNIP*	-0.0101	[-0.43]		0.0583	[4.11]	*	0.6773	[24.61]	*	-0.0046	[-3.89]	*	-0.0056	[-7.02]	*							
Mexico	1	M	*GNIP*	0.0369	[0.83]		0.0202	[0.57]		0.5211	[3.8]	*	-0.0080	[-0.89]		-0.0004	[-0.44]								
Spain	1	M	*GNIP*	0.0182	[1.98]	***	0.0190	[2.33]	**	0.8176	[11.93]	*	0.0563	[5.26]	*	-0.0104	[-4]	*	-32,430	[-5.61]	*				
UK	1	M	*GNIP*	0.0004	[0.35]		0.0024	[1.06]		0.5603	[57.13]	*	0.0162	[2.24]	**	-0.0114	[-4.97]	*							
USA	1	L	*GNIP*	0.0090	[1.95]	***	-0.0002	[-0.1]		0.4410	[23.3]	*	0.0507	[4.77]	*	-0.0103	[-4.96]	*							
Argentina	1	H	*GNIP*	-0.1735	[-0.24]		1.3601	[1.14]		1.1202	[2.19]	**	-0.0208	[-0.63]		0.0023	[1.25]		-5,401	[-0.36]					
Austria	1	L	*GNIP*	0.0584	[0.18]		0.1054	[1.03]		0.6182	[2.29]	**	0.1223	[0.72]		0.0018	[0.08]		-49,121	[-0.83]					
Belgium	1	M	*GNIP*	0.0638	[1.58]		-0.0071	[-0.93]		0.6921	[11.28]	*	-0.0555	[-1.66]		-0.0180	[-1.11]		8,658	[0.69]					
Denmark	1	L	*GNIP*	-0.0085	[-0.12]		0.0164	[0.76]		0.5738	[8.55]	*	0.0296	[1.76]	***	-0.0121	[-2.72]	**	1,476	[0.13]					
Finland	1	L	*GNIP*	0.0891	[1.78]	***	0.0097	[0.25]		0.6562	[14.83]	*	0.0461	[2.52]	**	-0.0097	[-2.45]	**	-18,559	[-3.84]	*				
Greece	1	H	*GNIP*	0.0470	[0.35]		0.0006	[0.01]		0.5198	[16.67]	*	0.0247	[2.46]	**	-0.0141	[-4.28]	*							
Israel	1	M	*GNIP*	0.0434	[0.32]		0.4275	[1.8]	***	1.4236	[3.18]	*	0.0319	[1.24]		-0.0101	[-0.88]		-46,090	[-2.89]	**				
Netherlands	1	L	*GNIP*	-0.0000	[-0.01]		0.0163	[1.25]		0.9099	[6.82]	*	0.0296	[0.65]		-0.0287	[-2.23]	**	-5,307	[-0.27]					
New Zealand	1	L	*GNIP*	-0.0887	[-1.3]		0.0110	[0.17]		0.6771	[41.22]	*	-0.0228	[-3.63]	*	-0.0048	[-3.81]	*							
Norway	1	L	*GNIP*	-0.1082	[-0.52]		-0.0489	[-0.34]		0.6457	[5.33]	*	0.0106	[0.16]		-0.0090	[-1.03]		-741	[-0.05]					
Philippines	1	M	*GNIP*	0.1023	[0.83]		0.0569	[0.86]		0.4109	[2.86]	**	-0.0046	[-1.54]		-0.0005	[-0.8]		2,120	[1.42]					
Portugal	1	M	*GNIP*	-0.0654	[-0.72]		-0.0315	[-0.52]		0.4707	[6.43]	*	0.0608	[2.07]	***	-0.0041	[-1.13]		-12,231	[-1.16]					
Singapore	1	L	*GNIP*	-0.0348	[-0.25]		0.3783	[2.57]	**	0.6409	[4.41]	*	0.1315	[2.09]	***	-0.0062	[-0.19]		-42,318	[-1.03]					
South Africa	1	H	*GNIP*	0.0430	[3.04]	**	0.0152	[1.22]		0.2257	[5.38]	*	-0.0074	[-2.29]	**	-0.0006	[-2.25]	**	4,129	[2.3]	**				
Sweden	1	L	*GNIP*	-0.0589	[-2.17]	**	-0.0257	[-0.97]		0.6603	[13.5]	*	0.1328	[4.16]	*	-0.0379	[-6.58]	*	-3,466	[-0.93]					
Switzerland	1	L	*GNIP*	0.1090	[3.19]	*	0.1385	[3.94]	*	-1.0496	[-2.24]	**	-0.1705	[-2.69]	**	-0.0125	[-1.32]					1,044	[3.62]	*	
Thailand	1	H	*GNIP*	0.0379	[1.2]		0.0286	[1.06]		0.5877	[7.21]	*	0.0013	[0.31]		-0.0004	[-1.89]	***	-445	[-0.31]					
Average (All)	**31**	**All**		**-0.0390**			**0.0791**			**0.9346**			**0.0941**			**-0.0094**			**-51,167**						
Average (Low)	14	L		-0.0028			0.0483			0.6248			0.0551			-0.0113			-24,680						
Average (Medium)	11	M		-0.1015			0.0333			1.5240			0.1953			-0.0111			-112,589						
Average (High)	6	H		-0.0086			0.2351			0.5769			-0.0003			-0.0021			-363						
Number of -ive Long run coefficients				**13**			**8**			**1**			**11**			**26**			**16**						

