THE GRADUATE INSTITUTE GENEVA

INSTITUT DE HAUTES ÉTUDES INTERNATIONALES ET DU DÉVELOPPEMENT

GRADUATE INSTITUTE OF INTERNATIONAL AND DEVELOPMENT STUDIES

INVESTMENT AS A TWO-WAY STREET:

How China used inward and outward investment policy for structural transformation, and how this paradigm can be useful for other emerging economies

THESIS
submitted at the Graduate Institute
in fulfilment of the requirements of the
PhD degree in International Relations/Political Science
Minor in Development Economics

by

Matthew Hector Travis Millan STEPHENSON

Thesis N° 1252

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Sur le préavis de MM. Thomas BIERSTEKER et Jean-Louis ARCAND, professeurs à l'Institut et co-directeurs de thèse, de Mme Sungmin RHO, professeur assistant à l'Institut et membre interne du jury, et de Mr Karl SAUVANT, Resident Senior Fellow, Columbia Center on Sustainable Investment, Columbia University, New York, USA et expert extérieur, le directeur de l'Institut de hautes études internationales et du développement autorise l'impression de la présente thèse sans exprimer par là d'opinion sur son contenu.

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Genève, le 6 février 2018

Philippe Burrin
Directeur

Thèse N° 1252

RESUME / ABSTRACT

Titre de la thèse :

L'Investissement Comme Rue à Double Sens : Comment la Chine à utiliser des politiques publiques pour guider l'investissement direct étranger entrant et sortant pour sa transformation structurelle, et comment ces leçons peuvent être utiles pour d'autres pays émergent

Title of thesis:

Investment as a Two-Way Street: How China used inward and outward investment policy for structural transformation, and how this paradigm can be useful for other emerging economies

Résumé en français : Cette dissertation explore les causes et les conséquences de l'investissement direct étranger sortant (IDES) de la Chine, en plein essor. L'IDES chinois conteste les cadres théoriques établis pour expliquer les flux financiers internationaux. Cette recherche propose et teste une nouvelle hypothèse, à savoir que la façon dont la Chine a ouvert son économie a l'IDE a entraîné une transformation structurelle économique et a généré une capacité domestique qui peuvent expliquer les tendances des IDES que nous observons actuellement. Par conséquence, il peut y avoir une relation entre l'IDE qu'un pays reçoit et l'IDES qu'un pays génère ensuite. Cette relation peut être favorisée par des politiques d'investissement et des cadres réglementaires régissant les flux d'investissements entrants et sortants. La recherche conclue par des suggestions qui peuvent être utile à la Chine et d'autres marchés émergents cherchant à utiliser la politique d'investissement dans le cadre de leurs stratégies nationales de développement économique.

English Summary: This dissertation explores the causes and consequences of booming Chinese outward foreign direct investment (OFDI). Chinese OFDI challenges established theoretical frameworks that have been used over the past decades to explain international financial flows. The research proposes and tests a new hypothesis, namely that the way China opened its economy to FDI brought about economic structural transformation and generated domestic capacity that can explain the patterns of OFDI we are now seeing. In essence, there can be a relationship between the inward FDI that a country receives and the outward FDI that a country then generates. The dissertation argues this relationship can be fostered through investment policies and regulatory frameworks governing inward and outward investment flows. It concludes with a series of considerations for China and other emerging markets seeking to use investment policy as part of their national economic development strategies.

To my mother, who teaches me how to be a good person.

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Geneva is sometimes maligned for lacking in fun, but with friends like these – fun-loving, golden-hearted people – this cliché could not be further from the truth: at the Graduate Institute, Stela Rubínová, Samuel Rohr, Daniele Rinaldo; in wider Geneva, Rodolphe Vallotton de Veley, Bożena Schmid-Adamczyk, Oliver Ernst. To all, thank you.

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While carrying out this research, I also had the chance to work in several international organizations, which helped situate the scholarship in practice. I very much wanted to do original work that would be policy relevant, which is why the last two chapters present some possible policy conclusions, first for China and then for other emerging markets. A big thank you to Heini Salonen of the United Nations, Iza Lejárraga of the OECD, and Roberto Echandi and José Ramón Perea of the World Bank Group for giving me the opportunity to learn while working, and work while learning.

Finally, this dissertation certainly would not exist without the love and support of my family.

Aunt Jan has taught me to be calm, scientific, listen, and think. Uncle Abe – the Platonic form of generosity – that it is hard to give too much. Uncle Mark strength, resilience, and perseverance.

My sister Corinne was a source of encouragement and support (sending me papers to read, taking out books from the library, creating a Dropbox), and would always make time when I called for help with tight deadlines. She has also been there ready to help me learn data manipulation. Corinne has already accomplished so much herself; it is a joy to watch her and wonder what she will do next.

My mother Sherry completed her PhD at the Graduate Institute exactly 30 years and 6 months, to the day, before me. Her thesis defense took place on 1 May 1987, and I followed suit on 1 November 2017. Without her love and support I am sure this dissertation would not exist. Constant messages of encouragement – whether through email, text, or in person – where like water to plants. She took time to share myriad messages about professional, cultural, and inspirational topics, keeping both Corinne and me up to date and in the loop, not to mention answering all her correspondence without fail.

She also helped me think through forks in the road, because decisions always seem clear in retrospect, but are foggy in the moment, to splice Robert McNamara and Søren Kierkegaard. If I got here, it is because she helped navigate those forks. It is thus to her that this dissertation is dedicated.

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Figures and boxes

Box

Acronyms

AREAER	Annual Report on Exchange Arrangements and Exchange Restrictions
AU	African Union
AUD	Australian Dollar
BEA	Bureau of Economic Analysis
BIT	Bilateral Investment Treaty
BRICS	Brazil, Russia, India, China, and South Africa
CBRC	China Banking Regulatory Commission
CFR	Council on Foreign Relations
CIS	Commonwealth of Independent States
CPCCC	Chinese People's Political Consultative Conference
CSA	Country-Specific Advantage
CSR	Corporate Social Responsibility
DC	Developed Country
DRC	Development and Reform Commission
EC	European Commission
EMENDATA	Emerging Multinationals Events and Networks DATAbase
EMNE	Emerging Multinational Enterprise
EPZ	Export Processing Zone
EU	European Union
EXIM	Export-Import
FAQ	Frequently Asked Question
FCV	Fragile and Conflict-affected, and Violent
FDI	Foreign Direct Investment
FDI Index	FDI Regulatory Restrictiveness Index
FSA	Firm-Specific Advantage
GBP	Great British Pound
GDP	Gross Domestic Product
GVC	Global Value Chain
HMT	Hong Kong, Macao, and Taiwan
HQ	Haoqing
IDE	Investissement Direct Etranger
IDES	Investissement Direct Etranger Sortant
IDP	Investment Development Path
IFDI	Inward Foreign Direct Investment
IIA	International Investment Agreement
IIER	Institute for International Economic Research
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
IOT	Input-Output Table
IPR	Intellectual Property Right
IPA	Investment Promotion Agency
JV	Joint Venture
LDC	Least Developed Country
LLL	Linkage, Leverage, Learning
M&A	Merger and Acquisition
MENA	Middle East and North Africa
MIT	Massachusetts Institute of Technology
MNE	Multinational Enterprise

MOFCOM	Ministry of Commerce
MW	Megawatt
NAFTA	North American Free Trade Agreement
NDCR	National Development and Reform Commission
NEPAD	New Partnership for African Development
NIC	Newly Industrialized Country
NOI	Net Outward Investment
NPC	National People's Congress
NYT	New York Times
OECD	Organisation for Economic Co-operation and Development
OFDI	Outward Foreign Direct Investment
OLI	Ownership, Location, and Internalization
POE	Privately Owned Enterprise
PRGT	Poverty Reduction and Growth Trust
PTA	Preferential Trade Agreement
R&D	Research and Development
SADC	South African Development Community
SAFE	State Administration of Foreign Exchange
SME	Small and medium-sized enterprise
SOE	State-owned enterprise
SSA	Sub-Saharan
TFP	Total Factor Productivity
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
US	United States
USCC	U.S.-China Economic and Security Review Commission
USD	United States Dollar
USGAO	United States Government Accountability Office
WBG	World Bank Group
WGI	World Governance Indicators
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

What do we already know?

1. Introduction: overview of dissertation and research questions

This dissertation explores the role of OFDI in emerging market economic development through a detailed examination of China's exceptional experience. Chinese OFDI has attracted the attention of politicians, businesspeople, civil society, and the general public from across the world as each group confronts this paradigm shift in global economic dynamics. Academic work has accordingly turned in the last few years to this growing phenomenon. In particular, two questions hotly debated are: i) whether emerging market OFDI challenges existing theoretical frameworks or whether existing theoretical frameworks are adequate to explain its patterns; and ii) whether China presents a special case vis-à-vis other markets, whether developed or emerging. This dissertation aims to shed light on this debate through a novel contribution to the literature. It suggests that past analytical approaches have ignored an important explanatory factor, namely the relationship between inward and outward investment flows in China. China has used investment policy to foster this relationship and bring about domestic economic structural transformation that has played an important role in the country's remarkable economic growth. This dissertation presents both a theoretical and empirical argument for this relationship and its explanatory power. It then concludes with a series of policy implications for China as well as other emerging markets seeking to use OFDI policy as a tool in their own economic development strategies. The dissertation is structured as follows:

Chapter one introduces, provides an overview of the structure, and presents the research questions.

Chapter two looks at the host market determinants of FDI and OFDI. It examines the rise of OFDI from emerging economies, and presents why existing theories may not be adequate to explain this new phenomenon. It breaks down the host-market determinants of OFDI into five broad categories, and evaluates the strength of different variables in explaining OFDI flows. It provides initial evidence that China is in many ways exceptional compared to other emerging markets, having used OFDI as a geo-political tool and to source strategic assets including knowledge and technology.

Chapter three examines the role of inward FDI on a country's economic development. It reviews the vast literature on how inward FDI can affect the host economy across eight different variables, namely productivity, linkages and GVCs, exports, domestic investment, innovation, wages, jobs, and gender inclusion. It presents the five different transmission channels and a number of transmission mechanisms through which this can take place. It also considers the negative effects that IFDI can have on a host economy.

Chapter four considers how outward investment can have an impact on the source (or home) economy. It identifies the mechanisms through which outward investment can bring about domestic structural transformation and capacity building, particularly through sourcing knowledge and technology. It examines these experiences across developed and emerging economies. It argues that the same five transmission channels and transmission mechanisms apply in the case of OFDI as in the case of IFDI, a novel theoretical stance. It also considers the negative effects that OFDI can have on a home economy.

Chapter five discusses China's experience regarding the three different dimensions examined in the three preceding chapters. First, the chapter examines the role of inward FDI in China's

economic development. It finds that inward FDI has played a crucial role in China's development, and generated capacities that could later be used for OFDI. Second, the chapter considers whether China's patterns of OFDI are different than FDI from developed economies or OFDI from other emerging economies. It finds that in some ways China is exceptional, mostly due to the strategic nature of its OFDI. Third, the chapter discusses the importance of OFDI on China's home economy. It finds that China has used OFDI to secure strategic assets and source knowledge and technology, shifting its development path upwards faster and most cheaply than if it had developed these capabilities domestically.

Chapter six shows how China has strategically and incrementally liberalized inward FDI over the last twenty years. The chapter does so through using an index developed by the OECD, the FDI Regulatory Restrictiveness Index. This index provides important evidence to later make the link between inward FDI, domestic structural transformation, and OFDI.

Chapter seven conducts an original analysis of primary sources to understand the evolution of China's OFDI regulatory framework. It considers how the Chinese government has put in place a sophisticated, dynamic system to guide Chinese OFDI. The chapter presents the modalities of this system and how they have evolved over time. The chapter presents three different theoretical mechanisms to understand this evolution, and draws from these to propose a new theoretical framework to explain China's OFDI policy path.

Chapter eight proposes that the analysis of the determinants of Chinese OFDI has heretofore ignored a crucial explanatory factor, namely the role of inward FDI that has flowed into China over the past three decades. Using input-output analysis, the chapter suggests that many of the top sectors that received inward FDI became increasingly connected to the top sectors that generated OFDI, providing quantitative evidence for a relationship. To complement this quantitative approach, the chapter considers two case studies of leading Chinese firms in two very different sectors to examine firm-level dynamics and relationship between IFDI and OFDI.

Chapter nine moves to policy considerations and suggests how China can continue to use OFDI strategically to generate home productivity and innovation and thereby avoid the middle-income trap. It outlines very concrete steps China may wish to consider in the next phase of its OFDI policy.

Chapter ten proposes policy considerations for other emerging economies seeking to use OFDI as part of their economic development strategy. Each country will have a unique political and economic context, but the chapter presents some general principles that policymakers may wish to consider as they seek to adapt the lessons of Chinese investment policy to their own specific national contexts.

Through these chapters, the following research questions will be addressed:

First, what are the determinants of emerging market OFDI, and does China represent a special case? Is OFDI the result of fundamental conditions in host markets? Or is such OFDI also in part the result of previous investment flows coupled with home government policies that guide and incentivize OFDI? Second, how has China used investment flows to bring about economic structural transformation in its home economy? In short, is there a relationship between FDI into China and OFDI out of China?

There is only very recent scholarship that has asked and attempted to answer these questions, namely a couple of articles in the last couple of years. Yet both FDI into China and OFDI out of

China have grown tremendously over the years, reshaping global relations and motivating this research.

The argument therefore aims to complete one analytical circle in three movements. First, the way that China opened its economy to FDI brought about certain transformational effects on its domestic economy. Second, these effects generated domestic capacity that has (with a lag) driven Chinese OFDI. Third, the way that China has guided its OFDI has shaped this process and allowed the country to acquire capabilities. In essence, China has used inward and outward investment flows strategically for its past, present, and future economic development.

Why are these research questions important? Their answers can help clarify the mechanisms, policies, and outcomes that underpin investment relationships. Answers can also help identify certain mechanisms that are just emerging regarding how developing economies can manage the opening of their economies in a way that leads to faster, deeper, and more sustainable growth. In many ways, China is ahead of the curve in these regards, and its approach and experience can inform future policies. If there is a relationship between inward and outward investment, and if there are clear policies that can promote such linkages, then this is important information for governments, businesses, development agencies, and other stakeholders as they allocate resources and formulate programs within their respective national development strategies.

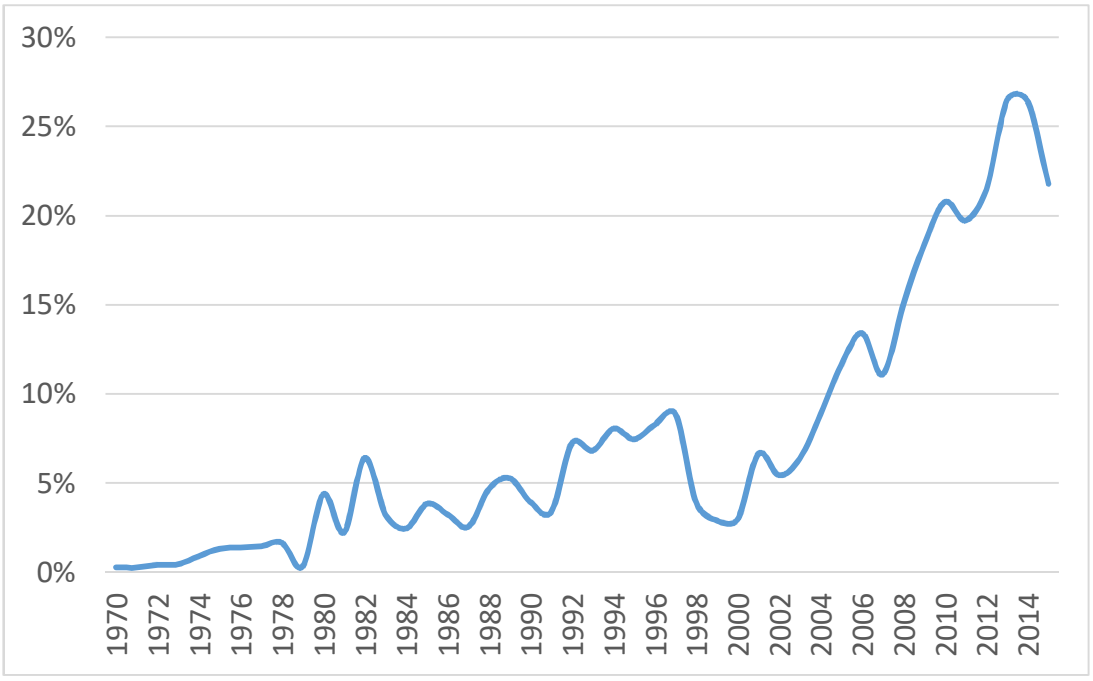
2. The rise in OFDI from emerging markets: what do we know theoretically and empirically?

A. Three waves of emerging market OFDI

Shifting global economic conditions have led to dramatic changes in international investment flows. Whereas developed countries used to dominate FDI, both as recipient and source economies, emerging economies[1] have become important new players in both inward FDI and outward FDI. As a result, we are witnessing a third wave in emerging market OFDI (Gammeltoft 2008).

The first wave, during the 1960s and 1970s, witnessed import substitution industrialization restrict the entry of FDI and the exit of OFDI, as developing countries aimed to nurture domestic industries and keep capital at home (Cuervo-Cazurra 2008; Gammeltoft et al. 2010). Protectionist measures reduced incentives to become internationally competitive, limiting firms' ability to expand outside of home markets. The small amount of OFDI that did take place generally went to other developing countries in the same region, and was mostly a combination of resource seeking (as developing economies sought primary inputs they lacked domestically) and market seeking (as a few developing countries sought to expand sales in culturally and geographically close neighbors) (Dunning et al. 2008; Ramamurti 2008; Wells 2008).

Figure 1: OFDI from Emerging Markets



Source: Author's calculations using UNCTADstat

The second wave, during the 1980s and 1990s, witnessed structural reforms and export orientation industrialization open emerging markets to FDI, as countries sought to attract the capital, knowledge, and skills needed to produce competitive exports. Liberalization shifted countries from highly closed to investment flows to increasingly open, and OFDI started to grow. During the second wave, OFDI became increasingly efficiency seeking, as developing countries began to plug

[1] This dissertation uses the terms 'emerging markets' and 'developing economies' interchangeably.

into Global Value Chains (GVCs) by locating some manufacturing activities in lower cost locations and integrating into international production networks (UNCTAD 2005). About two thirds of flows went to developed economies and one third to other emerging markets, but remained mostly in home regions (Dilek and Ratha 2003). The wave accelerated dramatically in the early 1990s through a combination of commodity price increases, export-driven current account surpluses, and overvalued emerging market currencies, before crashing following the Asian Financial crisis and the ensuing emerging market OFDI retrenchment.

The third wave, from the early 2000s to the present, is witnessing emerging markets increasingly use OFDI to acquire asset-augmenting, hard-to-develop capabilities. This includes things like technology, brands, networks, or organizational competencies. Both the stock and flow of OFDI have boomed, expanding from regional markets to being increasingly global and directed at both developed and emerging economies. Emerging economies accounted for 19% of global FDI flows and 12% of global FDI stocks in 2015, up from 4% and 3.7% in 1995, respectively (Perea and Stephenson, forthcoming).

In the third wave, OFDI includes all four types, moving from resource-seeking, market-seeking, and efficiency-seeking motives to also include strategic asset-seeking investments. What accounts for the emergence of this third wave? Both endogenous and exogenous factors have coincided to bring about this reconfiguration in the investment landscape.

On the endogenous side, liberalization and deregulation policy reforms embraced in the second wave raised competitive pressures in emerging markets, 'pushing' firms out of their home markets (Sauvant et al. 2008). At the same time, certain pioneering emerging markets, such as Singapore, embraced OFDI in the late 1990s as a development strategy to "achieve efficiency in resource allocation and diversify risks from economic shocks in any one region" (Lee et al. 2016: 63-64). Other emerging economies soon sought to emulate its successful approach. Emerging market governments started to view OFDI as a means to access markets, capital, technology, and knowledge and to ultimately boost national competitiveness (Luo et al. 2010). This led them to increasingly adopt supportive home country measures and remove restrictions to OFDI (see chapter seven, section C). As the world's economic center of gravity shifted gradually east, the growing middle class in Asia (and to some degree Latin America, fueled by commodity price increases) also started to demand new products and services, pushing emerging multinational enterprises (EMNEs) into foreign markets. Rising income levels in Asia acted as both a driver and a consequent of OFDI (OECD 2010).

On the exogenous side, changing macroeconomic conditions and terms of trade 'pulled' emerging market into new host markets. On the one hand, export growth from liberalization led to trade surpluses that could be invested abroad. On the other hand, China's thirst for primary inputs for its rapid industrialization drove a boom in commodity prices. As net commodity exporters, many emerging markets found themselves with significant windfalls. Finally, the lessons of the 1994 Mexican Peso Crisis and the 1997 Asian Financial Crisis, which witnessed massive capital flight and ensuing economic recession, caused emerging economies to protect themselves from future current-account reversals through building up the financial account. As a result, when the 2007 Global Financial Crisis and the 2009 Euro Financial Crisis hit, some emerging economies had created cushions to insulate themselves from the shocks, and had the liquidity to both stabilize their economies through counter-cyclical stimulus and take advantage of the fire-sale of distressed assets abroad, turning crisis into opportunity (Basin and Jain 2015; Gammeltoft et al. 2010; Sauvant et al. 2008).

The growing share of emerging market FDI in global FDI can partly be attributed to retrenchment in developed country FDI (both stocks and flows) during and following these two financial crises.

Yet emerging market OFDI actually started to increase prior to 2007. The most iconic example of this new phenomenon was Chinese firm Lenovo's acquisition of IBM's ThinkPad personal computer division, which took place in 2005 (Dong and Guo 2013). The crises amplified and accelerated these trends, but did not start them.

B. What is new about OFDI from emerging markets?

The boom in OFDI is a fairly recent phenomenon, and only accelerated in the last decade. There is thus a dearth of empirical literature that examines the determinants of OFDI. What studies exist have mostly been restricted to specific firms or industries, or to individual country case studies, not to quantitatively analyzing emerging economies *in toto*.

Yet emerging market OFDI warrants investigation, as it presents paradoxes and may challenge established theoretical frameworks. On the one hand, these countries have significant developmental needs at home, yet are exporting capital (a form of the Lucas Paradox). On the other hand, theoretical frameworks to explain FDI were developed in the 1960s and 1970s with developed economies in mind, and may not adequately explain the behaviour of these new entrants. Moreover, this behaviour and these new patterns of investment are important as they have the potential to significantly impact developmental outcomes for both home and host economies.[2]

As a result, OFDI may play an important role in an emerging economy's development strategy. An emerging economy can use OFDI as a late-comer catch-up strategy to source technology, increase domestic capacity, upgrade production processes, boost competitiveness, augment managerial skills, and access distribution networks (Amann and Virmani 2014; Driffield and Love 2002, 2007). In many cases, it would take an emerging economy firm longer and cost more to develop the equivalent capacity domestically than it does to acquire it through OFDI.

At the same time, some evidence suggests that EMNEs may actually have an advantage vis-à-vis multinational enterprise (MNEs) in operating in emerging contexts, which we will examine in detail below. They can transform their experience in the home markets into advantages, both regarding the soft skills needed to operate in institutionally weak environment, and the hard skills of adapting products and services to poor-quality infrastructure (Cuervo-Cazurra and Genc 2008; Ramamurti 2008). However, as we will see in the literature review this 'institutional advantage' claim is not empirically clear, and thus warrants further examination (see chapter two, section E).

In short, emerging markets have burst on the international investment scene in the last decade. Though their share of global FDI had been growing, the global financial crisis accelerated the increasingly important role of emerging markets as source economies. Yet analysis has not kept up – there is insufficient understanding of how such firms decide where to invest. Are the determinants of OFDI from emerging markets different or similar to the determinants of FDI from developed economies? Does this vary depending on the type of investment? Is China, which is driving this phenomenon, qualitatively different in its behaviour than other emerging economies? A clearer understanding of how different variables attract OFDI can help answer these questions, as well as help economies develop policies and frameworks to maximize investment flows' developmental impact.

[2] These benefits are not automatic, but require adapted and appropriate investment policies according to each country's particular circumstance. For a review of the literature on FDI host effects, see chapter three.

C. Existing theoretical frameworks and potential weaknesses

The literature lacks a unified theory to explain FDI decisions. Rather, there are a plethora of theoretical frameworks that have been successively advanced, each trying to fine-tune the ideas of its predecessors or plug a perceived gap. To some degree, there has been an iterative process between theory formation and empirical work, with each reacting to the other over time. Before turning to the empirical literature, it is therefore useful to present where the theoretical debate stands today, and how this informs our own analysis.

Why do firms carry out FDI? Hymer (1960) was the first to ask this question (Dunning and Rugman 1985: 228). Hymer's view was that FDI is a means of transferring tangible and intangible assets to organize internal production. That is, certain firms have certain advantages that they can better exploit in other markets. Hymer's insight was to distinguish between portfolio and direct investment, a distinction the OECD would later adopt and fine-tune.[3]

Hymer (1960) explains that the key difference between direct and portfolio investment is control by the investor of the investment (Hymer 1960: 23). There are two reasons why an investor may wish to exercise such control, which Hymer distinguishes as two different types of FDI: first, to manage the prudent use of the assets; second, to remove competition or appropriate returns (Hymer 1960: 23-25).

Since Hymer, there have been two different but complementary ways of thinking about the evolution of FDI. On the one hand, FDI can follow a process or path, with internal economic development driving external investment. This approach is captured by the 'flying-geese' model[4] (Akamatsu 1962), the Uppsala model of incremental internationalization[5] (Johanson and Vahlne 1977), and the Investment Development Path (IDP)[6] (Dunning 1981a). Each of these frameworks suggests there will be stages to internationalization, with learning and structural effects producing an organic and gradual expansion.

The IDP concept states that an economy's net outward investment (NOI) position will evolve as the economy's Gross Domestic Product (GD) grows. The net outward investment position is the

[3] In Hymer's dissertation, he talks about 25% ownership being the accepted rule of thumb at the time to distinguish portfolio investment from direct investment. However, he writes, "the details of the definition are not important. We are concerned with why this distinction is made at all" (Hymer 1960: 2). Today, the accepted distinction is that foreign direct investment requires at least 10% ownership (see OECD Benchmark Definition of Foreign Direct Investment, 4th edition (2008); http://www.oecd.org/daf/inv/investmentstatisticsandanalysis/40193734.pdf

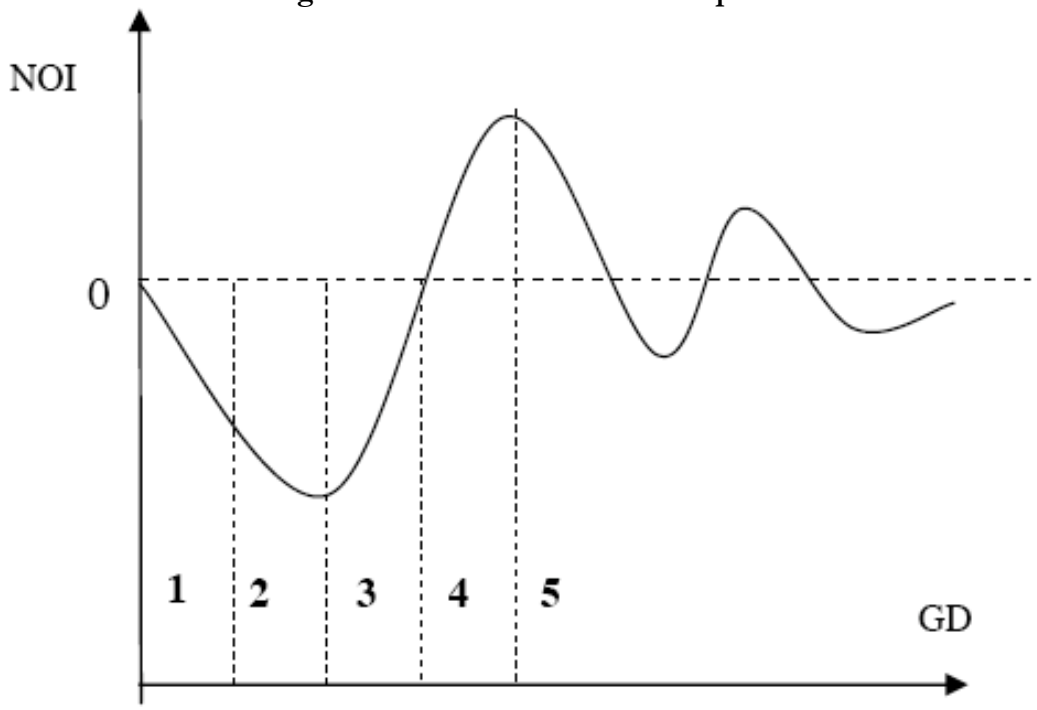
[4] In the case of the flying-geese model, stages will depend on the leading economy's domestic structural transformation, with increasing labor costs driving a shift from labor-intensive production to capital-intensive production; labor-intensive production will then shift to other economies in the region.

[5] In the case of the Uppsala model, stages will depend on organizational learning, with firms gaining experience in the domestic market before moving to foreign markets; internationalization thus begins with culturally and geographically close markets, and with export experience preceding FDI.

[6] In the case of the Investment Development Path (IDP), stages will depend on the net position between inward and outward FDI flows, which reflect changing market attractiveness with respect to costs, opportunities, and endowments (Dunning et al. 2008). Economies first attract inward investment, and then subsequently become outward investors themselves; in the last stage, FDI and OFDI fluctuate around an equilibrium. Scholars have applied the IDP framework to different contexts, and found it to have explicative power. On Central and Eastern Europe, see Gorynia et al. (2012) and Stoian (2013); on China, see Liu et al. (2005) and Marton and McCarthy (2007); on India, see Verma and Bernnan (2011); on Ireland, see Barry et al. (2003); on Malaysia, see Ramasamy (1996); on Poland, see Gorynia et al. (2007).

difference between outward an inward investment stocks. As an economy grows, it will first be a net recipient of investment (stages 1, 2, 3), and then, at some point, it will become a net source of investment (stages 4, 5). This can of course change depending on market evolutions or economic fortunes in a particular country. Over the long-term, inward FDI and outward FDI are expected to reach an equilibrium and be roughly comparable in scale. In fact, this is what we have started to see in China's case in 2015, when OFDI is estimated to have surpassed FDI for the first time (USD 145.7 billion vs. USD 135.6 billion) (KPMG 2016). It is too soon to say whether these two flows will settle into an equilibrium over time (see chapter eight, 'Looking forward').

Figure 2: The Investment Development Path



Source: Dunning & Narula 1996 in Kayam & Hisarciklilar 2009, p. 65

On the other hand, FDI can be driven by firms capitalizing on certain country or firm characteristics, known in the literature as country-specific advantages (CSAs) and firm-specific advantages (FSAs) (Rugman 1981). CSAs are qualities *located* in the country (e.g. natural resource endowments, labor costs, business climate, or geography), while FSAs are qualities *owned* and *internalized* by the firm (e.g. proprietary technology, knowledge, brands, or managerial skill). The classic articulation of this second approach is thus the ownership, location, and internalization (OLI) model, also known as the 'eclectic paradigm' (Dunning 1979).

The OLI model suggests that FDI will be contingent on a firm simultaneously possessing ownership advantages, location advantages, and internalization advantages. Ownership advantages include things like trademarks and production techniques; location advantages include things like access to raw materials and low wages; and internalization advantages include things like production techniques and core competencies. The presence or absence of these different categories of advantages can lead to different motivations for FDI. If a firm only has ownership advantages, it may choose to export; if it only has ownership and location advantages, it may choose to license; but if it simultaneously has ownership, location, and internalizing advantages, it may choose to invest abroad. All three are necessary to overcome the costs and challenges inherent in the 'liability of foreignness' when undertaking FDI (Zaheer 1995). As briefly mentioned above, Dunning also posits that the location decision for FDI can be understood through a four-part typology: whether

it is motivated by efficiency-seeking, market-seeking, natural resource-seeking, or strategic asset-seeking.

These models, however, were developed with economies of the Triad in mind: the 'flying-geese' model based on Japan, the Uppsala model based on Sweden, and the OLI model based on the UK and the U.S. As a result, scholars have suggested that they may not adequately explain OFDI from emerging markets, which may have distinctive characteristics. Rather than internationalizing incrementally (as suggested by the flying-geese and Uppsala models), empirical evidence suggests some early stage emerging market OFDI takes place far away from home, and with high initial commitments. Rather than exploiting existing ownership advantages internal to the firms (as suggested by the OLI model), empirical evidence suggests emerging market OFDI may be motivated by acquiring *new* firm-specific advantages.

A slew of new theoretical frameworks have thus been suggested to account for EMNE behaviour. Perhaps the most important of these is the LLL Framework put forward by Mathews (2002, 2006, 2007). This suggests emerging market firms internationalize precisely to acquire new competitive advantages rather than exploit existing ones. Such catch-up takes place through a process of linkage to, leverage in, and learning from (LLL) external networks. Emerging market firms *link* to these networks through supplier relationships to GVCs; firms *leverage* these linkages to access resources; and they *learn* from repeating this process. Luo and Tung (2007) put forward a similar idea in their 'springboard' model, which suggests EMNEs use OFDI as a springboard to acquire assets and seek opportunities that help them overcome their latecomer competitive disadvantages, both in their home market and in the international market. OFDI is thus used to acquire assets such as technology, brands, or distribution networks, as well as seek opportunities through bypassing host trade barriers and escaping home market constraints. These two frameworks thus focus on the 'pull' factors for EMNE internationalization.

In contrast, two other new frameworks focus more on 'push' factors to explain EMNE OFDI. Gammeltoft et al. (2012) propose what they call a framework of 'strategic fit'. In their view, EMNE behaviour is driven by the fit between institutional pressures and the economic environment on the one hand, and structures, resources, and practices of the firm on the other. Changes in institutional and economic circumstances in emerging markets therefore drive changes in EMNE behaviour. EMNEs engage in OFDI to realign their 'fit' with these changing circumstances, and are supported in this process by enabling government policies. Kumar et al. (2013) agree with the importance of institutional determinants in another framework they call the '3Is'. In their view, EMNE behaviour can be explained by the need for *internationalization*, the importance of *innovation*, and role of *institutions*. Given increasing competition both in their home markets and globally, firms need to internationalize to acquire knowledge-intensive processes that permit innovation, and are assisted in this process by home institutions.

At the same time, EMNE behaviour has prompted several scholars to propose modifications to the classic Dunning typology. Perez Ludena (2016) suggests it is more useful to think of FDI motivations in terms of two broad categories, namely asset exploiting and asset acquiring. Franco el al. (2008) instead puts forward a three-part taxonomy: resource seeking, market seeking and non-marketable asset seeking. Finally, Moghaddam et al. (2014) suggest that to explain EMNE OFDI motivations requires in fact a six-part taxonomy: end-customer market seeking, natural resource seeking, downstream and upstream knowledge seeking, efficiency seeking, global value consolidation seeking, and geopolitical influence seeking. This dissertation will retain the classic Dunning typology – given how widespread it has become – to create a common language of analysis across research.

Overall, though some have argued that no new theory is necessary (Rugman 2007), a consensus seems to be emerging that existing theories need to be extended and refined to better account for the special features of EMNEs, but not necessarily wholly replaced (Cuervo-Cazurra 2008; Cuervo-Cazurra 2012; Ramaswamy et al. 2012; Quer et al. 2015). The exception may be China, which seems to present some behaviour that does not fit existing theory on account of distinctive FSAs and CSAs, respectively the dominant role of State-owned enterprises (SOEs) in OFDI and domestic capital market imperfections. This will be considered in more detail below.

D. Development of empirical work

The development of the empirical literature on the host determinants of emerging market OFDI has gone hand in hand with improvements in the quality of data on variable proxies. The first studies of EMNE OFDI used official data from national governments to analyze investment flows. However, such data may be subject to significant distortions through omissions and biases.

In terms of omissions, official data does not capture private sector flows if these have not been reported. In emerging markets with approval requirements for outward investment, some private sector flows may go unreported to avoid the approval process (Davies 2013). To take China as an example, the scale of this omission is made clear by the difference between official Chinese data on outflows to the OECD countries, and what OECD countries report to have received from China, a difference estimated at up to 40%! This dramatic difference is confirmed by Eurostat data (Amighini et al. 2014; Hanemann and Rosen 2012).

In terms of biases, there are at least two potential sources. First, round-tripping may overstate OFDI, as investors channel money out of a country only to bring it back into the economy to benefit from certain advantages conferred on inbound FDI. Again taking China as an example, one study estimated in 2004 that as much as 40% of all flows to Hong Kong ended up being reinvested in mainland China (Garcia-Herrero et al. 2015). Second, some regulations require that the first but not the final destination for OFDI be recorded; given that OFDI is often funneled through financial intermediaries and tax havens, official statistics grossly misstate the amounts that remain in these jurisdictions. As a result, recent studies have removed tax havens from the data (Kolstad and Wigg 2012; Zhang and Roelfsema 2014).[7]

To address these problems of omitted and biased official data, recent studies have turned to market data to analyse EMNE OFDI. Private sector data on greenfield FDI and M&A paints a much clearer picture of actual flows. However, market data is more resource intensive to compile, and as a result earlier studies looked at only one or the other of these two modes, painting an incomplete picture.[8] Using a new dataset, Perea and Stephenson (forthcoming) find that the general preference of OFDI towards greenfield investment over M&A fades away when compared to OFDI from developed countries. In particular, OFDI is relatively more biased towards M&A when it targets manufacturing industries, and especially those that are knowledge-intensive, providing evidence

[7] It is worth noting that some scholars have chosen to address the tax haven bias through using count data, i.e. the number of investment projects in a country (Amighini et al. 2014; Ramasamy et al. 2012). Count data is a very useful unit of analysis to understand the relative distribution of EMNE OFDI across different types of FDI. However, it does not capture the intensity or importance of each investment, which is better captured by the monetary value. The combination of both dimensions can thus bring about a more complete picture.

[8] For instance, Kalotay and Sulstarova (2010) only looked at Russian M&A OFDI data, while Amighini et al. (2013a) only looked at Chinese greenfield OFDI data, both due to data limitations at the time of study.

that EMNEs are using OFDI to augment capabilities and competitiveness (Perea and Stephenson, forthcoming).

E. Insights of the empirical literature

As mentioned, scholars have advanced a laundry list of possible host country explanatory variables for host location determinants. These variables can be grouped into five broad categories: macroeconomic, structural, institutional, policy, and gravity variables. In an attempt to build upon previous insights, this section considers in turn what the literature finds about variables in each of these five categories. The chapter first focuses on the evidence for developed economies as a group and the few studies of emerging economies considered as a group; after that, it considers evidence for individual country studies and especially for China. Throughout, the section tries to disentangle any differences by disaggregating FDI by type.

1. Macroeconomic variables

GDP and GDP growth and GDP per capita

The best predictor of how much FDI a country receives is market size (Chakrabarti 2001; Dollar 2016). This is the single most shared finding across all studies, both those focused on developed and those focused on emerging economies: FDI from developed economies and OFDI from emerging economies are attracted by larger markets. The reason may be that larger markets simultaneously offer scope for sales of goods and services (leading to market-seeking investment), and cost saving through economies of scale (leading to efficiency-seeking investment).

The same reasoning applies to GDP growth, which is why this section groups these variables together. A fast-growing host economy generally leads to higher levels of aggregate demand and thus provides increasing opportunity for market-seeking investment. Case studies of some of the largest and most successful internationalizing firms from BRIC countries confirm the market-seeking motive for OFDI. Holtbrugge and Kreppel (2012) conducted case studies of two Brazilian firms (WEG Equipamentos Eletricos and CVRD), two Russian firms (Gazprom and Vneshtorgbank), two Indian firms (Reliance and Wipro), and two Chinese firms (Lenovo and Haier). They found market seeking to be the most important OFDI motive for all of these firms.

However, when explicitly comparing the effect of market size as location determinant between developed and emerging economies, Arita (2013) finds that compared to MNEs, EMNEs are less attracted to larger market sizes. The study suggests that the tendency for EMNEs to invest in smaller and less developed economies may be due to their inability to compete in more competitive markets.

This finding is confirmed in several regions and countries as well. Turning to Asia, Gao (2005) compares South, East, and Southeast Asian OFDI to OECD FDI. He finds that Asian OFDI goes to low income countries in the same region on account of being vertical, efficiency-seeking investment more than horizontal, market-seeking investment. Hiratsuka (2006), looking at ASEAN economies, finds a similar result, with EMNEs in the ASEAN region investing in neighboring countries with smaller GDPs first, and only later in larger markets. In this case the incremental internationalization approach put forward by the Uppsala model seems to hold. The explanation is that Asian EMNEs followed their customers when these latter expanded facilities to lower wage countries, what the study describes as "supplier following assembler" FDI. In this case efficiency-seeking investment is more important than market-seeking investment, at least initially.

Turning instead to Latin America, Cuervo-Cazurra (2008) finds a somewhat similar result, though with differences by sector. Looking at case studies of internationalization of the largest 'multilatinas', he finds that EMNEs in the region wait to expand to Brazil, by far the largest market, until they have first successfully expanded in smaller regional economies. The reason is that Brazil is so large and complex that it is considered a formidable challenge, even if the potential rewards are also significant.

Finally, many studies confirm that market size as a host determinant for Chinese OFDI (Wang et al. 2015; Zhang and Daly 2011). However, Huang and Wang (2010) find that Chinese investors do not pay close attention to either the market size or the cost advantages of host economies, but rather are attracted by advanced development in OECD countries and by resources in non-OECD countries. They suggest Chinese OFDI may be operating according to a 'China Model', which suggests Chinese OFDI idiosyncrasy (see chapter five, section B). Amighini et al. (2013b) find that Chinese manufacturing OFDI is more likely in countries with a larger market size and GDP per capita, while Chinese resource OFDI is more likely in countries with low levels of GDP. Chinese OFDI might therefore be motivated by different goals in different kinds of markets, resource seeking in poorer countries and asset seeking in richer countries. Ramasamy et al. (2012) accounts for this distinction by ownership structure of Chinese firm: SOEs are relatively more asset seeking than private firms. These seeming differences between OFDI from China and OFDI from other emerging markets will be further investigated with other variables.

Exchange rate and Inflation

Intuitively, if the host economy exchange rate appreciates, host assets become relatively more expensive, depressing FDI; contrariwise, if the host economy exchange rate depreciates, host assets become relatively cheaper, stimulating FDI. Most empirical studies for developed economies find support for this effect (Chakrabarti 2001; Sauvant and Davies 2010), although some do not (Frenkel et al. 2004; Okafor 2015). A study of Malaysia's OFDI finds that is does respond strongly to changes in the real exchange rate (Goh and Wong 2010), but two studies on China find no significant effect (Wei and Zhu 2007; Zhang and Daly 2011).

Regarding inflation, moderate inflation is generally considered a sign of healthy growth, and therefore expected to positively influence FDI. However, no clear picture emerges. With regards to developed economy FDI, Kok and Ersoy (2009) finds that inflation discourages developed economy FDI into emerging markets, and Okafor (2015) finds the same result but specifically for U.S. FDI into Sub-Saharan Africa. However, with regards to emerging economy OFDI, Anwar and Mughal (2013) find that Indian OFDI appears to be attracted to moderate inflation while Zhang and Daly (2011) find no support that Chinese OFDI is motivated by low inflation rates. These two variables therefore remain ambiguous and require further empirical investigation.

Trade openness

This variable plays an interesting role with respect to investment flows, because of the debate in the literature regarding whether trade and FDI are complements or substitutes. The consensus seems to be that they are often complements, especially when economies are oriented around manufacturing exports and participation in GVCs, but this depends on specific economic structures and the role of trade barriers between two economies.