Significance Level
*"***" at 10%*
*"**" at 5%*
"#" at 2.5%
"" at 1%*

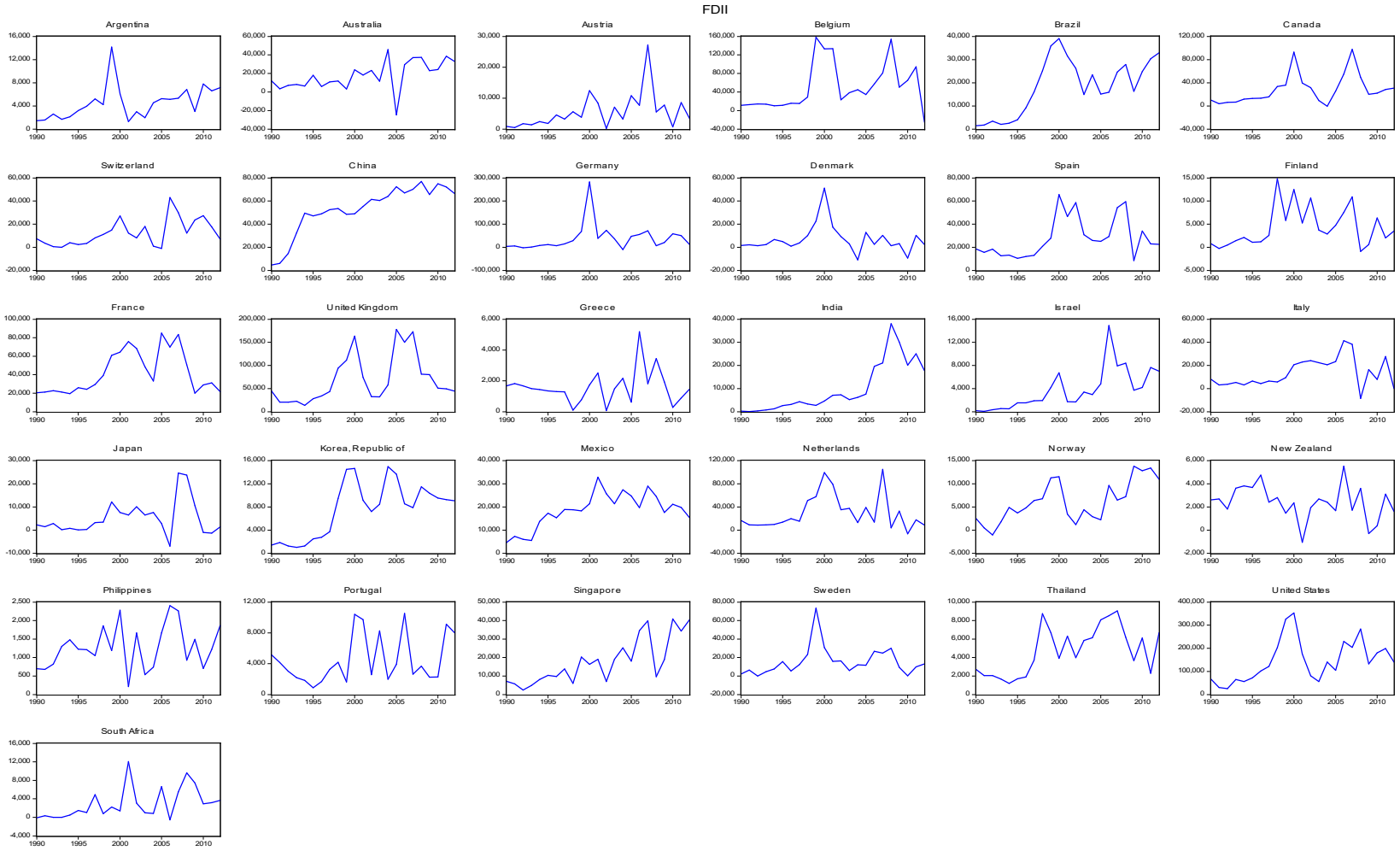
Country Risk: Based on Five Year Forecast of Composite Risk Index compiled by ICRG (International Country Risk Guide) - source www.prsgroup.com

Appendix 3.1 - Graphical Depiction of Country Specific Data – *GDPP*[53]