Groh and Wich (2012) find that trade openness is a significant determinant of investment flows

when looking at all economies, both developed and emerging, but that emerging economies score less well on this measure, which in part explains the lower level of FDI that they receive.

The importance of individual economic structures becomes clear when looking at individual country studies. For Malaysia, trade openness is a significant host determinant of OFDI (Goh and Wong 2010). For China, trade openness is likewise an important driver (Zhang and Daly 2011). However, for trade openness is found to be insignificant for U.S. FDI into Sub-Saharan Africa (Okafor 2015), as well as for Indian OFDI (Basin and Jain 2015), even though one study that compares Chinese and Indian OFDI find that OFDI from both countries is attracted to trade openness (De Beule and Van Den Bulcke 2012). The explanation for these findings may be that those countries that participate relatively more in the production of intermediate exports and are plugged into GVCs as a development model care more about trade openness when it comes to investment. For OFDI from countries like China and Malaysia, trade openness may be important because subsidiaries need to be able to export as well as import throughout the production process. In this case OFDI would be more of the efficiency-seeking type.

2. Structural variables

Studies show that dissimilarities in factor endowments generally encourage efficiency-seeking FDI, as they make vertical integration gains possible based on comparative advantages (Nicoletti et al. 2003). This is the basis of much vertical FDI flowing from developed to emerging economies and linking them through GVCs, as well as South-South flows that exploit cost differentials. Acquiring natural resources is a prime example of backward, vertical FDI. At the same time, dissimilarities in factor endowments discourage market-seeking FDI as it makes horizontal expansion through the production of the same good or service in different countries difficult (Ibid.).

Primary sector importance

Factor differentials in the primary sector between economies encourage resource-seeking FDI *par excellence*. Looking at all economies, natural-resource seeking FDI is not that significant a factor on a global level, but it can be very significant for certain economies or regions (Dollar 2016). This section looks at the empirical evidence in two of these regions.

First, the most iconic region is Africa, where studies have found that natural resource rents as a share of GDP are a good overall predictor for investment received (Dollar 2016). Disaggregating developed and emerging market flows, however, the picture becomes more complex. Looking at U.S. FDI in Sub-Saharan Africa[9] Okafor (2015) finds that the availability of crude oil and natural gas to have a significant and positive effect. Unexpectedly, however, he finds that rents generated from natural resources have a significant and negative relationship with US FDI. This may be due to limits placed on U.S. investor behaviour by the U.S. Foreign Corrupt Practices Act, so that increasing scope and need for bribery decreases U.S. FDI., as in these cases U.S. investors cannot compete against those willing to engage in such practices.

Chinese OFDI is also attracted to natural resources in developing markets, but differences emerge when one disaggregates between SOEs and private firms. Several different studies all agree that

[9] The study looks at 23 countries in the Sub-Saharan region during the period 1996-2010, and states that for this sample, U.S. FDI comprises 60% of total FDI.

Chinese SOEs invest abroad in search of natural resources in developing countries, while this is not a significant determinant for Chinese private firms in developing countries or for Chinese OFDI (SOE and private firm) in developed countries (Amighini et al. 2013; Kang and Jiang 2012; Kostad and Wiig 2012).[10] Chinese SOEs therefore may represent idiosyncratic behaviour in developing countries. In seeking out natural resources, Chinese SOEs are either indifferent to distance and the political and economic conditions in the host countries (Amighini el al. 2013), or seek out the combination of large natural resources and poor institutions (Kolstad and Wiig 2012). Looking more closely at type of natural resource, this interaction between natural resources and poor institutions is significant for fuel exports but not ores and metals, indicating that petroleum is the resource of primary interest for Chinese OFDI (Ibid.). Overall this kind of OFDI pattern would seem to suggest national strategic priorities of securing natural resources for home-country development, rather than profit-maximizing corporate behaviour.

Second, Russian OFDI into CIS economies is another case where natural resources play a significant role. Natural resource endowments were the main basis for the creation of EMNEs in Russia, and natural resources and manufacturing together account for over three quarters of Russian OFDI (Wilinksi 2011). The motivation of Russian OFDI therefore seems both market seeking and resource seeking, expanding and strengthening market position while controlling and accessing natural resources through a series of acquisitions.[11] In CIS and developing countries, Russian EMNEs seek to control upstream natural resources, while in developed countries, they seek to control downstream markets (Kalotay and Sulstarova 2010).

The role of the state is crucial to explaining the evolution of Russian OFDI (Kalotay and Sulstarova 2010; Sauvant 2008; Wilinksi 2011). In the early 1990s newly privatized firms played a role Russian OFDI; however, today Russian SOEs or state-influence EMNEs dominate OFDI in natural resources. Russian and Chinese OFDI therefore share some characteristics. There are, however, significant differences as well: Russian OFDI is focused on geographically close regions, and builds upon its own natural resource endowment, whereas Chinese SOE OFDI ventures geographically far away and is based on a relatively natural resource poor home economy. Moreover, Russian OFDI is focused on the primary sector, whereas Chinese OFDI is also focused on other sectors, and in particular on technology.

Infrastructure

Host economy physical infrastructure has an ambiguous role on FDI from developed economies. There is some empirical evidence that good infrastructure attracts investment; however, inadequate infrastructure may *motivate* investment (Nicoletti et al. 2003). There may also be threshold effects, whereby any positive relationship between infrastructure and FDI is only significant after a minimum threshold of infrastructure has been met (Chakrabarti 2011).

In a study of 127 countries that included both developed and developing countries, Groh and Wich (2012) found that infrastructure had the largest coefficient of any host determinant variable for

[10] In contrast, Chinese SMEs investing in Africa, which are mostly private firms, are not investing in natural resources. Instead, they are seeking OFDI opportunities in manufacturing or services, and operating on a profit-maximizing basis (Chen, et al. 2015).

[11] Studies suggest that in the early 1990s a sizeable portion of Russian OFDI was capital flight, with newly privatized firms seeking safety nests abroad given domestic risk and uncertainty, a motivation we will not focus on in this study.

FDI, thus concluding that infrastructure is a strong determinant, and that emerging and developing countries are less attractive as host destinations due to their poor infrastructure stock.[12]

Looking instead at the effect of host economy infrastructure on emerging economy OFDI, Arita (2013) found that lower levels of infrastructure actually led to higher levels of OFDI. This may reflect the advantage of EMNEs operating in environments similar to their home economies. However, Basin and Jain (2015) recent study focused on India found no relationship between infrastructure facilities of the host country and Indian OFDI.

Technology

The role of technology in attracting emerging market OFDI is perhaps the most interesting insight of recent empirical literature, as it is the role of technology that challenges the adequacy of existing theoretical frameworks. It is generally accepted that developed economies exploit existing technological assets in undertaking FDI; however, there is some evidence that emerging economies instead aim to *acquire* technological assets in undertaking OFDI.

Case studies of leading BRIC firms confirm the importance of OFDI to acquire new resources rather than exploiting existing ones (Deng 2004; Holtbrugge and Kreppel 2012). The reason is that most BRIC EMNEs face disadvantages in terms of patents, management know-how, or cutting-edge processes, and thus seek to acquire these abroad as part of a strategy of late-comer catch-up. As a result, forward integration OFDI in developed economies is a way to quickly and more cheaply acquire these assets relative to developing them at home.

Looking at empirical results, however, this finding seems to apply mostly to China. Across many studies, there has emerged a consensus that Chinese EMNEs use OFDI to acquire knowledge, skills, and technology they lack (Dong and Guo 2013; Huang and Wang 2011; Kang and Jiang 2012; Ramasamy et al. 2012; Zhang and Roelfsema 2014). To illustrate, Ramasamy et al. (2012) test the proportion of technology exports to total exports of the host countries in which Chinese EMNEs invest, and find that Chinese firms are attracted to countries that have a large proportion, which is taken to be a proxy for technical and innovative superiority. However, it is worth noting that in this same study, the alternative proxy for technology, number of patents, was significant as a determinant for Chinese OFDI at the 5% level but carried a negative sign. The authors suggest as an explanation that Chinese firms are not attracted to core research, but rather the practical application of technology; as such, Chinese firms invest in countries that can convert core research into commercially viable products and services, in line with Chinese pragmatism (Ramasamy et al. 2012). The ultimate aim may be to increase home competitiveness, and acquiring technology through strategic asset seeking OFDI is seen as the cheapest and fastest channel compared to home-grown R&D (Huang and Wang 2011).

Some empirical work investigates whether technology is also significant as a location determinant for Indian OFDI, explicitly comparing Chinese and Indian OFDI determinants in the same study. However, technology does not seem to be a significant determinant for Indian OFDI, which is more market seeking in its nature (De Beule and Van Den Bulcke 2012). It is worth noting, however, that De Beule and Ven Den Bulcke (2012) use patent intensity as a proxy for technology,

[12] Their measure of infrastructure (which included transportation, energy, and information and communication technology infrastructure) received a coefficient of 0.709, compared to business environment (0.030) and economic activity (0.102), and legal and political system (0.460), categories that mostly parallel those used in this study. It is worth not just noting the high coefficient on infrastructure, but also the very low coefficient on business environment. The role of business environment as a host determinant will be discussed below.

and, as noted earlier, this may not be the best measure to assess EMNE OFDI technology seeking motivation. Furthermore, descriptive evidence suggests that Indian EMNEs have ventured into the U.S. and other developed markets to access the latest technology and invest in R&D (Das and Banik 2015b). More work is therefore needed to clarify the importance of, and potential variation in, technology as a host determinant for OFDI from different emerging markets.

Skills, education, and labor cost

The literature generally finds a positive relationship between developed market FDI and human capital, as proxied by level of education (Nicoletti et al. 2003). Disaggregating between developed market and emerging market investment flows, some empirical work finds a negative relationship between EMNE OFDI and host education level, but only significant at the 10% level (Arita 2013). One explanation may be the advantages that EMNEs have in operating in environments with relatively low levels of education, which may be similar to their home environment. Another explanation may be that while emerging markets have historically had abundant low-skilled cheap labor, recent development has led to rising labor costs. The weakly significant attraction to host economies with uneducated and inexpensive labor forces may therefore be a result of shifting manufacturing activities into relatively lower labor cost economies, as predicted by the 'flying-geese' model.

Some studies consider the need to control for sectoral variation, particularly between manufacturing and services, in OFDI target host economies (Moran 2011). In Eastern Europe and Central Asia, for example, service-oriented investment has been attracted to relatively educated labor, while manufacturing-oriented investment has been attracted to relatively cheap labor (Doytch and Eren 2012). EMNE OFDI may, therefore, be simultaneously attracted to different kinds of labor pools for different reasons in the same economy. More empirical work is necessary to disentangle these effects.

3. Institutional variables

One of the most examined variables determining FDI decisions is the quality of domestic institutions. On the surface, good institutions are expected to attract investment. Findings suggests that, after controlling for market size and resource endowment (the most important variable examined above), *global* FDI is strongly attracted to a better governed institutional environment (Dollar 2016). There is, however, an important claim in the literature that EMNE OFDI is more attracted to host countries with poor institutional environments on account of 'institutional advantage'. This argument suggests that similarities in commercial *modus operandi* across emerging markets confer a comparative advantage to EMNEs over MNEs in emerging markets.

Institutional good governance is composed of many different factors, and it is important to disentangle the direction and magnitude of these factors for both developed and emerging markets. In fact, these factors may not work in the same direction or be of similar importance for different kinds of source economies. The World Bank's World Governance Indicators (WGI) decompose institutional quality into six separate measures, and we shall disaggregate this literature review in the same way to facilitate comparability. This disaggregation allows for a more nuanced understanding of different institutional dimensions and their different influences as location determinants.

Rule of Law

Looking at a combination of 127 developed and emerging countries, Groh and Wich (2012) find that rule of law and political instability lead to emerging economies being less attractive for foreign investors when compared to developed economies. This does not disentangle, however, differences between rule of law and political instability, as this study groups these two measures into a single variable termed "legal and political system".

Turning to emerging market OFDI, Wang et al. (2015) find that the effect of rule of law on Chinese outward investment is negative at the 1% level in all nine regressions they run. This means that Chinese OFDI avoids countries with a strict legal system, in contrast to the results above with respect to developed economy FDI. The study concludes that Chinese investors may have a comparative advantage under an unsound legal system, perhaps because of experience within their own political system, in line with the 'institutional advantage' argument mentioned above.

Corruption, Government Effectiveness, Regulatory Quality

The effect of corruption on FDI is ambiguous: on the one hand, corruption may increase the costs of doing business, and therefore decrease the incentive for FDI or OFDI. On the other hand, corruption may expedite lengthy procedures and circumvent complicated regulations, thus potentially becoming cost effective for investing firms. Along the lines of the 'institutional advantage' argument, EMNEs may possess an advantage in dealing with corrupt host authorities, given their home country experience with similar officials and lesser corporate regulations on bribery relative to MNEs (Cuervo-Cazurra 2008). Javorcik and Wei (2009) examine the effect of corruption on ODFI from emerging markets, and find that corruption discourages FDI.

The same result is found when examining China by itself – Chinese OFDI significantly prefers host economies with lower levels of corruption (Wang et al. 2015). In China's case, the three (of the six) institutional variables that *are* significant as host location determinant are control of corruption, government effectiveness, and regulatory quality; the other three are found to be insignificant.

Political stability and elimination of terrorism/violence

The 'institutional advantage' argument takes a different form when comparing developed and emerging economies investment patterns and the effect of political stability. Political instability is considered a deterrent for developed economy FDI, but this may not be the case for emerging economy OFDI.

The evidence for this is in large part oriented around studies of Chinese OFDI. It begins with the surprising finding by Buckley et al. (2007) that a 1% increase in political risk in a host economy is associated with a 1.8% increase in Chinese FDI into that host. This initiated a flurry of research to try and confirm (or reject) the finding, making this study by far the most cited in the Chinese OFDI literature. Subsequent studies have found empirical support for the inverse relationship between host political risk and Chinese OFDI (Cui and Jiang 2009; Duanmu and Guney 2009; Kang and Jiang 2012; Quer et al. 2011).

Recent scholarship using data at the firm level helps explain this phenomenon (Amighini et al. 2013; Ramasamy et al. 2012). Chinese OFDI can be decomposed into investments by Chinese private firms and Chinese SOEs. Once one controls for ownership, a clearer picture emerges. Chinese private firms invest abroad according to the traditional FDI theoretical frameworks, and behave as private firms from other countries, seeking to maximize profits and minimize risk. As such, they undertake mostly efficiency-seeking or market-seeking OFDI. In contrast, Chinese SOEs reveal different motivations. It is only SOE OFDI that is targeting politically risky host economies.

Chinese SOE OFDI is not necessarily profit maximizing or risk averse, but rather undertakes resource-seeking or strategic asset seeking OFDI in line with national strategic priorities. Given this kind of motivation, and with Chinese state backing, it is more understandable that SOE OFDI are either indifferent to investing in politically unstable countries, especially those with large resource endowments, or may even seek to fill a geopolitical void left by other investors. Chinese SOEs may be somewhat insulated from the same risks facing private firms, since many investment deals rely more on government-to-government relationships and nationalization or contract reneging may be less likely in such contexts (especially when the government is China, given its growing geopolitical and economic heft) (Ramasamy et al. 2012). Chinese SOEs risk-neutral or risk-seeking behaviour in OFDI host location selection may derive from a type of ownership advantage built on home country embeddedness, protected home markets, and imperfect capital markets that provide below market cost financing (Kang and Jiang 2012).

Democracy/Voice and accountability

Within the institutional variable, perhaps the most scrutinized factor is the role of democracy as a host location determinant for investment. There are two opposite effects at play: democratic checks and balances may reduce arbitrary and rent-seeking government interventions; yet non-democratic systems may be able to provide better incentives to potential investors precisely absent these checks and balances (Doytch and Eren 2012). As a result, there is a very large body of work that attempts to elucidate which effect dominates empirically. Studies conclude the effect is either ambiguous (Buthe and Milner 2008) or that there is no evidence that being a democracy (or autocracy) helps to attract FDI (Yang 2007). Looking specifically at China, democracy is generally found to be insignificant as a host determinants for Chinese OFDI (Wang et al. 2015).

Some empirical work helps to clarify the debate. Looking at 53 countries from 1982 to 1994 that exhibit variation in levels of democracy and development, Li and Resnick (2003) suggest that the role of democratic institutions on investments flows needs to be further disaggregated into two very different effects. On the one hand, increases in democracy lead to increases in property rights protection. On the other hand, increases in democracy lead to increases in the rule of law. While the former effect attracts investment flows, the latter discourages them (for the reason mentioned above). Empirically, a one-point increase in the level of democracy causes a decline of around USD 90 million (depending on the model) in FDI. Yet a one-point increase in property rights protection leads to an increase of USD 52 million in FDI inflows to a country, and a one-point increase in the *democracy-related* property rights protection leads to an increase of USD 76 million dollars in FDI (Li and Resnick 2003). It is therefore conceivable that non-democratic (developed or emerging) markets with strong property rights may in fact attract more investment than democratic (developed and emerging) markets.

Finally, looking at the effect of institutional quality by aggregating these different factors, there is still debate in the literature as to the 'institutional advantage' claim. While Cuervo-Cazurra and Genc (2008) find such evidence, Arita (2013) does not. Both use the six WGI proxies mentioned

above. The former study looks at data for 29 developed and 20 emerging countries from 1999 and 2001, while the latter looks at data for 21 developed and 22 emerging countries from 2004. The evidence is therefore mixed and the jury is still out.

4. Policy variables

Business climate

There is a broad consensus that improvements in the business climate will lead to increasing investment flows from source economies. This is one of the reasons countries target measures identified in the *Doing Business Report* to improve their ranking in the Ease of doing business index. Looking at specific components of the business climate, empirical work has found that shareholder protection and openness to FDI positively and significantly attract investment flows (Talamo 2007). This supports the widely-held view that, across both developed and emerging economies, fewer ownership restrictions, greater openness to foreign investors, and efficient investor protection measures increase host-country attraction as an investment destination (Kok and Ersoy 2009). Looking at one emerging market region, Doytch and Eren (2012) find that improved host country business climates in Eastern European countries, controlling for human capital, have a significant and positive effect on agriculture investment.

International Investment Agreements

There is inconclusive empirical evidence regarding whether ratification of bilateral investment treaties (BITs) and preferential trade agreements (PTAs) with investment chapters, two forms of international investment agreements (IIAs), have a significant and positive effect on investment flows to emerging markets.

Some studies find that international agreements make commitments to a liberal, stable, transparent, rule-based economic system more credible, and thus decrease the risk profile of a potential host market (Buthe and Milner 2008). Empirically, looking at 122 emerging markets from 1970 to 2000, the greater the number of PTAs to which a country was a party, the higher the investment flows received, holding many other factors constant (Ibid.). Neumayer and Spess (2005) find that the number of BIT's signed by an emerging market has a positive and significant effect on investment flows into the country (UK 2014). Along the same lines, Haftel (2007) finds that signing a BIT with the U.S. leads to a doubling of inward FDI (Ibid.).

However, other studies find that the effects of IIAs vary based on the quality of investor protection, which varies widely. Another way of putting this is that not all BITs are created equal: some BITs may be signed but not ratified, while others may be ratified but not include investment dispute settlement provisions, limiting their actual effect on attracting investment flows. It is also difficult to control for potential reverse causation, whereby it is not the ratification of BITs by emerging markets that is driving increased FDI, but rather the increased FDI that is driving the ratification of BITs (UK 2014). Further, BITs may increase investment to emerging market signatories, but when other countries level the playing field by themselves signing BITs, this positive effect declines (Elkins et al. 2006). Finally, IIAs seem to be most effective in the context of deeper economic integration, that is, when they are combined with other integration agreements, such as trade agreements (Dixon and Haslam 2016).

Taxes

The corporate tax rate may act as a host location determinant for FDI. This rate is often (but not always) a flat rate. Groh and Wich (2012) look at the role of corporate tax as a location determinant across developed and emerging economies, and finds the gap between its effect in both groups of economies to be minimal.

Disaggregating by type of source economy, and turning first to a high-income source economy, Lee et al. (2016) find that Singaporean OFDI is discouraged by higher corporate tax rates in a host country, but this effect is significant only for manufacturing and retail OFDI (indicating the importance for Singapore of efficiency and market-seeking OFDI). Wang et al. (2015) look at Chinese OFDI and find that it is also discouraged by higher host tax rates, a finding significant at the 1% level. Given that favourable tax policy is often used as means to attract foreign investment, these results are not surprising.

What is interesting to consider, however, is whether there are substitution effects between host tax rates and other location determinants. Wang et al. (2015) find that a low host tax rate can offset adverse institutional variables for Chinese OFDI. Though this effect is significant the 5% level, the effect is small. These kinds of substitution and interaction effects between policy variables and those in other categories warrant further study, as policy variables are those that governments can most easily control when seeking to attract investment flows as a pathway to development.

5. Gravity variables

The trade literature's use of gravity variables has been found to similarly have explanatory power for investment flows. In general, the direction of these variables for EMNE behaviour is unsurprising, though with one or two exceptions.

Geographic distance

Distance often engenders cost and complication. Costs can be linked to transportation, time, and start up; complications to coordination, information, and management at a distance. The greater the distance, the greater the costs can be. As a result, both FDI and OFDI generally begin in geographical proximity, and when they expand, do so first in the home region. Looking at a sample of the five largest developed economies at the time[13] and 22 emerging economies, Frenkel et al. (2004) find that investment flows are inversely related to the distance between home and host countries.

There are, however, two separate and opposite distance-related effects on FDI location decision. On the one hand, distance may have a positive effect on horizontal, market-seeking FDI, as instead of using trade firms may choose to locate investment closer to the market being served; in this case FDI and trade are substitutes. On the other hand, distance may have a negative effect on vertical, efficiency-seeking FDI, as firms may forgo FDI given the important trade costs; in this case FDI and trade are instead complements (Egger 2008). Which effect dominates will depend on the type of FDI in question, as well as the relative cost structures to distance.

Turning to empirical EMNE OFDI behaviour, the negative effect of distance on FDI is confirmed across several different regions. In Asia, Indian investments in the Asia Pacific are likely to go to

[13] Namely the United States, Japan, Germany, the United Kingdom, and France.

countries in its vicinity, regardless of other characteristics such as host macroeconomic conditions and monetary regime (Anwar and Mughal 2013).

In Latin America, EMNEs first focus on OFDI in neighboring countries through market-seeking investment (Cuervo-Cazurra 2008; Perez Ludena 2016). In Eastern European transition economies, this geographic gravity effect takes place in both directions: in one direction, a disproportion of inward FDI comes from relatively close, smaller continental European countries (e.g. Austria and Sweden) rather than traditional source countries (e.g. the UK or Japan) (Bevan and Estrin 2004). Such FDI flows after lower wages and production costs, and is thus mostly vertical, efficiency seeking. In the other direction, OFDI from European transition economies often flows to countries neighboring the investor's country-of-origin, though significant OFDI has targeted financial centers further away (e.g. Cyprus, the Netherlands, Switzerland, and Luxembourg), most likely for tax reasons (Wilinksi 2011). Non-tax regional OFDI flows after growing markets and disposable income, and is thus mostly horizontal, market seeking.

Comparing explicitly the effect of distance on MNE and EMNE investment decisions, empirical studies have found that EMNEs are significantly more sensitive than MNEs to distance (Arita 2013). Similarly, EMNEs are more likely than MNEs to locate OFDI within their regions (Ibid.). Developed country firms may have had time to develop greater resources, networks, and experience to compensate for the challenges of undertaking investment far afield.

Linguistic and cultural links

Not only geographic distance engenders cost, but so can 'psychic' distance, or the difference in cultural norms and linguistic barriers between potential source and host economies. As a result, studies have examined whether linguistic and cultural links might play a role as a host determinant for investment decisions.

Looking first at a developed economy, Japan's experience indicates that the presence of other firms from the same culture increases FDI. An empirical analysis of FDI host location by Japanese firms over a thirty-year period, one study found that the prior experiences of other Japanese firms in the target market mitigated the negative effect of both formal and informal institutional distance on entry decisions (Jiang et al. 2014).

Looking next at two emerging economies, linguistic and cultural links may be important host determinants for both Brazil and China. In Brazil's case, Cyrino et al. (2010) developed a multidimensional instrument to calculate the psychic distance between Brazil and its OFDI destination.[14] The study confirms that Brazilian firms first choose to enter similar markets in terms of culture, language, religion, education, and administrative and economic aspects, as well as geography. There were some exceptions, but they were in sectors where psychic distance seems less important because of the nature of the products, e.g. commodities (Cyrino et al. 2010).

In China's case, reliance on contacts and social networks (known in Chinese as *guanxi*) may reduce the risks and costs associated with internalization, and thus play a role in increasing OFDI (Quer et al. 2011). Kang and Jiang (2012) found that cultural distance has a marginal but still significant effect (at the 10% level) on Chinese OFDI location, with Chinese firms preferring to locate in host economies where they have a smaller cultural difference.

[14] Psychic distance was measured through seven dimensions: culture, language, religion, education, administration, economic/industrial development, and geographical distance.

Diaspora

The diaspora from an emerging economy can play a very similar role in bridging 'psychic' distance, through both providing information on host opportunities and through lowering potential transaction costs. Several studies have found a significant effect of Chinese diaspora on OFDI (Buckley et al. 2007; Quer et al. 2007; Zhang and Roelfsema 2014). For instance, Quer et al. (2007) find that, in a sample of 189 OFDI decisions made by 35 mainland Chinese firms in 63 countries across different regions of the world, Chinese diaspora was positively associated with the number of Chinese OFDI investments (Marinov and Marinova 2012).

The importance of diaspora for OFDI is confirmed for other emerging markets, such as India. Anwar and Mughal (2009) find that a 10,000 increase in the number of Indians residing in an OECD country is associated with a 2% rise in Indian OFDI to that host country. The study finds that this effect, though important, is weaker than those of the host GDP, host country's inflation rate and exports from India to that country (Anwar and Mughal 2009). More work needs to be done to investigate the role of other diasporas in attracting OFDI, for instance the Russian diaspora across Eastern and Central Asia, or diasporas from the African Continent, such as from Nigeria or Ethiopia.

F. Deep dive into the BRICS (sans China)

The BRICS – Brazil, Russia, India, China, and South Africa – are a key group driving this process as they represent 56% of total emerging market OFDI stock (Perea and Stephenson, forthcoming). Even more importantly for our analysis, on account of their size, resources, and geopolitical influence, these countries may demonstrate OFDI behaviour different than that of average emerging markets. In fact, the BRICS have seen their OFDI ratio increase more rapidly than other developing countries (Globerman and Shapiro 2008). This section will therefore examine BRICS OFDI in a bit more detail.

Although the term 'BRICS' and its eponymous political organisation means people think of the BRICS as a homogenous group, OFDI behavior is highly heterogeneous and driven by different host determinants. Variation within the BRICS in terms of factor endowments, technology levels, political systems, economic strategies, and government policy have led to variation in country-specific advantages (Rugman 1981). These in turn have shaped differences in internationalization strategies. For instance, resource-rich Brazil and Russia have undertaken very different resource and market-seeking OFDI than resource-scarce China and India (Bertoni et al. 2013). Efficiency-seeking OFDI has been important for Russia seeking forward integration based on natural resource value chains, but has not been very important for China or India, whose plentiful labor supplies have until recently offered efficient production at home. The role of geography has varied widely: Brazil focuses on OFDI close to home; Russia as well although expanding further away; China and India within their home continent, but with significant OFDI much further away; and South Africa focusing almost entirely on European host markets. Indeed, South Africa, with its unique history, developed a sophisticated home economy whose OFDI patterns resemble more those of developed economies rather than the other BRICS (Goldstein and Prichard 2009). The importance of technology and knowledge as a determinant has varied, although this is perhaps the one factor most BRICS OFDI has in common.

At the heart is the role of the home government. Generally speaking, BRICS OFDI policy has evolved over time from restriction to permission to promotion (Collins 2013; De Beule and Van Den Bulcke 2010). But the level of permission and promotion varies greatly within the BRICS

(Fleury and Fleury 2009). On the one hand, the internationalization of Brazilian, Indian, and South African firms has mainly been market driven. On the other hand, the internationalization of Chinese and Russian firms has been strongly supported by home governments. In these two countries, political and not just economic factors have shaped OFDI (Filippov 2010; Van Tulder 2010). For all of these reasons, the BRICS demonstrate great country-specificity, and OFDI host determinants need to be analysed on a case-by-case basis. Since chapter five will exclusively focus on Chinese OFDI, here we briefly identify the main determinants for Brazil, Russia, India, and South Africa to complement the analysis.

Brazil

Market-seeking seems to be the main motivation for Brazilian OFDI. Brazil represents a somewhat classic case of emerging market OFDI, building on its country-specific advantages and internationalizing gradually, focusing on its home region. Most Brazilian EMNEs develop their competitive advantages in the home market over many years, and only then exploit these assets in expanding into other geographically proximate economies (Cuervo-Cazurra 2008). When they do so, they enter similar markets in terms of culture, language, religion, education, administrative systems, and economic environments (Cyrino et al. 2010). There seem to be two phases in Brazilian OFDI: in the 1990s, OFDI from Brazil focused on greenfield projects in Latin America, staying close to its home market and focusing on commodities. Home economy structural reforms then induced Brazilian firms to upgrade their competitiveness, enabling them to become 'multilatinas' or Latin American EMNEs (Cuervo-Cazurra 2008). In the 2000s, OFDI therefore gradually expanded into industry, services, and IT, leading to increases in M&A (Fleury and Fleury 2009). However, Brazilian firms have carried out relatively less M&A in developed markets compared to the other BRICS (Bertoni el al. 2013). One explanation is that the home government has not been very active in promoting OFDI: "companies received reduced government support, particularly when compared with other emerging countries, such as China" (Fleury and Fleury 2009: 239). Main OFDI host determinants may therefore include geographic proximity, shared culture, and economic/administrative similarities.

Russia

Market-seeking and efficiency-seeking seem to be main motivations for Russian OFDI. During the 1990s, OFDI was often capital flight, a hedge against political tumult and regulatory uncertainty. Today, OFDI flows into natural resources and manufacturing, which together account for over three quarters of Russian OFDI (Wilinksi 2011). The role of the home government and of natural resources in driving OFDI cannot be overstated. Most Russian EMNEs were founded on and retain strong ties to the natural resources sector, whether oil and gas, metallurgy, and electricity generation and distribution (Collins 2013). State-owned or influenced EMNEs based in natural resource sector therefore dominate OFDI, motivated by a desire to increase efficiency through vertical integration. In Commonwealth of Independent States (CIS) and developing countries, Russian OFDI aims at controlling upstream natural resources, while in developed countries, it aims at controlling downstream markets (Kalotay and Sulstarova 2010; Wilinksi 2011). Yet so far this has not translated into significant asset-seeking FDI to obtain a technological edge. As one study states, "With the growing importance of the technology, innovation and know-how for the competitiveness of a modern company, there is a trend to focus on acquisition of technology and R&D-intensive units (both companies and research institutes) as a form of asset-seeking FDI.

Russian companies have a great interest in the advanced technologies, marketing experience and modern managerial skills. Yet, asset-seeking FDI to obtain a technological edge appears to be rare" (Filippov 2010: 315). Main host determinants may therefore include market size, geographic proximity, cultural/linguistic ties, and presence of natural resources (Kalotay and Sulstarova 2010).

India

Market-seeking and strategic asset-seeking seem to be main motivations for Indian OFDI. This reflects the evolution in Indian policy regarding OFDI: prior to 1990, OFDI was used as tool for internationals relations, and was mostly directed at other developing countries. After 1991, OFDI was liberalized and Indian entrepreneurs capitalized on their earlier professional experience and connections in developed economies developed during the 1980s (Collins 2013). As a result, two very different kinds of OFDI emerged: market-seeking OFDI is focused on developing markets and is often greenfield, while asset-seeking OFDI is focused on developed markets and is often undertaken through M&As (Basin and Jain 2015). Indian OFDI has therefore been fairly diversified between the manufacturing and service sectors, although recently services have emerged as more important (Das and Banik 2015b). With regards to asset-seeking in developed markets, it takes the form of knowledge investments, whether in the services sector (e.g. marketing skills, distribution systems) or research-intensive manufacturing sector (e.g. drugs and pharmaceuticals) (Bertoni et al. 2013; De Beule and Van Den Beulke 2010). There have been mixed findings regarding whether Indian OFDI is technology-seeking. Main OFDI host determinants may therefore include geographic proximity, market size, FDI openness, common language, cultural familiarity, and perhaps technology levels (Basin and Jain 2015; Das and Banik 2015a; Collins 2013).

South Africa

Market-seeking and to a lesser degree strategic asset-seeking seem to be main motivations for South African OFDI. What is surprising is the virtual absence of efficiency-seeking OFDI, notwithstanding its low-labor cost neighboring economies (Henley et al. 2010). In fact, South Africa stands out from the other BRICS as its OFDI patterns resemble much more those of advanced markets than other developing countries (Henley et al. 2010). The reason is its unique history of apartheid, which led to an unusual conjunction: the presence side by side of a highly sophisticated and advanced economy and significant poverty and underdevelopment (Goldstein and Prichard 2009: 245). As a result, South African firms have used their technological and financial advantages to enter advanced markets (Goldstein and Prichard 2009). Much of South African OFDI has targeted other Commonwealth countries, including in the OECD, and relatively little OFDI has stayed in the African continent (even though South Africa OFDI stock in Africa is relatively larger than other investors, in absolute terms this stock is still quite modest). Generally only smaller South African firms have chosen to undertake OFDI in the African continent (Goldstein and Prichard 2009). The South African government has encouraged its SOEs to invest in the African continent, following the New Partnership for African Development (NEPAD) of the African Union (AU). This has meant that South African firms are more likely than other international investors to make small investments (i.e. worth less than USD 1 million) and to partner with local entrepreneurs (Goldstein and Prichard 2009). South African firms also take advantage of the knowledge of culture and business environment in other parts of Africa (a large share of this OFDI in Africa is in the services sector) (De Beule and Van den Bulcke 2010; Henley et al. 2010). This resulted in significant M&A activity during the first part of the 21st Century as South African firms took advantage of privatization policies across the Continent (Henley et al.

2010). Interestingly, South African OFDI through M&A has been largely immune to resistance other BRICS have faced (Goldstein and Prichard 2009). Main OFDI host determinants may therefore include historical ties, culture, and development level (proxied by GDP).

G. Main conclusions from the literature on OFDI host determinants

This literature review has shown that emerging markets invest abroad for many different reasons. These reasons can be understood across four home firm motivations known as OFDI types (market-seeking, efficiency-seeking, resource-seeking, strategic asset-seeking) and five host economy determinant variables (macroeconomic, structural, institutional, policy, gravity). Empirical work has disentangled some of the differences between developed and emerging market firms across these motivation and determinants. Such disentangling is important as different OFDI types may be simultaneously responding to different determinants in the same host market, and different determinants may be working in opposing directions in terms of encouraging or discouraging OFDI. Only looking at the aggregate level will mask these divergences.

Perhaps one of the main conclusions is that we seem to have the right conceptual tools, in the set of motivations and determinants, to investigate both MNE and EMNE outward investment behavior. The importance of each motivation and host determinant may differ across country, sector, and time. But the same need to "access markets, natural resources, technologies or know-how, other assets such as brand names or distribution channels, or skilled and unskilled labor arises for emerging market MNEs as much as it does for their developed country rivals…Emerging markets are on the same planet as developed ones" (Thomsen 2010: 448-449). We seem to have the right vocabulary and conceptual tools to carry out further analysis. This is not to be taken for granted, since some studies have questioned their adequacy, citing that they were developed to explain the behavior of MNEs, and not EMNEs (Mathews 2002, 2006, 2007; Mogaddham et al. 2014, Perez Ludena 2016; Luo and Tung 2007).

Until recently, most studies relied on official data, but it was widely accepted these data suffered from biases and omissions. In the last few years, however, studies have started to use firm-level data from private sector sources. This has led to more accurate understanding of OFDI patterns and new insights through looking at both value and number of OFDI deals, as well as disaggregating OFDI by entry mode (M&A or greenfield) and ownership-structure (POE or SOE). Most of this empirical work has focused on China, with a little work focusing on emerging markets in the aggregate. So far, the new wave of empirical evidence has brought several insights.

Ownership may matter

Differences in emerging market OFDI behavior can partly be explained by differences in ownership structure, namely private firms or state-owned/affiliated firms. POEs from emerging markets generally undertake OFDI in much the same way as POEs from developed markets undertake FDI – through profit-maximizing, risk-averse decision-making. SOEs, however, may respond to host country variables quite differently. In developed economies, some studies have found Chinese SOEs to be particularly drawn to technology (Ramasamy et al. 2012), although other studies have found that this to hold equally, if not more, for Chinese POEs (Amighini et al. 2013). In developing economies, Chinese SOEs are willing to accept a higher level of risk and a lower

level of governance than Chinese POEs.[15] Chinese SOEs are either indifferent to investing in politically unstable countries, especially those with large resource endowments, or may even seek to fill a geopolitical void left by other investors. The reason is that Chinese SOEs may be operating on a non-commercial basis to secure natural and other strategic resources. While ownership structure applies mainly to China, Russian OFDI is increasingly carried out by state-owned or influenced firms.[16] The insight that in emerging markets ownership structure may affect OFDI location strategy has important developmental and political economy implications.

Strategic-asset seeking OFDI

There is evidence that some emerging markets use strategic asset-seeking OFDI to source technology, knowledge, and other intangible assets. Technology and knowledge-seeking OFDI may be part of an economic catch-up strategy, as sourcing these assets through OFDI is faster and cheaper than developing them endogenously (Huang and Wang 2011).[17] Case studies and M&A data provide evidence BRIC EMNEs are motivated by technology and knowledge-seeking (Bertoni et al. 2013; Holtbrugge and Kreppel 2012). However, empirical studies have so far only confirmed this motivation for Chinese OFDI (Dong and Guo 2013; Huang and Wang 2011; Kang and Jiang 2012; Ramasamy et al. 2012; Zhang and Roelfsema 2014). Regarding India, one study found technology not to be a significant determinant for Indian OFDI (De Beule and Van Den Bulcke 2012)[18]; nevertheless, more recent descriptive evidence suggests that Indian EMNEs have ventured into the U.S. and other developed markets to access the latest technology and invest in R&D (Das and Banik 2015b). Regarding Russia, qualitative work finds that though Russian firms have a great interest in advanced technologies, technology-seeking OFDI appears so far to be rare (Filippov 2010). There are therefore indications that other emerging economies aim to emulate China's approach to augment home capacities and move up the value chain through technology and knowledge sourcing OFDI.[19] More work is needed to clarify the importance of, and potential variation in, technology as a host determinant for OFDI from different emerging markets.

[15] Some studies argue that measurements for risk and governance that were developed with developed market firm in mind do not capture the reality for emerging market firms. For instance, a Chinese firm undertaking resource-seeking OFDI in Africa may not face the same risks as an OECD firm in the same country, because of a better understanding of how to operate in weak governance environments due to home experience.

[16] Within the other BRICS, OFDI from Brazil, India, and South Africa has been predominately by POEs.

[17] One interesting suggestion is that emerging market knowledge and technology-seeking OFDI may be aimed in the first instance at increasing competitiveness in the home market, not necessarily in the host market (Ramamurti 2012).

[18] It is worth noting that De Beule and Ven Den Bulcke (2012) use patent intensity as a proxy for technology, but other studies have found this may not be the best measure to assess whether OFDI is technology-seeking (Ramasamy et al. 2012). The reason is that emerging market firms may not be attracted to core research, but rather to the practical application of technology, and may rather be attracted to those markets that convert core research into commercially viable products and services.

[19] This would probably entail increasing OFDI in knowledge-intensive services and research-intensive manufacturing (Bertoni et al. 2013; Collins 2013).

Updating theoretical models

There has been great debate over whether current theoretical models are adequate to explain emerging markets OFDI behavior, or whether they need to be revised. Consensus seems to be that existing models are adequate, but need to give greater prominence to the strategic asset-seeking motivation, as described above (Cuervo-Cazurra 2008, 2012; Ramaswamy et al. 2012; Quer et al. 2015; Thomsen 2010).

OFDI as development strategy

The fact that OFDI is being used to acquire or augment assets, and not just employ existing ones, implies that OFDI can play an important role in developmental strategy. It can help an emerging economy catch-up through accessing and integrating new competencies. However, the exact home effects of OFDI are numerous and can impact employment, growth, productivity, exports, etc. The home effects of emerging market OFDI is therefore a vital area of future work to target and tailor the role of OFDI in any developmental strategy.

Institutional advantage

One of the main hypotheses investigated empirically in the literature is the suggestion that emerging market firms have an advantage over developed market firms in weak governance environments. Several empirical studies have found evidence for this 'institutional advantage' (Cuervo-Cazurra and Genc 2008; Wang et al. 2015); however, some have not (Arita 2013). Even studies using the same proxy for institutional quality (e.g. the World Governance Indicators) have reached different conclusions. Part of the reason may be that the WGI is composed of six different sub-variables, and depending on the home and host economy, each of these may have different strengths and may be working in different directions.

Importance of home determinants

Both push and pull factors will affect the destination of OFDI. Host determinants act as the 'pull', but this is an incomplete picture without considering home determinants, which act as the 'push'. Some of these will be negative, such as capital fleeing heavy regulatory burdens and unstable political conditions (Kalotay and Sulstarova 2010). However, some of these will be positive, such as home governments incentivizing firms to undertake OFDI. In the case of Russia and China, home governments have played an active role in pushing EMNEs to invest abroad, as clearly indicated through the title of the 1999 Chinese policy, 'Go out'. To fully understand OFDI behaviour requires understanding the interplay of home and host determinants.

Clear evidence of GDP size and growth as host determinants

Across all variables examined, the best predictor of how much FDI a country receives seems to be market size (Chakrabarti 2001; Dollar 2016). This is the single most shared finding across studies. The reason may be that larger markets simultaneously offer scope for sales of goods and services (leading to market-seeking investment), *and* cost saving through economies of scale (leading to efficiency-seeking investment). In addition, GDP growth is also an unqualified attraction for

OFDI. One reason may be that a fast-growing host economy generally leads to higher levels of aggregate demand and thus provides increasing opportunity for market-seeking investment. The implication is that development strategies need to carefully examine how small or slow-growing economies can offset these challenges in attempting to attract OFDI. Small and slow-growing countries will need to create a relatively more welcoming business climate and develop niche specialties to overcome these handicaps.

Clear evidence of gravity variables as host determinants

Though theoretically geographic distance can either encourage or discourage OFDI[20], empirical studies have found across several regions that distance has a negative effect (Anwar and Mughal 2013; Frenkel et al. 2004). OFDI generally begins in geographically proximate markets, and when it expands, does so first in the home region. Studies have also found that 'psychic' distance, or the difference in cultural norms and linguistic barriers between potential source and host economies, discourages OFDI. For example looking at Brazil, Cyrino et al. (2010) developed a multidimensional instrument to calculate the psychic distance between Brazil and its OFDI destination.[21] The study confirms that Brazilian firms first choose to enter similar markets in terms of culture, language, religion, education, and administrative and economic aspects, as well as geography. The implication is, once again, that markets that are geographically or psychically distant need to identify mitigating strategies to overcome this challenge to attracting OFDI. Policies need to develop other factors that compensate for these extra costs and difficulties.

[20] Distance may have a positive effect on horizontal, market-seeking FDI, as instead of using trade firms may choose to locate investment closer to the market being served. Distance may instead have a negative effect on vertical, efficiency-seeking FDI, as firms may forgo FDI given the important trade costs (Egger 2008).

[21] Psychic distance was measured through seven dimensions: culture, language, religion, education, administration, economic/industrial development, and geographical distance.

3. The role of inward FDI in host market economic development

The preceding chapter examined in detail the motivations for outward investment, what the literature calls the *host determinants*. But what are the impacts of such investment on the recipient economy, what the literature calls the *host effects*? If this research is to try and establish that inward FDI can bring about structural transformation that can help explain outward FDI, we need to first establish if and how FDI can affect a host economy and lead to such structural transformation. Support for the idea of FDI leading to such structural transformation is provided in one very recent study by three of the top scholars working on investment policy. Moran, Gorg, and Seric (2016) examine case studies of structural transformation through FDI in Malaysia, Costa Rica, and South Africa. They conclude that "the evidence from these three cases confirms that *the hosts were able to use middle-skill FDI to achieve structural transformation of the underlying production and export base in remarkably short periods of time*" (Moran, Gorg, and Seric 2016: 4; emphasis added).

The motivation for looking at the effect of inward FDI is thus to understand how opening to foreign investment could have been the first step in the process of change that then led to the outward FDI we are now seeing. It thus makes sense to consider all the different dimensions that could have been affected as a result of FDI, as all of these may have together – holistically – shaped Chinese domestic structural transformation. This review of the literature will thus attempt to be as comprehensive as possible, to consider all the different ways in which FDI may have affected China's domestic structural transformation. Some dimensions may be more immediately conducive to *economic* structural transformation (e.g. increases in productivity, innovation, and diversification), but other dimensions can equally play a role in that they create social support for FDI policies (e.g. job creation, gender inclusion) and provide resources to carry out future economic activity (e.g. wage growth).

This literature review thus presents existing evidence on the effects of FDI on host economies across eight economic areas or dimensions: productivity, linkages and GVC integration, export diversification, domestic investment, innovation, wages, jobs, and gender inclusion. For each area, it first presents general evidence, and then evidence specific to China. The effect of FDI on host economies has been extensively researched, creating a very large body of evidence. However, this research has traditionally focused on the *quantity* of investment rather than the *quality* of investment. In other words, the research has focused on growth dimensions to the host economy and has only recently started to consider inclusiveness dimensions as well. This review therefore aims disentangling differences in outcome across the spectrum of economic areas and understand the mediating role of different factors. Disentangling such difference is important since there is heterogeneity in host effects from FDI across country, time, and developmental dimension.

The evidence shows that FDI can have significant positive effects on host economy developmental outcomes, but this is not automatic. It depends on alignment between four elements: host economy policies, host economy framework conditions, FDI type, and sector composition. However, there is clear evidence that governments can adopt policies to improve the framework conditions and attract certain types of FDI in certain sectors to increase the likelihood of that FDI having positive effects on the host economy. Importantly, in some cases there may be tradeoffs between areas, so that governments need to have enough information to make decisions between competing priorities. As the review will show, China has fared quite well in capitalizing on the potential benefits of FDI for its economic development. In fact, many other emerging markets now seek to emulate China's success by studying and adapting China's policy approaches, most notably India.

A. Productivity and growth

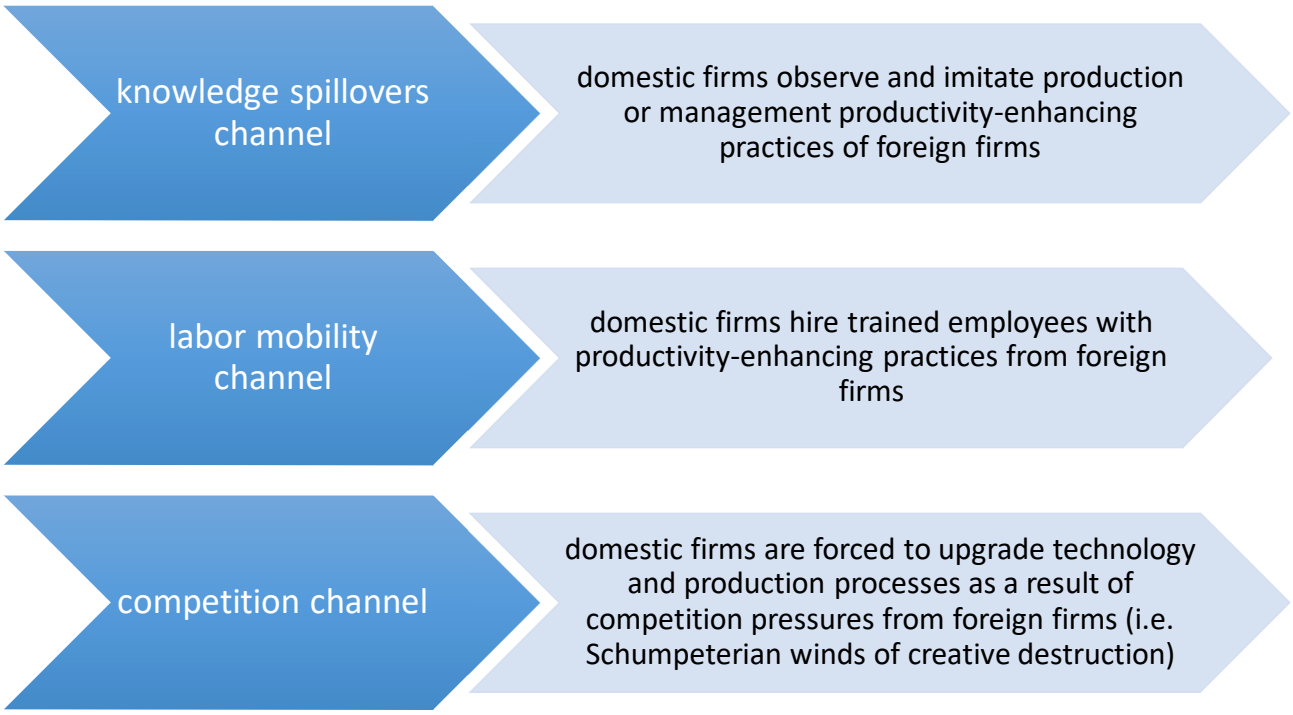
There is strong evidence that foreign owned firms are more productive than domestically owned firms, and that the presence of foreign firms in a market can lead to productivity increases in domestic firms. There is also strong evidence that FDI can help drive domestic economic growth. The section first presents the conceptual framework through which this can take place; it then considers the evidence across a number of studies (especially meta-studies, given the incredibly rich amount of evidence). The section then disentangles variation in FDI's effect on host productivity across a number of mediating factors, grouped in three broad categories. These take place at both the micro and the macro levels, and thus requires an 'integrated approach' of both levels to understand the productivity effects for the host economy.

In order to understand how FDI can affect host economy productivity, it is important to lay out a clear conceptual framework for how these effects can take place. The literature distinguishes between horizontal effects and vertical effects, direct linkages and spillover effects, as well as backward and forward linkages[22]. Horizontal productivity spillovers take place intra-industry, while vertical productivity effects[23] take place inter-industries. Within both horizontal and vertical effects, there can be different channels through which these take place (Pittiglio et al. 2015; Tang and Altshulter 2015).

[22] The review considers backwards and forward linkages in the linkages section below.

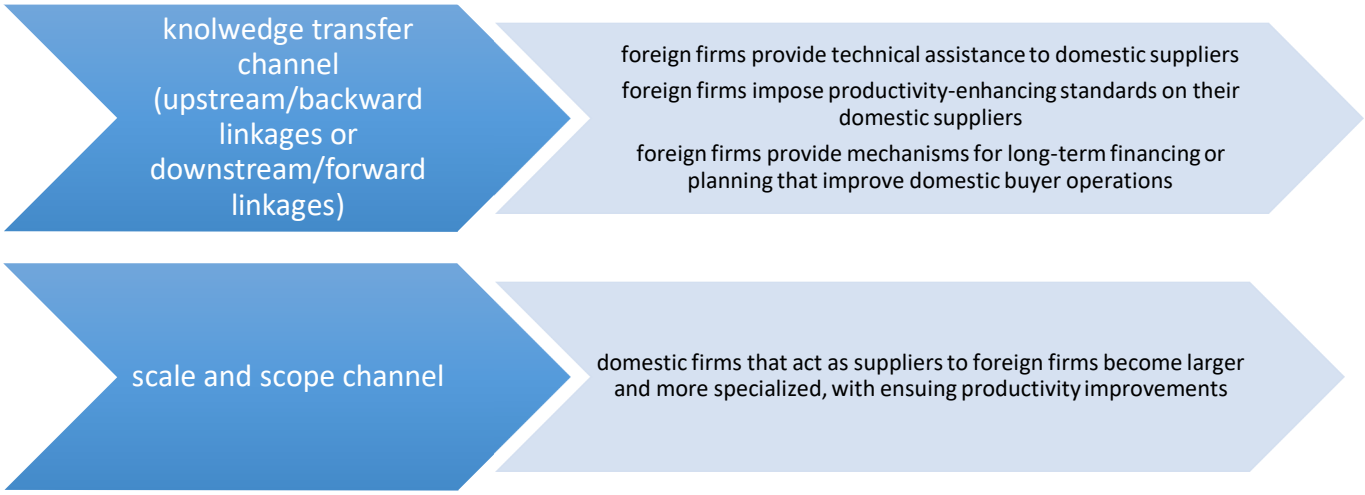
[23] For vertical productivity the term *effects* is used instead of *spillovers*, because this productivity effect can take place either directly or through a spillover. A direct effect would take place if the foreign and domestic firm include the cost of this productivity enhancing benefit in their commercial relationship (e.g. reimbursable training). A spillover, in contrast, would take place where the cost of the productivity benefit is *not* included in their commercial relationship. All horizontal productivity effects are by definition spillovers, but not all vertical productivity effects are spillovers. They can produce either spillovers *or* direct productivity effects.

Figure 3: Horizontal productivity spillovers can take place through three channels



Source: Author's elaboration.

Figure 4: Vertical productivity effects can take place through two channels



Source: Author's elaboration.

These five different channels will be discussed in more detail below in section K, 'Transmission channels and mechanisms'.

In practice, upstream vertical productivity effects are much more common than downstream vertical productivity spillovers, as there is an incentive for foreign buyers to help their domestic suppliers produce more efficiently and at a higher quality; there is less incentive for foreign suppliers to help domestic buyers operate efficiently at a higher quality, but is possible to also have downstream vertical productivity effects, as seen in the evidence below.

The reason that foreign firms may possess superior knowledge, technology, and managerial know-how than local firms it that to be competitive in markets outside of their home economy, they need to have some competitive advantage to successfully enter the foreign market and overcome the 'liability of foreignness'. The costs of undertaking FDI in a foreign market, the lack of local networks, and lower market knowledge means that these firms require other firm-specific assets to overcome these liabilities. These assets can take the form of knowledge-related capacities, which can lead to productivity spillovers in the host economy.

There is a very large body of evidence that FDI is associated with productivity increases to local firms (Alvaro 2015; Blalock and Gertler 2009; Echandi et al. 2015; Irsova and Havranek 2012; Meyer and Sinani 2009; Wooster and Diebel 2010). This can take place through the different channels described above. In 2011 one study calculated that there had been over a hundred studies on FDI and productivity between 2000 and 2010 (Havranek and Irsova 2011); the number is therefore today much higher. As a result, the only way to legitimately consider this large body of evidence is to review meta-studies that have themselves reviewed the results of many studies.

Meta-analysis studies of FDI and productivity provide strong evidence that FDI leads to productivity increases in the host economy through vertical effects, but no or weak evidence through horizontal effects. One study reviewed 3626 estimates of vertical productivity effects, and

using a multivariate meta-regression of data from 47 countries found that while results varied broadly across methods and countries, the average vertical productivity linkages were significant for both upstream (to suppliers) and downstream (to buyers), although the effect was greater for the former (Havranek and Irsova 2011: 234). Controlling for various biases in the data, the study finds that a 10% increase in foreign presence through FDI is associated with 9% increase in productivity of domestic suppliers (Havranek and Irsova 2011: 244). However, this study did not find significant evidence for horizontal productivity spillovers (Havranek and Irsova 2011: 242). As a result, the same authors carried out another meta-analysis to investigate specifically the presence and determinants of horizontal productivity spillovers from FDI (Irsova and Havranek 2012). The authors reviewed 1,205 estimates from 45 countries and find, on average, horizontal spillovers to be negligible (Irsova and Havranek 2012: 11).

Other meta-studies confirm the weak evidence for horizontal productivity spillovers to domestic firms. Wooster and Diebel (2010) use meta-regression analysis on data from 141 regressions in 32 studies, and find that results are highly sensitive to model specification, and that studies that use panel or firm-level data tend to find insignificant or even significant negative horizontal FDI spillovers (Wooster and Diebel 2010: 652). The reason may be that competition from foreign firms who enter the market through FDI force less competitive local firms to exit (Alfaro and Chen 2013 in Alfaro 2016: 10).[24] Meyer and Sinani (2009), using meta-regression analysis on 66 empirical studies, find that studies controlling for vertical spillovers when estimating horizontal spillovers tend to find less significant positive horizontal spillover effects. In other words, studies that do not control for vertical spillovers seem to overstate the likelihood of horizontal spillovers (Meyer and Sinani 2009: 1089).

While there is clear evidence that FDI can have a positive impact on host productivity, the effect varies across on a number of dimensions, known in the literature as 'mediating factors', that influence FDI productivity effects on domestic firms. This review groups the evidence within three broad categories of factors, namely a) productivity potential of foreign investors; b) absorptive capacity of host firms; c) and host economy institutional frameworks. This categorization is inspired by the empirical model developed by Farole and Winkler (2014b). In that study, they use a cross-section of World Bank's Enterprise Surveys – by more than 25,000 domestic manufacturing firms in 78 low- and middle-income countries from the between 2006 to 2010 – to examine how these three categories of mediating factors influence productivity spillovers to domestic firms from FDI. They find that all three categories affect the extent and direction of FDI spillovers on domestic firm productivity (Farole and Winkler 2014b: 59). This review uses the same conceptual framework as a way to organize the very large body of evidence in the literature. In so doing, the review attempts to differentiate between the micro and macro levels. The reason is that policy needs to adopt an "integrated approach" (also known in the literature as policy complementarity) across micro and macro levels if productivity benefits are to be realized (Alfaro 2016: 5).

Mediating factor 1: Productivity potential of foreign investors (micro level)

First, the productivity potential of different foreign investors can explain variation in FDI's effect on host economy productivity. There are a number of factors that can affect the productivity potential of foreign investors, including foreign investor motivation (FDI type), the level of foreign ownership in a sector, the share of inputs sourced locally by FDI firms, and FDI firm's use of technology (Farole and Winkler 2014b: 65).

[24] Interestingly, this study finds that FDI's effect on productivity is more likely to be significant and positive for Asian countries.

Foreign investor motivation is a key dimension to explain variation in FDI's effect on host economy productivity. As discussed later in the linkages area, in the short-term market-seeking FDI is most likely to develop linkages with host firms, and therefore productivity effects through those linkages. The reason is that market-seeking FDI is more likely to source from local suppliers, need local management, and be more forward integrated (Farole and Winkler 2014 in Echandi et al. 2015: 26). In the long-run, efficiency-seeking FDI may have the greatest potential in terms of productivity spillovers, but in the short-term local suppliers can find it difficult to develop linkages with FDI firms that are using FDI as an export platform, as local firms do not have the quantity and quality of inputs required by foreign investors (Ibid.). Natural resource-seeking and strategic asset-seeking FDI hold relatively less productivity potential for the host economy: the former because natural resource-seeking investors do least local sourcing amongst FDI types, and strategic asset-seeking FDI generally takes place when the host target firm already has high productivity relative to the foreign investor.

Foreign ownership structure in undertaking FDI may explain variation in FDI's effect on host economy productivity. The evidence suggests that joint ventures generate more vertical and horizontal productivity effects than fully owned firms (Havranek and Irsova 2011: 243; Irsova and Havranek 2012: 10). This finding is orthogonal to other, mostly case study scholarship that finds that performance requirements, including joint venture requirements, are an impediment to linkages, spillovers, and other benefits from FDI to the host economy (Hufbauer et al. 2013; Moran 1998, 2006, 2011; UNCTAD 2007; Echandi et al. 2015: 28). Looking at case study evidence of China's experience with joint venture requirements, Long (2005) finds that their imposition disincentivizes foreign affiliates from using advanced technology when undertaking FDI.[25] Yet China seems to have done quite well in using joint venture and other performance requirements to catalyze technology transfer to host firms.[26] More empirical evidence is thus necessary on the role of foreign ownership structure on FDI's host effects before one can draw any conclusions.

The share of inputs sourced locally may also explain variation in FDI's effect on host economy productivity. One proxy for this is distance between the home economy of the foreign investor and FDI host economy. The reason is that the share of inputs sourced locally by FDI firms increase with the distance between the home and host economies. Looking at Romania, one study uses firm-level panel data from 59,535 manufacturing firms from 1998 to 2003 to compare the effect of U.S. investors to EU investors (Javorcik and Spatareanu 2011). The study finds the presence of U.S. FDI in downstream industries leads to between a 2% and an 11% increase in productivity of Romanian firms in supplying industries, depending on estimations (Javorcik and Spatareanu 2011: 130). However, there was no significant relationship in the case of EU investors. Hvranek and Irsova (2011) also find greater FDI spillovers with country distance in their meta-study of vertical spillovers (Hvranek and Irsova 2011: 243).

[25] The study finds that advanced technology use was 32% in wholly owned foreign affiliates, 40% in majority foreign-owned affiliates, 23% in 50/50-owned affiliates, and 6% in majority Chinese-owned affiliates (Long 2005 in Echandi et al. 2015: 30).

[26] This has been called a 'Faustian bargain' in the literature, as foreign firms were willing to transfer technology for access to the Chinese market and the short-term commercial returns this brought, knowing that in transferring such technology they were helping to strengthen domestic rivals and would later lose market share.

Mediating factor 2: Absorptive capacity (micro and macro levels)

Second, the absorptive capacity of host economies can explain variation in FDI's effect on host economy productivity, particularly levels of human capital and the size of the technology/productivity gap between foreign and domestic firms.

Absorptive capacity is defined as the "ability to identify, assimilate, and exploit knowledge from the environment" (Cohen and Levinthal 1989). It applies at both the level of the individual firm and at the level of the overall economy. At the firm level, absorptive capacity will be a function of how effectively a firm can productively integrate knowledge resources. At the economy-wide level, absorptive capacity will depend on whether there are frameworks and mechanisms to help firms integrate knowledge resources as well as to develop linkages and learning between firms. However, the literature measures absorptive capacity at the firm rather than economy-wide level.

Host economies may need minimum human capital thresholds before the benefits of FDI can be realized. Human capital may be a framework condition that policymakers can affect in order to catalyze positive benefits of FDI for the host economy (Alfaro 2016: 5). Looking at the United States, and using data from all 48 contiguous states from 1978 to 1997, one study found that there was a minimum educational threshold needed in a state for FDI to be more beneficial to growth than domestic investment. In the case of the United States, this was estimated at between 15.56 years and 12.04 years. Six states fell below the lower threshold, all of which spent enormous capital to attract FDI during this period (Ford et al. 2008: 103). There are a further 23 states between the minimum estimated threshold (12.04 years) and the maximum estimated threshold (15.56 years). The study also finds that a 1% change in the percentage of the population with a college degree will increase growth rate by about 0.1% per year, and that education contributes five times more to productivity growth than increased employment, underscoring the importance of education as a policy measure to unlock the benefits of FDI and to drive growth and productivity more generally (Ford et al. 2008: 104). Evidence from the meta-studies confirm the finding that skilled employees increase the absorptive capacity of domestic firms and thus the benefits of FDI (Irsova and Hvranek 2012: 10). Studies that vary the relative skill ratios in empirical estimations of FDI's effect on productivity also confirm the critical role of human capital (Alfaro et al. 2010: 254).

The technological or productivity distance between foreign and domestic firms can also explain variation in FDI's effect on host economy productivity. The evidence suggests that a small technology gap seems to generate more productivity spillovers than a large technology gap (Havranek and Irsova 2011: 243; Irsova and Hvranek 2012: 10). The reason is that very sophisticated knowledge and technology used by foreign firms cannot be productively integrated by host firms until they have the absorptive capacity to do so. Looking at Mexico, one study finds that productivity spillovers between foreign firms and local firms varies as a function of the productivity gap between the two (Kokko 1994). However, looking at Indonesia, a separate study finds that only firms with a large technology gap had a statistically significant productivity effect from FDI, about a 10.1% increase in productivity (Blalock and Gertler 2009: 197). The role of technology and productivity levels in mediating the impact FDI on local firm productivity therefore requires more empirical work before drawing any definitive conclusions.

Mediating factor 3: Institutional framework (macro level)

Third, a country's institutional framework can also explain variation in FDI's effect on host economy productivity. This can include the development of financial markets, labor market flexibility, and trade openness of the host economy.

The development of financial markets may explain variation in FDI's effect on host economy productivity. Evidence suggests that a well-functioning financial market may support FDI's spillovers to the host economy. The reason is that a well-functioning financial market ensures that capital is allocated to productive uses, while encouraging entrepreneurship and lowering transaction costs, all of which have positive effects on the host economy (Alfaro 2016: 6). A well-functioning financial market also allows more productive local firms to self-select into supplier status to foreign firms present in the market through FDI, by providing them access to credit, often a limiting factor to developing such linkages (Alfaro 2016: 6; Alfaro, Kalemli-Ozcan, and Sayek 2009 in Moran 2015: 28). Alfaro and Rodriguez-Clare (2004) find that FDI generates growth effects close to three times higher in financially well-developed countries than in financially poorly developed countries (Alfaro and Rodriguez-Clare 2004 in Alfaro 2016: 7). The study looks at data from 72 countries from 1975 to 1995, and finds that in those economies with more fully developed financial markets, local suppliers are more productive (Ibid). However, the meta-study on vertical spillovers by Hvranek and Irsova (2011) found that countries with *underdeveloped* financial systems enjoyed greater productivity spillovers (Hravnek and Irsova 2011: 243). Later the meta-study on horizontal spillovers by the same authors found that financial system development had no effect on horizontal productivity spillovers (Irsova and Hrvanek 2012: 10). There is therefore insufficient evidence at present to draw any clear conclusions about the relationship between financial markets, FDI, and domestic firm productivity.[27]

Labor market flexibility, however, is a key factor to explain variation FDI's effect on host economy productivity. As discussed above, labor mobility between foreign and domestic firms in the host market may be an important channel through which FDI impacts host productivity. Looking at Ghana, one study considers how working as a manager in a foreign firm then affects the productivity of new local firms that these former managers start. The study finds that local firms run by owners who worked for foreign firms in the same industry immediately before opening their own company are more productive than other rivals in the industry (Gorg and Strobl 2005 in Moran 2015: 20)

Trade openness can also help shape the productivity benefits of FDI. A meta-study by Meyer and Sinani (2009) find that an open trade regime enables and motivates local firms to increase their productivity, a relationship that applies across all countries (Meyer and Sinani 2009: 1088-1089). This is supported by the meta-study vertical productivity spillovers from FDI, which finds that countries open to international trade receive greater vertical productivity spillovers (Havranek and Irsova 2011: 243). However, another meta-study by the same authors finds the opposite effect for horizontal productivity spillovers. The explanation is that domestic firms with high *ex ante* experience from international trade have little to learn from foreign investors that come to their country (Irsova and Havranek 2012: 10).

Finally, time since foreign entry may also explain variation in FDI's effect on host economy productivity. The evidence suggests that FDI may initially negatively affect local competitors. The reason is that competition from foreign firms may force some local firms to exit the market. However, for those firms that are able to adapt and compete, there is a permanent positive effect on productivity. Interestingly, the effect of FDI on domestic suppliers' productivity is transient:

[27] Alfaro et al. (2010) formally model the relationship between FDI, financial development and growth rates, and argue that when financial markets are developed enough, the host economy benefits from backward linkages between foreign and domestic firms, with positive spillovers to the rest of the economy (Alfaro et al. 2010: 254); however, this is models the relationship rather than provides empirical evidence.

foreign firms boost local suppliers' productivity for a few years after entry, but then the effect fades out (Merlevede, Schoors, and Spatareanu 2013: 108).

Evidence for China

Looking specifically at China's experience, there is strong evidence that FDI has increased Chinese productivity. An early landmark OECD study provides some historical numbers in support of productivity spillover potential between foreign and domestic firms. OECD (2000) reports that, on average, "labour productivity of FDI firms is two and half times that of China's domestic firms and more than four times in the technology intensive industries" (OECD 2000: 29).

A few years later, Zhou et al. (2002) provide an assessment of the role of FDI on the productivity of Chinese firms. Their contribution is to differentiate between impact at the regional level and at the industrial level. They use data from 1992 to 1995 on 450,000 firms, which at the time accounted for 90% of China's industrial activity. The study finds that domestic firms located in *regions* that attract more FDI tend to have higher productivity, while domestic firms in *industries* that attract more FDI tend to have lower productivity. The explanation is that FDI brings positive externalities to a region, but may draw away the best employees from domestic firms in an industry, thus reducing the production efficiency of those domestic firms.

Buckley, Clegg, and Wang (2007) provide an interesting addition to the literature on how FDI can have productivity spillover effects in China. They find such spillovers, but their analysis suggests that the form that this spillover may take can change over time. That is, there may be curvilinear effects, whereby the spillover effect diminishes with time. The authors present evidence that such a curvilinear effect may be most pronounced for those industries that are relatively low in terms of technology content. This supports the previous analysis that different kind of industries can benefit more or benefit less from FDI. But the overall conclusion that FDI has a positive spillover effect in the Chinese context remains robust and intact.

A more recent study introduces another important nuance. In setting out to evaluate the effect of FDI on the productivity of local manufacturing firms, Lin, Liu, and Zhang (2009) make a distinction between FDI from OECD economies and from Hong Kong, Macao, and Taiwan (HMT). They use a very large panel dataset that covers all manufacturing firms above a certain minimum size, using data from 1998 to 2005. Their conclusion is that FDI does indeed have significant horizontal spillover effects on productivity when the foreign investment comes from OECD firms, but these horizontal spillover effects are negative for FDI from HMT firms.

This is *a priori* surprising, because HMT firms have certain characteristics that make their operation in the Chinese market easier than OECD firms: they share business culture, diaspora networks, geographic proximity, language, family ties, and the much-touted *guanxi*. However, the explanation is that to compensate for lacking these advantages, OECD firms need to have *other* advantages to compete in the Chinese market. These advantages could include more advanced technology, participation in GVCs, internationally recognized brand names, etc. (Lin, Liu, and Zhang 2009). As the authors state, given these different firm characteristics, it is not clear "which type of foreign invested firms is more likely to generate spillovers to domestic firms in China" (Lin, Liu, and Zhang 2009: 686).

The study finds vertical spillover effects for both OECD firms and HMT firms, though for the latter the finding is not significant. However, in the case of *horizontal* spillover effects, OECD firms have a positive and significant effect on domestic Chinese firm productivity, while HMT firms have a *negative* and significant effect. One possible explanation is that the HMT firms and the domestic

local Chinese firms are too similar: they both tend to be labor intensive and to produce relatively close substitutes compared to OECD firms. As the authors conclude, this kind of direct competition between rather homogenous firms and products "implies a stronger crowding-out effect on Chinese firms by HMT firms, relative to Non-HMT firms" (Lin, Liu, and Zhang 2009: 686).

However, in both cases, vertical spillover effects are present. The strength of these effects depends on the kind of FDI in question: FDI that seeks access to China's domestic market has stronger vertical spillover effects than FDI that is export-oriented and simply seeks to take advantage of the benefits of production in China. This is consistent with the theoretical proposition initially considered in this literature review, that drew a distinction between the domestic economy effects of different kinds of FDI. But the bottom line is that both market-seeking and export-oriented FDI have a positive vertical spillover effect on the local Chinese economy. However, vertical spillover effects from export-oriented FDI are weaker than those from domestic-market-oriented FDI, another interesting finding.

Finally, Ran, Voon, and Li (2007) consider the effect of FDI not only on productivity and innovation, but on economic growth in general across China. They find that the effects of FDI on growth are present, but need to be nuanced, as the effect varies across industries and provinces. In capital-intensive industries, FDI has a strong effect on growth. The same is true on relatively more developed provinces that are generally along the Eastern coast. So industries such as chemical, petroleum and nonferrous metal processing, transportation, and electronics benefit from FDI. And provinces and cities such as Guangdong, Jiangsu, Shanghai, and Shandong do as well. But less capital-intensive industries, and provinces that are located to the West and in the Central region, do not benefit in the same way.

B. Linkages and integration into GVCs

Linkages play a role in all the FDI host effects areas described above, especially in terms of productivity. To some degree linkages are a means to an end, not an end in itself, the ends being increases in each developmental area (e.g. jobs, wages, gender inclusion, economic diversification, etc.). However, since linkages are so important, this section examines the relationship between FDI and linkages in the host economy, especially framework conditions and policies that can explain some of the variation in the presence of linkages (or the strength of such linkages). One particular form linkage is plugging into global value chains (GVCs), which provides an important pathway to development. This section will therefore pay particular attention to the relationship between FDI and GVCs.

The intellectual origin of this analysis lie with Hirschman (1958) who argues that "linkage effects are realized when one industry, by easing conditions of production, facilitates the development of another, thereby accelerating the pace of industrialization" (Alfaro 2016: 6, note 7). Different types of linkages may bring different benefits for the host economy. A backward linkage denotes a domestic firm supplying to a foreign multinational in the country; a forward linkage denotes a domestic firm buying from a multinational in the country (Gorg and Seric 2016: 619). Evidence from Sub-Saharan Africa suggests that backward linkages are positively associated with product innovation, while forward linkage is positively associated with labor productivity (Ibid.).[28]

[28] Productivity spillovers can take place both through linkages and without the presence of linkages. An example of a productivity spillover through linkages would be a foreign-owned firm buying an input from a domestic firm and helping the domestic supplier improve production processes to reach quality and quantity goals. Even though there is a linkage, it is a productivity *spillover* as the benefit of the productivity increase through such coaching is not being included in the purchase price of the item supplied. An example of a productivity spillover without

The strength of linkages between foreign and domestic firms is often shaped by the motivation for FDI (known as the FDI type). In particular, market-seeking FDI is more likely in the short term to develop linkages with local firms than efficiency-seeking, natural resource-seeking, or strategic asset-seeking FDI (Echandi et al. 2015: 26). Returning Farole and Winkler (2014b)'s cross-sectional analysis of 25,000 domestic manufacturing firms (across 78 low- and middle-income countries from 2006 to 2010) supports this variation in linkages based on FDI type. Separate evidence from Sub-Saharan Africa confirms that natural resource-seeking FDI generates few linkages with local firms than other types (Amendolagine et al. 2013: 48). Finally, further evidence using the World Bank's Enterprise Survey finds that efficiency-seeking FDI is also less likely to generate linkages with local firms (Sanchez-Martin, de Pinies, and Antoine 2015: 8).

The strength of linkages between foreign and domestic firms may also vary depending on the structure and character of an industry. The food, wood and furniture, automobile and auto parts industries are relatively more prone to backward linkages (Sanchez-Martin, de Pinies, and Antoine 2015: 24). In the apparel industry, in contrast, the presence of rules-of-origin requirements limit the natural development of linkages (Moran 2015: 21; Farole and Winkler 2014a). The natural resource industry likewise, by its structure and character, poses challenges to FDI linkages, given the high capital and technological requirements to extract minerals, petroleum, or natural gas (Ibid.). However, even in the case of high capital and technological thresholds to linkage formation, there are certain economic activities that lend themselves more than others to the development of linkages. Services, in particular, may be the most promising for local firms to develop and benefit from linkages with FDI activities. Separate survey data on supplier-multinational linkages in 2012 in Chile, Ghana, Kenya, Lesotho, Mozambique, Swaziland, and Vietnam find that transportation, security, cleaning, and catering as low-hanging fruit for linkages formation (Winkler 2014: 111). Policymakers may therefore wish to facilitate these 'quick wins' and build on linkage potential in these areas as a foundational layer of linkage relationships, on which other sectors may later build (e.g. manufacturing of simple local components such as pumps or piping).

The strength of linkages between foreign and domestic firms may depend the role of a local partner, the quality of institutions, and sharing suppliers. The presence of a local partner in the ownership structure may increase the likelihood of linkages with local firms by reducing transaction costs with local firms. Finally, within institutions, low bureaucracy and a strong legal system have been identified as keys element in shaping the strength of linkages. The reason is that if contracts are more likely to be enforced efficiently, foreign investors will be more willing to develop local linkages through outsourcing rather than keep activities in-house. Firm-level survey data collected by UNIDO in 19 Sub-Saharan African countries in 2010 provides support for how these factors shape linkages between foreign and domestic firms (Amendolagine et al. 2013: 47). Across different estimations of the short and long-run demand for local linkages, the study finds all of these three factors to play a positive and significant role.

Looking at Bangladesh, another study finds support for the importance of 'FDI siblings' in determining linkages. These are firms that share local intermediate input suppliers, generating 'shared supplier spillovers' from this form of linkage. Using unbalanced panel data from a survey

linkages would be a domestic firm observing the ways of doing business of a foreign-owned firm, without having a commercial relationship between the two, or for trained workers from a foreign-owned firm leaving and joining domestic firms. In these cases, there may be productivity increases in the host economy without linkages between the foreign firm and local firms. The same logic could hold for other variables than productivity, such as gender, jobs, or wages. FDI can thus generate benefits to the host economy both through and without linkages; this section considers the evidence when such linkages do play a role.

of Bangladeshi firms in 2004 to 2005, the study finds that a 1% increase in FDI sibling presence is associated with a 1% increase in product scope and a 3% increase in productivity (which explains about a quarter of product scope expansion and about a third of productivity gains) (Kee 2015: 19).

Level of education and assistance programs can also shape the presence and strengths of linkages. Surprisingly, higher levels of human capital can have a significantly negative impact on linkage, according to Winkler's (2014) study of supplier-multinational survey data across seven developing countries in 2012. The share of workers with a tertiary education had a significantly negative impact on FDI linkages, while the general manager's education level also had a negative effect (Winkler 2014: 112). The author suggests that highly educated local firms may be directly supplying local firms abroad without needing to develop linkages through FDI.

Gorg and Seric (2016), using the same UNIDO survey data of 19 Sub-Saharan countries in 2010, find that assistance (by governments of multinationals) can increase the positive effects of backward and forward linkages on host economies. In particular, backward linkages are positively associated process innovation if the domestic firm also receives assistance for match making, technology upgrading, searching for staff from the government, or workforce upgrading from multinational customers (Gorg and Seric 2016: 619). In addition, forward linkages are positively associated with productivity if the domestic firm also receives technology transfer from multinational customers (Ibid.). These suggest policy interventions that can help multinationals create stronger linkages with domestic firms, and thus lead to more positive effects on the host economy. Blalock and Gertler (2008) a real-world example of such uncompensated assistance by U.S. and Japanese firms to Indonesian suppliers for improved production, quality control and business management (e.g. moving from small-scale orders to larger regular purchases from local firms that showed promise).

FDI can play an important role in helping plug domestic firms into GVCs. The proliferation of GVCs offers new avenues for economic development by plugging into production networks and contributing value-added in the production process. The presence of foreign firms in an economy through FDI can help domestic firms plug into GVCs. Cambodia and India provide examples of developing countries that have welcomed FDI in order to plug into production networks, in the case of Cambodia by integrating garment value chains and in the case of India by integrating support service value chains (Giroud and Mirza 2015: 73). Examples of assistance measures that can help domestic firms plug into GVCs include advance payment, provision of financing for improvements, support for sourcing raw materials, training of workers, product or process technologies, licensing of patented technology, help with the organization of production lines, help with quality assurance, help with finding export opportunities, and help with implementing health, safety, environmental, and/or social conditions (Winkler 2014: 112).

Separate evidence suggests that participating in GVCs increases knowledge spillovers, and that these spillovers increase with intensity of supply chain linkages (Piermartini and Rubinova 2014: 2). The authors use industry-level R&D and patent data in 29 countries from 2000 to 2008. They conclude that this partly explains why some emerging economies, such as China, Singapore, or Republic of Korea, that received increasing levels FDI, moved from only serving as a production platform to being increasingly integrated in production networks, and as a result become major contributors to the technological innovation since 1985 (Piermartini and Rubinova 2014: 20).

Evidence for China

Looking specifically at China's experience, there is evidence that FDI has increased China's linkages as well as integration into GVCs. One study looks at 1998 to 2001, and uses the input-output table from 1997 to construct linkage variables (this is one of the same tables that will be used in the original empirical work of this dissertation). The study finds that FDI generates positive vertical linkage effects in Chinese manufacturing at both the national and regional levels, and limited positive horizontal spillovers at the regional level. The evidence suggests that OECD firms generate both vertical and horizontal linkages, while Hong Kong, Macao, and Taiwanese firms generate vertical backward linkages (Liu, Wang, and Wei 2009: 1113). While the horizontal variable is statistically insignificant, the vertical (backward and forward) linkage variables are consistently positive and statistically significant across different measures. For instance, a one-standard-deviation increase in one backward linkage variable measured by capital results in a rise of 23% TFP growth, and a one-standard-deviation increase in one forward linkage variable leads to an 8.3% increase in TFP growth (Liu, Wang, and Wei 2009: 1118-9). Turning instead to how FDI into China has facilitated integration in GVCs, another study provides evidence using case studies from the coastal city of Qingdao between 2001 and 2004 (Kim 2011: 69).

C. Exports

There is evidence that FDI can lead to economic sophistication through export diversification. Related to economic diversification is economic complexity; however, there seems to be no extant work investigating the relationship between FDI and economic complexity in the host economy. The limited evidence in this area thus beckons for more research.

There is evidence that FDI can lead to host economy export growth, export sophistication (or quality), and export diversification. Many countries have used export-oriented industrialization strategies a pathway for development. The evidence suggests that FDI can help economies achieve greater and more sophisticated exports. FDI might can help achieve export diversification through two channels: on the one hand, MNEs can use knowledge and technology they bring to the host economy when using the host as an export platform, thereby generating higher-unit value goods than those previously exported by the host country; on the other hand, MNEs can lead to knowledge and technology spillovers to local firms, especially suppliers in the production process, facilitating product upgrading (Harding and Javorcki 2012: 964). There is evidence that some economies that initially relied on exporting commodities have been able to use FDI to upgrade and diversify their export base and thus achieve higher growth rates and greater welfare gains (Chen and Swenson 2014; Freund and Pierola 2012; Harding and Javorcik 2012; Moran 2014; Swenson 2008 all in Echandi et al. 2015: 9). One of the key studies, Harding and Javorcik (2012), looks at 105 countries from 1984 to 2000, and relates unit values of exports at the four-digit SITC level to data on sectors treated by investment promotion agencies (IPAs) as a priority in their efforts to attract FDI.[29] This study finds that the unit values of exports in sectors targeted by the IPAs increase by 11% (Harding and Javorcik 2012: 970). However, there is important variation depending on development level: for developing countries this result is significant at the 1% level, but for developed countries the effect is much weaker and only significant at the 10% level (and then only with a time lag).

[29] Previous work by the same authors, looking at 140 countries, had found that active IPA targeting of a sector doubled FDI inflows compared to non-targeted sectors. This finding is robust to including country-year fixed effects, country-sector fixed effects, and sector-time fixed effects (Harding and Javorcik 2011).

The role of FDI in export sophistication and diversification therefore appears to hold for developing but not for developed countries. Such differences may be due to differences in technology levels between developing and developed countries – for developed economies there is less of a technology gap to close, and so the presence of MNEs through FDI has only a minor effect on the unit values of exports through the two channels described above (Harding and Javorcik 2012: 971). Evidence for the role of FDI in promoting export sophistication and diversification of developing but not of developed countries is provided by a large study over a long time horizon. Iwamoto and Nabeshima (2012) examine 175 countries from 1980 to 2007 using dynamic panel model based on generalized methods of moments to control for endogeneity and time-invariant country effects.[30] They find that a five-year lagged FDI inflow correlates positively with both export diversification and sophistication. However, these results only hold for developing countries. In addition, FDI stock has a statistically significant effect on export sophistication, but not on export diversification. Again, this applies only to developing countries (Iwamoto and Nabeshima 2012: 17-18). This study therefore supports the earlier result that FDI-driven export diversification may only be relevant for countries with a knowledge and technology gap that FDI helps to bridge.

Differences in the effect of FDI on export diversification may be related to differences in FDI type, especially efficiency-seeking FDI and secondarily market-seeking FDI. There is consensus in the literature that efficiency-seeking FDI is most likely to lead to export-oriented diversification, as efficiency-seeking FDI aims to exploit the cost and skill advantages in the host economy to produce for export. Amongst the other types of FDI, market-seeking FDI is most likely to generate linkages with the domestic economy, as MNEs aim foster supplier and consumer relationships (Echandi et al. 2015: 26; Farole and Winkler 2014a). This has the potential, over time, to generate knowledge effects through direct knowledge transfer and indirect knowledge spillovers (as discussed above in the linkages section).

In light of these potential differences on export diversification by different FDI types, it is interesting to examine one region that has relied heavily on specific type of FDI, natural resource-seeking: the Middle East and North Africa (MENA) region. One study uses a panel dataset of 127 export markets from MENA countries from 1988 to 2006, and finds that in resource-poor countries in the region, removing impediments to FDI improved export diversification, but not in resource-rich countries (Gourdon 2008: 35). The author suggests that FDI to high income, resource-rich countries is mostly natural resource-seeking and market-seeking, while FDI to low income, resource-poor countries is mostly efficiency seeking, corroborating the argument that only certain types of FDI may contribute to export-oriented diversification (Gourdon 2008: 30).

Evidence for China

Looking specifically at China's experience, there is strong evidence that FDI has contributed to China's export growth and sophistication. An early study asks "what is the role of FDI in China's trade expansion, what is the impact of FDI on the differences in China's provincial trade, and what is the impact of FDI on China's bilateral trade with its trade partners?" (Chunlai 1997: 5). The short answer is that FDI and trade are seen as complementary, and so FDI has a positive impact on trade. This result holds empirically for both China's bilateral trade and China's provincial trade.

[30] A variety of methods have been employed in the literature to measure export diversification and export sophistication. Iwamoto and Nabeshima (2012) develop a measure of export diversification based on a Herfindhal Index following Harding and Javorcik (2010), and a measure of export sophistication based on Hausmann et al. (2006)'s index of the productivity of a country's export basket. Following the approach by the same authors, Harding and Javorcik, allows for comparability of results across these different studies.

A later study uses panel data from 24 provinces between 1986 and 1997 and finds that increased levels of FDI positively affect provincial manufacturing export performance (Zhang and Song 2000: 392). Specifically, a 1% increase in FDI is associated with a 0.29% increase in exports in the next year (Zhang and Song 2000: 394). Another study uses bilateral data for China and 19 source economies from a very similar period, 1984 to 1998 and finds an interesting virtuous cycle: growth of imports causes the growth of inward FDI, which in turn causes the growth of exports from China, which then causes the growth of imports (Liu, Wang, and Wei 2001: 190). Other studies during the same time frame also agree that FDI drives exports (Sun and Parikh 2001; Zhang and Felmingham 2001).

Turning instead to examining not just export volume but export quality, one study considers Chinese exports from 1997 to 2009 and finds that the presence of MNEs through FDI is associated with not only both export growth and export quality improvements (measured by higher unit value) by Chinese firms in the same sector (Chen and Swenson 2014 in Echandi et al. 2015: 9). Specifically, a one standard deviation increase in MNE presence was associated with a 6.3% increase in transaction unit values and a 1.3% increase in exports.

D. Domestic investment

There evidence that FDI can both crowd in and crowd out domestic investment, and the empirical effect may depend on the level of development of a country and the time horizon that is considered.

The effect of FDI on domestic investment may vary depending on level of development of the host economy and time horizon. The most comprehensive study looks at FDI into 50 countries from 1970 to 2004 (Wang 2010). It finds that FDI has a negative contemporaneous effect on domestic investment, but a positive cumulative effect on domestic investment (Wang 2010: 3711). Disaggregating the analysis into developed countries (DCs) and least developed countries (LDCs), the study finds that the contemporaneous effect is negative in DCs and neutral in LDCs, while the cumulative effect is neutral in DCs and positive in LDCs (Ibid). The study therefore suggests that FDI may crowd-in domestic investment relatively more in economies at lower levels of development.