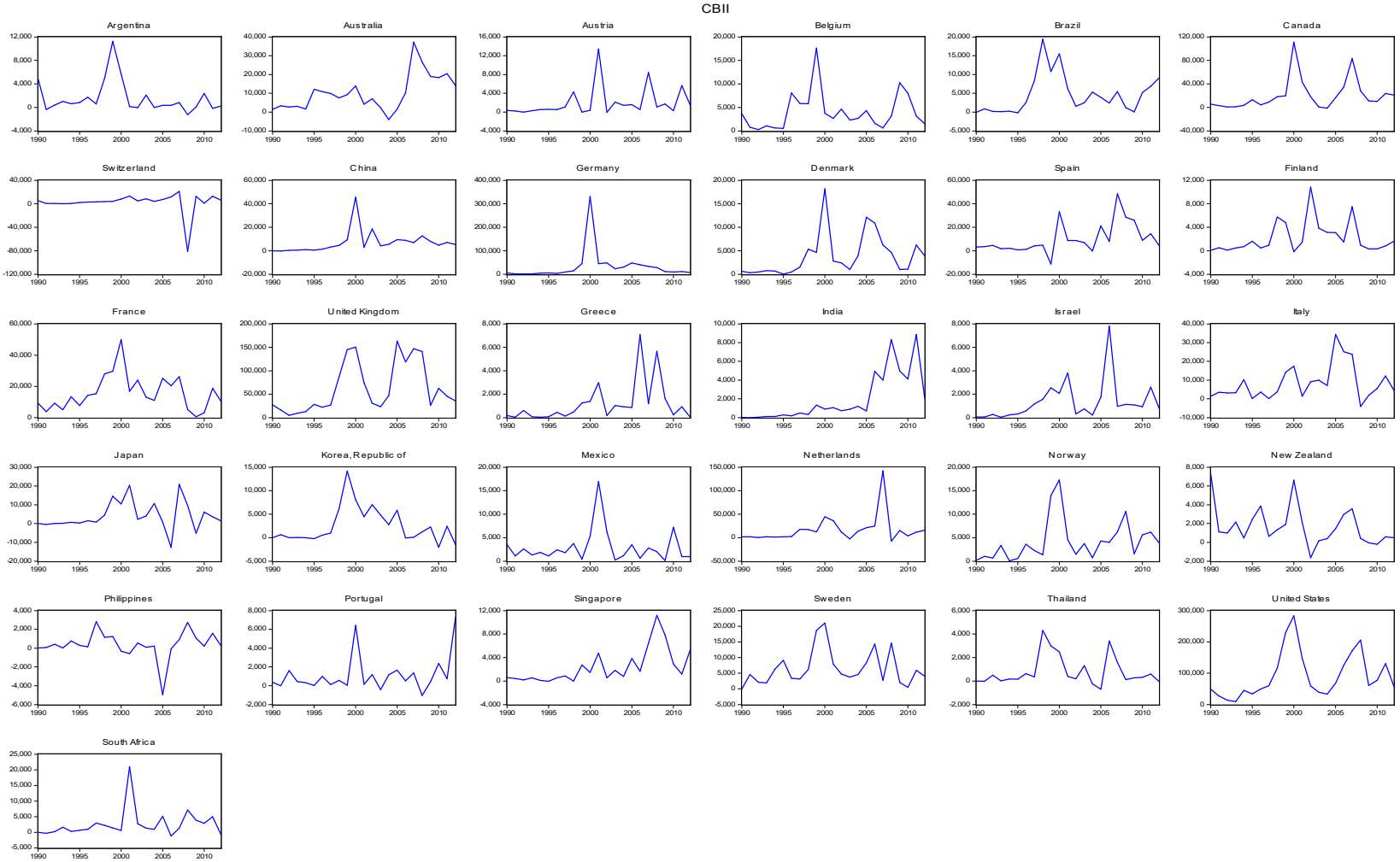
[53] *GDPP*: Per capita gross domestic product in 2005 US dollars

Appendix 3.2 - Graphical Depiction of Country Specific Data – *FDII*[54]



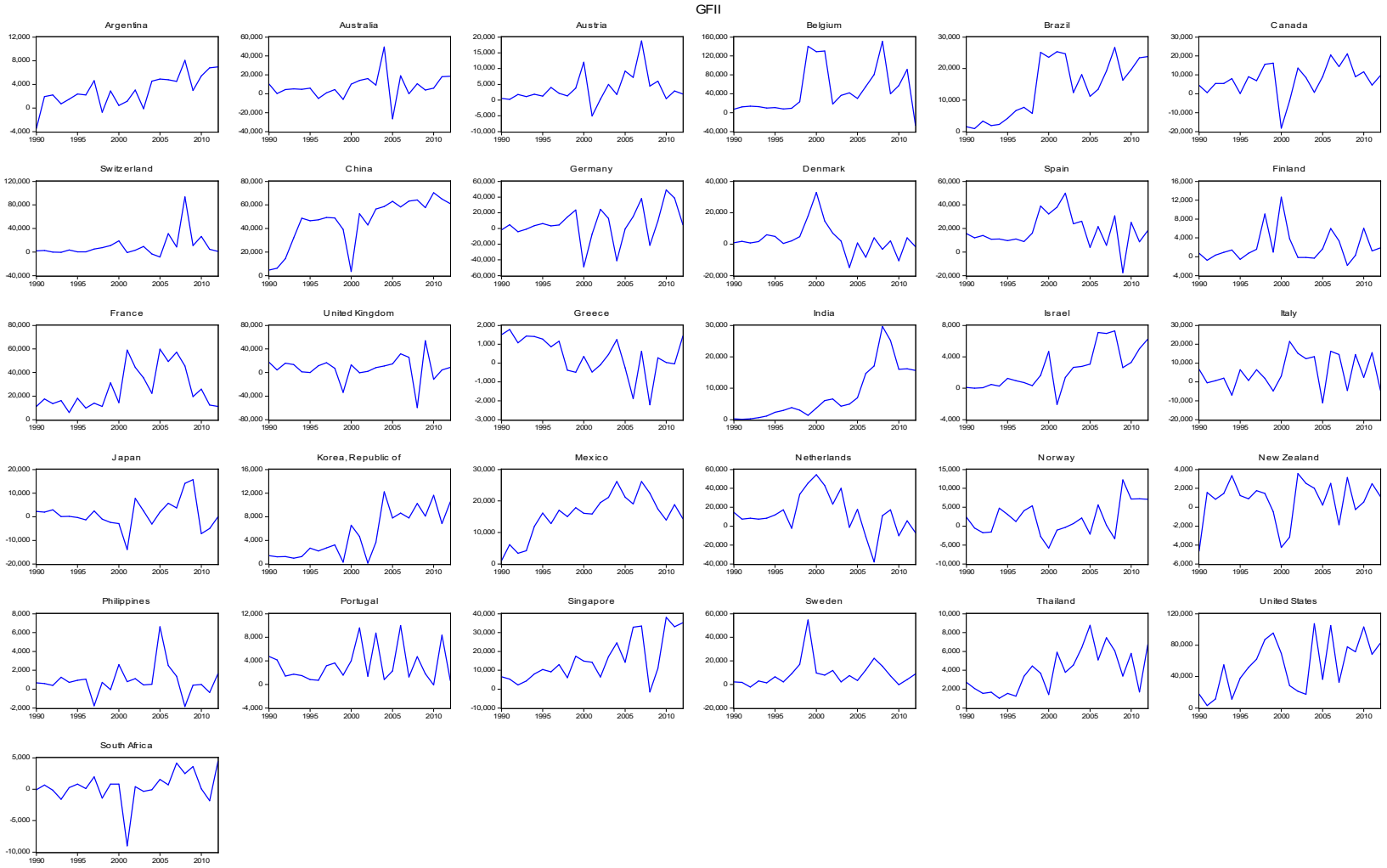
[54] *FDII*: Total Inward Foreign Direct Investment flows in 2005 US dollars

Appendix 3.3 - Graphical Depiction of Country Specific Data – *CBII*[55]



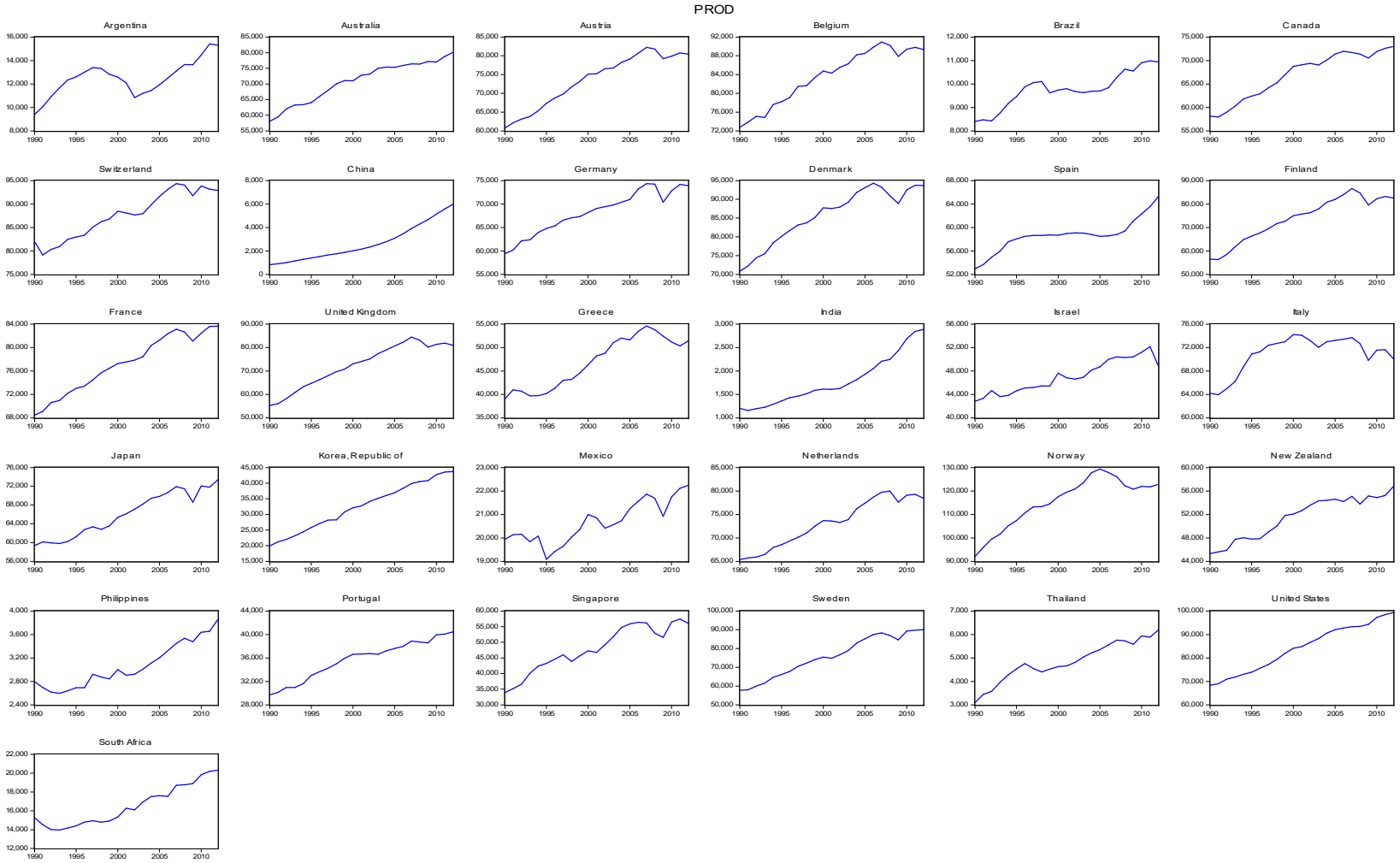
[55] *CBII*: Inward Cross-border Mergers and Acquisitions flows in 2005 US dollars

Appendix 3.4 - Graphical Depiction of Country Specific Data – *GFII*[56]