Two regional studies provide further evidence that FDI can both crowd-in and crowd-out domestic investment. Looking at 38 sub-Saharan African countries from 1970 to 2005, a study uses fixed-effects estimates to control for country-specific effects and finds that FDI crowds in domestic investment (Ndikumana and Verick 2008). Interestingly, these results hold for both resource-intense and non-resource-intense countries, although the effect is stronger and significant at a higher degree of confidence for the latter (Ndikumana and Verick 2008: 723). Looking instead at the Czech Republic, Hungary, and Poland from 1990 to 2000, another study finds variation across countries (Misun and Tomsk 2002). FDI led to crowding-out of domestic investment in Poland, but to crowding-in of domestic investment in Hungary and in the Czech Republic (the latter between 1993 and 2000) (Misun and Tomsk 2002: 38). The authors suggest that the variation may be due to different motivations for FDI in different countries, namely efficiency-seeking FDI in Hungary and market-seeking FDI in Poland, the latter causing FDI to compete with domestic producers rather than encourage additional domestic investment. In addition, the authors caution that these results should be interpreted and understood in the context of transformative recession in the region and a privatization process (Misun and Tomsk 2002: 51). Together, these findings point to the potential effect of FDI on domestic investment, and to the role of policy to create favorable conditions for FDI to crowd in and not crowd out such domestic investment.

Evidence for China

Looking specifically at China's experience, there is evidence that FDI has increased China's domestic investment. One study examines the causal link between FDI and domestic investment from 1988 to 2003, and finds that FDI crowds in rather than crowds out domestic investment (Tang, Selvanathan, and Selvanathan 2008). In addition, the larger the FDI, the larger the domestic investment. Interestingly, the causal link is uni-directional and not bi-directional: FDI leads to domestic investment, but domestic investment does not lead to FDI (Tang, Selvanathan, and Selvanathan 2008: 1307)

E. Innovation

There is not that much empirical work on the relationship between FDI and host economy innovation, although the evidence that does exist focuses almost entirely on China's experience, and finds a positive relationship.

There is evidence that FDI can lead to increasing host firm innovation, although there may be winners and losers in the host economy. One study looks at Mexico considers U.S. firm Wal-mart's entry into the Mexican market following ratification of the North American Free Trade Agreement (NAFTA). The study finds that FDI by Wal-mart (in the form of Walmex) caused potential suppliers to split into two groups, those with relatively appealing products and those with less, with the former supplying to Walmex. Overall, the study suggests that market share reallocations, exit patterns, and adjustments in innovative effort, increase both productivity and the rate of innovation (Iacovone et al. 2009: 1).

Evidence for China

Looking at Chinese provincial-level data from 1995 to 2000, one study finds positive effects of FDI on the number of domestic patents (a proxy for innovation), across three different kinds of patents (Cheung and Lin 2004). The effect is particularly strong for external design patents, where a 1% increase in FDI inflow leads to between a 0.15% and a 0.47% increase in the number of applications (depending on the estimation) (Cheung and Lin 2004: 25). The authors conclude that these effects are strongest for minor innovations (such as external designs) rather than major innovations. They conclude that FDI plays a demonstration effect that catalyzes indigenous innovation. Separate evidence, still looking at Chinese provincial data but from 1998 to 2003, finds the same conclusion: there is a positive effect of FDI on the number of domestic patent applications and this is stronger for minor innovation (Xian and Bing 2005: 1). The fact that FDI's effect on domestic innovation is stronger for minor innovations is aligned with the earlier discussion on China's predilection for the practical application of innovation and for converting research into commercially viable products and services (see chapter two, section E, technology variable).

F. Wages

There is strong evidence that foreign owned firms pay higher average wages than domestically owned firms. This finding is corroborated across countries, development levels, sectors, skill level, and time. As the availability of data has evolved – from industry level to firm level and finally employer-employee matched data – this has improved accurate measurement of the FDI wage premium. Most studies using better data have confirmed FDI wage premia,

although at lower levels. Certain dimensions can also mediate the FDI wage premium, particularly development level and source country. This section first briefly provides theoretical argument for the FDI wage premium before presenting the evolution of this broad array of evidence, and then concluding with a discussion of the mediating factors.

There are number of theoretical reasons for an FDI wage premium. First, firms acquired or established through FDI may be more productive than other domestic firms, thus earning higher profits and paying higher wages. Second, foreign affiliates may pay more because their parent firms are relatively more productive (having had to overcome the liability of foreignness to undertake FDI) and thus have higher profits and can pay higher wages. Third, foreign firms might try to prevent technological spillovers through labor turnover by paying a wage premium. Four, the FDI wage premium may compensate for higher labor demand volatility in foreign plants or for a higher foreign closure rate. Fifth, there may be non-market forces, such as equity consideration (Bernard and Sjöholm 2003; Egger and Kreickmeier 2013; Fabri et al. 2003; Fosfuri et al. 2001; Heyman et al. 2007; Javorcik 2014; Tomohara and Takii 2011)

There is strong evidence that foreign firms pay higher wages than domestic firms, especially for developing countries, even as the estimates have fallen over time with better data and methods. Early studies looked at industry-level data, later work used firm-level data, and the latest approach draws from individual-level data using employer-employee matched data. Earlier estimates of the FDI wage premium range from 10% to 70% across a host of studies.[31] The landmark firm-level study is Lipsey and Sjoholm (2001), which uses a dataset on 20,000 firms in Indonesia. This study is particularly noteworthy as it claimed the "universal rule" that foreign-owned firms and plants pay higher wages than domestically owned ones, across host economy development level and across industries (Lipsey and Sjoholm 2001: 2). Using an exceptional dataset, the authors were able to control for education, region, sector, plant size, energy inputs per worker, other inputs per worker, and proportion of employees that were female. They concluded that approximately one-third of the FDI wage premium could be attributed to region and sector, one-third to plant size and use of other inputs, and one-third was left unexplained (Lipsey and Sjoholm 2001; Moran 2015: 6).

Studies using employer-employee matched data have confirmed the existence of a significant FDI wage premium, albeit at lower levels. Employer-employee matched data is useful as studies that only use firm-level data cannot control for the possibility that ownership changes are associated with changes in the composition of the workforce, who may leave or join the firm as a consequence of FDI. In contrast, employer-employee matched data can control for worker selection. Looking at Portugal, using a matched employer-employee data from 1991 to 1998, one study finds evidence that foreign acquisition increases wages, as per the FDI wage premium described above, but at a lower level than expected. In the case of Portugal in the 1990s, this was 4% for high educated workers and 2% for low educated workers (Almeida 2007: 93). However, a study of detailed matched employer-employee data on the entire Swedish private sector from 1990 to 2000 (2 million observations per year, or roughly 50% of the Swedish labor force) actually found a negative effect of FDI on wages in some specifications, with wages 2% less in acquired rather than similar non-acquire firms, significant at the 1% level (Heyman et al. 2007: 368). In other specifications, however, the FDI wage premium was between 2% and 6%. This study was able to control for both firm and individual heterogeneity as well as possible selection bias in foreign acquisitions through combining propensity score matching techniques with difference-in-difference estimations. From the

[31] Heyman et al. (2007) draws from the following studies in estimating this range: Aitken et al. (1996), Bandick (2004), Conyon et al. (2002), Doms and Jensen (1998), Driffield and Girma (2001), Girma et al. (2001), Griffith (1999), Görg et al. (2002), Haddad and Harrison (1993), Lipsey (1994), Lipsey and Sjöholm (2004), and Sjöholm and Lipsey (2006).

evidence, it seems clear that if there is an FDI wage premium in developed economies, then it is not very large.

Developing countries enjoy a larger FDI wage premium than developed countries. One firm-level study compared the FDI wage premium across five countries at different stages of development, using a consistent methodology across estimations for Brazil, Germany, Indonesia, Portugal and the UK (Hijzen et al. 2013).[32] The FDI wage premia ranges from 2% in Germany, 5% in the UK, 8% in Portugal, 16% in Brazil, and 21% in Indonesia; the results are significant for the developing countries, but not significantly different from zero in Germany and the UK (Hijzen et al. 2013: 179). An earlier study with one of the same authors and considering the same countries found similar but slightly different results: 5% in the UK, 8% in Portugal, 11% in Brazil, 19% in Indonesia, with a positive but statistically insignificant effect in Germany (OECD 2008a: 265). This provides further evidence of the importance of FDI as a mechanism for economic development in developing countries like China.

The effect on wages may also vary depending on the motivation for FDI, known as FDI type. One study looks at firm-level data by using four-digit sector level information (as compared to the more common and less disaggregated two-digit approach) along with input-output tables to distinguish market-seeking FDI and efficiency-seeking FDI (Alfaro and Charlton 2009 in Alfaro 2016: 8). It finds that different motivations for FDI affect factor incomes (such as wages) within and across countries. In particular, market-seeking FDI, being a substitute for trade, may increase wages without necessarily changing their distribution. In contrast, efficiency-seeking FDI, being a complement to trade, may reduce absolute wage differences across countries and alter relative wages within countries (Alfaro 2016: 8-9).

There is mixed evidence regarding whether FDI also raises wages in non-foreign owned domestic firms. FDI may induce wage increases in other domestic firms through a 'reference wage effect' or 'wage spillover' which can operate either through equity concerns or through bargaining. Looking at Indonesia, one study uses a generalized methods of moments to estimate the effect of FDI on local firm wages from 1989 to 1996, using a total of 27,066 observations (Tomohara and Takii 2011). The study finds that higher wages set by foreign firms increase the wages of local firms when the gap between the foreign firm wage and local firm wage is large, but not when it is small. Specifically, in 'large wage-gap' industries (14 industries such as chemicals, iron and steel, and electronics) local wages increase by 4–5% for each 1% increase in the wages paid by the foreign firms, significant at the 5% level (Tomohara and Takii 2011). However, there is no statistically significant effect in 'small wage-gap' industries.

Looking at Brazil, one study finds that positive wage spillovers to host firms through labor mobility. A 10% increase in the share of former multinational workers increases an incumbent worker's wage in domestic firms by approximately 0.6% (Poole 2013: 399). Looking at Italy, another study uses fixed effects to find that wage spillovers take place when the technology gap between foreign-owned and domestically owned firms is large (Pittiglio et al. 2015). While the technology gap contributes positively to domestic wages in the same sector, it contributes negatively to wages paid by domestically owned enterprises that are suppliers of intermediate inputs to the foreign firm (Pittiglio et al. 2015: 25). This result argues for host economy policies that take into account the different kind of linkage relationships that can exist between foreign-invested and domestic firms.

[32] The time periods and sectors for each country are as follows: Germany (all sectors, 2000 and 2004), Portugal (all sectors, 1997-2004 except 2001), UK (all sectors except banks, 1997-2005), Brazil (all sectors, 1994-2005), and Indonesia (manufacturing, 1997-2005 except 2001).

The latest evidence also indicates that the FDI wage premium can vary depending on the FDI source country. In other words, the country dyad (host-home pair) can mediate the effects of FDI on wages in the host economy. One study, which uses firm-level data from UNIDO across 19 Sub-Saharan (SSA) countries in 2010, finds that foreign firms pay on average 16.9% more than domestic firms, *ceteris paribus* (Coniglio et al. 2015: 1260). However, when disaggregating FDI from developed countries and developing countries, north-south FDI is associated with between 22.8 and 29.3% higher wages (depending on the specification), while there is no robust evidence for a South-South FDI wage premium (Coniglio et al. 2015: 1260). Looking at specific source countries, Chinese investors pay 59.2% lower average wages than domestic firms. When comparing Chinese FDI to US and EU FDI and disaggregating by skill level, the study finds that Chinese firms investing in SSA are associated with a negative wage premium for skilled workers (-23.7% compared to domestic firms, -49.8% compared to US/EU firms), as well as a persistent but smaller negative wage premium for unskilled workers (-10.4% compared to domestic firms, -15.0% compared with US/EU firms) (Coniglio et al. 2015: 1260). The study proposes explanations for these significant differences: Chinese investors may be exporting domestic labor practices; employing a large share of Chinese workers who are more inclined to work for long hours with weak workers' rights; attracting low-skilled and qualified workers and thus paying a low equilibrium wage; or locating in more peripheral/rural areas where equilibrium wages are significantly lower (Coniglio et al. 2015: 1261).

Girma and Gorg (2007) likewise find that the nationality of the foreign investor to be an important determinant of the FDI wage premium. Looking at the United Kingdom from 1980 to 1994, they find that sizable post-acquisition wages effect on both skilled and unskilled workers following an acquisition by a US firms; however, there is no such impact following an acquisition from an EU firm (Girma and Gorg 2007: 97). For FDI by U.S. firms, the FDI wage premium is 8% for skilled workers (one year post acquisition) and 13% for unskilled workers (two years post acquisition); For FDI by EU firms, in contrast, there is no effect on wages, either for skilled or unskilled workers. Finally, for FDI from firms from the rest of the world, there is a smaller but still significant FDI wage premium on unskilled workers (4.4% the first year, and 6.8% the second year following acquisition) (Girma and Gorg 2007: 109). Understanding that FDI from different source countries may lead to significantly different labor market outcomes across different levels of skills in the host economy may spur host government policymakers to consider how to target FDI source countries that are more likely to generate better quality and higher-paying jobs.

Evidence for China

Looking specifically at China's experience, there is strong evidence of an FDI wage premium in China, although the wage spillover effects may be negative (i.e. may decrease rather than increase wages in domestic firms). One study looks at micro-level evidence in the Chinese manufacturing sector from 1998 to 2007 (Chen, Ge, and Lai 2011). The FDI wage premium ranges from 27% to 2.4% depending on the empirical method used, but remains statistically significant (Chen, Ge, and Lai 2011: 1326). However, the presence of foreign investment in the same industry and province has a negative effect on the wage level in domestic enterprises in that industry and province: a 10% increase in the foreign employment share in the same province and industry lowers the wage level in domestic firms by about 0.9% (Chen, Ge, and Lai 2011: 1328). This is an important finding that warrants more examination in the future. It may result from competition effects that put pressure on less efficient and competitive local firms.

A separate study using data from a 1996 household survey of about five thousand households across six provinces compares wages in FDI firm to wages in SOEs. For workers of equal

characteristics in both sectors, the average wage differential was 1738.3 yuan in favor of FIEs (Zhao 2001: 51). However, the study cautions that SOEs provide significant nonwage benefits, so they may in fact be more attractive as an employment option. Finally a more recent study looks at household and province-level data from 1995 to 2002, and finds positive effects of FDI on wages, although with gender differences discussed below (Braunstein and Brenner 2007).

G. Jobs

This section complements the previous one by looking at whether FDI creates jobs, and if so, if these are good quality jobs. From the point of view of both workers and governments, it is not sufficient that there by a FDI wage premium, the development objective is also that there be job creation and that these jobs take place in conditions that support skill development, quality of life, and social objectives. This section first considers evidence for FDI's effect on domestic job creation. It then considers what it means for a job to be a 'good' job by identifying certain dimensions to job quality, before reviewing the evidence as to whether FDI generates not only jobs but 'good' jobs.

Job creation

There is evidence that FDI creates jobs in the host economy. A number of the studies reviewed in the previous section provide evidence regarding FDI's impact on job creation. Returning to the firm-level study of the Germany, the UK, Portugal, Brazil and Indonesia during the mid 1990s to mid 2000s, there are two important dimensions to note. First, foreign-owned firms employ many more workers than domestic firms, with employment differences in all countries being greater than 100%. Even after controlling for industry and region, foreign-owned firms are still much larger, ranging from 85% in Portugal to over 500% in Brazil (Hijzen et al. 2013: 180). Second, foreign takeovers raise employment in some countries, but not in all. In Indonesia and the Portugal, foreign takeovers raise employment by 25% and 24%, respectively. However, in the UK and Germany foreign takeovers are associated with *falls* in employment (although these effects are not precisely estimated) (Hijzen et al. 2013: 180).[33] It is worth noting that the study finds mixed evidence regarding whether there is a skills bias to employment change in the three countries following foreign acquisition (Hijzen et al. 2013: 181).

Returning to the study of Portugal during the 1990s that used matched employer-employee data, the study finds that employment increased by 10.1% following foreign acquisition (Almeida 2007: 87). Returning to the study of 19 sub-Saharan African countries in 2010, the study finds that foreign investors are on average 11.5% and 16.6% larger in terms of employees (the range depends on the estimation applied) (Coniglio et al. 2015: 1250). However, given that the study looks at FDI in a single year, this does not allow for a dynamic estimation of employment growth over time. Finally, recent work by the OECD finds that approximately 25 jobs are created per USD 10 million greenfield foreign capital investments in OECD countries, while in the South African Development Community (SADC) this number is still large but a bit lower, at 19 jobs per USD 10 million (OECD Secretariat presentation, 2017 Global Forum on International Investment).

FDI may benefit workers with different levels of skills differently, with perhaps more benefits accruing to high-skilled workers. There is evidence that FDI increasingly flows to higher-skilled

[33] Brazil has too few foreign takeovers during the sample period to estimate the effect.

activities[34] rather than lower-skilled activities. Looking specifically at manufacturing FDI, the flow to higher-skilled activities was nearly ten times (9.69) larger per year than the flow to lower-skilled activities in the annual average from 2009 to 2011. The annual average between 1990 and 1992 was about five times (5.48), and between 2005 and 2007 about 14 times (13.94), indicating that this trend is accelerating (Moran, Gorg, and Seric 2016: 2-3). This means that FDI likely benefits higher-skilled workers more than lower-skilled workers.

Initial skills endowments may play an important role in determining the effect of FDI on host economies. There may be an interaction effect between FDI types and skill levels in the economy: certain skill endowments attract certain FDI types, and certain FDI types help develop certain skill endowments. One study, based on an unbalanced panel for 111 countries over seven 5-year time periods from 1970 to 2000, confirms that FDI amplifies differences in initial skill endowments. In countries that are relatively well endowed with skills, FDI enhances skill development by increasing enrollment in secondary and tertiary education relative to the sample average. However, in countries that are relatively poorly endowed with skills, FDI enhances skill inequalities by attracting FDI that seeks low-skilled activities, creating a low-skill equilibrium (Te Velde and Xenogiani 2007: 83, 96, 101). By affecting school enrollment rates differently depending on initial conditions, FDI may lead to low-skill countries specializing in low-skill production, and high-skill countries specializing in high-skill production, with low-skilled developing countries trapped in a low income-low skill FDI equilibrium. This suggests important human capital development policy measures for governments who wish to escape such a cycle. Specifically, policymakers will need to coordinate skills-development policies with investor needs if they are to bring the country to a higher skill path (Te Velde and Xenogiani 2007: 103).

There may also be variation in FDI's effect on host employment depending on source country. Returning to the study of 19 Sub-Saharan countries in 2010 that used firm-level data, the study found variation in FDI's employment effect by country of origin. FDI from MNEs originating in other developing countries (South-South FDI) had on average 15.3% more employees than domestic firms; FDI from MNEs originating in developed countries (North-South FDI) had on average 11.2% more employees than domestic firms (Coniglio et al. 2015: 1253). FDI from Chinese firms produced the largest employment increase, followed by FDI South Africa and countries in the Middle East and North Africa (MENA) region. These differences are not driven by sectoral specialization of firms originating in different countries, as estimates include sectoral dummies. Rather, FDI from these countries seems to target blue-collar, relatively less skilled workers, while FDI from developed countries seems to target relatively more skilled employees.

Quality of jobs created

Beyond FDI's effect on wages and job creation, both workers and policymakers care about whether these are "good" jobs. The OECD has developed a framework on measuring and assessing job quality (OECD 2015d). This framework considers job quality to be based on three dimensions: earnings quality, labor market security, and quality of working environment (which includes training). The earlier section considered FDI's impact on earnings quality, so this section will review the evidence on FDI's impact on labor market security and quality of working environment.

[34] In the manufacturing sector, lower-skilled activities are defined as: food, beverages and tobacco; textiles, clothing and leather; and wood and wood products. Higher-skilled activities are defined as publishing, printing and reproduction; coke, petroleum products and nuclear; chemicals and chemical products; rubber and plastic products; nonmetallic mineral products; metals and metal products; electrical and electronic equipment; precision instruments; and motor vehicles and other transport (Moran, Gorg, and Seric 2016: 24).

There is mixed evidence regarding FDI and labor market security. The literature argues that one of the reasons for the FDI wage premium is to compensate for less labor market security as MNEs can easily shift production to other locations, or to induce lower worker turnover to lower the risk of knowledge transfer or leakage to rivals. There two effects would work in different directions in terms of impacting labor market security or worker turnover. It is thus an empirical question as to whether FDI contributes to more or less labor market security relative to domestic firms.

Returning to the two studies that review FDI's impact on labor markets in Germany, the UK, Portugal, Brazil, and Indonesia, the earlier study finds evidence that foreign takeovers increase worker turnover in Portugal, while no effect is found in either Brazil or Germany (OECD 2008a). However, the later study finds that in Germany, Portugal and Brazil that separation rates decline after takeover, although the effect is only significant in Brazil.[35] The decline in separation rates varies from 2.6% (Portugal) to 4.1% (Germany) to 6% (Brazil) (Hijzen et al. 2013: 182). The study suggests that the lower separation rates are motivated by foreign-owned firms' desire to reduce knowledge spillovers.

Another dimension of labor market security is whether MNEs that have established through FDI are more or less likely to shut down operations than domestic firms. There is conflicting evidence in the literature. Some studies find that MNEs are more likely to shut down (e.g. Bernard and Jensen 2007, looking at the U.S.; Bernard and Sjoholm 2003, looking at Indonesia), while other studies find that less likely to shut down (e.g. Harrison and Scorse 2010, also looking at Indonesia) (Javorcik 2013: 4).

There is no clear evidence regarding the impact of FDI the quality of working environment (also known in the literature as non-wage working conditions). Some studies have found that foreign-owned firms offer better working conditions than domestically owned firms (Brown et al. 2002 in Braunstein 2006). Other studies find no strong evidence that FDI improves non-wage working conditions, as MNEs instead adapt to local labor practices rather than exporting those of their home economy (Almond and Ferner 2006 in OECD 2008a).

There is some evidence that foreign-owned firms have longer working hours. Studies have found working hours to be longer in foreign-owned firms (Markey and Ravenswood 2009: 11). However, this may be due to the characteristics of the firms acquired rather than changes induced by FDI. Evidence suggests that longer working hours in foreign firms in Brazil, Portugal, and the UK are due to the characteristics of firms acquired by foreign owners. In fact, foreign takeovers actually have a slightly negative impact on working hours, although this is not statistically significant (OECD 2008a: 286). Another study surveyed work-life balance practices for over 700 medium-sized firms in the U.S., UK, Germany and France to analyzes to what extent US MNEs export labor practices to their affiliates in Europe. The evidence indicates that US MNEs export management practices but not work-life balance practices (Bloom et al. 2009 in OECD 2008a). Finally, returning to the study of FDI in Export Processing Zones in Madagascar, the study finds that while these jobs provide favorable wage and non-wage compensation, the working hours are very long and the turnover is high (Glick and Roubaud 2006: 722).

There is some evidence that FDI leads to greater training. Looking at the Czech Republic, one study finds that foreign-owned firms spend 4.6 times more than domestic firms on hiring and training (Filer et al. 1995 in Javorcik 2013: 3). Looking at Malaysia, another study likewise finds that foreign-owned firms provide more training to their workers than domestic firms (World Bank 1997

[35] The authors report that separation rates cannot be calculated for Indonesia as worker-level data is not available, while for the UK the sample is too small to allow a firm-level analysis of separation rates for all but the largest firms.

in Javorcik 2013: 4). However, returning to the study of Portugal using employer-employee matched data, Almeida (2007) does not find evidence for FDI providing significant increase in human capital of the workforce. She finds that acquired firms *already* have a more educated workforce, and so most of the cross sectional differences between foreign and domestic firms are in fact driven by foreigners cherry picking firms domestic firms with higher human capital to acquire.

There is some evidence that FDI may improve the situation of child labor in developing countries. Iram and Fatima (2008) find that FDI does not increase the demand for child labor, Neumayer and De Soysa (2005) find that FDI is associated with a lower incidence of child labor, and Brown (2007) finds that child labor deters inward FDI (Markey and Ravenswood 2009: 12). There are a number of possible explanations for these welcome findings. First, there may be reputational costs for firms that use FDI to engage in child labor, and a number of MNEs have thus adopted voluntary codes of conduct, including, amongst other things, guarantees not engage in child labor. Second, there may be new instruments, such a Global Framework Agreements adopted by MNEs and labor groups, which include injunctions against child labor. Finally, an explanation where FDI is the consequent rather than cause of lower child labor is the following: child labor has a negative effect on the human capital stock as it reduces human capital formation; where child labor incidence is high, the human capital stock is therefore lower, and if FDI is drawn to higher human capital stock, it follows that FDI will be lower in those economies with high child labor (Brown 2007 in Markey and Ravenswood 2009: 12).

In short, a study by the OECD, rhetorically titled "Do Multinationals Promote Better Pay and Working Conditions?" pithily concluded that, "There is no strong evidence that FDI also improves non-wage working conditions" (OECD 2008a: 265). Therefore, while there is strong evidence of higher wages and greater employment from FDI, there is no conclusive evidence that the *quality* of employment increases, and it may even decrease. Such lack of clarity and even disagreement in the literature motivates a better identification of the actual effects of FDI on non-wage working conditions in the host economy.

Evidence for China

Looking specifically at China's experience, there is evidence that FDI has created jobs in China, but there is less evidence regarding the quality of employment. One study looks at the effect of FDI on employment in the manufacturing sector from 1998 to 2004. The study finds that the high employment growth in foreign firms is associated with their firm characteristics and their high survival rate. In addition, there seems to be a positive indirect effect of FDI on employment in private domestically-owned firms, where employment growth is also high (Karlsson et al. 2008: 1).

H. Gender inclusion

There is relatively little evidence regarding the effects of FDI on gender inclusion, especially compared to the amount of evidence in other areas. What evidence exists indicates that FDI has a positive effect on gender inclusion, although this varies depending on FDI type, skill level of women, development level in the host economy, and over time. More work is needed in this area before drawing any firm conclusions. The evidence that does exist can be disaggregated into looking at two different dimensions of gender inclusiveness: the effect of FDI on women's employment and wages, and the effect of FDI on gender equality in the economy. This section reviews each in turn.

Evidence suggests that efficiency-seeking FDI in labor-intensive, export-oriented industries increases women's employment and wages (described in the literature as a "cost effect"). In many developing countries, women are relatively unskilled compared to men and are relatively overrepresented in the informal sector, which is poorly remunerated. More formal employment opportunities brought by FDI thus present a significant step up in pay for women compared to informal employment. Empirical studies from three different parts of the world provide strong evidence. Looking at China, which for much of the past decades was the premier case of development through FDI into export-oriented industries, one study finds that women in these industries earn much higher wages compared to wages in their rural home communities. In the 1990s, these women were able to earn more in one month than a man in their home village could make in an entire year (Davin 2001: 15 in Braunstein 2006: 16)! A later study of Chinese gender composition differentials in 2004 found that female employment was 13% higher in foreign and exporting firms than in non-exporting firms, significant at the 1% level (Chen et al. 2012: 260).

Looking at Honduras, surveys of women involved in export-oriented manufacturing *maquiladoras*[36] find that women who move to this kind of employment for the first time earn about 50% more than in their previous jobs (Ver Beek 2001 in Braunstein 2006: 17). Looking at Madagascar and Export Processing Zone (EPZ) jobs from 1995 to 2002, real earnings growth has been substantially higher for women than for men, 35% versus 25%, respectively (Glick and Roubaud 2006: 735). These authors control of sector-specific differences and worker characteristics, and find that FDI-generated EPZ jobs provide women with high wage jobs relatively to their skill level, and with relatively similar pay between men and women, in contrast to the informal sector which features a very large gender-pay gap. In addition, the study finds that these kinds of jobs provide non-pecuniary benefits as well: 79% of workers in EPZ jobs receive paid leave and 83% health care, on par with the public sector but much higher than non-EPZ private employment, even in the formal sector (Glick and Roubaud 2006: 747).

However, as economies upgrade, women may be left out of higher quality jobs (described in the literature as a "technology effect"). In developing countries, women may not have the same level of skills to benefit from employment opportunities brought about by domestic structural transformation. Women may be disproportionately assigned to low-value added, low-tech, and low-training tasks in foreign and exporting firms, a phenomenon described as 'within-firm segregation of tasks' (Chen et al. 2012: 263). This seems to indicate a dynamic dimension to the effect of FDI on women's employment and wages in developing countries: it initially benefits women as they enter the formal labor market for the first time, but as foreign firms require greater skilled labor, women's employment and wages may decline or even reverse (Seguino and Grown 2006). China provides some evidence of this dynamic dimension, as we shall see below.

FDI's impact on women's employment and wages may therefore depend on whether the "cost effect" or the "technology effect" dominates, which may in turn depend on sectoral differences, FDI type, and women's skill level. For relatively low-skill sectors, the cost effect to FDI may be stronger, leading to relatively less skilled women benefiting more from FDI. For relatively higher-skill sectors, the technology effect to FDI may be stronger, leading to relatively more skilled women benefiting from FDI. Empirical studies provide supportive evidence to these differences in the effect of FDI on gender depending on sector and skill level. Looking at Indonesia, one study considers the effect of FDI on women's employment in lower-skilled plantation employment and higher-skilled hotel employment (both in rural settings). As expected, it finds that the cost effect explains more unskilled women's employment in plantations and the technology effect explains more skilled women's employment in hotels. On the whole, in rural Indonesia, regression analysis

[36] *Maquiladora* refers to factories that produce labor-intensive products with imported goods; a large share of *maquiladora* employment is female.

finds that the technology effect is more relevant than the cost effect in determining relative female employment, so that relatively more women are employed in plantations and relatively fewer in hotels (Siegmann 2007: 125).

The relationship between FDI and women's skill level can also be examined through the reverse perspective: instead of looking at how FDI affects women's skill-based employment, one can look at how different levels of women's skill levels impacts FDI. This is the approach taken by Busse and Nunnemkamp (2009) when estimating a gravity model to test the effect of gender differences in education (as a proxy for skill level) on FDI flows to a sample of 77 host developing countries and 28 source countries between 1978 and 2004. Across the full sample, the study finds that gender disparity in education reduces FDI inflows, significant at the 1% level. Or phrased positively, a decrease in gender disparity in education by 0.25 years (the standard deviation) leads on average to an increase in the FDI/GDP ratio by 2.5% (which rises to 3.6% in the long-run). However, there is variation across FDI home and host country: gender inequality in education only depresses FDI from *developed* home countries and *middle-income* developing host countries. When looking at FDI from *developing* home countries and going to *low-income* developing host countries, the effect of gender-based education inequality on FDI is statistically insignificant. The authors suggest this can be attributed to differences in FDI type based on host country development level, with natural-resource seeking FDI and efficiency-seeking FDI targeting economies at low levels of economic and skills development (Busse and Nunnenkamp 2009: 78). However, the policy implications seem clear: a country that seeks to move up in development level through attracting FDI should decrease gender-based education differentials. Finally, the size of the coefficients at the secondary and tertiary level of education is considerably higher than at the primary level, indicating that changes in secondary and tertiary education disparities will have a much stronger impact on FDI inflows than changes at the primary level (Busse and Nunnekamp 2009: 74).

Evidence for China

Looking specifically at China's experience, there is evidence that FDI has increased gender inclusiveness in China. One early study looked at individual- and municipal-level data in 2000 and found no effect of FDI on the gender wage gap when comparing different cities (Shu, Zhu and Zhang 2007). More recent work in China, however, has found that efficiency-seeking FDI curtails the gender wage gap when controlling for productivity, and that significant gender wage discrimination remains only among private non-exporting firms (Chen et al. 2012: 265). While the study finds that female workers are paid significantly less than male workers (earning 79.5% what male workers earn across all manufacturing firms), the study finds that this is explained by productivity differences in exporting firms but not by productivity differences in non-exporting firms. In other words, competition to global competition from FDI neutralizes wage discrimination, which persists at a significant level in non-exporting firms, where the productivity ratio exceeds the gender wage ratio by 17.2% (Chen et al. 2012: 264).

Another study looks at household and province-level data from 1995-2002, and finds positive effects of FDI on both female and male wages. At the beginning of the sample period, women experienced larger wage increases from FDI than men. At the end of the sample period, however, this trend reversed and men experienced larger wage increases (Braunstein and Brenner 2007). The authors argue that this shift reflects the transition of FDI from lower productivity to higher productivity activities, as well as more domestically oriented production where male employment is relatively higher. China's experience thus provides evidence of both the dynamic dimension and the potential equalizing role of FDI in gender wage and employment.

I. Synthesis of current body of knowledge

On the basis of this literature review, one can identify where the evidence is relatively deep and the conclusions relatively clear, versus areas that warrant more empirical investigation. The table below presents this information in colour-coded manner across the different economic dimensions reviewed above (figure 5). For those dimensions where our understanding of FDI's effect on the host economy is low, medium, or even non-existent, further work is required. Often the reason why results are inconclusive are existing limitations to measuring FDI's effects across host economies and over time. More clearly defined and widely applicable indicators would help in addressing this challenge.

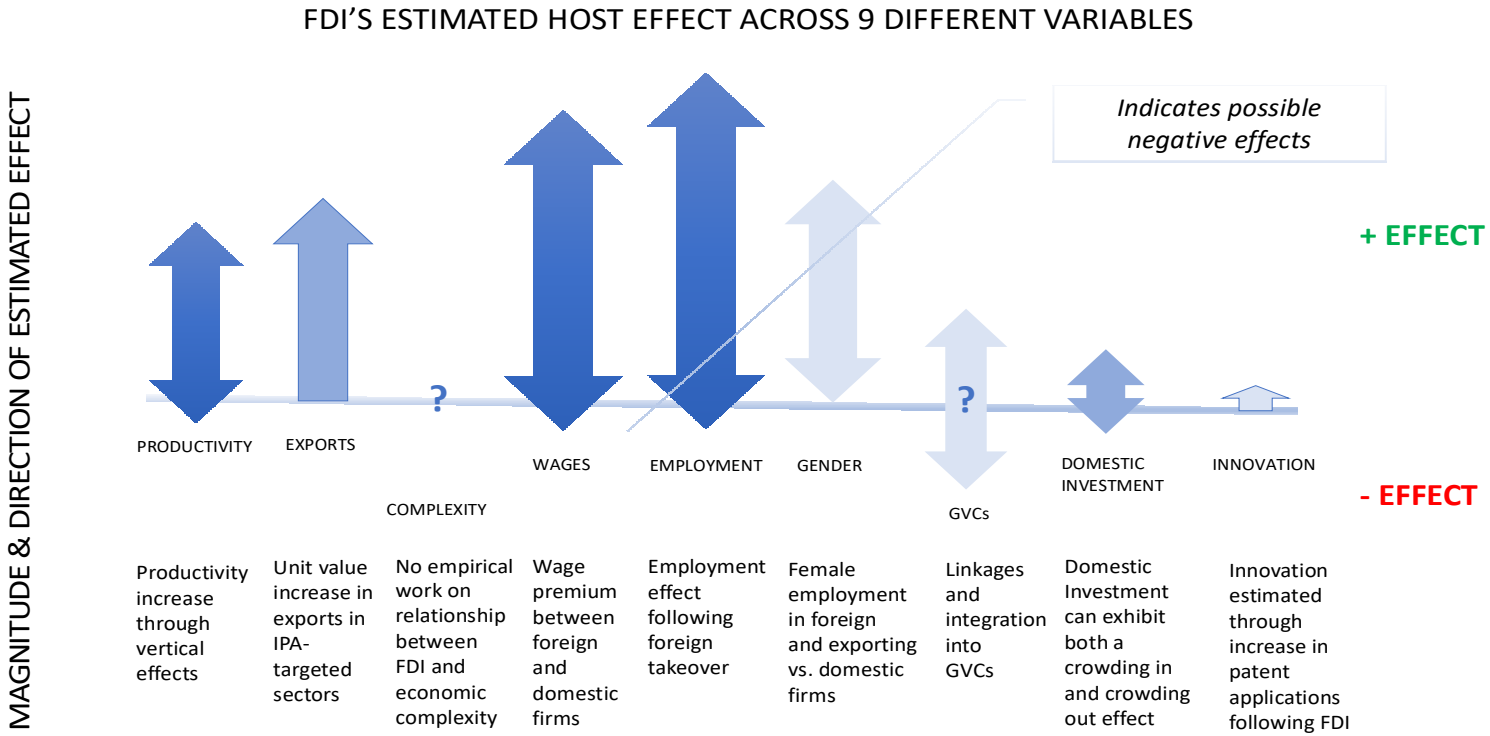
Figure 5. How clear is the evidence? FDI's impact on host economies'…

	Productivity & growth	*Exports & diversification*	*Economic complexity*	*Wage growth*	*Employment effects*	*Gender inclusiveness*	*Linkages & GVCs*	*Innovation growth*	*Domestic investment*
Number of studies	High	Low	None	High	High	Low	Medium	Low	Medium
Geographic range of studies	High	Medium	--	High	High	Medium	Medium	Low	High
Conclusiveness of results	High	Medium	--	High	Medium	Low	Low	Low	Low

Source: Author's elaboration.

Where existing empirical work provides sufficient evidence, we can estimate the magnitude and direction of FDI's effect on host economies across economic dimensions. In two cases, there is not enough empirical work to suggest such estimates, namely FDI's effect on host economic complexity and integration into GVCs. However, for the other dimensions, the figure below provides a comparison of FDI's effect on host economies across different variables (figure 6). What is particularly noteworthy is that the potential effect is much more positive than negative: across some economic dimensions, FDI only produces positive effects on the host economy; but when it can generate both positive and negative effects, the latter are much weaker than the former.

Figure 6. Estimating the relative magnitude and direction of FDI's effect across host variable



Source: Author's elaboration.
Note: The shading indicates the amount of evidence for each variable, with the darker the colour, the more evidence. The estimates in figure 6 come from an overall view of the literature while relying in part, though not entirely, on the leading or most complete study considered, i.e. the study with the longest time horizon, the greatest number of economies sampled, or the most complete data. For productivity, see Havranek and Irsova (2011), which finds strong evidence of positive vertical productivity effects, but no evidence of significant horizontal productivity effects; the potentially negative effects in the figure come from negative horizontal spillovers in other leading studies (e.g. Wooster and Diebel, 2010). For exports, see Harding and Javorcik (2012). For wages and employment, see Hijzen et al. (2013), though the possibility for negative effects come from other leading studies (e.g. Heyman et al., 2007). For women's employment, see Chen et al. (2012), though again the possibility for negative effects comes from other studies (e.g. Braunstein and Brenner, 2007). For domestic investment, see Wang (2010). Finally, for innovation see Cheung and Lin (2004).

J. Critical discussion

The body of literature reviewed above is rich yet full of gaps. In some areas, it is very deep and allows for clear conclusions (e.g. the relationship between FDI and productivity). In other areas, however, there is little or even no empirical work, and policy makers are left in the dark (e.g. the relationship between FDI and economic complexity). This imbalance and these gaps make it difficult to evaluate the net effect of FDI, especially since there might be tradeoffs between different economic dimensions.

One deep structural challenge to determining FDI's effect on host economies is disagreement or confusion over how to measure certain effects. For example, FDI's effect on host labor markets needs to consider not only job creation, but also job quality, since what people care about is not just jobs *per se*, but 'good' jobs (Cazes, Hijzen, and Saint-Martin 2015). The OECD has developed a framework to measure job quality based on three dimensions: wages, labour market security, and working environment (also known as non-wage working conditions) (OECD 2008a). While there is clear evidence of FDI's impact on wages, there is mixed evidence regarding its impact on both labour market security and working conditions. And within this last category, there is no universally accepted understanding of what makes for good working conditions. There is some evidence that FDI leads to more training – one dimension of working conditions – but also evidence that FDI leads to longer working hours – another dimension of working conditions (Filer et al. 1995; Markey and Ravenswood 2009; OECD 2008a; World Bank 1997). The lack of clear indicators to measure FDI's effect on employment across these different dimensions makes it difficult to evaluate whether FDI leads to positive, negative or neutral outcomes.

A further example where the lack of clear indicators makes measuring FDI's host effects difficult across countries and over time is gender equality. The most common ways to measure gender equality are through the gender-wage gap and the share of female employment. However, other indicators have also been used, including labour rights, level of schooling, health, as well as more complex definitions, such reducing discrimination, women's status, or the general well-being of women (Aguayo-Tellez 2012; Baliamoune-Lutz 2007; Busse and Nunnenkamp 2009; Dollar and Gatti 1999; Klasen 1999, 2002; Richards and Gelleny 2007; Rose 1995). The lack of a clear indicator to measure FDI's impact on gender makes any empirical analysis and policy reform difficult.

Another challenge lies in tradeoffs between analysis at the micro and macro levels (e.g. at the level of the individual or firm vs. at the level of the industry or economy). While micro-level data are more accurate, macro-level data are more generalizable. For instance, to evaluate FDI's effect on wages in a host economy, early studies looked at industry-level data, later work used firm-level data, and still later work used employer-employee matched data, which controls for worker selection. However, the more micro-level one examines these relationships, the less likely it is that such results can be generalized across industries, across the economy, or between economies. A solution is to use both micro and macro indicators to measure FDI's effect on host economies, so as to avoid this trade-off, the approach being taken by the current programme of work.

In the same vein of challenges to generalizability of results, the literature reveals that FDI's impact on host economies may vary with development level. In general, FDI's effect on host economies is stronger for developing economies and weaker for developed economies. Such differences may be due to levels of knowledge and technology between developing and developed countries, so that developing countries can use FDI to close this gap, while developed countries may already be at the frontier. FDI's differential effect across development level is found when considering the wage premium (Hijzen et al. 2013) as well as the impact on exports, whether unit value of exports (Harding and Javorcik 2012) or diversification and sophistication (Iwamoto and Nabeshima 2012).

The implications are that any potential conclusions regarding FDI and host economies need to control for development level in destination economies.

In addition, FDI's effect may vary by development level of the source economy. The evidence shows that developed source economies may be associated with much higher FDI wage premia than developing source economies, the latter of which can even result in significant negative wage effects in host economies (Coniglio et al. 2015). Any conclusions regarding FDI's impact on host economies may therefore need to factor in the development level of both source and target economies. The fact that development level may play an important role in shaping FDI host effects is a challenge to generalizing findings across economies.

Finally, a big challenge to measuring FDI's effect on host economies is that this is likely to vary by FDI type, but there is at present no clear methodology to categorize FDI by type. For instance, efficiency-seeking FDI is most likely to lead to export-oriented diversification, while market-seeking FDI is most likely to generate immediate linkages with the domestic economy (Farole and Winkler 2014). The two may have very different effects on factor incomes, such as wages (Alfaro, 2016). In contrast, natural resource-seeking FDI may generate the fewest linkages with host economy firms, while strategic asset-seeking FDI may hold relatively less productivity potential (Amendolagine et al. 2013). However, there is no clear methodology to classify a certain FDI flow or stock using this typology. One study tries to disaggregate market-seeking FDI and efficiency-seeking FDI by using four-digit sector level information along with input-output tables (Alfaro and Charlton 2009). However, this approach may suffer inaccuracies as FDI types can cut across sectors. In addition, there is growing evidence that FDI may be responding to more than one motivation at a time, demonstrating mixed motives, further challenging the analysis. There are efforts underway to try and develop methodologies to better classify FDI by motivation, but at present this challenge is hampering the analysis and placing limits on policy makers' ability to target measures by FDI type.