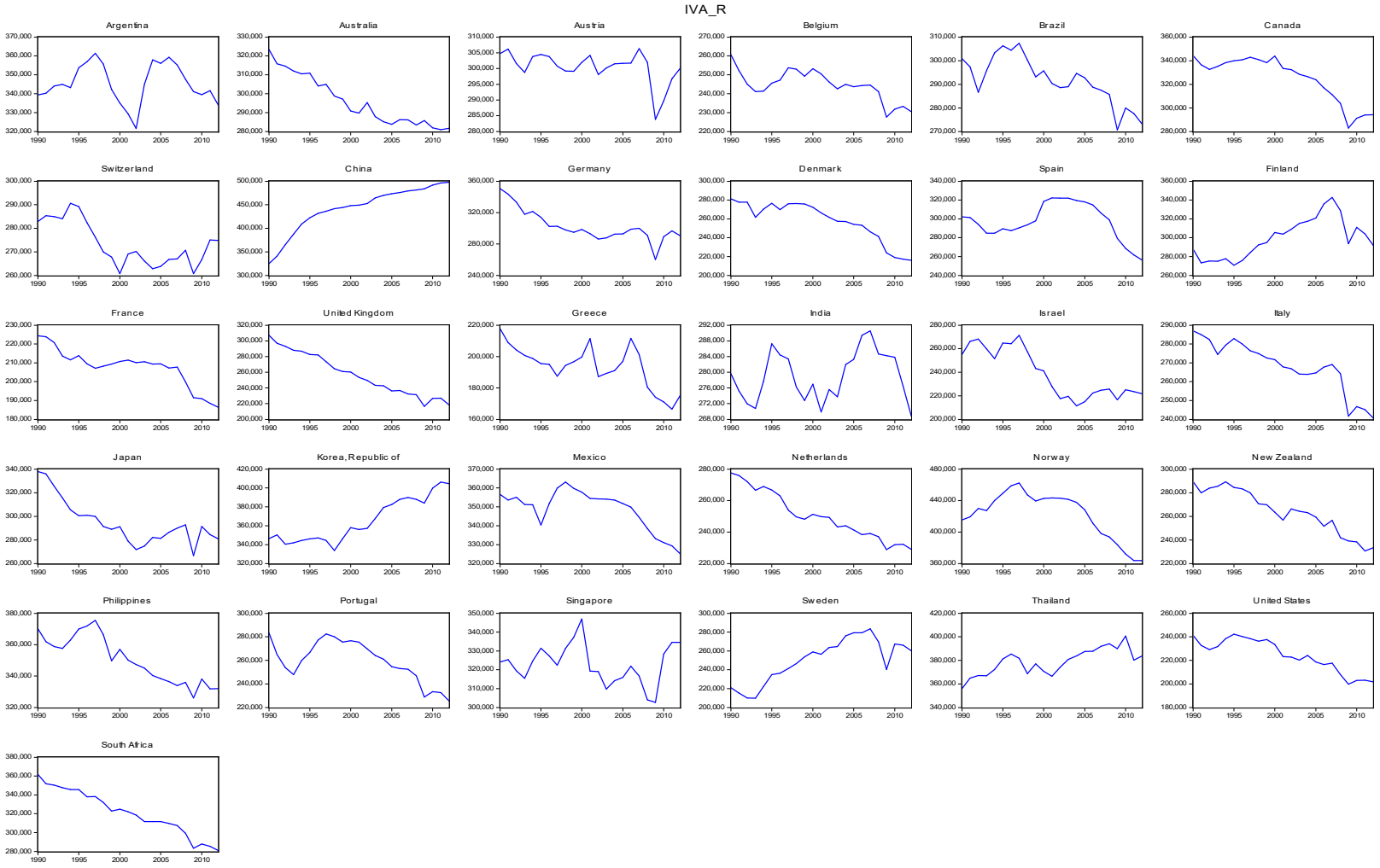
[56] *GFII*: Inward Greenfield Investment flows in 2005 US dollars

Appendix 3.5 - Graphical Depiction of Country Specific Data – *PROD*[57]



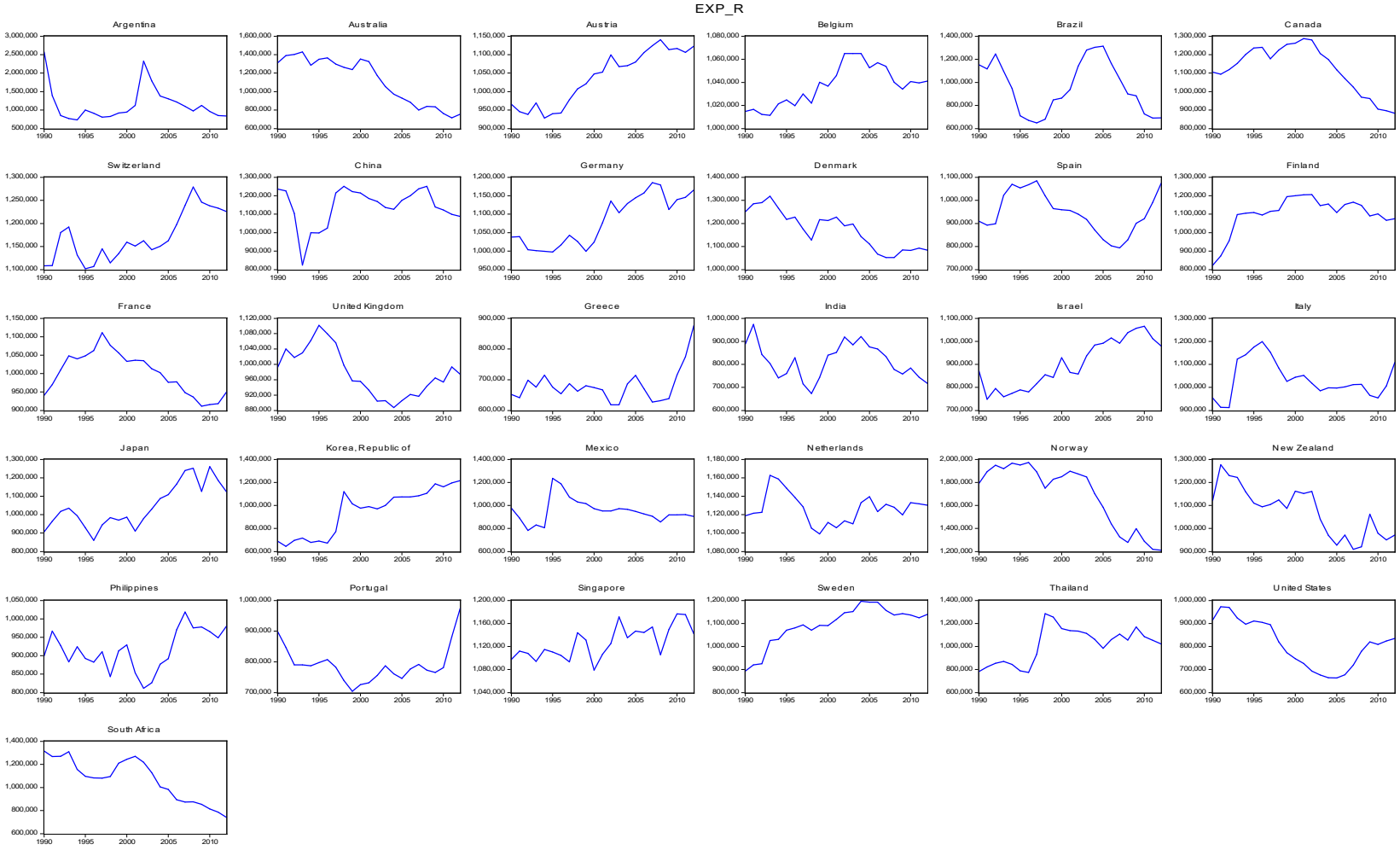
[57] *PROD*: GDP in 2005 US dollars per employee