K. Transmission channels and mechanisms

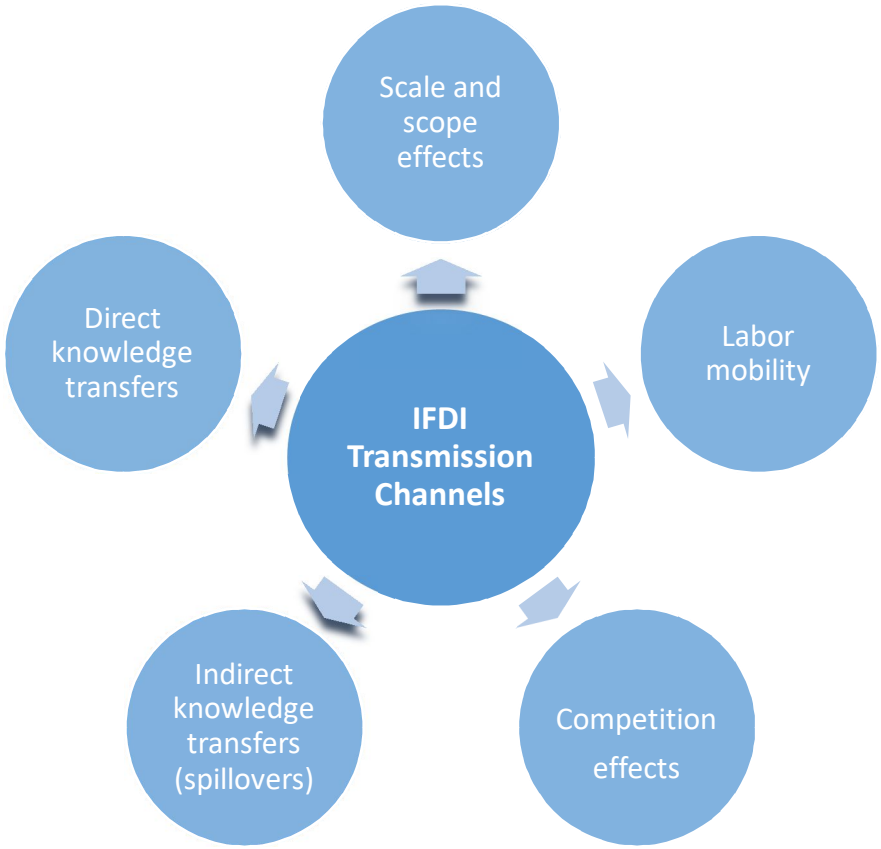
This dissertation proposes a novel conceptual framework in which FDI can impact the host economy through 'transmission channels' and 'transmission mechanisms'. The channels are the pathways connecting foreign firms to domestic firms. The mechanisms are the kinds of interactions that can take place within those channels.

A metaphor can help explain the differences between channels and mechanisms and how these are conceptually distinct. The channels are like roads that connect two parts of a geographic space. They create the space for travel and interaction. Firms are like cars that can travel on those roads. But the mechanisms are the kinds of interactions that can take place between the cars. They can shine their lights on one other, honk their horns, bump, crash, or stay very far apart and have no interaction. In other words, FDI allows two firms, one domestic and one foreign, to be connected. But the form that these connections will take will differ markedly from one context to another. In one context, the two firms might interact closely and knowledge transfer (or linkage, or learning or upgrading, etc.) might place. In another context, the two firms might have little interaction, and no knowledge transfer (or linkage, or learning or upgrading, etc.) will take place.

IFDI Transmission Channels

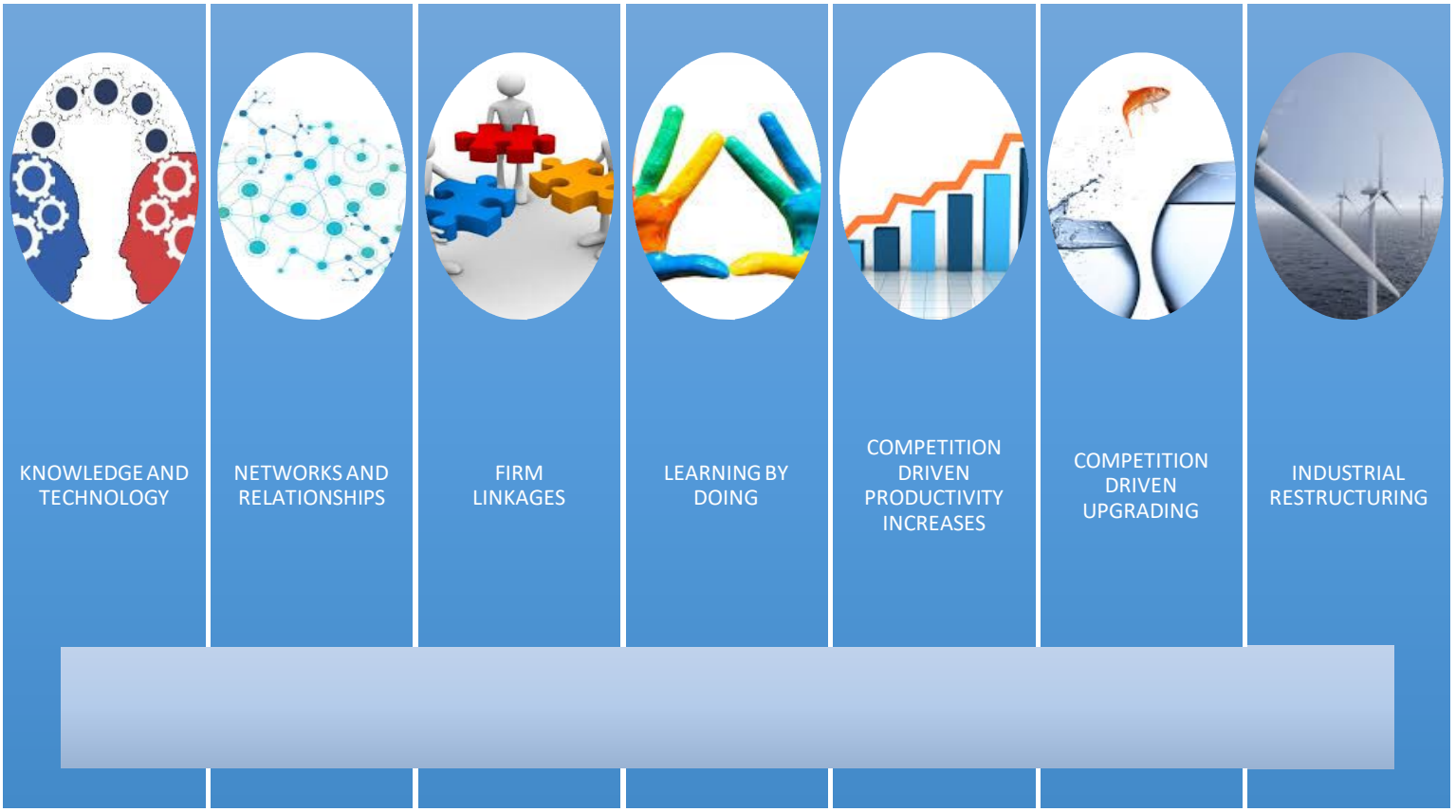
There are at least five distinct transmission channels through which IFDI can positively affect the host economy: scale and scope effects, labor mobility, competition effects, direct knowledge transfer, and indirect knowledge transfer (i.e. spillovers). In terms of scale effects, the presence of a foreign firm can allow domestic firms to grow bigger, as they can become domestic suppliers to these multinationals. They can also produce new goods and services, thereby benefiting from scope effects as well. In terms of competition effects, the presence of a foreign firm can drive upgrading and productivity growth through increased competition. Of course, this competition can also result in domestic firms exiting the market, something we discuss in the next section (see section L. 'Negative effects from IFDI'). The presence of foreign firms can also lead to both direct knowledge and technology transfer and indirect transfers through spillovers (see discussion above in section A 'Productivity and growth'). In terms of labor mobility, domestic firms can hire trained employees with productivity-enhancing practices from foreign firms.

Figure 7: IFDI Transmission Channels



Source: Author's elaboration

Figure 8: IFDI Transmission Mechanisms (not exhaustive)



Source: Author's elaboration

A conceptually critical point, worth emphasizing *con brio*, is that the very same transmission channels and transmission mechanisms impact the host economy in the case of IFDI (resulting in host effects) and the home economy in the case of OFDI (resulting in home effects). See chapter four, section C.[37] The application of this conceptual framework to OFDI will be discussed in detail

[37] Some might question whether labor mobility can apply to both IFDI and OFDI. I believe that it can, although the mechanism might work with greater facility in the case of IFDI than in the case of OFDI. To illustrate, IFDI can bring with it skilled workers from abroad. These foreign workers can then be hired away from the multinational by domestic firms. Alternatively, the foreign worker can leave the multinational and set up his or her own firm in the host economy, albeit that in both cases this mechanism will be limited by employment regulations, such as work permits for foreigners. In the case of OFDI, the firm that invests abroad might train a domestic worker. This newly skilled worker may have a hard time moving to the parent company in the home market. Yet this does happen. For example, Google might hire a particularly brilliant Indian software engineer in Bangalore and procure a work permit for her to work in California. This would be an example of OFDI in India impacting the U.S. economy through labor mobility. Nevertheless, it is worth noting that labor regulations might make the mechanism of labor mobility through OFDI to the home economy slightly less likely than labor mobility through IFDI within the host economy.

in the next chapter (see chapter four), but it is worth introducing this framework at this point.[38] This framework is key, as the transmission mechanisms are what bring about economic structural transformation in the host economy (in the case of IFDI) and home economy (in the case of OFDI). Please see discussion in chapter eight, section E. 'hypothesis', as well as figures 34 and 35.

L. Negative effects from IFDI

FDI, however, is not a panacea for development. It is important to recognize that FDI can have negative effects on the host economy. Policymakers therefore need to weigh the pros and cons when considering opening their markets to foreign investment. The above review has delineated a number of the pros; it is thus worth underscoring a bit more the cons for a balanced critique of the evidence. FDI can produce negative effects on the host economy across a number of dimensions.

On the one hand, FDI can lead to a reallocation of wealth away from host firms to foreign firms, as foreign firms might grab market share through being relatively more competitive. This can lead to less performant domestic firms being forced to exit the market, with ensuing loss of wealth and jobs for domestic capitalists and employees. FDI can certainly make the pie bigger (through technology transfer, knowledge spillovers, new markets for products and services that did not exist before, etc.), so that even a smaller share of the bigger pie is a larger serving in terms of firm revenue. However, in not all cases does the pie get bigger. And in some cases, the economic serving for domestic firms post FDI is smaller than pre FDI. This is especially likely where high levels of earlier protectionism created inefficiencies in domestic firm operations. FDI's economic effect can also increase inequality in the host economy, rewarding a select number of host firms that are able to tap into new market opportunities catalyzed by FDI, but leaving other firms behind. Those with the skills to make the most of new opportunities may therefore see their income (and overtime wealth) rise, but those who are not able to do may therefore see their income (and over time wealth) fall, either in absolute terms as discussed before, but also in relative terms, exacerbating inequality.

Returning to the evidence for China discussed earlier, one study found that *regions* that attract more FDI tend to have higher productivity, while domestic firms in *industries* that attract more FDI tend to have lower productivity. The explanation may be that FDI brings positive externalities to a region, but may draw away the best employees from domestic firms in an industry, thus reducing the production efficiency of those domestic firms (Zhou et al. 2002). This finding was corroborated by a later study that found a 10% increase in the foreign employment share in the same province and industry lowers the wage level in domestic firms by about 0.9% (Chen, Ge, and Lai 2011: 1328). Looking at another dimension of competition, again returning to the earlier evidence, one study found that firms from OECD countries have a positive and significant effect on domestic Chinese firm productivity, while firms from Hong Kong, Macao, and Taiwan (HMT) have a *negative* and significant effect. The explanation may be that HMT firms and domestic Chinese firms are too similar: they both tend to be labor intensive and to produce relatively close substitutes compared to OECD firms. As a result, direct competition between rather homogenous firms and products "implies a stronger crowding-out effect on Chinese firms by HMT firms relative to Non-HMT firms" (Lin, Liu, and Zhang 2009: 686).

On the other hand, FDI can have negative impacts on non-economic aspects of life, such as the environment, governance, stability, or culture. For example, foreign firms may not care about

[38] A big thank you to Dr. Karl Sauvant, who through is comments as external examiner on my dissertation committee made me realize that the very same transmission channels and transmission mechanisms are at play for IFDI and OFDI.

environmental externalities of their investment unless strong domestic (and international) regulations force them to take such externalities into account. In terms of governance, FDI can increase corruption in host governments, as firms make side payments to open up markets and grow market share, unless strong domestic (and international) regulations constrain and sanction this kind of behavior. In terms of stability, FDI can fund domestic civil unrest through providing revenue to belligerent groups or criminal elements. Finally, in terms of culture, opening to FDI can have impacts on traditional ways of doing business, bringing new products and services that can challenge or disturb cultural, religious, or social mores.

Policymakers may therefore wish to weigh the pros and the cons of opening their economy to FDI. But how? One analytical approach that is gaining traction in policy circles is to differentiate between types of FDI, following Dunning (1988). As mentioned earlier, there are at least four different types of FDI: natural resource-seeking, market-seeking, efficiency-seeking, and strategic asset-seeking. Depending on the type of FDI that enters a country, it might have very different effects on the economy, society, and environment.

For instance, *natural resource-seeking* FDI generally involves large financial amounts, and often takes place in economies with relatively poor governance, suffering from the Resource Curse. This type of FDI may therefore increase governance issues through things like side payments to secure mining rights, or harm the environment through externalities to extracting the resources. These negative effects are not inherent to natural resource-seeking FDI, but simply relatively more likely. Host countries that are abundant in such resources and aim to use FDI in natural resources a path to development therefore need to tread carefully and put in place systems that can manage the process and increase the likelihood of positive developmental outcomes.

Market-seeking FDI, in contrast, might pose more of a challenge to domestic firm performance and employment. The reason is that foreign firms are entering the economy to tap into the domestic market, but this might be to the detriment of incumbent firms, unless FDI creates new markets or expands those that exist.

Efficiency-seeking FDI, in turn, might be relatively more likely to benefit the host economy, *ceteris paribus*. The reason is that such FDI generally creates new industries, and is therefore job enhancing. In addition, the products of efficiency-seeking FDI are generally exported to other markets, and so the outputs do not compete with domestic firms. Finally, there is an incentive for foreign investors to help workers become more productive – such as through training, technology, capital investments – which can produce knowledge transfer and knowledge spillovers to the domestic economy. Efficiency-seeking FDI is therefore more likely to bring about domestic upgrading, a top policy goal for most economies around the world.

Strategic asset-seeking FDI, finally, might be amongst the most sensitive types of FDI from the point of view of the host economy. This type of FDI seeks to acquire strategic assets, whether technology, brands, or distribution channels in areas where distribution channels are limited. One should distinguish between economic activities that are strategically important to the host economy and economic activities that are strategically important to the foreign investor, as these may not be the same thing. The host economy may wish to limit foreign investment in areas such as domestic nuclear power or some forms of media, believing that these are strategic in nature and the interests of the foreign firm may diverge from the interests of the host government and society. However, the foreign firm may view as strategic assets things like brands or technology, which are of strategic importance to the productive capacity of the foreign firm, but not necessarily of strategic importance to the host country.

Disaggregating by FDI type therefore allows host policymakers – as well as researchers – to refine their analysis of whether a certain investment is more or less likely to benefit the host economy.

M. Conclusion

It is clear that FDI has the potential to benefit the host economy. However, these benefits are not automatic but depend on certain framework conditions. This review has attempted to disentangle some of the variation through identifying the role of framework conditions, also known as mediating factors. Some of these framework conditions are structural, and hard to change. For most, however, policies can play an important role in helping to establish framework conditions that can maximize the benefits and minimize the costs of FDI to host economies. As made clear by the evidence, China has been quite successful at leveraging FDI to positively impact its economy across these economic areas.

4. The role of outward FDI in home market structural transformation

A. Introduction

During the first part of the 20th Century, FDI took place predominately between developed economies, generating so-called North-North FDI. During the second part of the 20th Century, FDI from developed to developing economies slowly increased, generating so-called North-South FDI (mostly efficiency-seeking and natural resource-seeking). As developing economies grew, so did OFDI from developing economies to other developing economies, generating so-called South-South OFDI (mostly market-seeking and natural resource-seeking). Only recently have emerging economies undertaken OFDI into developed economies, generating so-called South-North OFDI (mostly market-seeking and strategic asset/knowledge-seeking[39]).

The evolution in global direct investment flows led to an evolution in empirical analysis of their effects. Studies initially looked at North-North FDI to examine home effects for developed economies (Stevens and Lipsey 1992). Later, studies looked at North-South FDI to examine host effects for developing economies (Borensztein et al. 1998). Later still, some studies have looked at South-South OFDI's home effects, often focusing on resource-seeking OFDI (Hufbauer and Adler 2010; Zafar 2007).[40] Only recently have studies begun to look at the home effects of South-North OFDI. In other words, there is limited but growing empirical work examining the domestic impact of emerging economies investing in developed and developing economies. This section sets out to review the theory and the evidence.

Figure 9: Direct investment dyads by development level

North-South FDI	**North-North FDI**
South-South OFDI	**South-North OFDI**

The chapter proceeds as follows. First, we consider the different dimensions of home effects, as what is measured may lead to different conclusions. Second, we lay out the main transmission channels through which emerging market OFDI may bring about home effects. These

[39] Dunning's classic typology for FDI motivations includes strategic asset-seeking FDI (Dunning 1993); more recently, scholars have instead used the term knowledge-seeking FDI (Meyer 2015). It seems that the former type is broader than the later – i.e. all knowledge-seeking FDI is strategic asset-seeking, but not all strategic-asset seeking is knowledge-seeking. For example, acquiring a brand for brand-name recognition is strategic-asset seeking but not knowledge-seeking. Knowledge-seeking OFDI aims to augment firm specific advantage owned by the firm to improve its competitivity through the acquisition of new knowledge (Chen, Li, and Shapiro 2012). For the purposes of this study, we are mostly concerned with knowledge-seeking OFDI, as this sub-type of strategic asset has the most capacity to generate home effects.

[40] Other South-South OFDI types have not yet been widely examined. Given similar levels of development, it seems unlikely there will be significant strategic asset-seeking OFDI between southern partners. Market-seeking OFDI, which aims to facilitate market-access for exports, is not likely to generate significant home effects. Studies have argued that efficiency-seeking OFDI is not likely to take place between southern partners, as the cost structures are fairly similar. However, this is starting to change as domestic production costs increase in certain emerging markets. For instance, Chinese labor cost increases are driving efficiency-seeking relocation of production to other emerging economies. To my knowledge, there is no study that empirically examines the relationship between the different types of OFDI (natural resource-seeking, market-seeking, efficiency-seeking, and strategic asset-seeking) and home effects for emerging markets.

transmission channels are necessary but not sufficient for positive home effects linked to spillovers. Third, therefore, we describe the transfer mechanisms necessary for positive spillovers effects to actually lead to home effects. Fourth, we present empirical findings for direct investment home effects, initially laying out the experience for developed countries to provide a baseline of comparison, and then focusing on studies of emerging economies *in toto*, but also providing evidence for country-level studies of key emerging markets.

B. Dimensions of home effects

The emerging market (EM) home effects of OFDI can be measured along myriad dimensions, similar to the variables considered in the host effects chapter above (see chapter three). The major ones are presented in the chart below, along with examples of empirical studies.[41]

Figure 10: Snapshot of OFDI home effects literature

EM home effect dimension considered	Examples of study
Productivity	Amann and Virani 2014; Globerman and Shapiro 2008; Hsu et al. 2011; Yang 2013; Zhao 2010; Zhao et al. 2010
Growth	Herzer 2010; Wong 2010; Behbehani and Al Hallaq 2013
Exports	Chen, Hsu, Wang 2012; Goh et al. 2013; Zhang and Wang 2010
Domestic investment	Al-Sadig 2013; Kheyfets 2008; Taylor and Nolke 2010
Innovation	Chen, Li, Shapiro 2012; Zanello et al. 2015; Fu and Mu 2014
Employment	Liu and Lu 2011; Chen et al. 2016; Yang 2017; Masso, Varblane, and Vahter 2008

Given emerging market heterogeneity and differences in OFDI type, it is likely that there will be different home effects along these different dimensions. Dimensions may also simultaneously have positive and negative effects on the home economy. It is therefore necessary to examine home effects empirically to determine the real impact. Before turning to the evidence, we first lay out the channels or mechanisms through which these effects can take place.

C. Transmission channels and mechanisms

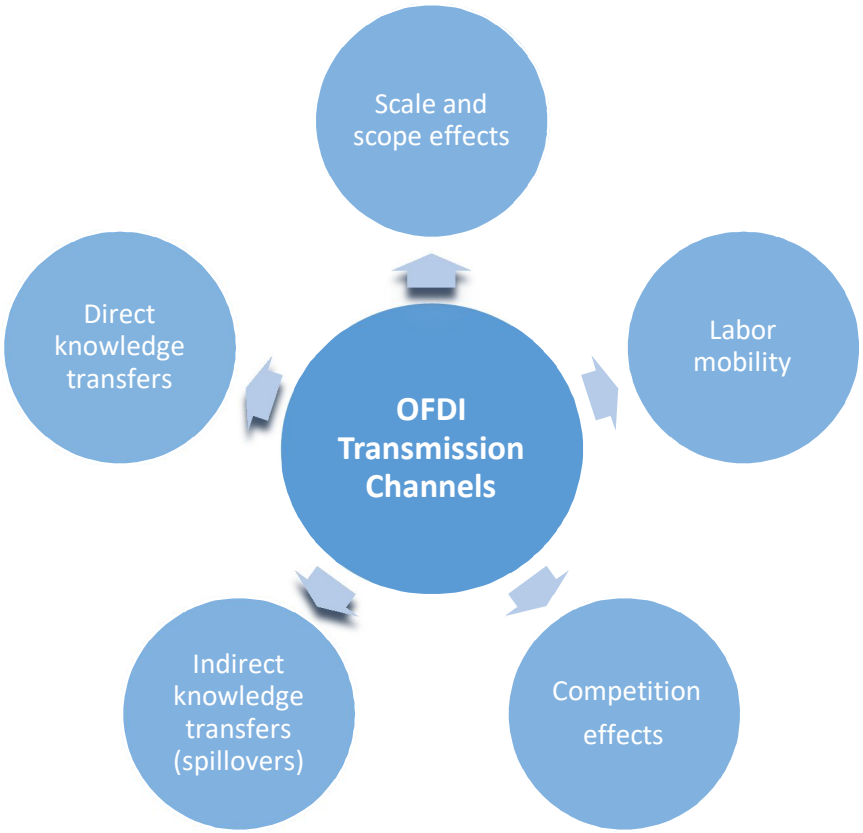
There are at least five distinct transmission channels through which OFDI can positively impact

[41] In addition, there are some home effects that have only been examined in the context of developed economy FDI. These may prove relevant for emerging markets in the future, but at present studies have not examined them in the emerging market context. Examples include: a) tax revenues (Kokko 2006) and skill composition (Elia et al. 2009). See Lipsey (2004) and Kokko (2006) for surveys of developed market FDI home effects. See Kokko (2006) and Globerman and Shapiro (2008) for discussions of differences between developed and emerging markets that could potentially contribute to differences in home effects between developed economy FDI and emerging economy OFDI.

the home economy: scale and scope effects, labor mobility, competition effects, direct knowledge transfer, and indirect knowledge transfer (i.e. spillovers) (Amann and Virmani 2014; Bitzer and Gorg 2005). These are the very same transmission channels as discussed above for IFDI (see chapter three, section K 'Transmission channels and mechanisms).

It is important to keep these logically distinct, as these different transmission channels may exist either individually or simultaneously, clouding the analysis. For instance, South-South OFDI may lead to scale effects, but is unlikely to lead to direct or indirect knowledge transfer. South-North OFDI, in contrast, may lead to direct and indirect knowledge transfer, but may not lead to scale effects. However, it is possible to have all five transmission channels present simultaneously.

Figure 11: OFDI Transmission Channels



Source: Author's elaboration

Scale and scope effects

Emerging market OFDI allows a firm to grow larger than it would have if limited to operating in its home economy. This growth may bring about traditional gains based on economies of scale and of scope, pushing down costs of production and operation. Furthermore, participation in foreign markets may allow a firm to develop capacities that allow it to further expand in its home market. This second-stage effect would add to the gains based on economies of scale and of scope.

Competition effects

Competition between EMNEs and host firms in more sophisticated and contestable developed markets creates the need for EMNEs to improve efficiency and upgrade production processes through new techniques or technologies, with the ensuing potential for cost-saving and productivity improvements in the home market (Bitzer and Gorg 2005; Javorcik 2004; Thomsen 2010).

Labor mobility

Through OFDI, the firm that invests abroad might encounter or develop a uniquely talented employee. The parent company may then take steps to bring that employee to the home economy. Granted, this does not happen easily or that frequently, but it does happen. Labor mobility can therefore help transmit benefits of particularly talented workers from the host economy to the home economy. An example could be Google hiring an exceptionally talented Indian software engineer in Bangalore, and then asking her to work in headquarters in California (see footnote 36).

Direct knowledge transfers

Emerging market OFDI enables firms to acquire knowledge, e.g. through mergers and acquisitions or joint ventures. Another means of acquiring knowledge is locating production operations in knowledge-intensive sectors or clusters in host economies (Hsu et al. 2011). Knowledge can take the form of technology, production techniques, or management skills. However, such knowledge transfer initially benefits only the foreign subsidiary. For it to be transferred back to the parent firm, so-called reverse technology transfer, requires pass-back mechanisms (Chen, Li, Shapiro 2012) discussed in the following section (see section D, 'Pass-back mechanisms').

Indirect knowledge transfers (spillovers)

Spillover effects take place when the activities of some firms increase the productivity of other firms. In essence, the value of a firm's activities is not fully internalized, but 'spills over' to other firms, generating a positive externality (Javorcik 2004).

There are two distinct channels through which emerging markets can benefit from technology spillovers. The first occurs when developed economies carry out FDI in emerging markets (North-South FDI), and spillovers take place from MNEs to host emerging market firms. This 'conventional' spillover thus takes place in emerging markets (Amann and Virmani 2014). The second occurs when emerging economies carry out OFDI into developed markets (South-North FDI), and spillovers take place from host developed market firms to EMNEs. This 'reverse' spillover thus takes place in developed markets (Chen, Li, Shapiro 2012). For the purposes of this section, we only consider reverse spillover effects.[42]

[42] Reverse spillover effects can either be horizontal (intra-industry) or vertical (inter-industry) (Javorcik 2004). Firms tend to limit horizontal reverse spillovers as they could benefit competitors; firms tend to encourage vertical

Reverse spillovers can take place in host developed markets in several ways. First, EMNEs that participate in GVCs can benefit from knowledge spillovers through using intermediate products in host developed markets, and then copy those technologies (Javorcik 2004). Second, EMNEs can use OFDI to hire skilled labor trained by other firms in host developed economies. Third, EMNEs can use OFDI to collaborate with researchers and technology leaders in host firms, labs, or universities.

At the same time, home emerging market firms that do not undertake OFDI can benefit from reverse spillovers in several ways. On the one hand, such firms can hire labor that acquired skills in host markets (Fosfuri et al. 2001). On the other hand, home firms can copy technological and managerial innovations that EMNEs bring back to parent operations from host subsidiaries.

Just as with knowledge transfer, the effects of spillovers may be hard to estimate. The reason is that any positive association between FDI and productivity increases through spillovers may simply be because FDI takes place in high productivity or higher potential industries rather than because any genuine spillovers take place. It is hard to disentangle endogeneity and the direction of causality.

It is important to acknowledge that these five different transmission channels can lead to opposite outcomes. Scale and competition effects may force less competitive firms to exit the market. Knowledge effects may only accrue to those who have the capacity to integrate such knowledge, leading to outward investment exacerbating skills-based inequalities. Rigid factor markets may exacerbate adjustment costs, while undeveloped factor markets may limit the potential benefits of outward investment for the home economy (e.g. unskilled labor not being able to integrate OFDI-generated knowledge and innovation, or capital market imperfections causing OFDI to crowd out domestic investment). It is up to policymakers to put in place systems that maximize the benefits of outward investment while minimizing their costs.

As with IFDI, these transmission channels create the potential for transmission mechanisms to take place. In other words, firms that are outwardly invested in a foreign market can – through things like knowledge effects, labor mobility, competition effects, etc. – experience the gamut of the following transmission mechanisms, previously introduced in the preceding chapter:

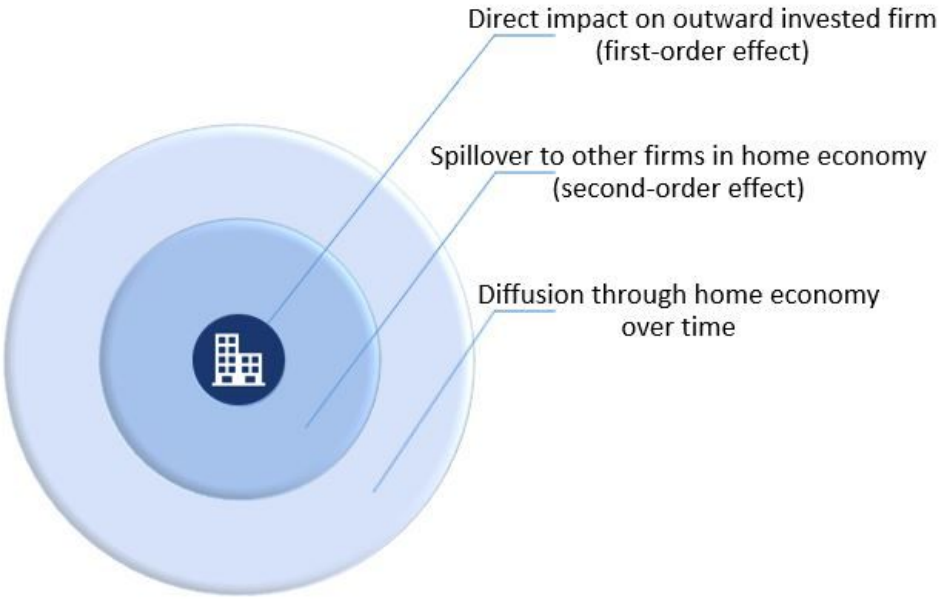
reverse spillovers as they increase the quality of supplier performance, e.g. the provision of intermediate inputs (Tang and Altshuler 2015). Vertical reverse spillovers can either be backwards (to suppliers) or forwards (to clients).

Figure 12: OFDI Transmission Mechanisms (not exhaustive)

Source: Author's elaboration

These effects will be felt in the home economy on three different levels. Initially, only the outwardly invested firm will directly experience the impact of investing abroad (first-order effect). Later, this firm's changed knowledge, capacity, and behavior may in turn affect other firms in the home economy that are not themselves outwardly invested (second-order effect). Finally, this impact may diffuse throughout the home economy to other sectors over time. But for the second-order effects and diffusion effects to take place, we need certain 'pass-back' mechanisms from host to home economy, to which we now turn.

Figure 13: Three different levels of OFDI effects in the home economy



Source: Stephenson 2017

D. Pass-back mechanisms

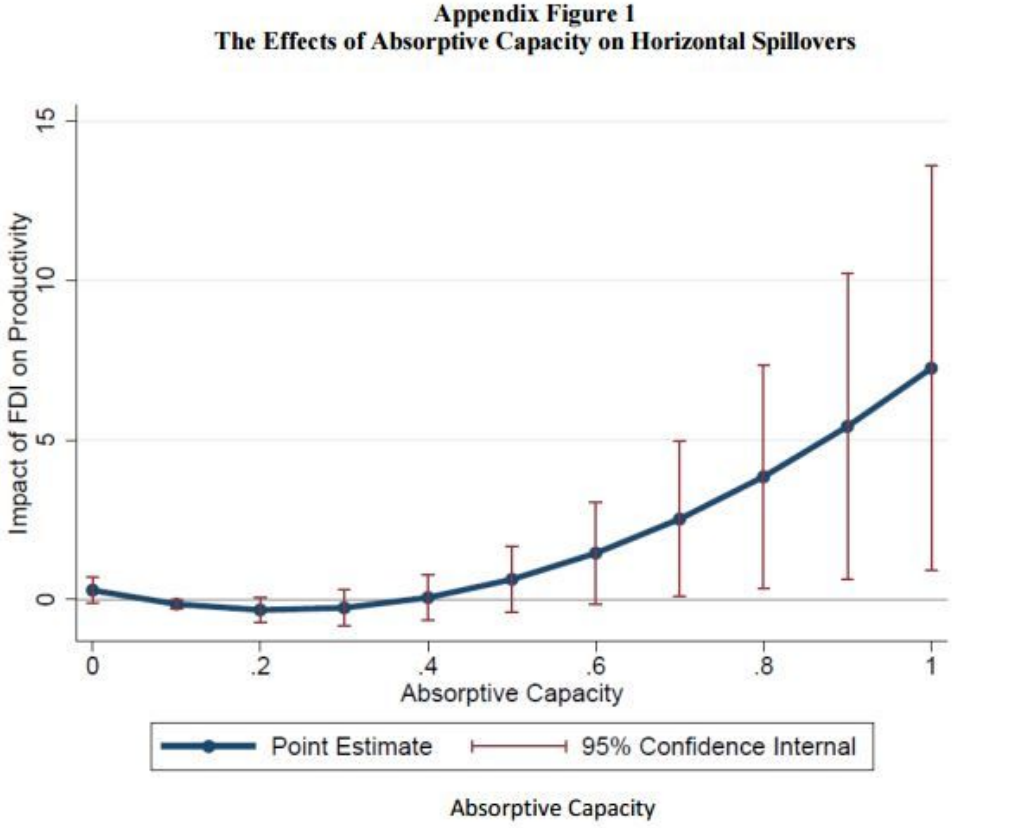
The presence of transmission mechanisms is necessary, but not sufficient for emerging market home effects through OFDI (Amann and Virmani 2014). There are certain pass-back mechanisms from host to home economy that need to exist for positive reverse spillover effects to be felt in home emerging markets. This pass-back process takes place in two stages. First, EMNEs subsidiaries that benefit from knowledge spillovers in host developed economies need to transfer this knowledge back to the parent firm in the home economy (Chen, Li, Shapiro 2012). Internal transfer mechanisms include things like personnel exchanges, production shifting, management rotation, etc. (Aminullah et al. 2013; Chen, Li, Shapiro 2012). Second, the parent firm then needs to have the capacity to absorb the knowledge and use it in its operations. It is on account of limited absorptive capacity by emerging market firms, relative to developed market firms, that home effects of emerging market OFDI may be more modest than home effects of developed market FDI (Globerman and Shapiro 2008).

E. Absorptive capacity

There are two divergent views on how absorptive capacity may affect the home effects of emerging market OFDI. On the one hand, firms furthest from the technology frontier may benefit most from spillovers, as they are starting from a low base and therefore have the most to gain. On the other hand, firms furthest from the technology frontier may not have the capacity to make the best use new technologies. Rather, firms closest to the technology frontier may be best placed to adopt cutting-edge technology made available through OFDI (Tang and Altshuler 2015). Empirical work

seems to vindicate both stories, which might indicate that the effect of absorptive capacity on spillovers is nonlinear, and rather presents a U-shape function. On one side of the U, firms with a large technology gap can assimilate less complex knowledge, as they have the greatest potential for productivity growth. On the other side of the U, firms with advanced technology positions can assimilate more complex knowledge, as they have the absorptive capacity to incorporate advanced technology (Tang and Altshuler 2015).

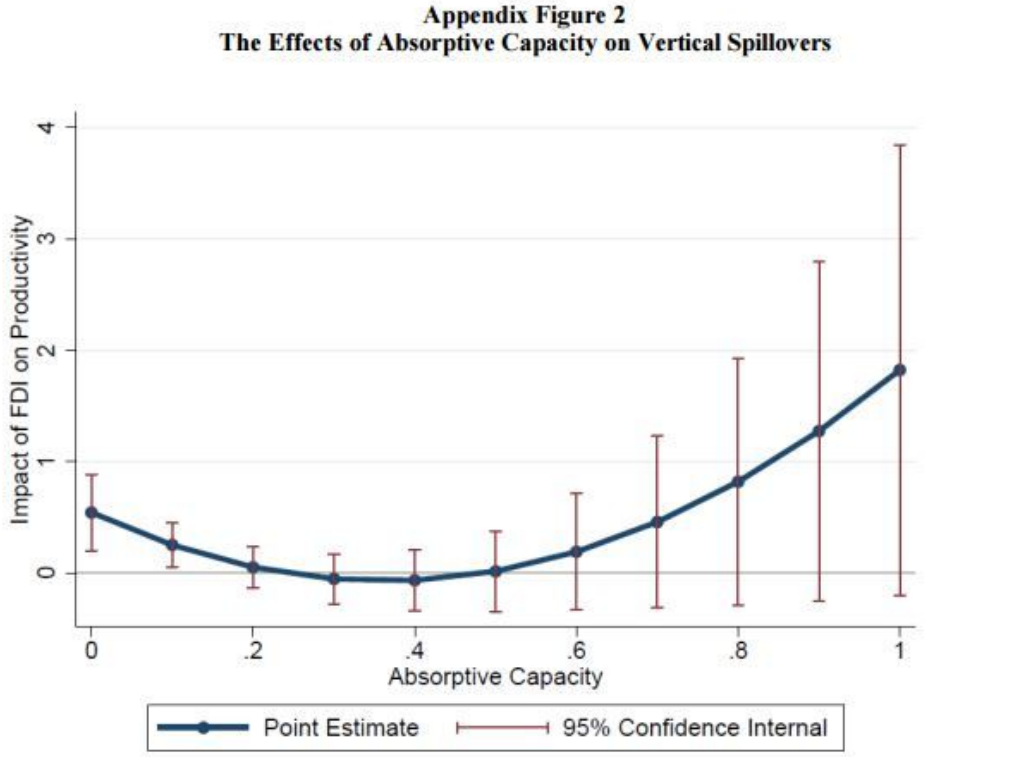
Figure 14: Effects of absorptive capacity as a U-shape function (horizontal spillovers)



Note: The figure shows how the spillover effect depends on a firm's absorptive capacity using the estimated coefficients in column 3 of Table 7.

Source: Tang and Altshuler (2015)

Figure 15: Effects of absorptive capacity as a U-shape function (vertical spillovers)



Note: The figure shows how the spillover effect depends on a firm's absorptive capacity using the estimated coefficients in column 3 of Table 7.

Source: Tang and Altshuler (2015)

Other studies have suggested that the export intensity of a firm, the size of the firm, governance structures, and R&D spending all may impact absorptive capacity. First, firms that are exporters have more knowledge of and experience with foreign markets, which may make them more capable of understanding and absorbing foreign technologies (Tang and Altshuler 2015). Second, small firms may enjoy more spillovers as they are less bureaucratic, making it easier to adjust to new technologies (Sinani and Meyer 2004); nevertheless, small firms may not be able to compete as effectively with foreign firms (Aitken and Harrison 1999). Third, large, family-owned conglomerates have emerged in many emerging markets to address market failures linked to weak property rights, contract enforcement, and widespread corruption. However, studies have found such relation-based governance to be associated with lower levels of innovation– as innovation makes the sunk costs invested in relationships less valuable – suggesting lower levels of absorptive capacity (Li et al. 2003). Fourth, R&D spending may improve recipients' absorptive capacity, while also helping to transform pure knowledge into inputs for productive innovation (Chen, Li, Shapiro 2012).

Since there are several different effects that can take place simultaneously, and since both transmission channels and linkage mechanisms need to exist for positive reverse technology

transfer to take place, the direction and strength of emerging market OFDI on home effects is an empirical question. It may in fact vary by industry given differences in economies of scale, factor proportions, market orientation, governance structures, technological opportunities, and government policy (Hsu et al. 2011). In other words, heterogeneity across emerging markets could generate variation in home effects of OFDI. It is therefore likely that the impact of OFDI will differ country by country (Globerman and Shapiro 2008). The actual home economy impact of emerging market OFDI therefore requires empirical examination.

F. Empirical evidence

Home effects for FDI from developed economies

Before looking at home effects of emerging market OFDI, we look at evidence for home effects of developed market FDI in order to create a baseline of comparison. This is particularly apt as the latter has taken place for longer than the former, resulting in more empirical work, while scholars have suggested that emerging market OFDI home effects can usefully be understood through contrasting it to developed market FDI home effects (Globerman and Shapiro 2008; Kokko 2006).

Multi-country studies

We first look at the results of empirical studies for multiple developed markets, before looking at single-country studies. One of the most cited is Van Pottelsberghe de la Potterie and Lichtenberg (2001), which examines home productivity effects of trade and investment between 13 developed countries over 1971-1990 by looking at the R&D capital stocks in host economies. The study finds that imports and OFDI are two simultaneous channels through which technology spillovers benefit home economies by increasing total factor productivity (TFP). However, the relationships vary country to country. For instance, a 1% increase in United States R&D capital stock raises Japanese TFP by 0.0272% through imports and by 0.0274% through Japanese OFDI in the United States. In contrast, a 1% increase in Japanese R&D capital stock raises U.S. TFP by 0.0120% through imports and by only 0.0005% through U.S. OFDI in Japan. Technology transfer intensity therefore depends on the country pair, including size of the R&D capital stock. GDP size also matters: as a country gets larger, so does the ratio of home economy benefits of FDI to the home economy benefits from trade.

A few years later, Bitzer and Gorg (2005) examine the same question but adding more developed countries and looking at an even longer time period, in this case 17 OECD countries over 1973-2000. The study finds ambiguous results. FDI has, on average, a negative effect on home TFP. But there is substantial heterogeneity between countries, and in some cases FDI is associated with increased home TFP (e.g. France, Japan, Poland, Sweden, the Czech Republic, the UK, and the U.S.). Once again the size of countries matter: small countries experience smaller negative effects from outward FDI on home productivity than large countries. Bitzer and Kerekes (2008) later look specifically at ten manufacturing sectors in the 17 OECD countries during the same period, and reach similar conclusions.

More recently, Castellani and Pieri (2015) look at home effects on productivity of FDI from 262 regions of the European Union over 2007-2011. The study finds different home effects depending on FDI sector. FDI into manufacturing is negatively associated with home productivity growth;

however, FDI into sales-related activities (marketing, distribution, sales) is positively associated with home productivity growth.

Single-country studies

When looking at specific industries or single-countries, studies have found positive home effects for developed country FDI. Looking at the chemical and pharmaceutical industry, Criscuolo (2009b) finds evidence of inter-firm reverse technology transfer: patent citations on patents granted to 17 European chemical and pharmaceutical MNE in the U.S. over the period 1985–2005 showed that these 17 firms channeled knowledge to other home firms.

- Looking at Italy, Barba and Castellani (2004) examine FDI from 1993 to 1998, and find a positive effect of FDI on home TFP growth, output, and employment.
- Looking at Japan, Kimura and Kiyota (2006) examine FDI from 1994 to 2000, and likewise find a positive effect of FDI on home productivity: Japanese firms that invested abroad grew, on average, by 1.8% more than those that did not.
- Looking at Estonia, Vahter and Masso (2007) examine FDI from 1995 to 2002, and find a positive association with productivity of the home parent companies, but no robust evidence of productivity spillovers to other firms in the home market.
- Looking at the U.S., Herzer (2010) examines FDI from 1980 to 2004, and finds that FDI has a strong positive impact on home economic growth
- Also looking at the U.S., Tang and Altshuler (2015) examine FDI from 1999 to 2009, and finds spillovers from vertical linkages between U.S. MNEs and their home economy suppliers: a one-standard deviation increase in FDI is associated with a 2.8% increase in home country firm TFP.
- Looking at Germany, Herzer (2012) examines FDI from 1980 to 2008, and finds a long-run relationship between FDI and both home GDP and TFP: a 10% increase in the outward FDI stock is associated with 0.30% increase in GDP and a 0.29% increase in TFP.

The consensus seems to be that the effect of FDI on home productivity is generally positive, but differs across countries, and may depend on a number of variables, including the motivation of the investment as well as the technological capacity in home and host economies. The relationship between developed economy FDI and home effect is therefore ambiguous. It may vary by type of FDI (market-seeking, efficiency-seeking, resource-seeking, asset-seeking), by sector, and by development level of host economy. For instance, market-seeking FDI into the manufacturing sector of developing economies may have negative developed economy home productivity effects. In contrast, efficiency-seeking FDI into services sector of developed economies may have positive developed economy home productivity effects. Or still, resource-seeking FDI into the primary sector of developing economies may have positive developed economy home productivity effects. But data limitations make it difficult to disaggregate FDI by types.

Home effects for OFDI from emerging economies

Multi-country studies

The first attempts at quantifying the home effects of emerging market OFDI pooled developed and developing economies together. Looking at a sample of 50 developed and developing markets, Herzer (2010) finds positive effects of OFDI on home economic growth, significant at the 5% level. An increase in the OFDI-to-GDP ratio of 1% is found to increase home growth by 0.293% per year, a finding whose direction and magnitude does change when other variables are included

in different estimated models. However, it is important to remember that this study pools developed and developing economies together.

Later looking only at developing countries, Herzer (2011) examines 33 developing countries over the period 1980-2005 to consider the long-run relationship between OFDI and TFP.[43] The study finds that a 1% increase in the OFDI stock is associated with an increase in home TFP by 0.024%, significant at the 1% level. This result, however, holds for the sample as whole but not for all countries within the sample. In about half the sample (17 developing countries) an increase in OFDI is associated with an increase in TFP.[44] In the other half (16 developing countries), an increase in OFDI is associated with a decrease in TFP.[45] Differences in labor regulations are found to have explanatory power for this variation, while human capital, financial development, and trade openness are not found to have a significant effect on OFDI's productivity impact.

Ahmad et al. (2016) look at four Asian countries (Malaysia, the Philippines, Singapore, and Thailand) from 1981 to 2013 to investigate the relationship between OFDI and exports. The study finds that OFDI and exports are complementary, significant at the 5% level for all countries. For instance, a 1% increase in OFDI leads to an increase in exports of $750 million for the Philippines, $72 million for Singapore, $41 million for Thailand, and $31 million for Malaysia.

Al-Sadig (2013) investigates the effect on domestic investment of OFDI from 121 developing and transition economies over 1990-2010. The study finds almost a dollar-for-dollar negative relation between OFDI and domestic investment in the home economy, significant at the 1% level. A USD 10 increase in OFDI leads to a USD 9.7 decrease in domestic investment.[46] Dasgupta (2014), however, investigates the same question as Al-Sadig (2013) but only focusing on the BRICS, which is therefore of greater relevance to China. She finds that OFDI from the BRICS crowds in domestic investment, an effect that holds both in the short and in the long run (Dasgupta 2014).

Chen, Li, Shapiro (2012) consider OFDI from 20 emerging markets into developed markets over the period 2000-2008 to test for positive reverse spillover effects. Specifically, the study investigates the explanatory power of three host economy knowledge-related independent variables (R&D employment, R&D expenditures, and patents) for variation in home technological ability (proxied

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[43] Note that these two studies by Herzer do not look at the same sample of developing countries. Herzer (2010) considers the following 55 developed and developing markets: Argentina, Australia, Austria, Bahrain, Bangladesh, Belgium, Benin, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Cyprus, Denmark, Egypt, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Korea (Republic), Kuwait, Mauritius, The Netherlands, New Zealand, Niger, Norway, Pakistan, Paraguay, Peru, Philippines, Portugal, Senegal, Spain, Sri Lanka, Swaziland, Sweden, Tunisia, Turkey, the UK, the USA, Uruguay, and Venezuela, South Africa.

Herzer (2011) considers the following 33 developing countries: Algeria, Argentina, Benin, Bolivia, Botswana, Brazil, Burkina Faso, Chile, Colombia, Costa Rica, Ecuador, Egypt, Gabon, Hong Kong, India, Indonesia, Jordan, Kenya, Malaysia, Mali, Mexico, Morocco, Pakistan, Panama, Paraguay, Peru, Senegal, South Africa, South Korea, Swaziland, Thailand, Tunisia, Venezuela. Some countries are found in both samples, but some are not.

[44] Algeria, Argentina, Benin, Brazil, Chile, Gabon, Hong Kong, India, Indonesia, Malaysia, Mali, Mexico, Morocco, Senegal, Swaziland, Thailand, and Venezuela.

[45] Bolivia, Botswana, Burkina Faso, Colombia, Costa Rica, Ecuador, Egypt, Jordan, Kenya, Pakistan, Panama, Paraguay, Peru, South Africa, South Korea, and Tunisia.

[46] It is beyond the scope of this chapter, but it is worth noting that Al-Sadig (2013) finds the opposite effect for FDI into developing and transition economies: FDI crowds in domestic investment. A one percentage point increase in inward FDI as a percentage of GDP increases the rate of domestic investment by about 55% in the short run, a result significant at the 1% level.

by home economy firm-level R&D expenditure). The study finds that both R&D employment and R&D expenditure in host economies have a significant, positive effect on R&D expenditures of emerging market parent companies that have subsidiaries in host markets: when host industry-level R&D employment increases by 1%, home R&D expenditure increases by 0.20%; when host industry-level R&D investment increases by 1%, home R&D expenditures increases by 0.10%. Interestingly, however, the study finds that patent levels in host economies do not produce such reverse spillovers. The authors suggest that R&D knowledge is locationally embedded, and therefore can only be accessed through OFDI. Patent knowledge, however, is not locationally embedded, and can be accessed by emerging market firms through alternative market transactions (e.g. licenses) without requiring OFDI.

Amann and Virmani (2014) consider OFDI from 18 emerging markets into 34 OECD countries over the period 1990-2010 to test for positive reverse spillover effects from R&D expenditures on TFP. They then consider FDI from the 34 OECD countries into the 18 emerging markets over the same period to test for conventional spillover effects. This allows the study to compare the magnitude of these two different channels of spillover effects, namely reverse spillovers vs. conventional spillovers.

The study finds that both channels are positive and significant at the 5% level. However, the conventional channel is found to be nearly twice as impactful as the reverse spillover channel. That is, developed market FDI into emerging markets often brings about more spillovers than emerging market OFDI into developed markets. Looking at the relationship between the 18 emerging markets and the U.S., for instance, the effect on home TFP is higher in 13 emerging markets when the U.S. invests in them than when they invest in the U.S. To illustrate, a 1% increase in U.S. R&D raises TFP in India by 1.31% through OFDI flows from India to the U.S., and by 1.99% through FDI flows from the U.S. to India.[47]

The same result is found when examining the five biggest emerging markets (Brazil, Russia, India, China, and South Africa) and their six biggest OECD markets (U.S., UK, Japan, Germany, Portugal, and the Netherlands): the BRICS benefit more from spillovers when OECD countries invest in them than from spillovers when they invest in OECD countries. For Brazil and China, this is the case for all six OECD investing partners; for South Africa, the spillovers are greater for FDI than OFDI in five out of six OECD countries; for India in four out of six; and for Russia this is split evenly three to three.

The reason may be asymmetry in technology embeddedness: when developing market MNEs invest in emerging markets, they are using their own technological innovation, and therefore have internalized it and know how to use it efficiently. In contrast, when emerging market EMNEs invest in developed markets, they are seeking to use others' technological innovation, and their absorptive capacity may limit full internalization of knowledge spillovers. This could explain differences in the effects on TFP of these two channels. The significant effect of a human capital variable in the model suggests that human capital plays an important role in technology absorptive capacity, and supports this explanation.

[47] An interesting finding is that when the period 1990-2010 is split into two periods (1990-2000 and 2001-2010), the study finds that it is only the latter period in which emerging economies benefited from FDI and OFDI. Though the impact was positive in the 1990s, the effect was insignificant, and only became significant in the 2000s. It seems that technology transfer only took place when FDI flows to and from the EMNEs reached a critical level.

Single-country studies

India

India provides perhaps the most plausible comparison to China, given that they are the only two economy's with such a large population. India's OFDI has been growing significantly, prompting research into its impact. Two studies find positive home effects, looking at different dimensions of the Indian economy. Pradhan (2007) examines Indian OFDI from 1990 to 2001. The study finds a positive relationship between OFDI and Indian exports: an increase in the OFDI stock of one rupee crore leads, on average, to 0.133 rupee crore increase in exports, whereas the increase in the probability to export is about 0.0049. One explanation is that Indian firms are using OFDI to establish distribution and marketing centers abroad, which enhance their abilities to provide both sales and after-sales services. Later, Pradhan and Singh (2008) examine Indian OFDI from 1988 to 2008 specifically in the automotive sector, one of the fastest internationalizing sectors of the Indian economy. The study finds a positive effect of OFDI on home R&D intensity, indicating that home R&D performance seems to benefit from OFDI.

Taiwan

The home effects of Taiwanese OFDI have been particularly studied as a means to gauge what might happen in the future for the Chinese economy, given the shared culture but difference in development level. Hsu et al. (2011) examine OFDI by Taiwanese firms in 15 manufacturing industries from 1991 to 2007, and finds no significant positive or negative effect of aggregate OFDI on home productivity. However, when disaggregating data host economy, the study finds that OFDI to other countries than China enhances productivity. The study suggests this may be due to strategic asset-seeking OFDI in most countries, yet efficiency and market-seeking OFDI in the case of China. Yang et al. (2013) examine OFDI by Taiwanese manufacturing firms over 1987-2000, and find a positive correlation between OFDI activity and home firm technical efficiency. Liu et al. (2015) also examine OFDI by Taiwanese manufacturing firms but over a later time period, 2000-2010. The study finds that OFDI to developed economies tends to have a positive effect on home productivity and employment; however, OFDI to developing economies can lead to negative effects employment and industry. Interestingly, home income inequality is aggravated by OFDI regardless of host development level, a phenomenon that is taking place in mainland China as well.

Kuwait

Gulf Cooperation Council economies are an important group of emerging markets that may present unique attributes on account of their relatively high-income level and heavy reliance on revenues from natural resources. Looking at just one particular country, Behbehani and Al Hallaq (2013) examine Kuwaiti OFDI from 1985 to 2011. They find that OFDI brings about almost no effect on home economic growth: a 1% increase in OFDI is associated with a 0.000062% increase in home economic growth, significant at the 10% level. The reason may be that most OFDI is aimed at consumption and not productive investments. The authors conclude Kuwait is an example of growth led OFDI instead of OFDI led growth.

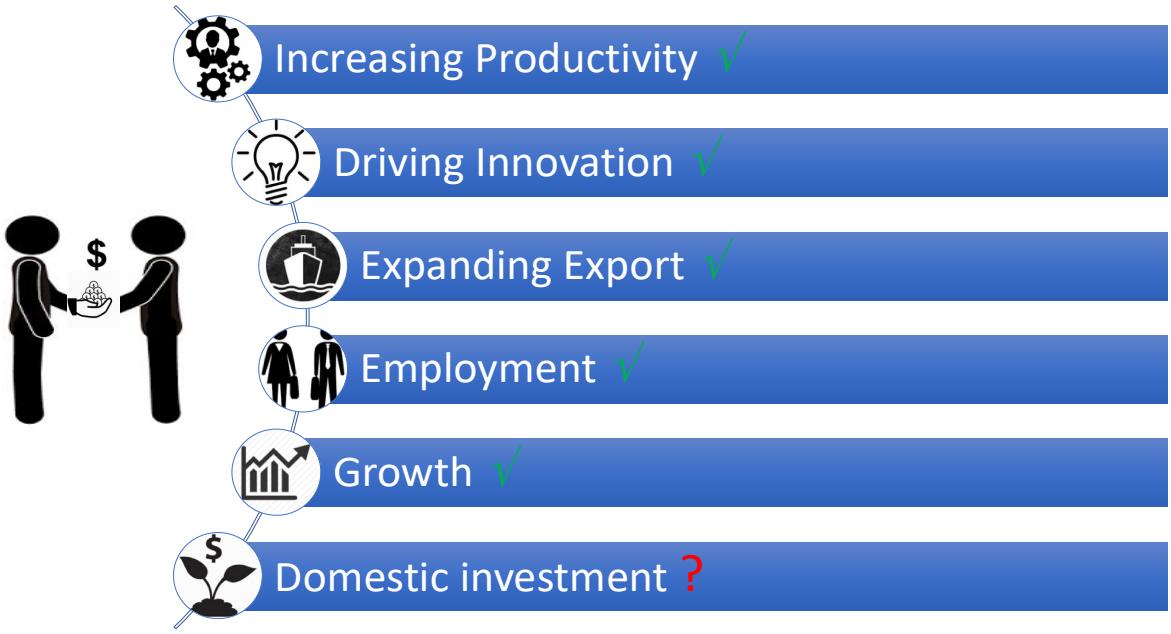
It is worth mentioning that other studies have used different methods to investigate home effects of emerging market OFDI. For case studies or business surveys investigating knowledge and

technology transfer to EMNEs, see Aminullah et al. (2013) for Indonesia, Jeenanunta et al. (2013) for Thailand, and Borini et al. (2012) for Brazil.

Evidence by variable

From the review of the evidence regarding outward investment home effects, one can distill that home effects may take place across at least six variables: productivity, innovation, exports, employment, growth, and domestic investment. The evidence also suggests that, looking specifically at emerging markets, there is strong support for OFDI leading to five positive home effects: increases in productivity, innovation, exports, employment, and growth. There is limited evidence regarding the effects of emerging market OFDI, like that from China, on home economy domestic investment. As we saw, there is evidence of both a negative relationship (Al-Sadig 2013) and a positive relationship (Dasgutpa 2014). However, since the latter study focused on the BRICS, it might very well be that OFDI produces a different effect on domestic investment depending on the kind of home economy. Since the relationship is not clear, we include a red question mark next to that home effect in the summary of the variables and evidence presented in the figure below.

Figure 16: OFDI home effects across six different variables



Source: Author's elaboration

What is important to note for this research on the effects of Chinese OFDI on its domestic structural transformation is that the three variables for which the evidence is clearest are those that are most important to the process of domestic structural transformation, namely productivity, innovation, and economic sophistication through export diversification. So the evidence strongly supports the thesis that OFDI can lead to domestic structural transformation in the home economy.

How in particular, might this take place?

Increasing productivity

Outward investment can increase productivity in the home economy. All the transmission channels described above can play a role. In terms of scale effects, expansion beyond the home market brings about economies of scale and of scope, with ensuing efficiency improvements that can increase productivity. In terms of competition effects, competition between developing country MNEs and firms in foreign markets can cause EMNEs to upgrade production processes through new techniques or technologies, improvements that can then be applied as well in home markets. In terms of knowledge effects, acquiring a foreign firm can directly lead to more productive technology or know-how, while participation in a foreign market can lead to demonstration effects through observing and copying production techniques. It is, however, also possible for outward investment to have a negative effect on home productivity, for instance if relocation of production abroad takes place at the expense of investments necessary to sustain productivity at home (such as new machinery, worker training, and R&D).

Increasing innovation[48]

There is also clear evidence that OFDI can increase innovation[49] in the home economy. The key transmission channels are direct and indirect knowledge effects. Knowledge can take the form of technology, production techniques, or management skills. Disaggregating outward investment by type becomes particularly important, as one particular type of OFDI, knowledge-seeking investment[50], is likely to have the greatest positive effect on home innovation. There is also evidence that South-South OFDI is increasingly becoming a source for home innovation. Whereas previous paradigms considered developed countries as the repository of knowledge and technology, and thus focused on North-North or North-South investment flows, there is increasing evidence of a multi-polar global technology network, with growing South-South innovation-oriented interactions and collaborations (Nepelski and De Prato 2015). Part of the reason is that knowledge created in developing countries may be more adapted to the needs of other developing countries, and that the level of complexity of that knowledge may be more easily absorbed by other economies at a similar level of development.

[48] The two paragraphs of text discussing the innovation and export variables use material from Perea and Stephenson, forthcoming.

[49] Innovation is generally examined through R&D measures (expenditures, employment) and patent measures (registration, citation).

[50] Dunning's classic typology for FDI motivations includes strategic asset-seeking FDI (Dunning 2000); more recently, scholars have instead used the term knowledge-seeking FDI (Meyer 2015). It seems that the former type is broader than the later – that is, all knowledge-seeking FDI is strategic asset-seeking, but not all strategic-asset seeking is knowledge-seeking. For example, acquiring a brand for brand-name recognition is strategic-asset seeking but not knowledge-seeking. Knowledge-seeking OFDI aims to augment firm specific advantage owned by the firm to improve its competitiveness through the acquisition of new knowledge (Chen, Li, and Shapiro 2012). This study is mostly concerned with knowledge-seeking OFDI and not other forms of strategic-asset seeking, as this type of investment has the capacity to generate home effects. In this chapter, the term 'knowledge' is used to subsume different forms of knowledge, including technology and management know-how.

Box 1: How Turkey's household appliance industry used OFDI to drive innovation[51]

Turkey's household appliances industry illustrates how an emerging market can use OFDI to enter foreign markets through M&A and greenfield R&D, thereby driving innovation at home and becoming an important market actor. According to the Turkish Household Appliances Suppliers association, Turkey's household appliance production ranks first compared to all EU countries, and is fifth in the world in exports behind China, Germany, Mexico, and Korea. The three leading Turkish firms are Arcelik, Vestel, and BSH Ev, which in 2015 together had 95% of domestic sales. The first two firms are of Turkish origin, while the last is wholly owned by German firm Bosch. Both Arcelik and Vestel have acquired a number of foreign brands to enter both advanced and emerging markets over the past two decades, including in Austria, Germany, Pakistan, Romania, Russian Federation, South Africa, the United Kingdom, etc.

What is less expected, however, is that both Arcelik and Vestel have used OFDI to locate R&D activities in foreign markets in an attempt to increase parent firm innovation. Arcelik has seven R&D centers around the world. This has allowed it to develop energy-efficient products and position itself as a green company, leapfrogging incumbent rivals. This emphasis on R&D means that in 2015 the firm had by far the most patent applications amongst all Turkish firms, with a total of 235 submitted to the World Intellectual Property Organization (WIPO), a staggering eight times more than the second highest Turkish firm by patent application, and placing Arcelik in the 78th position globally. Vestel has adopted a similar strategy of using EM OFDI to tap into foreign technology and thereby boost productivity and innovation. It devotes 2% of sales revenue to R&D spending, with R&D centers in the UK and China in addition to Turkey. As a result, Vestel is also one of the three Turkish companies to be listed among the top 1,000 companies in the world by R&D spending.

Increasing economic sophistication through diversifying exports

There is very strong empirical evidence that outward investment increase and diversify home country exports. The key transmission mechanisms are scale and knowledge effects: outward investment may open new markets, thereby creating opportunities for increased export-oriented production of either intermediate or finished goods; at the same time, outward investment may bring back to the home economy knowledge and technology that boost export competitiveness. Yet there may be negative effects if relocating production abroad lowers exports of final goods and services, as foreign markets are now being served by local production. The net effect in a single country and sector is therefore ambiguous, as it depends on the relative strength of these different effects. Empirical evidence, however, overwhelmingly confirms that outward investment and home exports are complements and not substitutes. Time horizon may be an important dimension in determining the effect of OFDI on home country exports. A longer time horizon may provide more time for adjustments through the different transmission channels, and thereby lead to larger effects.

[51] A summary of this case study appears in Perea and Stephenson (2018).

Box 2: How Jordan's pharmaceutical sector used OFDI to boost exports[52]

Jordan's pharmaceutical sector provides an excellent example of how a relatively smaller emerging market can use OFDI to develop a domestic industry's capacity and competitiveness with an aim to expand exports. Since being established in the 1960s, Jordan's pharmaceutical industry has grown into the largest pharmaceutical exporter in the Arab world, and the second largest the Middle East and North Africa (MENA) region, behind Israel. According to the Jordan Association of Pharmaceuticals Producers, around 80% of Jordanian production is destined for export to over 60 countries, though the vast majority of these exports head to other Arab countries, including Saudi Arabia, Algeria, and Iraq.

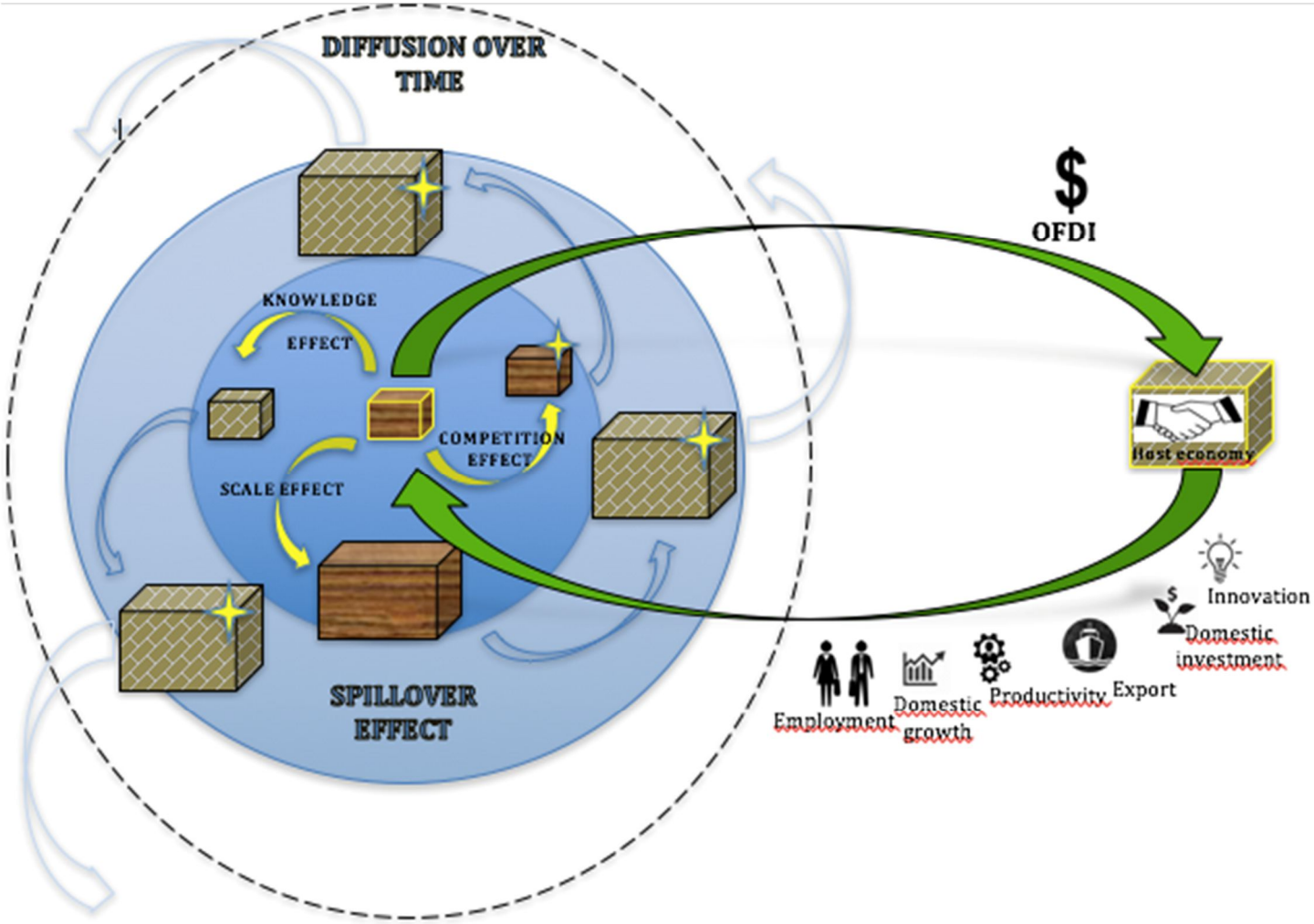
Jordan was able to develop its pharmaceutical exports through leveraging outward investment. At the vanguard of this strategy has been Al Hikma Pharmaceuticals (Hikma), the largest pharmaceutical company in Jordan. Since being founded in 1978, the company has led a series of M&A and greenfield investments across the world, in both advanced and emerging economies, to access technology and markets. This started with greenfield investment in Portugal (1980), followed by acquisition in the United States (1991), becoming the first Arab company to receive US Federal Drug Administration (FDA) approval. Hikma then expanded aggressively through a combination of M&As and greenfield investments in Tunisia (1993), Saudi Arabia (1999), Italy (2005), Algeria (2006 and 2010), Germany (2007), Egypt (2007 and 2013), Morocco (2011), Sudan (2011), and United States (2011, 2014 and 2015). Today Hikma has USFDA approved manufacturing facilities in Germany, Italy, Portugal, Jordan, Saudi Arabia, and the United States, as well as R&D centers in Algeria, Egypt, Jordan, Saudi Arabia, Tunisia, and the United States. The firm has been able to leverage low costs and skilled labor at home with knowledge acquisition and market penetration abroad through EM OFDI, becoming the third largest generic injectable supplier to the U.S. market (by far the largest pharmaceutical market in the world).

For the discussion of OFDI's effect on home employment and domestic investment, please see just below section G, 'Negative effects from OFDI.'

The following figure provides an original illustration of how OFDI home effects can lead to domestic structural transformation and upgrading. It combines the different transmission channels, levels of home effects, and structural transformation/upgrading into one visual representation. The structural transformation/upgrading is illustrated through a house that initially is in straw, then wood, then brick as the home economy benefits from OFDI. This approach to illustrating upgrading was inspired by the parable of the Three Little Pigs.

[52] A summary of this case study appears in Perea and Stephenson (2018).

Figure 17: Illustration of the upgrading potential of OFDI on the home economy



Source: Author's elaboration

G. Negative effects from OFDI

OFDI, however, is not a panacea for development. It is important to recognize that OFDI can have negative effects on the home economy. Policymakers therefore need to weigh the pros and cons when considering allowing outward investment to leave their markets. The above review has delineated a number of the pros; it is thus worth underscoring a bit more the cons for a balanced critique of the evidence. OFDI can produce negative effects on the home economy across a number of dimension. These can be grouped into at least four main concerns: home employment, domestic investment, balance of payments, and capital flight.

First and foremost is a concern that OFDI will lead to job loss at home. This represents politicians' worse fear, and so they lambast firms to 'keep the jobs at home!' The evidence shows that OFDI can in fact lead to job losses in the home economy; however, this is generally accompanied by job gains, with job losses in some areas offset by gains in other areas.[53] The evidence shows that OFDI offshores lower-skilled, lower-wage activities, and so lower-wage workers may indeed suffer job losses.[54] However, OFDI also helps shift domestic workforce composition from lower-value to higher-value activities, which is key to upgrading and creating *quality* jobs.[55] And often there is a net positive job creation effect in the home economy. Those with higher skills may therefore benefit from OFDI, and those with lower skills may suffer. Policymakers may therefore wish to

[53] For **China**, see Yang, Xueliang, "The Parent Firms' Reverse Spillovers of China's Production-Oriented OFDI Enterprises: Evidence from Chinese Manufacturing Enterprises." *Modern Economy* 8, no. 04 (2017): 507; Cozza, Claudio, Roberta Rabellotti, and Marco Sanfilippo, "The impact of outward FDI on the performance of Chinese firms." *China Economic Review* 36 (2015): 42-57; and Liu, Huiqun, and Jinyong Lu, "The home-employment effect of FDI from developing countries: in the case of China." *Journal of Chinese Economic and Foreign Trade Studies* 4, no. 3 (2011): 173-182. For **Estonia**, see Masso, Jaan, Urmas Varblane, and Priit Vahter, "The effect of outward foreign direct investment on home-country employment in a low-cost transition economy." *Eastern European Economics* 46, no. 6 (2008): 25-59. For the **EU**, see Sunesen, Eva, Svend Jespersen, and Martin Thelle, "Impacts of EU outward FDI." *Copenhagen: Copenhagen Economics* (2010). For **France** and **Italy**, see Navaretti, Giorgio Barba, Davide Castellani, and Anne-Célia Disdier, "How does investing in cheap labour countries affect performance at home? Firm-level evidence from France and Italy." *Oxford Economic Papers* 62, no. 2 (2009): 234-260. For **France**, see Hijzen, Alexander, Sébastien Jean, and Thierry Mayer, "The effects at home of initiating production abroad: evidence from matched French firms." *Review of World Economics* 147, no. 3 (2011): 457. For **Germany**, see Becker, Sascha O., and Marc-Andreas Muendler, "The effect of FDI on job security." *The BE Journal of Economic Analysis & Policy* 8, no. 1 (2008). For **Italy**, see Castellani, Davide, Ilaria Mariotti, and Lucia Piscitello, "The impact of outward investments on parent company's employment and skill composition: evidence from the Italian case." *Structural change and economic dynamics* 19, no. 1 (2008): 81-94; Federico, Stefano, and Gaetano Alfredo Minerva, "Outward FDI and local employment growth in Italy." *Review of World Economics* 144, no. 2 (2008): 295-324. For **Japan**, see Yamashita, Nobuaki, and Kyoji Fukao, "Expansion abroad and jobs at home: Evidence from Japanese multinational enterprises." *Japan and the World Economy* 22, no. 2 (2010): 88-97. For the Republic of Korea, see Debaere, Peter, Hongshik Lee, and Joonhyung Lee, "It matters where you go: Outward foreign direct investment and multinational employment growth at home." *Journal of development economics* 91, no. 2 (2010): 301-309. For **Malaysia**, see Chen, Jen-Eem, Lee Chin, Siong-Hook Law, and W. N. W. Azman-Saini, "Outward FDI and Home Country Employment." *International Academic Research Journal of Social Science* no. 2:1 (2016): 100-105. For **Taiwan, China** see Liu, Wen-Hsien, Pan-Long Tsai, and Ching-Lung Tsay, "Domestic impacts of outward FDI in Taiwan: Evidence from panel data of manufacturing firms." *International Review of Economics & Finance* 39 (2015): 469-484. For the **United States**, see Desai, Mihir A., C. Fritz Foley, and James R. Hines, "Domestic effects of the foreign activities of US multinationals." *American Economic Journal: Economic Policy* 1, no. 1 (2009): 181-203; and Harrison, Ann, and Margaret McMillan, "Offshoring jobs? Multinationals and US manufacturing employment." *Review of Economics and Statistics* 93, no. 3 (2011): 857-875.

[54] For the **Republic of Korea**, see Debaere, Lee, and Lee 2010, *op cit.*; for **Taiwan, China** see Liu, Tsai, and Tsay 2015, *op cit.*; for the **United States**, see Harrison and McMillan 2011, *op cit*.

[55] *Op. cit.,* footnote 50.

tap into this domestic workforce upgrading effect from OFDI, and, rather than restrict OFDI, complement it with retraining programs to help those displaced by the changing domestic labor needs find new employment.

To consider these questions from the host economy's perspective when looking at Chinese OFDI, Chinese investors in SSA pay 59.2% lower average wages than domestic firms! This negative wage premium applies both for skilled and unskilled workers. The explanation may be that Chinese investors are exporting domestic labor practices; employing a large share of Chinese workers who are more inclined to work for long hours with weak workers' rights; attracting low-skilled and qualified workers and thus paying a low equilibrium wage; or locating in more peripheral/rural areas where equilibrium wages are significantly lower (Coniglio et al. 2015: 1261). However, in this same study OFDI from China produces the highest employment increase, precisely because it is targeting target blue-collar, relatively less skilled workers. So SSA policymakers need to consider whether many jobs at relatively lower wages is beneficial, or not, to their country's economic development. This is certain a policy decision, but at least it can be evidence based.

Second is the concern that OFDI substitutes for domestic investment. In other words, a country may still have investment needs at home (infrastructure, health, education, technology, etc.) and yet through OFDI capital flows out and invests in another economy. There is some evidence that OFDI substitutes for domestic investment in developing countries.[56] However, there might be some cases where this is a false dichotomy, as in some cases OFDI takes place without tapping into capital in home markets, but through capital that is already out of the country or through borrowing in foreign capital markets. Yet it is important to acknowledge that for countries at lower levels of development limiting capital outflows in order to encourage capital to be invested in the home economy might make some develop sense. It will depend on the development level of the country, the level of capital availability, and the uses to which OFDI (and domestic investment) are directed. For instance, as we shall see, the Chinese state clamped down on OFDI when it started flowing to sectors and activities that were not deemed beneficial to the home economy, such as football clubs or movie studios (see chapter seven, section C, 'A new phase begins?').

Third is the more macroeconomic concern that OFDI may adversely affect the balance of payments. In other words, capital outflow from OFDI may result an imbalance between inflows and outflows in a country, which will have to be financed somehow, either through capital inflows, savings, or debt. Over time, balance of payment issues could be unsustainable, resulting in disequilibrium and even potentially a crisis. This effect from OFDI will depend on whether there are offsetting capital inflows into the economy. For instance, an economy generating OFDI can offset this through an attractive investment climate that is attracting FDI, or through successful OFDI transactions, which are producing profits transferred back to parent companies. OFDI *per se* is not a concern, but it can be if it is unsustainable because capital is only flowing out, and not in as well.

Fourth and final, but closely linked to the preceding point, is a concern that OFDI may in fact be capital flight in disguise. A change in policy that suddenly permits OFDI might cause a rapid exodus of capital if there are investment climate concerns in the home market, from either political or economic factors. This rush to the exit can both cause imbalances and deplete capital availability in the home economy. For instance, as we shall see OFDI rose out of China so rapidly at the end of 2016 that the authorities clamped down, fearing that this was capital flight and not necessarily capital seeking productive and profitable investments abroad (see chapter seven, section C, 'A new phase begins?'). However, it is worth considering whether capital flight will not take place to some

[56] Ali J. Al-Sadig. 2013. "Outward Foreign Direct Investment and Domestic Investment: The Case of Developing Countries". IMF Working Paper 13/52.

degree regardless, and whether the state may not therefore wish to manage and control the process of outward investment rather than simply forbid it.[57] In China's experience, the regulators did not forbid it, they simply tightened oversight. However, other developing countries have tried to forbid OFDI entirely, and this generally simply drives these financial flows underground, rather than stopping them. In a similar way to the inefficacity of alcohol and drug prohibition, forbidding something does not stop people from doing it, but rather rewards those who are willing to facilitate contravening the system, taking taxes and other revenue away from the state and placing it instead into the pockets of those who facilitate illegality.

As policymakers consider the pros and cons of OFDI, and especially the four concerns outlined above, the Dunning FDI typology[58] may once again be helpful. As mentioned earlier, this typology applies equally to IFDI and OFDI (see chapter four, section A, 'Introduction'). However, in addition these four types, there are two further types that should be kept analytically distinct: escape investment and geopolitical investment. Escape investment is defined as OFDI used "to escape restrictive legislation, institutional voids, or macro-organizational policies by home governments (e.g. round-tripping investment, escaping from high levels of taxation or austere environmental regulation, etc.)"[59]. Geopolitical investment is defined as OFDI used to "pursue international expansion consistent with their home country government's Geopolitical Influence Seeking" [60].

Differentiating between OFDI types is useful as these different types may bring different benefits to the home economy, and therefore policymakers may wish to tailor their interventions accordingly. Clearly strategic asset-seeking OFDI is likely to benefit the home economy (see chapter nine for a very detailed analysis of how one type of strategic asset-seeking OFDI, knowledge-seeking OFDI, can benefit the home economy). It is likely that home governments may therefore wish to facilitate, support, and even promote strategic asset-seeking OFDI. Similarly, for resource constrained economies, natural resource-seeking OFDI may be critical to secure inputs needed for production at home. Again, home governments may wish to facilitate, support, and promote this type of OFDI when the home economy lacks these resources. Market-seeking OFDI is likely to be purely revenue creating for the home economy, bringing as it does increased sales and thus the potential for firm growth and ensuing job increases. However, it is conceivable that home governments may not wish to support efficiency-seeking OFDI if this is likely to hurt domestic industries. While relocation of production to lower-cost locations makes sense as a corporate strategy at the firm level, this may not always make sense for development strategy at the country level, or perhaps simply not on the same timescale.[61] That is, the home government may wish to slow down such efficiency-seeking OFDI so that home industry and workers are able to gradually adapt to the change in workforce needs. It may take time for re-training program to help

[57] In fact, regulating OFDI rather than forbidding it may be net revenue creating for the economy in the sense that it may bring out of hiding capital that is currently being stashed away with not productive use. This is different than capital flight that is takine place already and simply going through illegal channels. Instead, a sizable amount of wealth may just be lying dormant in an economy, as those holding this capital have no confidence in the system, and therefore prefer to hide it than take a risk. Yet if there were a mechanism that allowed them reveal this capital and use it for OFDI, the state might win in that it gains some portion of tax and other administrative fee from the revelation of the capital, and the economy might win in the sense that capital can be put to new productive uses.

[58] Market-seeking investment, efficiency-seeking investment, natural resource-seeking investment, and strategic asset-seeking investment. See Dunning (1988).

[59] See Cuervo-Cazurra and Narula (2015): 4.

[60] See Moghaddam et al. (2015): 369.

[61] I am indebted to Dr. Karl Sauvant who opened my eyes to this point with his comment. "Is what is good for Tata good for the Indian economy?" when he paraphrased Charles Erwin Wilson's alleged 1953 statement, "What's good for General Motors is good for America".

displaced workers find new employment. This is not to say that home governments may wish to block *all* efficiency-seeking OFDI. But simply that development concerns may also come into the picture, and not just firm profit maximization.

Finally, some OFDI may be motivated by escaping the home investment climate. This type of OFDI, which can be equated with capital flight, may not in fact bring benefits to the home economy, and so there is a legitimate rationale in differentiating this OFDI type from the other types and in devising targeted restrictions accordingly. Geopolitical OFDI is likely to be a strategic decision on the part of the state, and therefore to require other considerations than economic ones discussed above.

Two further points are important to consider when evaluating whether OFDI may have negative effects on an economy: dynamic considerations and the trend to removing restrictions.

First, in terms of dynamic considerations, many policymakers that voice concern over adverse impact of OFDI on their home economies only consider this in static terms rather than in dynamic terms. In other words, they see capital flowing out, and the fall in economic activity in the home economy that corresponds to this amount of capital. Yet OFDI can lead to a host of benefits for the home economy – such as knowledge acquisition, greater competitiveness, increased revenue, etc. – as examined in detail above (see chapter four, section F). These home effects can then lead to new economic activities in the home economy that did not exist before. In essence, the pie is not just being divided between capital sent abroad and capital and remains at home, but is being enlarged over time. The dynamic quality means that there would be *both* OFDI and increased domestic investment, if OFDI leads to revenue creation and profit remittance that increases the amount of capital in the home economy. Or, alternatively, jobs can be created because OFDI leads to greater innovation or increased competitiveness by home firms, which can then expand their parent operations. When evaluating the cost-benefit of OFDI on an economy (as well as FDI, for that matter) it is therefore important to include a temporal dimension to allow the various home effects to work their way through the economy (see chapter four, section C, especially figure 13 and 'diffusion in home economy over time').

Second, policymakers around the world are moving away from restricting OFDI, which is a sign of governments 'voting with their feet' regarding their perception of the positive and negative effects of OFDI on their home economies. In 2005, over three fifths of developing countries had some form of OFDI restriction in place (60 percent, or 91 out of 151 countries).[62] A decade later this number had fallen to less than half (49 percent, or 77 out of 156).[63] What is interesting is that restrictions vary with level of development: low-income developing countries[64] are more likely to restrict OFDI than other developing countries. In 2015, 60 percent of low-income developing countries had OFDI restrictions in place (36 of 60 countries); in contrast, only 43 percent of non-low-income developing countries had such restrictions (41 of 96). However, an earlier snapshot of OFDI restrictions across 84 developing countries in 2011 reveals that even countries at similar

[62] International Monetary Fund (IMF)'s Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) database.

[63] *Op cit.*

[64] In order to identify OFDI restrictions using the IMF's AREAER database, we follow the IMF definition of low-income developing countries, namely those with a level of per capita gross national income less than the Poverty Reduction and Growth Trust (PRGT) income graduation level for non-small states. See IMF "Proposed New Grouping in WEO Country Classifications: Low-Income Developing Countries." IMF Policy Paper, 2014, Washington, DC.

levels of development can vary greatly in their level of OFDI restrictiveness.[65] It is also worth noting that at the other end, developed countries generally do not restrict OFDI[66], except for geopolitical reasons, such as economic sanctions. There is therefore clearly a relationship between development and OFDI restriction, and as income levels rise in developing countries, governments seem to be lifting OFDI restrictions. They would not be doing so if they felt that OFDI was having strong negative effects on their home economy.

[65] Karl Sauvant, Persephone Economou, Ksenia Gal, Shawn W. Lim, and Witold Wilinski. 2014. "Trends in FDI, Home Country Measures and Competitive Neutrality." In *Yearbook on International Investment Law & Policy 2012–2013*, edited by Andrea Bjorklund, pp. 3-107. New York: Oxford University Press.

[66] John Anderson. 2013. "Converting and Transferring Currency: Benchmarking Foreign Exchange Restrictions to Foreign Direct Investment across Economies." World Bank, Washington, DC.

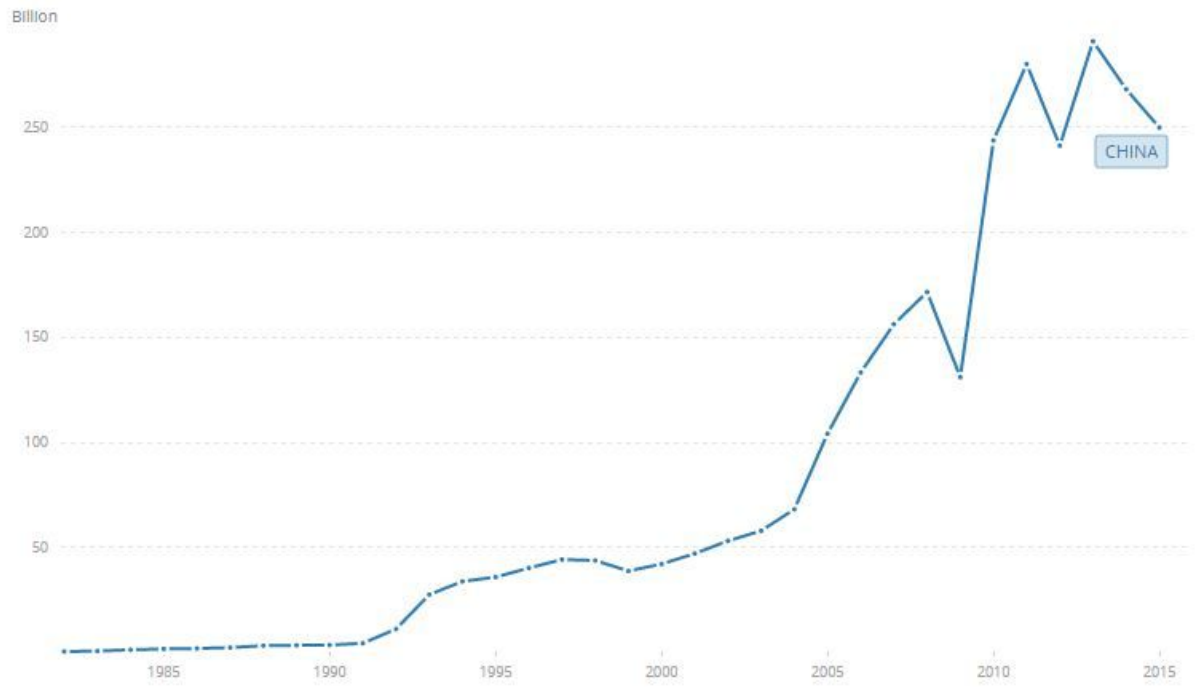
What do we not yet know?