Appendix 3.6 - Graphical Depiction of Country Specific Data – *IVA_R*[58]



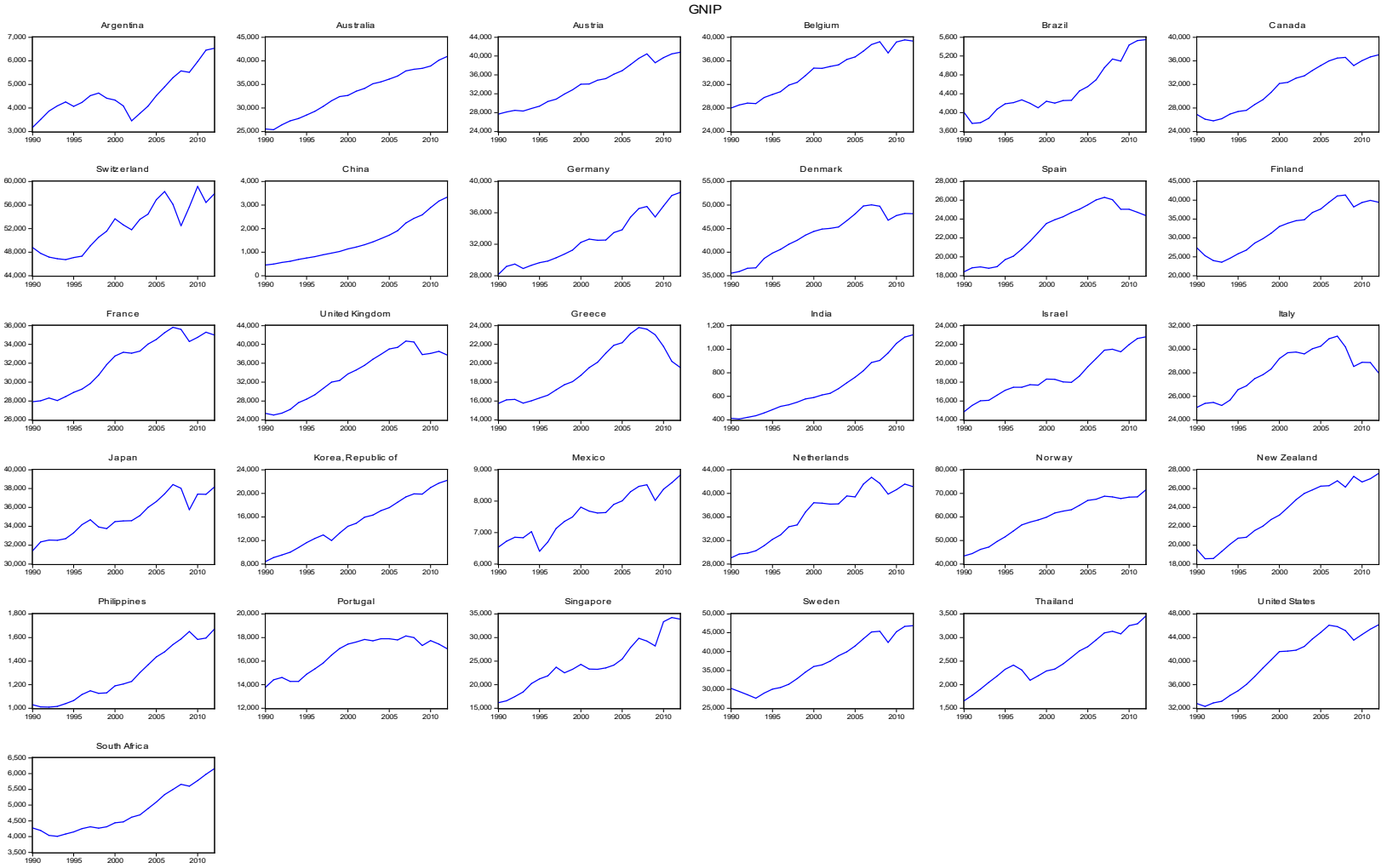
[58] *IVA_R*: Industrial value added to total value added ratio

Appendix 3.7 - Graphical Depiction of Country Specific Data – *EXP_R*[59]