5. Is China exceptional?

A. The role of inward FDI in laying the groundwork for outward FDI: Chinese inward FDI host effects

Chinese economic reforms began in December 1978 under leader Deng Xiaoping, who famously declared "It doesn't matter whether the cat is black or white, as long as it catches mice." This pragmatic view meant that if opening the economy to foreign investors brought benefit to China, then FDI was welcome. But foreign investors were not given *carte blanche* overnight. They were initially confined both geographically (to special economic zones) and sectorally (to those areas identified in national development plans). Over the past 38 years, China has gradually and increasingly expanded such access. This expansion has followed another classic aphorism, namely to "cross the river by feeling the stones". In essence, wading into the FDI river step by step, after evaluating the effects of FDI on the Chinese economy one sectoral 'stone' at a time. In more technical parlance, "FDI policies in China have evolved alongside economic development and strengthened institutional capacity. A gradual and prudent approach has been taken in the process of liberalization" (World Bank 2010: 1).

Figure 18: Foreign direct investment net flows into China over time (current USD)



Source: Author's calculations using World Bank Database

So how has inward FDI affected China? The literature review above presented evidence on inward FDI across eight variables (see chapter three). Across most variables there is strong evidence that inward FDI in China had an important effect on domestic structural transformation; and there is some evidence across all of them. In fact, from this thorough review of the literature, one could

conclude that China's was able to leverage inward FDI for economic and social improvements relatively more than other developing countries. In this sense, China is exceptional: it managed to reap relatively more benefits from inward FDI than other developing countries.

This section will briefly consider five arguments for how the host effects of inward FDI laid the groundwork for Chinese OFDI; the regulatory and quantitative analysis in support of this claim will be presented later (see chapters six, seven, and eight).

First, FDI has produced domestic capital formation. This is a very important element in the argument that FDI could have an effect on OFDI, in that the increase in capital availability is virtually a *sine qua non* of outward investment. One could argue that outward investment can also take place on credit, but generally it is not only credit based but rather includes a component of existing capital that is used to leverage more capital through some sort of line of credit with a financial institution. China would later develop its own significant pool of financing for OFDI through capital accumulation, but the fact that FDI increased capital availability is a first step in this direction. A landmark OECD (2000) report provides a few specific numbers: "Since the early 80s FDI has made a determinant contribution to domestic capital formation. The ratio of FDI to GDP has increased from 0.31% in 1983, to 1% in 1991, 6.22% in 1994, and staying around 5% in the second half of 1990s" (OECD 2000: 26). These figures indicate the important effect of FDI inflows increasing gross capital formation in China's domestic economy.

FDI led to domestic capital formation that created the capacity to later generate OFDI.

Second, FDI has upgraded skills. The percentage share of skilled workers in the total number of workers employed by FDI firms is different than in that of domestic firms. FDI firms hire more skilled workers. In addition, FDI firms have relatively less clerical and other administrative staff that are not directly involved in production. Both effects mean that FDI firms encourage and engender skills upgrading. However, it is important to note the caveat that this effect may take away skilled workers from domestic firms, thereby hampering domestic firm productivity. Nevertheless, skills upgrading can later provide the knowledge base to successfully undertake entrepreneurial activity that leads to OFDI.

FDI led to skills upgrading that created the capacity to later generate OFDI.

Third, FDI has expanded China's industrial structure. The main effect here is that of a gradual shifting from only manufacturing to also include services, and a gradual shifting from only state-owned enterprise activity, to increasingly private Chinese firms becoming more and more important actors in the local economy. Both of these effects make it more likely that Chinese firms gradually develop the capacity to engage in OFDI. Regarding services, OFDI requires capacity in a number of service areas, such as transportation, insurance, finance, etc. The fact that FDI into China brought about a shift into services makes it much likely that Chinese firms could then have the capacity to invest abroad. Regarding the shift from a purely state dominated local economy to one with increasingly important private players, the number of extant private firms and their share of local production has been increasing over time. Though OFDI has taken place by both SOEs and POEs, the increasing existence and activity of POEs can only be a positive contributing force to potential OFDI activity by Chinese firms.

FDI led to industrial structure expansion that created the capacity to later generate OFDI.

Fourth, FDI has increased domestic competition. The presence of foreign firms in the Chinese economy has increased competition in certain sectors. This can either crowd out local firms, or cause smaller, local competitors to emerge that provide goods and services at a cheaper cost and through more efficient processes. This creates space for new local entrants to increasingly provide alternatives, driving domestic competition, and preparing these local Chinese firms for the challenges of participating in the international market once they have sufficient experience and capability.

FDI led to increased domestic competition that created the capacity and conditions to later generate OFDI.

Fifth, FDI has created international business networks. Foreign MNEs that entered China through FDI to take advantage of its location-specific assets (e.g. low-cost labor for efficiency-seeking FDI, or large domestic economy for market-seeking FDI), forged networks between foreign and domestic firms. These could be in the form of supplier relationships, as foreign firms sourced intermediary inputs locally. Or these could be in the form of business partners, either forced (e.g. joint venture requirements through ownership share limitations), or as a way to navigate a complicated political, economic, and cultural system (e.g. finding a local partner to advise on ways of doing business). These relationships created natural networks that then could serve as the conduits or pathways for domestic Chinese firms to later more readily engage in OFDI.

FDI induced linkages and networks between foreign and domestic firms created pathways for later OFDI.

B. Does the pattern of Chinese OFDI follow that of other economies? Chinese OFDI host determinants

That Chinese OFDI has boomed since 2004 is indubittable. One has only to look at the graphs below to visually glean how dramatic this rise has been.

Figure 19: Geographic representation of Chinese OFDI in 2005

Source: New York Times "The World According to China Investment Maps" 24 July 2015

Figure 20: Geographic representation of Chinese OFDI in 2013

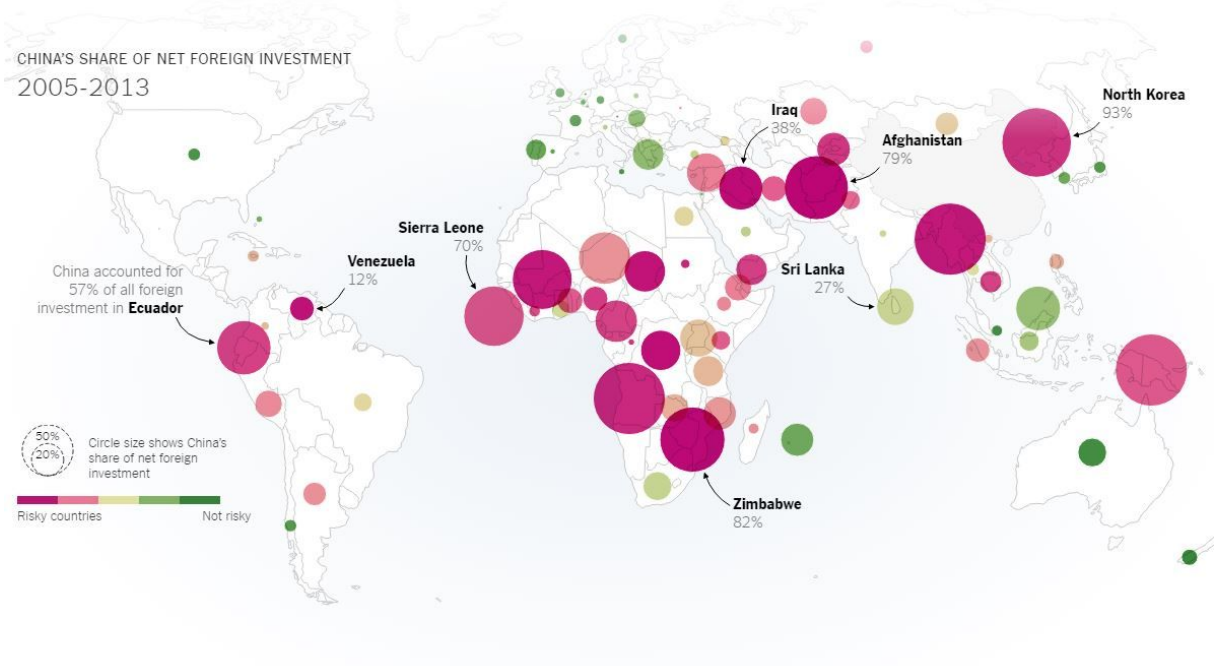
Source: New York Times "The World According to China Investment Maps" 24 July 2015

However, has China followed the same approach regarding outward investment as other developed and developing markets? The following section seeks to answer this question, and concludes that China, in fact, has adopted a different strategy regarding OFDI. In many ways it *is* exceptional. This exceptionalism derives from the fact that Chinese OFDI is willing to flow to areas with a

higher tolerance for risk (weaker institutions, poorer governance) and in search of key assets (previously natural resources, but increasingly knowledge and technology). Scholars have analysed the China Model of economic development, also known popularly as the Beijing Consensus to juxtapose it to the Washington Consensus (Bell 2016; Li 2015). I propose that OFDI is an integral part of the China Model, but a dimension that has heretofore been ignored.

As we saw in the literature review on OFDI host market determinants (see chapter two), in some ways China is attracted to investing in markets following different patterns than developed economies and other emerging economies. Initially, it would appear that the explanation is based on different ownership structure, with ensuing differences in firm behavior on the basis of strategic interests. In other words, Chinese state-owned enterprises invest abroad in ways that are different than Chinese privately owned enterprises, because Chinese SOEs are following national strategic priorities rather than purely commercial objectives. As a result, Chinese SOEs are willing to engage in markets that that have weaker governance and institutions, taking bigger risk and investing in areas where there might not be an immediate profit. This pattern emerges visually in the map below.

Figure 21: Geographic representation of China's share of FDI in Fragile and Conflict-affected, and Violent (FCV) economies



Source: New York Times "The World According to China Investment Maps" 24 July 2015

One further point to support this argument is that Chinese firms have invested in almost all countries in the African continent, even if this investment is *de minimis*, which would indicate a symbolic political motivation rather than an actual economic motivation.[67]

[67] Moggadham et al. (2014) report that "sometimes China's investments in African countries, such as Cape Verde and Malawi, barely exceed $1 million. Such meager amounts reflect more symbolic investments rather than having an economic rationale" (Moggadham et al. 2014: 369). For an analysis of Chinese POE investment in Africa, using an original dataset, see Shen (2013).

In contrast, Chinese POEs operate more according to traditional market-based behavior, shunning risk and seeking profit. The reason for this divergence in outward investment behavior based on firm ownership is that Chinese SOEs are operating with national strategic priorities as their guiding principles, not just profit-making. Moreover, the heads of Chinese SOEs are also members of the Communist Party, and not evaluated merely on the economic performances of their firms, but also on whether they are advancing the nation's strategic priorities. Since Chinese SOEs were for a long time the dominant outward investors in terms of number and value of deals, it makes sense that their behavior drove Chinese OFDI patterns.

However, this picture is incomplete. This was the view in the literature until recently, but it does not account for a fundamental shift that has taken place in the past few years as Chinese POEs have begun to be more and more important outward investors (Hardy 2014). POEs have not been major players in natural-resource seeking OFDI, but they have become major players in strategic-asset seeking. It is therefore too simple to say that the difference between Chinese OFDI and emerging market OFDI can be explained by Chinese SOEs. In fact, the difference between Chinese OFDI and emerging market OFDI is that Chinese investors (both SOE and POE) have been more strategic than other emerging market players.

Initially, this took the form of Chinese SOEs being willing to take above-market risk for natural resources. Now, this takes the form of both Chinese SOEs and POEs using OFDI to acquire knowledge and technology. Until recently, it seemed that this was an SOE phenomenon as well, with the strategic focus of Chinese SOEs shifting from securing natural resources (during the huge industrialization boom that took place in China) to sourcing knowledge and technology (to continue domestic upgrading and moving up the value chain). However, the most recent quantitative studies using firm-level data that distinguish by ownership structure indicate that *both* Chinese SOEs and POEs are particularly attracted to knowledge-intensive outward investment targets when these acquisitions take place in developed markets:

> "human capital positively affects Chinese investment, and especially SOEs, both in the overall sample and in the group of lower income countries and in OECD countries, in which human capital is also an attracting factor for private firms. Even more interestingly, countries with larger shares of spending on R&D are attractive for both types of companies mainly for FDI in the manufacturing sector… the search for strategic assets is not only confined to state-controlled companies – as suggested by Ramasamy et al. (2012) – but it is possibly even stronger for investments by private companies, especially in OECD countries" (Amighini et al. 2013).

This is confirmed by very recent studies that have been able to show that Chinese firms are willing to pay a significant premium for acquiring foreign targets in developed markets. One study that looked at acquisitions in Europe between 2000 and 2013 found that on average the acquisition premia paid by Chinese firms was *double* the size of acquisition premia paid by European firms for similar target firms (Urbsiene et al. 2015). The reason is that Chinese firms are using OFDI strategically to source hard-to-acquire and expensive to develop knowledge and technology. These strategic assets are useful for Chinese firms to upgrade domestically and compete in the Chinese home economy. They also allow Chinese firms to increasingly become internationally competitive, and later expand internationally using these newly assimilated firm competencies.

Evidence for this aggressive acquisition strategy by Chinese firms is provided by the ratio of size between acquirer and target for Chinese M&A versus M&A by other BRICs: "on average, BRICs acquirers are 10 times the size of the target firm; but Chinese acquiring firms for M&A in developed economies are only 5 times larger than the target firm, which indicates much more aggressive acquisition behaviour" (Bertoni et al. 2013). This indicates that Chinese firms are pursuing a different, more aggressive penetration strategy to source assets through M&A. OFDI was initially focused on research-intensive manufacturing (e.g. industrial and commercial machinery, computer

equipment, electronics, etc.) as Chinese firms attempted to upgrade their domestic industry. However, OFDI is now increasingly focused on services as well. Chinese firms have especially looked to acquire distressed assets following the Global Financial Crisis and turn them around by moving part of the activities to China or simply to gain access to their strategic assets (knowledge and technology but also brands and distribution networks) (Bertoni et al. 2013).

In many ways, China is following a similar path as Japan in the 1950s-1960s and South Korea and Taiwan in the 1960s-1970s. Rather than relying on developing capacities endogenously, these countries used outward investment to source technology and bring it back to their home markets. But it seems that China is doing this on a larger scale and in an accelerated manner compared to the previous Asian Newly Industrialized Countries (NICs). A full comparison is beyond the scope of this dissertation, but it would be valuable to understand the similarities and differences between China's approach and that of the NICs. Differences may also arise not from a difference in strategy, but rather from a difference in economic context. The strategy of sourcing knowledge and technology through outward investment may be the same, but the world today has become increasingly dependent on knowledge and technology in its economic architecture. The information and communications technology revolution, the exponential acceleration in computing power, and the integration of technology in almost all walks of life that has taken place over the past decades means that knowledge and technology is even more fundamental and structurally central to economic activity than it was in earlier times. This could account for the even greater prominence given by China to knowledge-related acquisition relative to the NICs, even though the strategy itself is similar.

It is important to note that we have been looking at the "pull" factors for emerging market OFDI. Yet no analysis can be complete without mentioning that in many cases "push" factors also play a significant role. Push factors can arise from negative factors, such as corruption, limited protection of intellectual property rights (IPR), weak rule of law, regulatory uncertainty, etc., or they can arise from positive factors, such as preferential incentives, promotional policies, market opening measures, etc. (Luo et al. 2010). In cases where home economies are particularly challenging, or where home governments are particularly supportive, such push factors may be quite strong and play a very significant role in determining EMNE OFDI behaviour. Chinese OFDI are a case in point. An examination of *all* OFDI push factors in the Chinese economy is beyond the scope of this study, but given the importance of the state in the Chinese political system, chapter seven will look in great detail at the regulatory framework for OFDI – one of the key push factors – and how this has evolved over time.

C. The role of OFDI on China's own economy: Chinese OFDI home effects

Chinese OFDI is by far the largest amongst emerging markets, prompting significant scholarship, including on its home effects. Several recent studies find strong evidence for positive home effects on productivity, growth, and employment (see chapter two, section E). A few key findings are presented here.

Zhao, Liu, and Zhao (2010) find that Chinese OFDI leads to productivity growth through both technology sourcing and efficiency improvements. The study looks at Chinese OFDI into eight developed countries from 1991 to 2007 (Australia, Canada, Germany, Great Britain, Japan, South Korea, the U.S. and Singapore). They find that host economy R&D capital stocks is the most important determinant of productivity increasing through OFDI. Specifically, when the size of OFDI stock increases by 1%, there is a 0.55% increase in total factor productivity, significant and the 1% level. Of this increase in productivity, 0.33% is due to efficiency improvements and 0.22%

is due to technological progress (Zhao, Liu, and Zhao 2010: 125). The importance of efficiency improvements (learning effects) and technology sourcing (at least during this period), is confirmed by case study evidence of international R&D units set up by five Chinese companies in Europe: ZTE Corporation, JAC Motors, Changan Motors, Hisense Group, and Hisun Group (Di Minin et al. 2012: 200-1).

Liu and Lu (2011) examine OFDI from China over 1982-2007, and find a positive effect on home market employment growth: a 1% increase in OFDI leads to a 0.022% increase in employment. The study suggests horizontal, South-South OFDI creates job-inducing economies of scale. Interestingly, OFDI has no home employment effect in the primary industry, only in the secondary and especially tertiary industries. The authors speculate that given the non-tradability of most tertiary activity, OFDI into services abroad generates increased employment in the home market to manage these investments.

Cozza et al. (2015) examines OFDI from China to Europe over 2003-2011, and find a positive effect on home productivity and scale of operation, measured by sales and employment. The study distinguishes between M&A and greenfield entry modes: both have a positive and significant impact on home sales and employment, but the impact of greenfield OFDI is greater. In addition, while M&A OFDI facilitates access to technology, this type of OFDI is detrimental to home firm financial performance, at least in the period considered.

Overall, the literature provides evidence that Chinese OFDI has led to positive effects in the home economy, including on productivity, growth, employment, etc.

D. Building the bridge between FDI host effects and OFDI home effects

The most recent evidence tries to bridge FDI host effects and OFDI home effects, creating a foreshadowing of the possible link between inward FDI-outward FDI that we shall examine below (see chapter eight).

Liu et al. (2016) look at a sample of Chinese firms that have undertaken OFDI, and consider how learning in foreign markets (OFDI home effects) and learning in the domestic market (FDI host effects) affect performance. They find "*synergistic effects between domestic learning and host market learning,* and that these two types of learning jointly shape subsidiary performance" (Liu et al. 2016: 143; emphasis added).

In more concrete terms, Chinese firms benefit from collaboration with foreign firms that are present in China through inward FDI (e.g. through original equipment manufacturing (OEM), joint ventures, or being suppliers for foreign firms present in China through FDI). Such interaction with foreign firms in China helps Chinese firms "to develop and accumulate the knowledge and capabilities needed for undertaking OFDI" (Ibid.) Examples of such OFDI capability building includes learning about foreign markets, accumulating knowledge, building financial and operational assets, as well as building networks and linkages before venturing abroad. In essence, Chinese firms leverage inward FDI host effects to have the capacity to successfully undertake OFDI to generate OFDI home effects: "both host market learning and domestic learning are complementary and jointly enhance subsidiary performance" (Liu et al. 2016: 149).

This synergistic relationship between FDI host effects and OFDI home effects also makes China rather exceptional.

E. The role of finance in guiding this process

This process has been guided by an active state allocating resources to strategic priorities through the financial market. This effort has been led by China Development Bank (CDB) and China Export-Import Bank (CHEXIM).

Two scholars at Boston University created a database of Chinese finance for OFDI, since China does not publish disaggregated data on CDB or CHEXIM financing. Irwin and Gallagher (2014) estimated OFDI finance from 2002 to 2012 at $140 billion, and since 2007, they estimate Chinese OFDI has averaged over 30 billion dollars a year. This would mean that China's OFDI lending comprised 31% of total OFDI, a very high percentage, and the sign of an active state in guiding this process. However, these two scholars state that since they overestimate total OFDI, this share should be considered an underestimate. So the state role is even more important than this figure would indicate.

To understand the relationship between state finance and OFDI in China, it is also instructive to compare China's approach to that of Japan and the Republic of Korea. China's OFDI lending representing 31% of total OFDI can be contrasted with equivalent figures of 16% for Japan and 20% for the Republic of Korea. It thus appears that China is encouraging OFDI even more proactively than Japan or Korea. Yet it seems more appropriate to compare China's OFDI lending today with that of Japan and Korea when they were at equivalent stages of development. China's active OFDI encouragement makes sense today, since Chinese companies have relatively little experience investing abroad and need subsidized loans to make the leap. Japanese and Korean companies, by contrast, no longer need this help. They have already built global supply chains, acquiring natural resources and shipping to cheap labor assembly plants. Yet when comparing China's OFDI today to that of Japan in the 1960s and Korea in the 1980s, China still stands out and is more active in directing finance to OFDI than these two countries where in their equivalent developmental stage.

The very significant role that state finance plays in Chinese OFDI may be due to a couple of factors. First, since many borrowers in China are SOEs, China can more easily dictate how they use the capital, so China can leverage loans strategically. Second, China has a greater capacity to provide finance for OFDI because it has significantly higher savings and foreign exchange reserves than Japan or the Republic of Korea, both today and especially during the equivalent developmental stage.

What is particularly interesting is to look at China's state finance of OFDI disaggregated by sectors. When one does so, it becomes clear that the Chinese government is pushing OFDI harder in some sectors than in others. The ratio of OFDI lending to total OFDI varies from 3% in services to 75% in infrastructure. Digging deeper, Chinese companies investing overseas in real estate, the financial sector, and agriculture are receiving little state support. In contrast, the state is heavily involved in supporting overseas manufacturing and infrastructure projects. Clearly China has identified strategic priorities, and is leveraging its financial resources through OFDI to help achieve its national objectives.

F. Chinese OFDI and renewable energy technology: the case of wind turbines[68]

A real-life case study brings these concepts to life. In traveling throughout China by train to see the true economic conditions outside of the big cities, I was struck by the fields upon fields of wind turbines, especially in the sparsely populated Western regions of the country. This lead to research on China's extraordinary investment in wind turbine technology, including through OFDI. I found that China's experience with wind turbines provides an extraordinary case study for how a developing country can combine technology sourcing with an increase in absorptive capacity to maximize the potential benefits of OFDI.

In 2005 China's wind power capacity 5 was 1,260 MW; yet by the end of 2016, this figure had grown more than 100-fold to 168,690 MW, an increase in installed capacity of over 1,200% per year (Global Wind Energy Council, 2016). The International Energy Agency reports that China has been building two wind turbines every hour. As a result, China now has more installed wind power capacity than all of the European Union combined, and more than double the capacity of the United States. This represents a remarkable example of a developing country leapfrogging developed economies through a radical and forward-looking policy measure.

OFDI has played a key role in making this remarkable growth possible. From 2009 to 2014 China made 44 outward investments in the wind energy industry. Looking at China's top three wind turbine producers (Sinovel, Goldwind, and Mingyang) reveals a four-phase approach to leveraging OFDI: knowledge acquisition, assimilation, transformation, and exploitation.

Of fundamental importance, the Chinese state guided and facilitated this process through policy instruments, such as subsidies, tax incentives, R&D spending, technical partnership, outward investment financial incentives and support, and other measures. State policy has been the lynchpin to strengthening technology and knowledge transfer mechanisms, boosting human capital, and providing supportive infrastructure to facilitate the adoption of foreign technology by domestic firms. China's wind turbine industry thus shows that developing country latecomer firms can source technology through outward investment, and that focusing on building absorptive capacity at the firm or industry level can undergird this process.

[68] A summary of this case study appears in Perea and Stephenson (2018).

Original empirical contribution

We now turn to original work to help answer our research questions. The argument proceeds in three movements. First, the way that China opened its economy to FDI brought about certain transformational effects on its domestic economy (chapter six). Second, these effects generated domestic capacity that has driven Chinese OFDI (chapter seven). Third, the way that China has guided its OFDI has shaped this process and allowed the country to drive positive home effects (chapter eight). In essence, China has used inward and outward investment flows strategically for its past, present, and future economic development.

6. Chinese inward FDI policy reforms (1/3 of the argument)

China's process of opening to FDI is very helpfully captured by the FDI Regulatory Restrictiveness Index[69], also known as the FDI Index, a tool recently developed by the OECD. Unfortunately, the data for China only begins in 1997, and therefore does not capture the reforms before that. However, it is still useful for our analytical purposes for two reasons. First, Chinese OFDI only began to increase after 2005, and so a metric to capture inward FDI as of 1997 provides a baseline figure eight years before the OFDI phenomenon began; given the necessary lags for direct and indirect transmission of inward FDI effects on the host economy, eight years seems a reasonable timeframe to allows these effects to be felt in the Chinese domestic economy, even if they may have begun earlier. Second, in contrast to many countries where there might be a disjuncture between *de jure* and *de facto* regulations, in China's case *de jure* regulations are generally those experienced in actual economic relations. Therefore this index is a good measure to understand the real effects of how China has progressively opened its economy to FDI across certain key sectors. Understanding the process of opening to key sectors will be critical when later reviewing the relationship between Chinese inward and outward investment flows.

[69] The FDI Regulatory Restrictiveness Index (FDI Index) measures statutory restrictions on foreign direct investment in 58 countries, including all OECD and G20 countries, and covers 22 sectors. The FDI Index is currently available for 8 years: 1997, 2003, 2006-2014. Data can be found at http://www.oecd.org/investment/fdiindex.htm

Before examining how China has progressively opened its economy to FDI across different sectors over time, it is first helpful to situate China's experience in a broader context. The following charts present China's regulations on inward FDI compared to 32 other key economies in the world. They show how restrictive China's inward FDI policy has been relative to other countries. From 1997 to 2015, China is consistently either in first or second place in terms of inward FDI regulatory restrictiveness. All figures are by the author using OECDStat.

Figure 22: Rank order of FDI restrictiveness in 1997

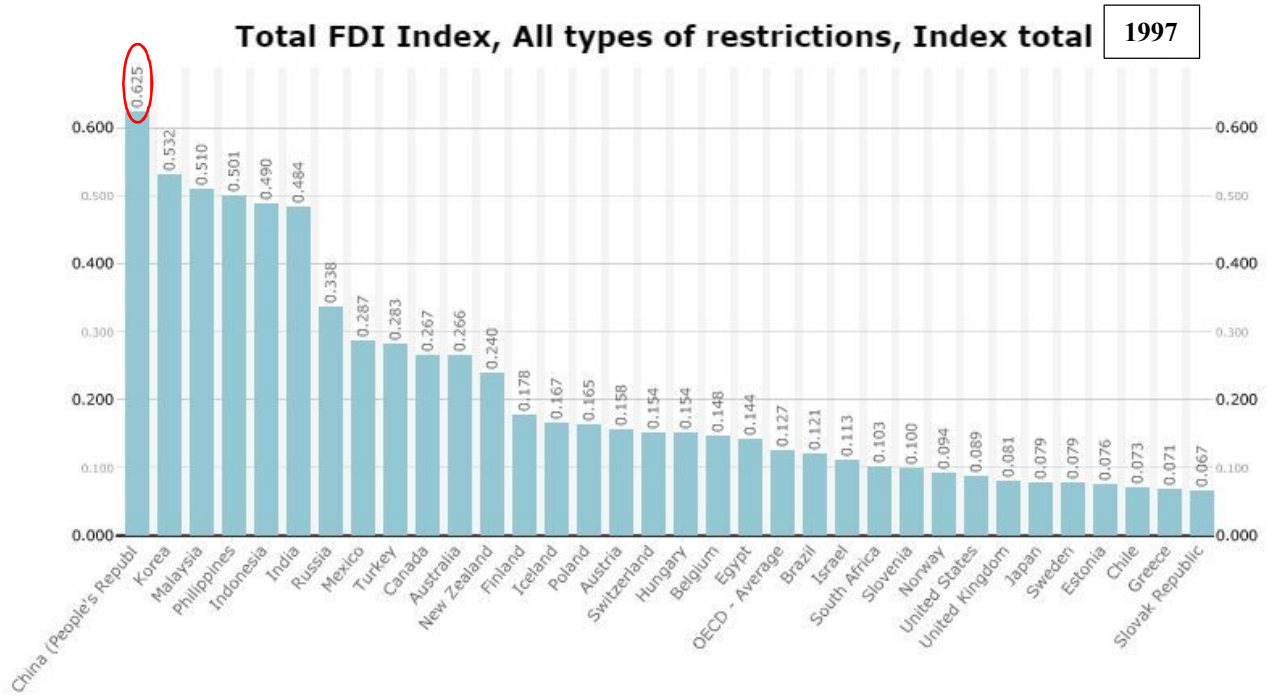


Figure 23: Rank order of FDI restrictiveness in 2003

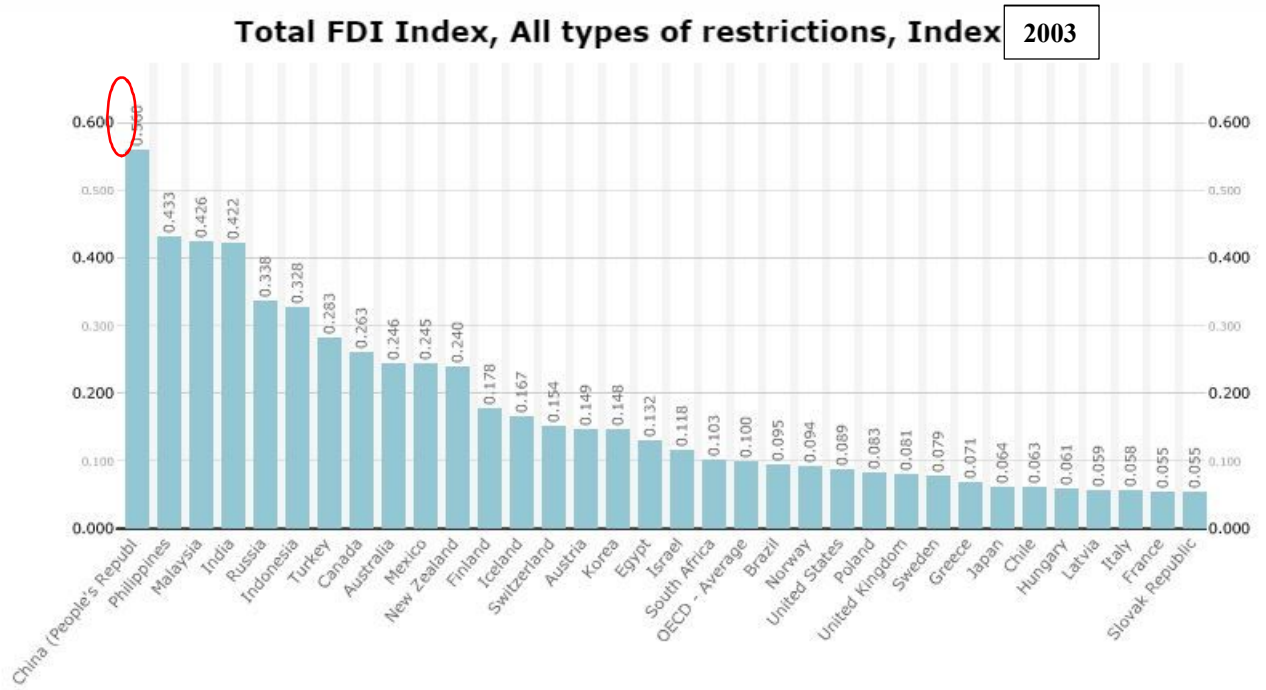


Figure 24: Rank order of FDI restrictiveness in 2006

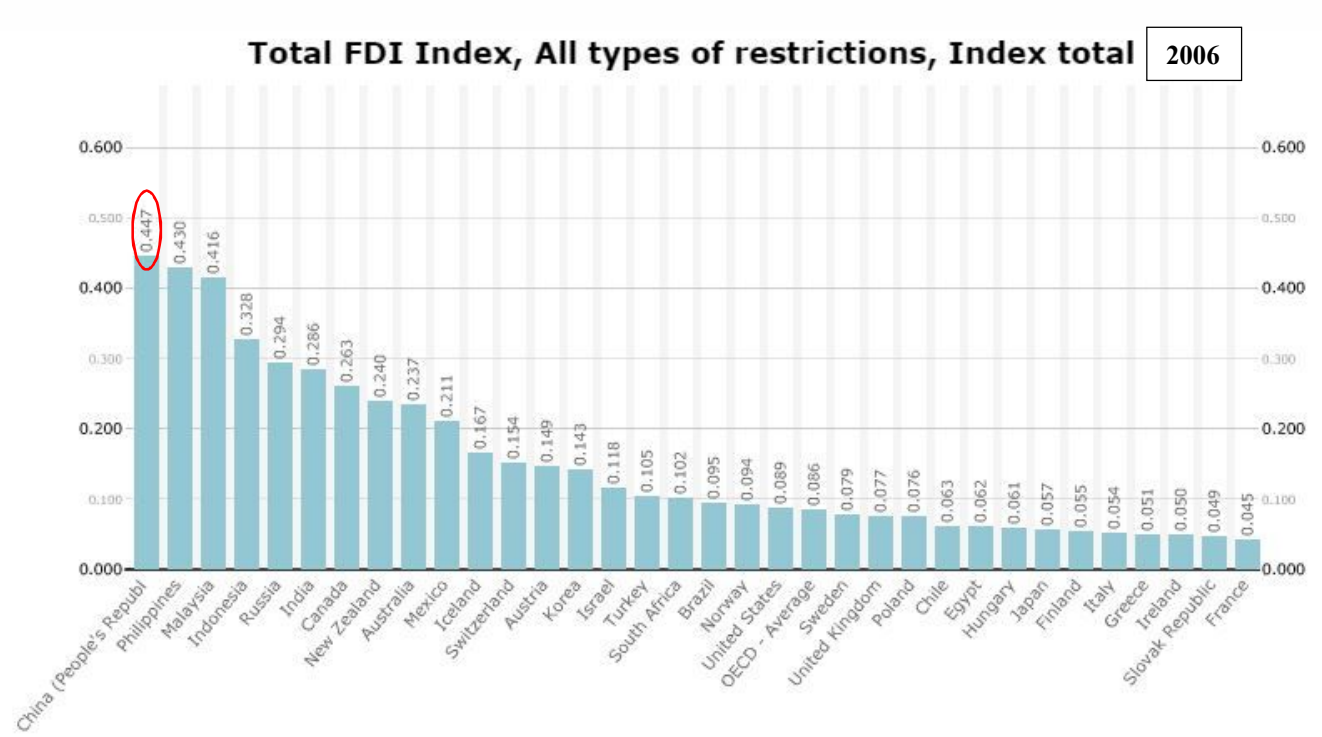


Figure 25: Rank order of FDI restrictiveness in 2010

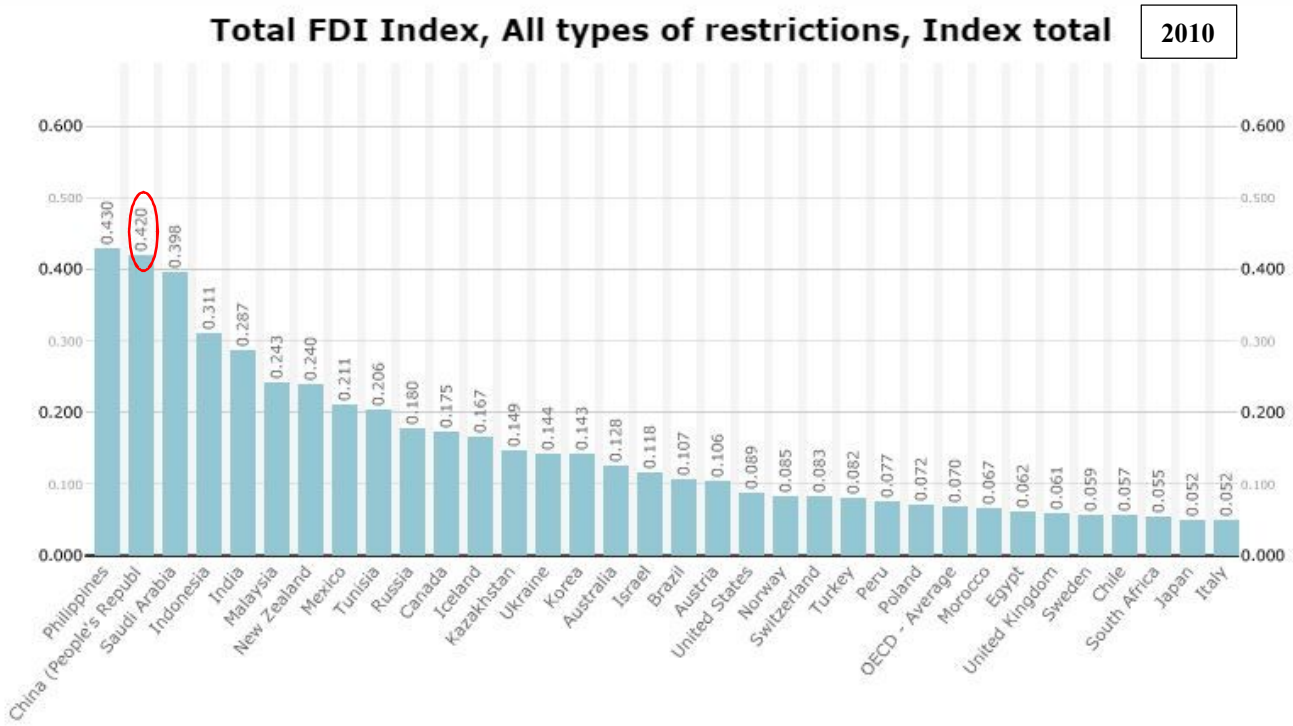


Figure 26: Rank order of FDI restrictiveness in 2013

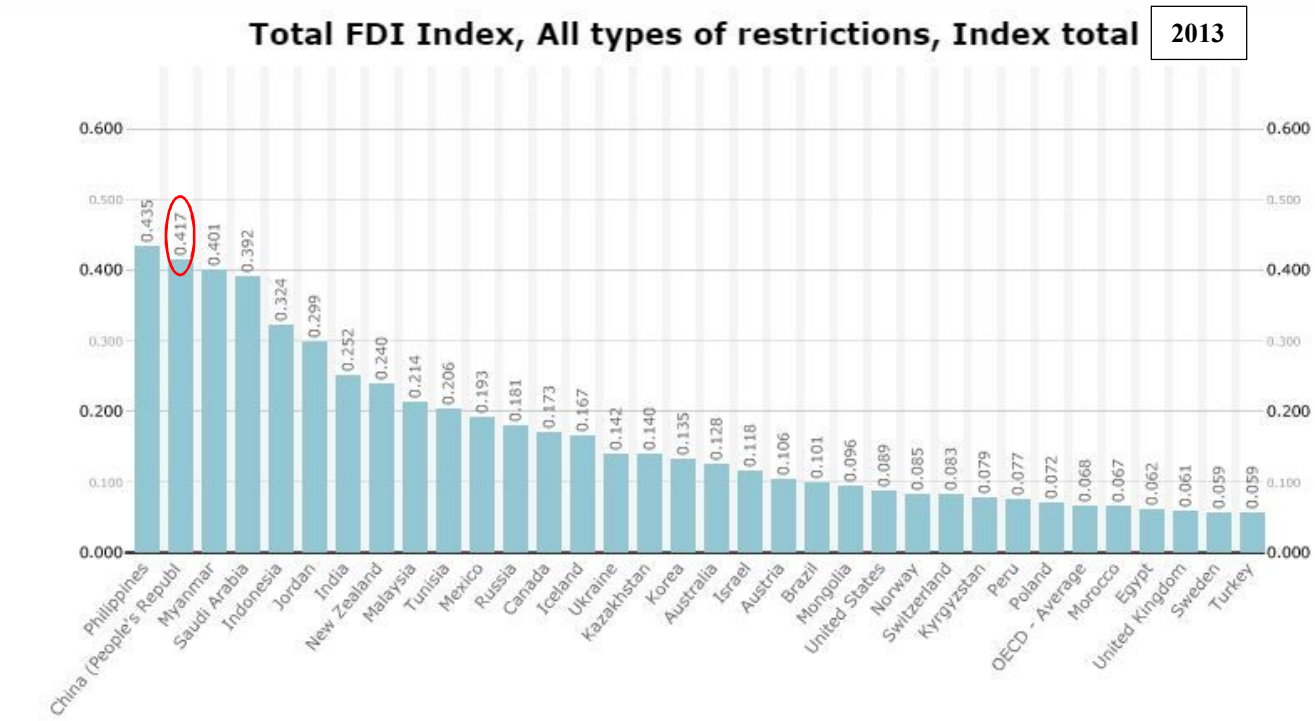
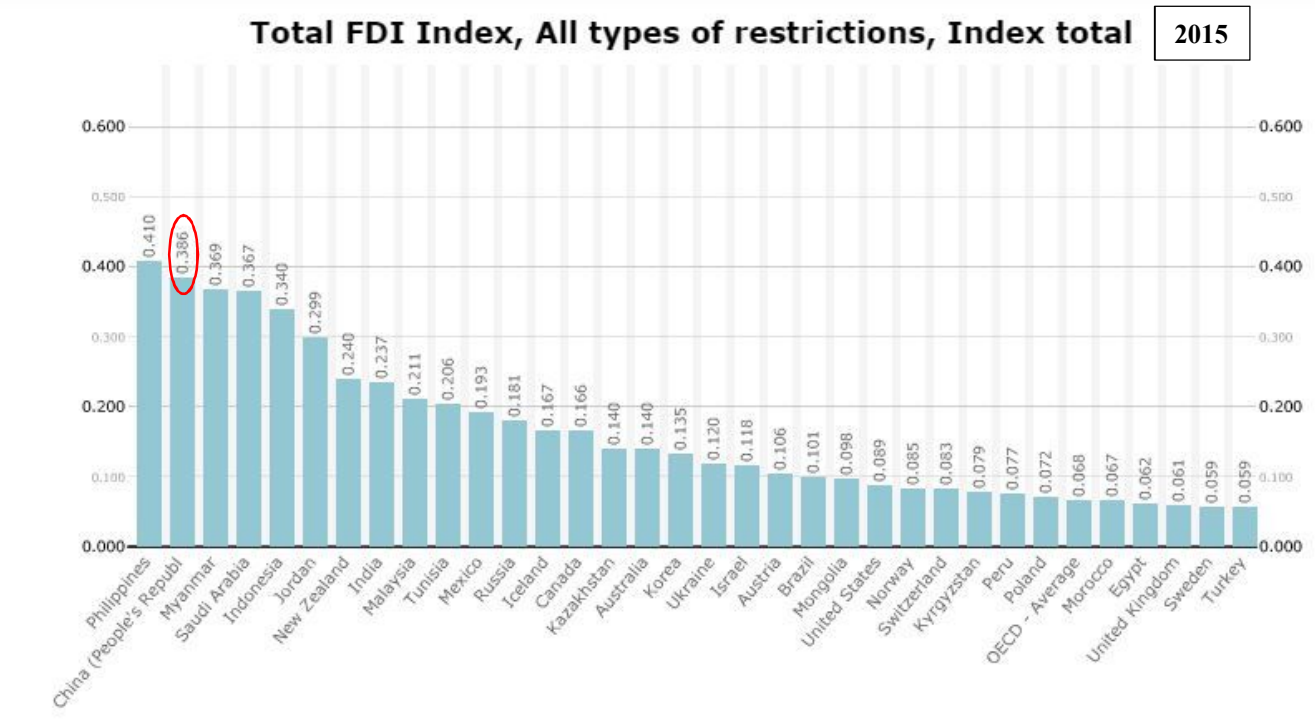


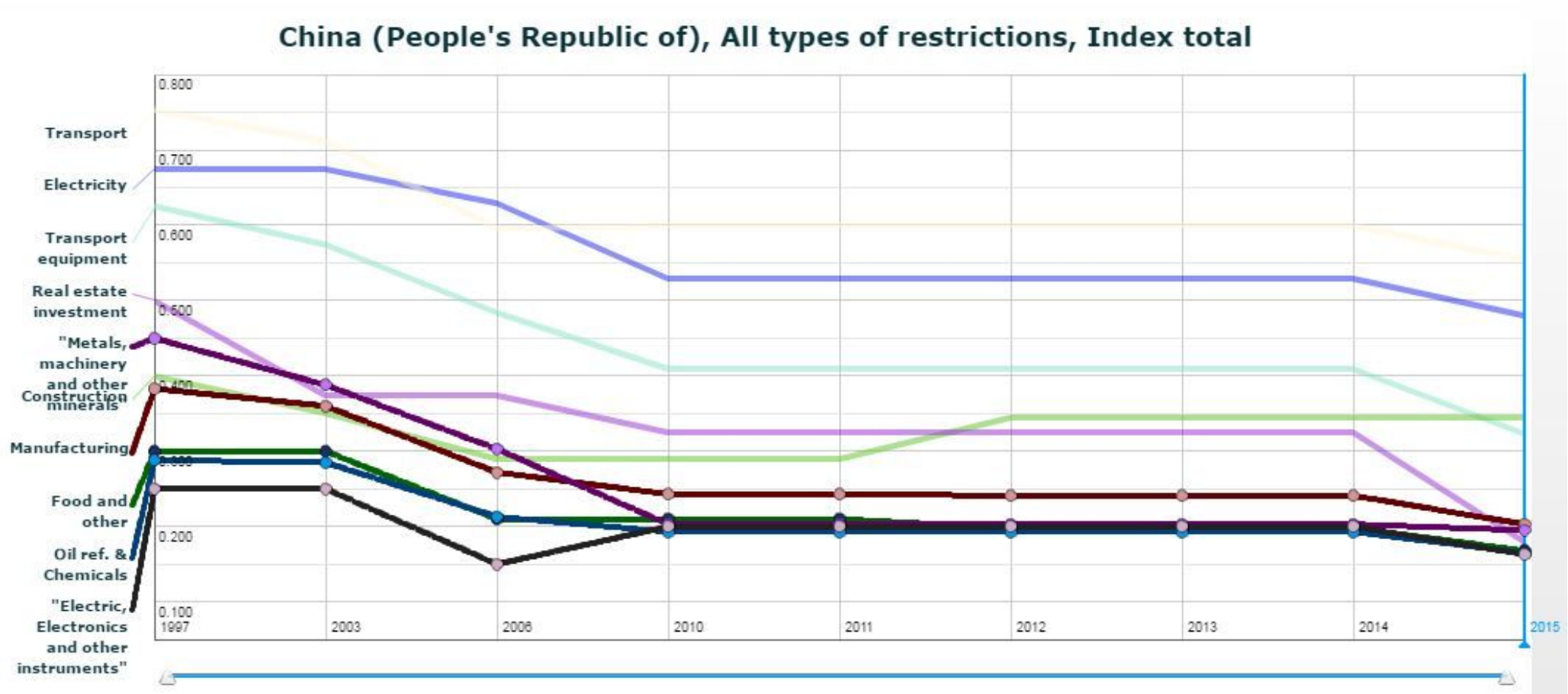
Figure 27: Rank order of FDI restrictiveness in 2015



It is a fascinating picture that emerges. Even though China has amongst the highest limitations to FDI, the country has received records levels of FDI. This is somewhat of a paradox, and contravenes what one would expect, and what classical economics vaunts at the role of liberalization, namely its importance in attracting foreign trade and investment. In China's case, the country was able to attract record levels of FDI notwithstanding such high restrictiveness because the economy provided many of the host-market characteristics that FDI seeks (described above in chapter three), including a huge domestic market, competitive production costs, functioning institutions, rule of law, etc. This dynamic gave China the power the influence investment flows through policy measures. It could liberalize strategically to attract more investment in certain sectors but did not have to liberalize across the board because the country was such a desirable destination economy for FDI regardless. Therefore, in China's case, investment policy was a particularly effective instrument for its economic development strategy.