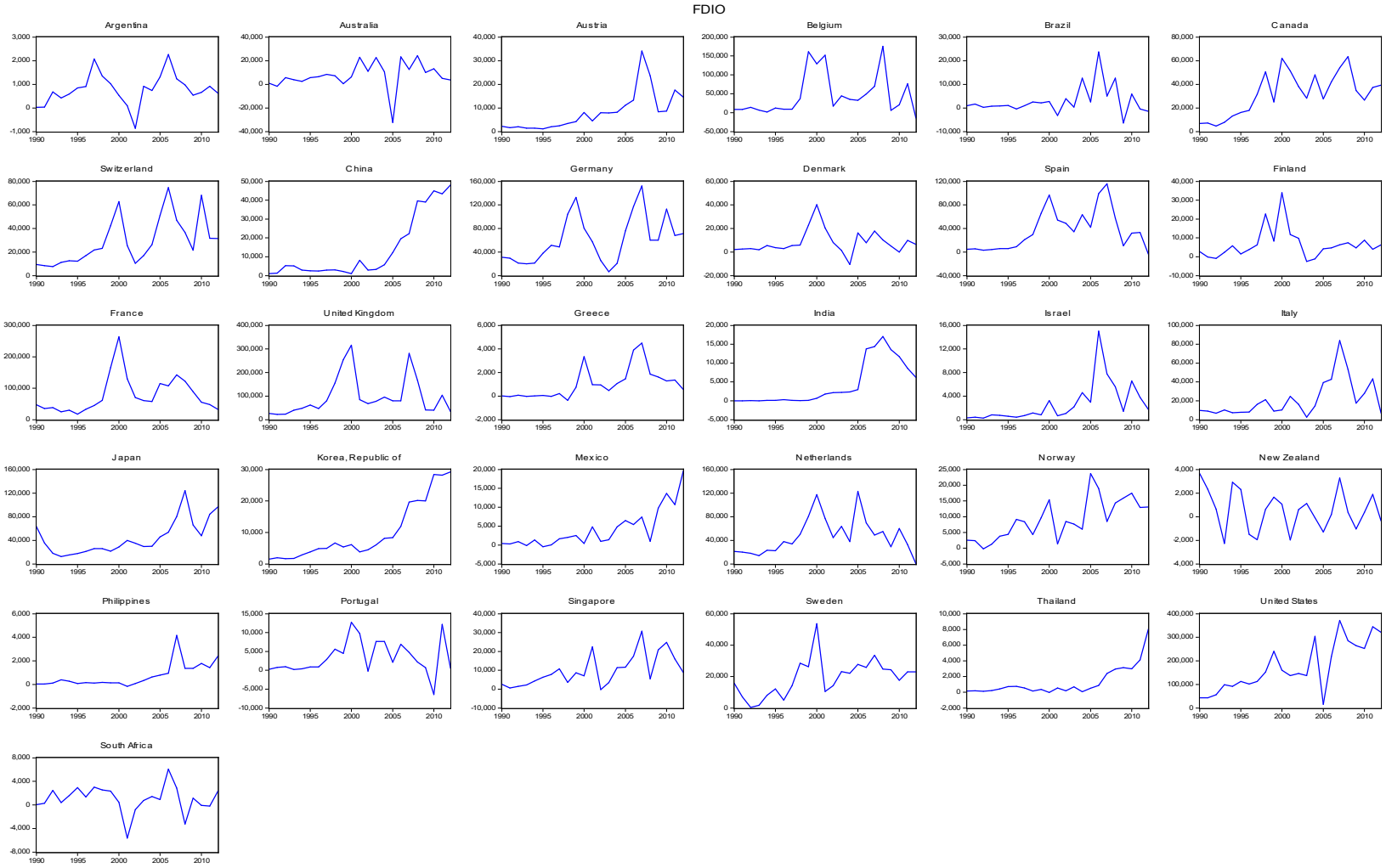
[59] *EXP_R*: Export to import ratio

Appendix 3.8 - Graphical Depiction of Country Specific Data – *GNIP*[60]



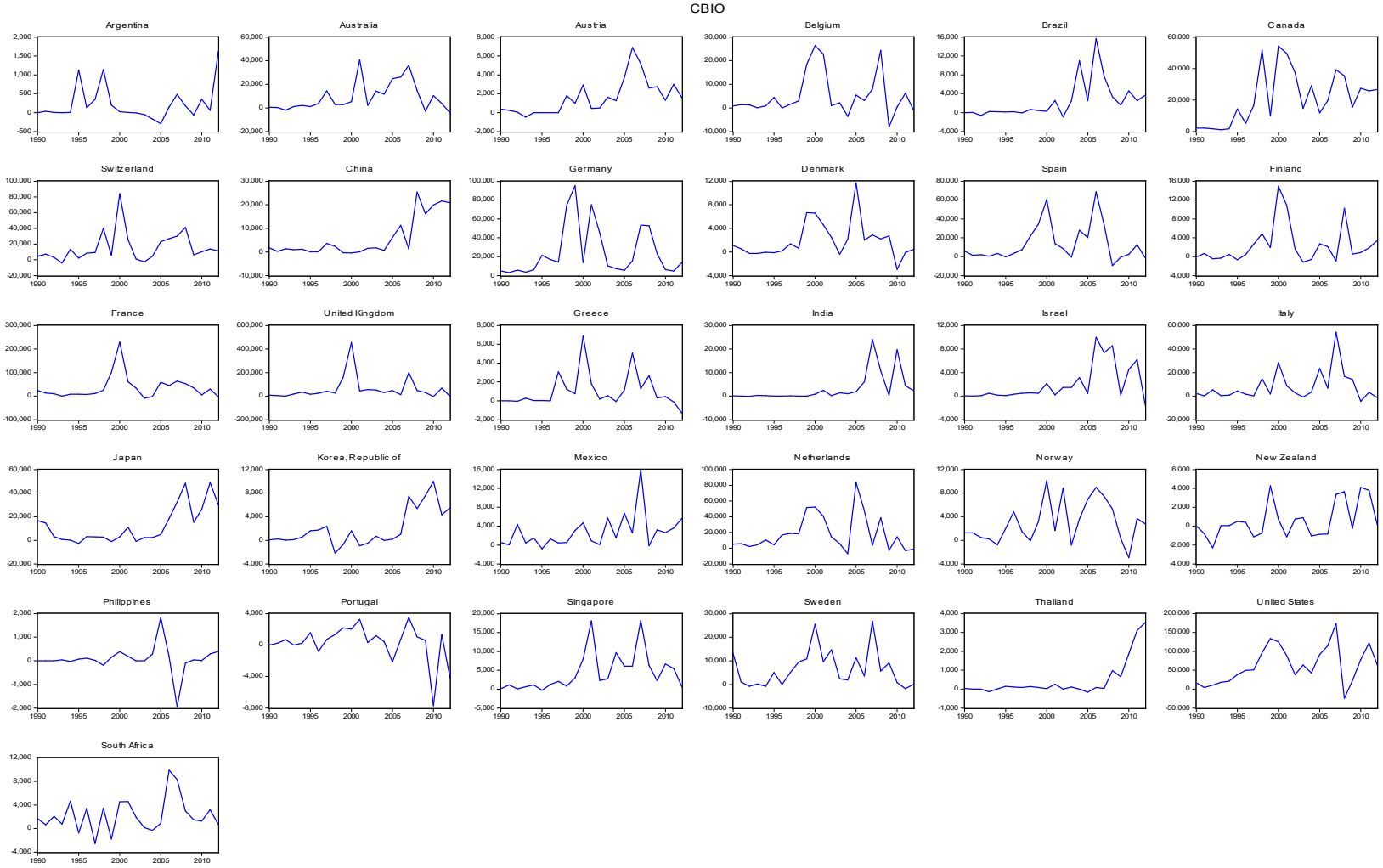
[60] *GNIP*: Per capita Gross National Income in 2005 US dollars

Appendix 3.9 - Graphical Depiction of Country Specific Data – *FDIO*[61]



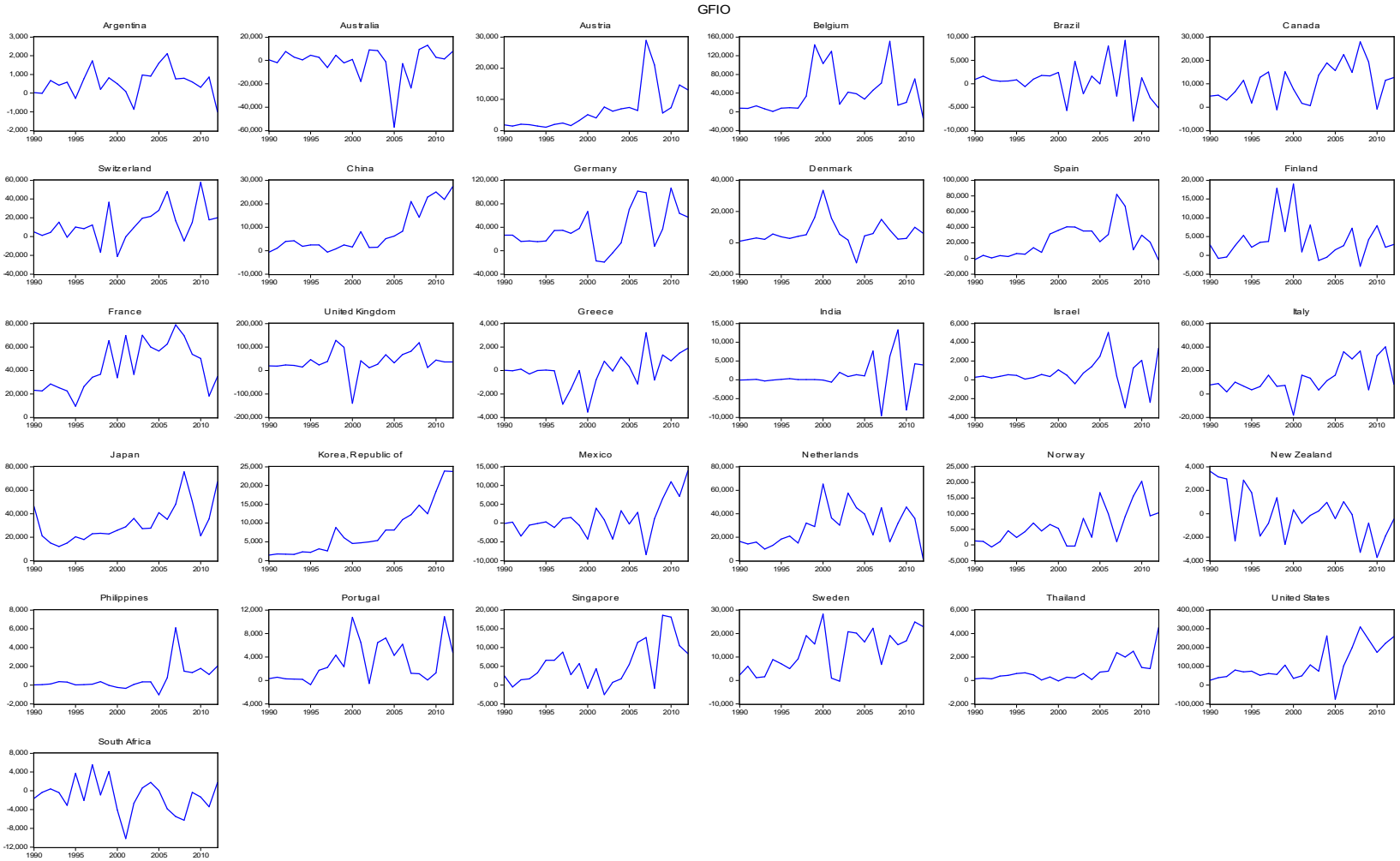
[61] *FDIO*: Total outward foreign direct investment flows in 2005 US dollars

Appendix 3.10 - Graphical Depiction of Country Specific Data – *CBIO*[62]



[62] GBIO: Outward Cross-border Mergers and Acquisitions flows in 2005 US dollars

Appendix 3.11 - Graphical Depiction of Country Specific Data – *GFIO*[63]



[63] *GFIO*: Outward Greenfield Investment flows in 2005 US dollars