We turn now to a closer examination of China's evolving inward FDI policy through its changing FDI Index, and in particular by looking at key sectors that comprise the top-line figure in the charts above. Using the FDI Index, we can therefore examine how China opened its economy to FDI in the top ten sectors that received FDI (the identification of these sectors is described in chapter eight).

Figure 28: How China opened its economy to FDI in the top 10 sectors that received FDI

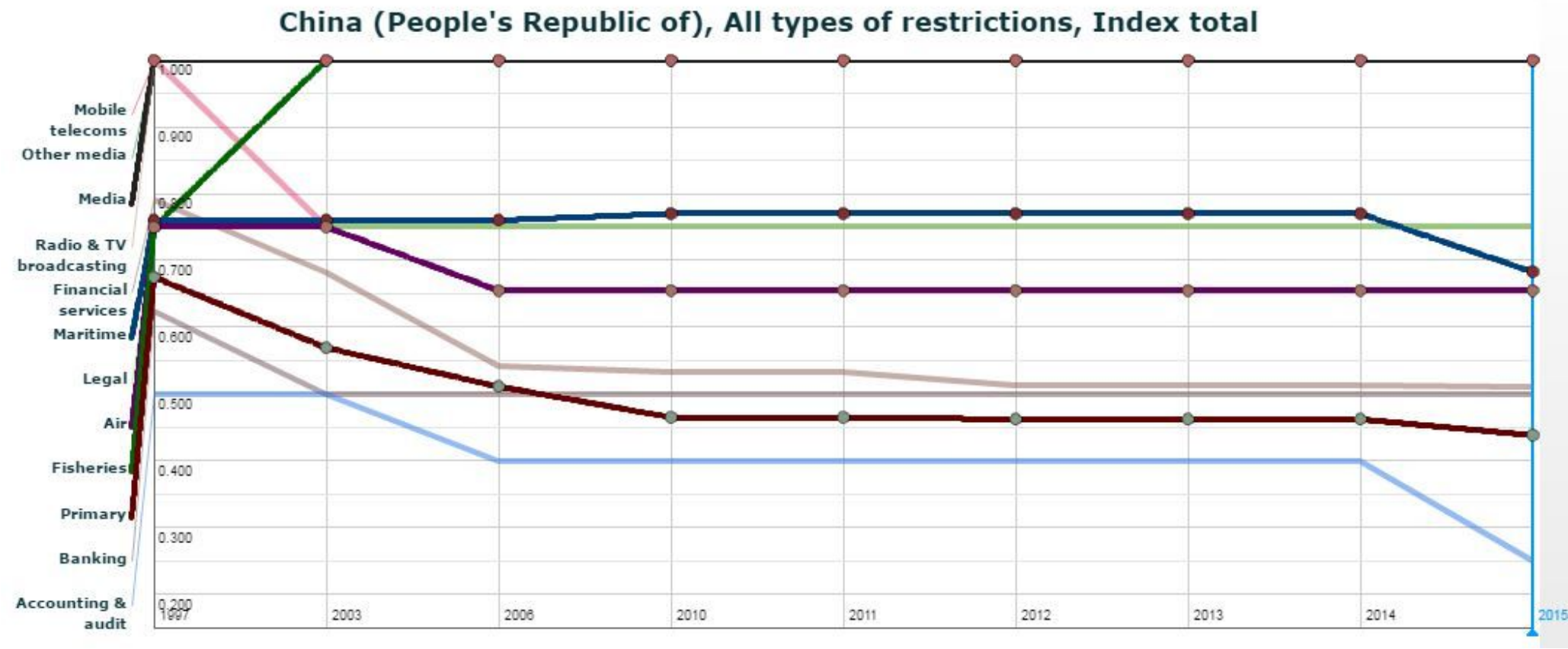


Source: Author using OECDStat

As one can see, there was progressive liberalization in almost all sectors, though with some tightening of market access for two sectors on one occasion each (electronics in 2010 and construction in 2012). The reason why this graph is important is that it shows the effectiveness of FDI policy in driving inward FDI flows. If the FDI Index's direction and inward FDI flows had no relationship or even moved in different directions, this would be an indictment of the effectiveness of FDI policy to attract and guide investment flows. In contrast, if the FDI Index and inward FDI flows move in the same direction, then this is strong evidence of the effectiveness of this policy lever. In China's case, the state was able to use inward FDI policy to guide FDI to certain key priority areas.

It is useful to contrast this graph that tells a story of increasing openness to inward FDI with another graph that tells the opposite story, namely one that highlights the sectors that China did not open very much to inward FDI.

Figure 29: How China kept certain priority and strategic sectors much more restricted to FDI

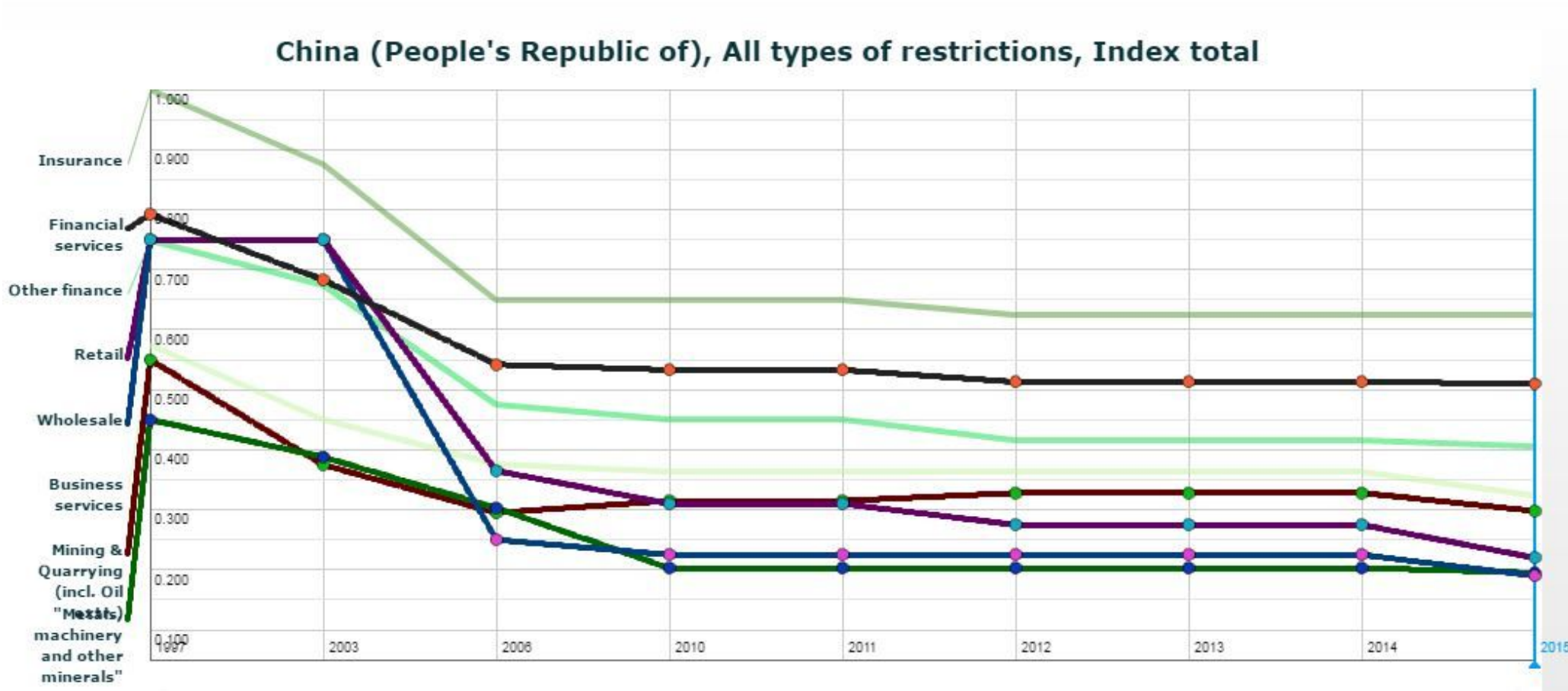


Source: Author using OECDStat

As one can see on the y-axis, the values of the FDI Index for these protected sectors is very high, ranging all the way up to 1.0 for those sectors that are completely closed to FDI into China. Even if not completely closed, the averages are still quite high, above 0.500 (with a few exceptions). It is not surprising that these sectors that have a high level of de jure restrictiveness also receive less inward FDI into China. Restrictiveness is particularly high for professional services, such as banking, legal services, and accounting services, with China presumably wanting to use this protection to develop its own industry in a form of infant industry argument. China's recent pivot to services as a key component of its future economic reform and development strategy would support this view. Restrictiveness is also particularly high for what might be viewed as national security or sensitive sectors, such as mobile telecommunications, media, radio and TV broadcasting, or fisheries and maritime.

The preceding two findings are rather unexceptional. What is particularly interesting, however, is the following one, which is not as obvious and provides some interesting analytical fodder. Some of the top sectors that generated OFDI following 2004 (the identification strategy will be explained in more detail in chapter eight), are those that were most liberalized when it comes to FDI access into China. These are not necessarily the sectors that received the most FDI (figure 28), but rather the sectors that received less FDI but that then were amongst the top generators of OFDI (figure 30). These sectors include insurance, financial services, other, finance, retail, wholesale, business services, mining, and metal manufacturing.

Figure 30: How FDI access was strongly liberalized for the top 10 sectors that then generated OFDI



Source: Author using OECDStat

All of these sectors are in the top ten sectors generating Chinese OFDI, as we shall see below (chapter eight). What should be observed is that the Chinese government liberalized inward FDI into these sectors quite dramatically between 1997 and 2006. After that, the FDI Index plateaued. The fall in the Index from 1997 to 2003 and again from 2003 to 2006 is quite significant, in several cases dropping between 40-50%. The hypothesis that will be later investigated using input-output analysis, but which is supported by this evidence, is that China opened up certain sectors of its economy to inward FDI in such way as to attract FDI and help develop domestic capacity that can later account for the growing levels of Chinese OFDI in these sectors. What is particularly interesting are the timing of the inward FDI liberalization and later OFDI increase. The liberalization took place roughly seven years before Chinese OFDI started growing (1997 vs. 2004). This seems like a reasonable lag for the necessary linkages, spillovers, knowledge transfer, and other domestic economic structural transformations that would build Chinese domestic capacity to then invest abroad.

Though these sectors are not in the top ten sectors to have received inward FDI, they could be viewed as a second phase effect. Certain sectors received a great deal of inward FDI and generated capacity to then produce OFDI (figure 28); other sectors received somewhat less inward FDI, but the Chinese government liberalized those sectors to draw international investor interest, and in so doing may have supported the development of domestic capacity that then generated increasing levels of Chinese investment abroad (figure 30).

Finally, China has continued to liberalize inward FDI, most recently revising its laws on October 1, 2016, with implementation through circulars and catalogues taking place throughout 2017. The revisions replace the previous approval requirements with filing requirements, provided the activities of the foreign enterprises are not on the negative list, which was cut from 93 industries down to 62. The Vice Minister of Trade was quoted as stating that now 95% of foreign enterprises do not need approval before being incorporated, and the registry procedure takes less than three days (compared to the 20 before) (Washington Trade Daily, May 27, 2017).

New sectors have become open to FDI, as well as existing sectors to higher ownership share. In particular, China has further opened the services sector, manufacturing sector, and energy sectors, with the aim of supporting innovation, value-added, and green economic activity as conceived in the "Made in China 2025" strategy (see chapter seven, section D). Examples include automotive electronics, new energy vehicle batteries, motorcycles. This is in line with the gradual and incremental liberalization of strategic industries that has been taking place over the past decades, as China uses FDI policy in a targeted way to encourage and develop domestic capacity in certain key, priority sectors.

7. Chinese outward FDI policy reforms (2/3 of the argument)

Starting in the early 2000s, China has gradually liberalized its OFDI regulatory framework. This process can be analysis through considering the various instruments put in place over time. In this chapter, I consider this evolution, analyzing the legal changes and for the first time structuring this process as taking place during certain periods with particular characteristics. The chapter then considers in detail the recent reforms enacted in 2014, as these have radically altered the regulatory landscape. However, the OFDI framework is not one of pure liberalization, but should rather be seen as one that is maturing and evolving; China has begun to put in place more regulations in other areas, particularly the way OFDI affects local, environmental, and social concerns. This can be seen through an explosion of instruments that can be understood under the umbrella term of OFDI firms' corporate social responsibility. In the first months of 2017, the regulatory framework also took a new turn of moving from OFDI quantity to OFDI quality. The chapter then goes on to offer an analytical framework for understanding this change over time. In the literature since China began OFDI reforms, scholars have taken the view that these reforms emanate from the unsustainable and unwieldy nature of approving myriad OFDI projects given China's growth and the spike in such projects. This may be the case, but this chapter discusses a few mechanisms, drawing from the work of two scholars who analyzed reform-era private-sector development in China, whereby the interactions between OFDI firms and the Chinese government could explain some of the regulatory reform we have recently witnessed. These theories could help explain the adaptive endogenous institutional change that we have recently seen in the OFDI regulatory framework.

A. Introduction

This chapter presents an analysis of the evolution of the Chinese regulatory framework for OFDI. Between 2001 and 2017, the regulatory system underwent dramatic reform. New rules and instruments were created, and then revised. Today, leading scholars assess the regulatory framework as 'very sophisticated' (Sauvant and Nolan 2015). Though the trend is of increasing liberalization, in some respects there has been increasing regulation as well, especially in the first quarter of 2017. These reforms therefore represent an interesting example of institutional change. This chapter both charts the change and attempts to provide an analytical explanation. It is divided as follows: section A introduces. Section B describes the methodology used. Section C lays out the principal regulatory reforms over time. Section D provides a suggested analytical framework to

understand these changes. This chapter makes an original contribution to the literature, as it is the first time that theories of institutional change and reform have been applied to the Chinese OFDI framework. Section E concludes.

B. Methodology

To carry out this research, it was important to read the original regulatory instruments. These include, for example, publicly announced Principles, Planning Documents, State Council or National Development and Reform Commission (NDCR) Decisions, Chinese pledges at international fora (e.g. UN High-Level Meetings), white papers, Circulars, Measures, Rules, Notices, Opinions, Reports, Bulletins, Guides and Policies. Thankfully, the Canadian-based International Institute for Sustainable Development (IISD) and the Institute for International Economic Research (IIER) jointly published in 2013 a compilation of primary sources translated into English. This publication is entitled *Chinese Outward Investment: An emerging policy framework*. The translations were done by a number of credible sources (e.g. Chinese ministerial websites, law offices, foreign government delegations, IISD, etc.). In this publication are found 81 original texts that pertain to the Chinese OFDI framework. The earliest document dates from 1964, but the vast majority fall between 2004 and 2010, with the most recent document dated October 2012. I therefore used this publication as the main source of information for the research.

However, there were significant developments in 2014 regarding the Chinese OFDI regulatory framework, and then again in 2016. At the end of 2013 the State Council issued new guidance, and in 2014 the NDRC, the Ministry of Commerce (MOFCOM), and the State Administration of Foreign Exchange (SAFE) all issued new regulations to implement this guidance. I therefore had to find and review this material as well. Given the importance of these 2014 changes, I also consulted several legal analyses that had been done by private law firms in 2014 to explain the implications of these changes to their (existing and prospective) clients. These law firms include either widely known international firms that have a Chinese component to their work, or Chinese firms directly. I also read press reporting and commentary on recent changes in the first half of 2017.

Finally, I thought it was important to consult statements made by MOFCOM officials and spokespeople regarding the changes in OFDI regulations, as this provides the official governmental perspective.

C. OFDI regulatory framework over time

Following this research and reading Chinese secondary sources, I believe the Chinese OFDI regulatory framework can be seen as having four phases.

The first phase is from 1983 and 2001. It has been called the "spontaneous stage"[70] (Liang and Ma 2011: 103). In 1983 China issued *Four Principles of Economic and Technological Cooperation*, which can

[70] Other scholars have used other terms and slightly different periods to classify these stages. For instance, Luo et al. (2010) suggest Fresh Flowers/Poisonous Grass (1984-1990), Finding the Stepping Stones (1991-2000), and Going Abroad (2001-present). Alternatively, Buckley et al. (2007) suggest Cautious internationalization (1979-1985), Government encouragement (1986-1991), Expansion and regulation (1992-1998), Implementation of the 'go global' policy (1999-2001), and Post-WTO period (2001-present). Though helpful and valid, these older classifications do not address what has happened since 2001. I believe that significant reforms have happened in

be seen as containing the embryo of OFDI regulatory policy down the road. Namely, emphasis in international economic cooperation on friendship, complementarity, and win-win between China and another state; this document also marks the beginning of the principle of foregoing political conditionalities to undertaking foreign trade and investment. However, during this phase OFDI was not significant, either as a policy matter or in terms of stocks and flows.

The second phase is from 2001 to 2009. It has been called the "government-oriented stage" (Ibid.). This is when China's new "Going Global" strategy was first announced in the Tenth Five-Year Plan (2001-2005) and then implemented through a series of instruments. This is the golden age of the Chinese OFDI regulatory framework, as it was during this time that most of the instruments were put in place. Later phases updated, amended, or removed these instruments. Much of this implementation took place in 2004, when many key events/measures were announced: China hosted the first International Forum on "Going Global" (June 2004); started distributing the Catalogue of Countries and Industries for Investment Abroad (July 2004) to "guide and approve the investment abroad of Chinese enterprises"; issued verification and approval procedures for OFDI for the first time (October 2004); and began supportive credit policy on key overseas investment projects encouraged by the state (October 2004).

The third phase is from 2009 to 2014. This could be called the "private-engagement stage". In March 2009 MOFCOM revised the Measures for Overseas Investment Management. Also in 2009, MOFCOM started publishing annual Guides on Chinese-funded Enterprises Overseas, which provides Chinese firms with information on the business climate in approximately 165 host countries. In February 2011 the National Development and Reform Commission (NDRC) issued new regulations that decentralized OFDI decision-making. During this period the OFDI regulatory framework matured, with higher currency thresholds for seeking approval, with delegation of authority to the provinces, and with a simplification of procedures.

The fourth phase is from 2014 to the present. This could be called the "increased corporate responsibility stage". In 2014 China significantly streamlined its OFDI regulatory framework. The system changed from the default being a need for approval to the default being simply a need to register. Approval is still necessary in some cases, but not many (e.g. when the OFDI host country does not have diplomatic relations with China or is under sanctions, where more than one country is affected, and where the export is restricted under Chinese law). At first OFDI projects above $1 billion still required approval, but even this threshold was removed in subsequent MOFCOM regulations. The role of MOFCOM has also been radically re-envisaged: its role is no longer to consider the economic merits of a project (which is solely the responsibility of the firm), but rather to help create the enabling environment for Chinese firms to flourish abroad (e.g. through market studies, guidance, negotiating investment agreements, etc.).

One can see a policy pattern emerge through considering the evolution of OFDI instruments. The pattern is one of being increasingly liberalized and favorable to OFDI. As Sauvant (2014) has succinctly put it, China has gone from restricting, to facilitating, to supporting, to encouraging OFDI. This accords with the Investment Development Path (IDP) theory first posited by John Dunning (1993), whereby as a country develops it goes from being a recipient of FDI to an originator of FDI, as seen through its level of net outward investment per capita. As China's GDP has grown, it moved from being overwhelmingly a host country for FDI, to now becoming increasingly a home country for FDI as well. This evolution is reflected in the increasingly liberalized and favorable policy measures that China has implemented vis-à-vis OFDI.

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the last few years that provide good grounds for recasting where one might divide periods, and with what descriptive names.

Examples of home country measures that China has used in the past to support its OFDI (available to both state owned and privately owned enterprises) include: subsidies, priority access to loans, expedited approval, access to foreign exchange, tax rebates, investment insurance and guarantees, foreign market information, consular protection, customs facilitation, movement of personnel, etc. (Sauvant and Nolan 2015: 4-5).

The National Development and Reform Commission (NDRC) is the "super ministry" charged with setting reform policy. To show the evolution in OFDI policy adopted by the NDRC (and then implemented through MOFCOM), the chart below lays out the key elements of NDRC instruments in 2004, 2011, and 2014.

Figure 31: Key NDRC decisions regarding regulating Chinese OFDI - progressive decentralization and liberalization

	Interim Measures for the Administration of Examination and Approval of Overseas Investment Projects (10/2004)	**Notice of the National Development and Reform Commission about Decentralizing the Approval Authority of Foreign Investment Projects** (02/2011)	**Measures for the Administration of Approval and Recordation of Overseas Investment Projects** (04/2014) **Decision of the National Development and Reform Commission on Amending Relevant Provisions of Measures for the Administration of Approval and Filing of Outbound Investment Projects and Measures for the Administration of Approval and Filing of Foreign Investment Projects** (12/2014)
State Council	Resource development projects in the amount of USD 200 million or more; projects using large amounts of foreign exchange of USD 50 million or more —*Approval*		Projects with a total investment amount of USD 2 billion or more AND either in a sensitive country/region or in a sensitive industry —*Approval*
NDRC	Resource development projects in the amount of USD 30 million or more; projects using large amount of foreign exchange of USD 10 million or more —*Approval*	Centrally administrated SOEs: resource development projects in the amount of less than USD 30 million and projects using foreign exchange in the amount of less than USD 10 million —*Filing*	Project relating to sensitive countries/ regions, or sensitive industries, irrespective of the investment amount —*Approval*
Centrally administrated SOEs	Resource development projects in the amount of less than USD 300 million and non-resource development projects in the amount of less than USD 100 million —*Filing* Resource development projects in the amount of USD 300 million or more and non-resource development projects in the amount of $100 million or more	Centrally administrated SOEs or local enterprises' projects with a total investment amount of US $300 million or more —*Filing*	

	—*Approval*		
Local NDRC	Non-central SOEs: Resource development projects in the amount of less than USD 30 million; projects using foreign exchange in the amount of less than USD 10 million —*Approval*	Local enterprises: Resource development projects in the amount of less than USD 300 million and non-resource development projects in the amount of less than USD 100 million (except for special projects) —*Approval*	Local enterprises: Projects with a total investment amount of less than USD 300 million —*Filing*

Source: Lau 2015

Authors' note: There is a slight variation between the NDRC and the MOFCOM definition of sensitive countries/regions and sensitive industries. On the one hand, the NDRC Measures state that sensitive countries/regions are those that are subject to international sanctions, while the MOFCOM Measures specify that these should be *UN* sanctions. On the other hand, the NDRC Measures spell out sensitive industries as those in "basic telecommunication operations, cross-border water resource development and utilization, large-scale land development, main power transmission lines, electrical grids and news media"; the MOFCOM Measures, however, define sensitive industries as "industries involving products or technologies whose exportation is prohibited or restricted by China, or where multiple countries (regions) have an interest (e.g. a cross-border water resource development project)" (Ye et al. 2014). For a discussion of the potential sources of interpretation inconsistency given this variation, see Zhang (2014).

Liberalization…

As the chart above shows, the value threshold for OFDI project approval has been increasing. At the same time, there has been a shift from requiring approval to requiring simply filing. Both these changes indicate a policy pattern of increasing liberalization.

This pattern of increasing liberalization in OFDI policy can be seen in MOFCOM instruments as well. The 2009 MOFCOM *Measures for Overseas Investment Management* instituted easier procedures for undertaking OFDI. On the one hand, prospective investors, and not MOFCOM, now had to assess the viability of OFDI projects. On the other hand, following the same decentralization logic as seen in the chart above, local departments of commerce were now authorized to approve OFDI projects below a certain threshold (below USD 300 million for resource projects and below USD 100 million for non-resource projects), except for projects in sensitive areas. The application procedure was simplified and the time shortened. The 2009 MOFCOM Measures also issued, for the first time, regulations on Chinese firm behavior in host countries.

The 2014 MOFCOM *Measures for Overseas Investment Management* took this trend to the next level. Firms are now entirely responsible for their own decision-making regarding OFDI, and have autonomy in that respect. The default approach to Chinese OFDI is now a filing system rather than an approval system. In other words, the 2014 MOFCOM Measures for the first time adopted was is called a negative-list approach, meaning that only those OFDI projects on the list are subject to approval; all others are not. This list compromises what is dubbed sensitive countries or industries (see Author's note above). It includes OFDI that would jeopardize national sovereignty or security, or the public interest, or violate the laws; harm the relationship between China and the relevant country/region; violate an international treaty or convention to which China has acceded, or is a party; or involve the export of products or technologies which are prohibited (King and Wood Mallesons 2015). MOFCOM estimates that approval will be needed in less than 1% of cases (MOFCOM 2014).

Box 3: How do the other BRICS approach OFDI policy?

To understand China's approach to OFDI regulation, it is instructive to compare it to the other BRICS and see whether their approach is similar or different from China's (see Perea and Stephenson, forthcoming). It is clear from this chapter that China has gone over the 2001-2014 period from restricting to facilitating, supporting, and finally encouraging OFDI, although at the end of 2016 it tightened regulations once more. How has OFDI policy evolved in the other BRICS over this same period?

Brazil has generally favored OFDI, and in 2007 put in place financial incentives to encourage OFDI in specific sectors in which the Brazilian economy had a comparative advantage, such as mining, petroleum, pulp and paper, and beef (Nunes de Alcântara et al. (2016). Russia has likewise generally welcomed OFDI, which has mostly taken place in the energy sector, but has also opted to block individual deals (Fortescue and Hanson 2015).

India in contrast, retains a relatively restrictive OFDI framework, notwithstanding recent liberalization. OFDI in real estate is forbidden, in financial services is quite restricted, and in energy and natural resources, manufacturing, education, and hospital requires prior approval by the Reserve Bank of India (*Frequently Asked Questions (FAQ)* 4, Overseas Direct Investments, Reserve Bank of India, updated April 12, 2017). There are also restrictions on how OFDI is carried out in neighboring countries (e.g. Pakistan, Nepal, and Bhutan), as well as quantitative restrictions set by the net worth of the Indian firm (see *FAQ* 12, op cit.). If OFDI is approved, the firm must then submit annual performance reports on each OFDI deal.

South Africa also restricts OFDI, although with its own particular regulatory conditions. Firms face a limit of 1 billion Rand per calendar year for OFDI, above which they must submit an application to the South African Reserve Bank, and a condition of any approval is that at least 10% of the target entity's voting rights must be obtained through the investment. Even for deals under the 1 billion Rand limit, there remain restrictive conditions, such as the net sale of proceeds being repatriated to South Africa, and South African-owned intellectual property not being sold without prior approval (*Guidelines to Authorised Dealers in respect of genuine new foreign direct investments of up to R1 billion per company per calendar year* (2016-05-10), published by the Financial Surveillance Department of the South African Reserve Bank).

The system has been significantly streamlined. Filing paperwork can now take place in as little as three business days. And this filing takes place at local departments of commerce at the provincial level, in line with the principle of subsidiarity that things done locally will provide better responsiveness and management service. Finally, firms no longer need to seek advice from domestic chambers of commerce and business associations when considering OFDI in resources, and there is no inspection of OFDI modalities ex post facto (Stibbe 2014, Han Kun 2014, Ye et al. 2014, Zhang 2014). This new system is laid out in the following table.

Figure 32: Chinese MOFCOM regulatory framework for OFDI (2014)

Regulator	Authority	Scope	Time limit
MOFCOM	Verification/approval	OFDI in sensitive countries/regions or industries	Within 20 working days after acceptance of application
	Record-filing	OFDIs by Central SOEs (over 100 such firms)	Within three working days after acceptance of application
Provincial-level commerce department	Record-filing	Investment by non-Central SOEs and privately owned enterprises (POEs)	To be decided by the Provincial-level commerce commissions referring to the MOFCOM regulation

Source: King and Wood Mallesons 2015

There is a criticism in the literature that it is inefficient for there to be two authorities with whom Chinese firms interested in engaging in OFDI need to engage, namely the NDRC and MOFCOM (Davies 2013). The argument is that one should be enough, a form of the 'one-stop-shop' often advocated in investment policy practice. However, given that the process is now generally record-keeping rather than approval, and that firms can record their OFDI activities simultaneously with the national/local DRC and the national/local department of commerce, I think this double-filing is no longer that onerous. It is as if one were copying two instead of one person in an email, so that both have the information in their files for future reference, but not for action. The cost of copying two people/institutions instead of one does not seem that significant.

One more reform that is worth mentioning is that previously SAFE needed to verify the foreign exchange needs of OFDI firms. However, this role has now been delegated to commercial banks as of June 2015, another example of the government relaxing the regulatory framework and delegating responsibilities.

… yet evolving regulation…

However, the story is not simply one of pure liberalization. Is it instead one of evolution and maturation. There have simultaneously been increasing regulations regarding how Chinese firms behave abroad. The Chinese government has put in place a series of instruments to ensure that OFDI takes into consideration environmental issues, promotes corporate social responsibility, respects local customs and religion, and generally promotes greater harmony between the interest of the investment home and host countries. Examples of such instruments are presented in the following box.

Box 4: OFDI and respect for host country conditions

- Shenzhen Stock Exchange Social Responsibility Instructions to Listed Companies (Shenzhen Stock Exchange, September 2006)
- Guidelines to the State-owned Enterprises Directly Under the Central Government on Fulfilling Corporate Social Responsibilities (State Council's State-Owned Assets Supervision and Administration Council, December 2007
- Nine Principles on Encouraging and Standardizing Outward Investment (State Council, October 2006)
- Green Guidelines (ExIm Bank, revised in 2007)
- Shanghai Stock Exchange Notice of Improving Listed Companies' Assumption of Social Responsibilities (May, 2008)
- Shanghai Stock Exchange Guidelines on Environmental Information Disclosure by Listed Companies (May 2008)
- China Banking Association's Guidelines on Corporate Social Responsibility of Financial Institutions (China Banking Association, January 2009)
- Guide on Sustainable Overseas Forests Management and Utilization by Chinese Enterprises (State Forestry Administration & MOFCOM, 2009)
- Notice of the China Banking Regulatory Commission on Issuing the Guidance on Commercial Banks' Management of Reputational Risks (CBRC, August 2009)
- Regulations on Safety Management of Overseas Chinese-funded Enterprises and their Employees (August, 2010)
- ExIm Bank Environmental Assessment Framework (ExIm Bank, January 2011)
- ExIm Bank Resettlement Policy Framework (ExIm Bank, January 2011)
- MOFCOM Opinions on Corporate Culture Construction in Chinese Enterprises Overseas (May 2012)
- Green Credit Guidelines (CBRC, 2012)
- Guidelines for Environmental Protection in Foreign Investment and Cooperation (MOFCOM, Ministry of Environmental Protection, February 2013)
- Regulations of Behavior in Competition Abroad in the Area of International Investment and Cooperation (MOFCOM, March 2013)

Source: IISD 2013; Sauvant and Chen 2014

What these all have in common is the idea that OFDI should respect local customs and interests, and earn what has been dubbed a "social license", or an informal contract between OFDI firms and local stakeholders.

To cite a Chinese instrument: "Outward investment cooperation enterprises shall require their overseas Chinese-funded enterprises and institutions to seriously fulfill their social responsibilities, perform well in environmental protection, creating local jobs, and active participation in public welfare undertakings so as to create a good external environment for its outward investment and cooperation activities" (Chapter 3, Article 9 of Regulations of Safety Management of Overseas Chinese-funded Enterprises and their Employees, August 2010). In essence, this represents a move from purely considering the *quantity* of OFDI to considering the *quality* as well (Zhang 2014). MOFCOM itself, in responding to the rhetorical question it poses itself as to what should be its future focus, given that it is no longer approving the vast majority of OFDI project, identifies regulation of OFDI and promotion of these social issues: "efforts should be made to urge enterprises to abide by domestic and overseas laws and regulations, respect local customs, fulfill social responsibilities, do a good job in such areas as environment and labor protection, staff training and the construction of enterprise culture, promote the integration with local areas…" (MOFCOM 2014).

There is some criticism that these measures to support good business practices in OFDI do not have teeth and are simply indicative. It remains to see to what degree the Chinese government may, in the future, strengthen the punitive dimension if CSR, environmental, and other social measures are not abided in OFDI. However, given the proliferation of these measures, it seems likely that

China is trying to use these instruments to counter a possible backlash against Chinese OFDI from host countries that historically perceive the Chinese model as insensitive to local interests. This backlash could increase the economic and political cost of Chinese OFDI, and therefore these measures are a rational response to trying to lower or prevent such cost increase.

Chinese OFDI is, in essence, responding to several forces: on the one hand, it is learning from past mistakes of its internationalizing firms (as well as the mistakes of those of other countries). It is also adapting its strategy to more sophisticated markets, given that the regulatory and social context, and thus operating principles, are more sophisticated and constraining in developed versus developing markets. Finally, Chinese OFDI is trying to overcome the double challenge of "liability of foreignness" (the lack of cultural anchors and the initial skepticism in new markets), and "liability of the home country" (the negative reputation that now accompanies Chinese OFDI has carrying less about social, environment, and rights-based issues and not investing in the local community for the long term) (Sauvant and Davies 2010: 3). Efforts to implement a "corporate social responsibility" phase in outward investment is aimed at improving the Chinese brand of OFDI. Convincing host economies that Chinese OFDI both follows the patterns of good global citizenship and contributes positively to local communities will help obviate resistance and lower political, economic, and social transaction costs.

… in response to political economy concerns

This is especially important given that political economy resistance to Chinese OFDI has been growing, especially in advanced markets. Policymakers from a number of regions, from North America to Western Europe to Australasia, are concerned Chinese firms may be using OFDI to acquire knowledge and technology in strategic assets, to the detriment of host state's economic future. China has increasingly targeted high-tech and knowledge-intensive industries, using OFDI as a way to acquire hard-to-develop capacities faster and more cheaply than developing these indigenously.

In carrying out M&A OFDI, there is concern that China may at various time be a) undermining national security through acquiring technology that could be used for military purposes, such as semiconductors; b) hollowing out recently acquired firms by shifting the technology to China rather than keeping it in the advanced home market; c) using unfair means in undertaking these acquisitions, such as lack of market access reciprocity and manipulation of target firm valuation. To illustrate, President Obama in December 2016 blocked China's Fujian Grand Chip Investment Fund from acquiring the U.S. portion of Germany's Aixtron, citing that it posed a national security risk relating to "military applications of the overall technical body of knowledge and experience of Aixtron" (NYT, 02/12/2016).

The United States is also currently considering reforming the Committee on Foreign Investment in the United States (CFIUS) to incorporate investment reciprocity into its national security reviews of FDI, a change that would be specifically targeted at Chinese OFDI (Law360, 03/14/2017). The U.S. Congress has directed the U.S. Government Accountability Office (USGAO) to review this possible reform, amongst others. The U.S. Congress is advised on these matters by the U.S.-China Economic and Security Review Commission established by Congress in October 2000 with the legislative mandate to "monitor, investigate, and submit to Congress an annual report on the national security implications of the bilateral trade and economic relationship between the United States and the People's Republic of China, and to provide recommendations, where appropriate, to Congress for legislative and administrative action" (USCC Fact Sheet). It is composed of twelve

senior former officials, and provides an annual report. With the election of President Trump, the possibility of significant policy changes have increased.

Similar issues have emerged in Australia. In 2016, the Australian government mandated that all acquisitions of public infrastructure be subject to the Foreign Investment Review Board. In the same year, the Australia government blocked a Chinese OFDI deal to acquire the country's largest agribusiness, and a Chinese OFDI deal to acquire an electricity grid operator (Smyth 2016).

Similar issues have also emerged in Europe. Chinese firms have been accused of manipulating the share price of mid-sized Germany firms (*Mittelstand*) by placing and then cancelling large orders with the aim of depressing the German firm's share price and then acquiring the firm more cheaply. Even though the *Mittelstand* enjoy cutting-edge technology (and are credited with driving Germany's economic success), their relatively smaller size makes them more prone to takeover by Chinese OFDI. The quintessential example in Germany is Chinese firm Midea's recent acquisition of German firm Kuka, which makes many of the automated robotic arms in factory assembly. This acquisition elevated national awareness and political discussion of China's M&A OFDI; interestingly, after initial political resistance the deal went through. The quintessential example in the UK is Chinese investment in the Hinkley Point C nuclear reactor; once again, after initial political questioning and review by the new Prime Minister Theresa May, the deal went through.

In general European policymakers are increasingly concerned that Chinese firms may be using OFDI in Europe to acquire knowledge and technology in strategic assets, to the detriment of Europe's future. Chinese OFDI flows have been growing to record levels, with the country becoming a net exporter of FDI in 2015 for the first time, representing the second highest FDI flows in the world (after the United States). The Chinese Premier announced that between 2015 and 2020 the country expected to undertake one trillion dollars worth of OFDI. Strikingly, during the first half of 2016, China invested more in Europe than in the previous three years combined. In its European acquisitions, China has increasingly targeted high-tech and knowledge-intensive industries, using OFDI as a way to acquire hard-to-develop capacities faster and more cheaply than developing these indigenously. However, there is increasing concern in Europe that China may be using unfair means in undertaking these acquisitions, such as lack of market access reciprocity and manipulation of target firm valuation.

As a result of these concerns, in February 2017 Germany, France, and Italy presented the European Commission a common position on screening foreign investments, implicitly targeted at Chinese OFDI, building on the U.S. CFIUS approach. Some suggestions for addressing these political economy tensions through governance reforms are considered below (see chapter ten).

A new phase begins?

Finally, Chinese policy on outward investment has taken a very recent turn in December 2016, becoming more restrictive. Chinese officials have begun to worry about the exodus of capital through OFDI, and increased restrictions to slow down the flow. In announcing the change in policy, officials explicitly indicated that Chinese OFDI was flowing to areas and activities not aligned with national priorities, such as cinema studies or football clubs. The head of the Chinese central bank was quoted as saying, "Some [OFDI deals] are not in line with our requirements and policies for overseas investment, such as in sports, entertainment and clubs. This didn't bring much benefit to China and caused some complaints overseas." (Washington Trade Daily, 13/03/2017).

It is too soon to tell how this will be implemented in practice, but analysts believe it will likely mean examining and approving authorities will consider the source of the investment funds, the qualification of the investment entities, and the quality of the intended target assets. Regulators may also require more information on the investment objectives, expected returns, and rationale of the investment (Lexology, 15/12/2016). In addition, overseas investment administrative authorities announced they would scrutinize four types of investment projects and five different industries. In terms of projects, these include: a) large investments in non-core business activities; b) outbound investments made by limited partnerships; c) investments in targets with asset values higher than the Chinese acquirer; d) projects with very short investment periods. In terms of industries, these include: real estate, hotels, movie theaters, entertainment, and sports clubs (Ibid.).

This very recent tightening of policy with respect to destinations of Chinese OFDI has opened an interesting new chapter in the story. Similarly to the changes in 2014 that added a quality dimension to the *way* that Chinese OFDI was carried out, Chinese policy seems to be adding a quality dimension to the *sectors* to which Chinese OFDI is targeted. It is no longer simply a story of the more the better, but rather that the target destination needs to be aligned with national strategic priorities.

D. Theoretical framework to explain OFDI regulatory reform

After having presented some of the main changes in the evolution of the Chinese OFDI regulatory framework, it is natural to wonder why this is happening.

In China, compared to many other emerging economies, the state plays a very important role in creating the rules of the road and the economic incentives for outward investment. At the same time, until very recently, the majority of OFDI was from SOEs, which will be more likely to reflect institutional dimensions than the actions of purely profit-oriented private firms (Amighini et al. 2013). When considering OFDI, both policy and trends, Chinese state institutions therefore play a key role, and institutional theory is a good starting point for analyzing the process of OFDI regulatory reform.[71]

But how to explain evolution over time, both of OFDI policy and the institutions themselves? We have seen policy and institutional change through the four stages examined above (see chapter seven, section C 'OFDI regulatory framework'). Through what precise mechanisms can this be explained?

There is perhaps no society more pragmatic than China. Generally, the Chinese approach is to gradually and incrementally adopt changes that better suit objectives, especially if conditions evolve. Sauvant and Chen presciently predict, writing in February 2014, many of the regulatory changes that were to take place in October 2014:

[71] The choice of theoretical approach is based on the dynamics observed, through field work, primary material, and secondary material. However, it is interesting to note that other scholars have also chosen this theoretical approach when examining Chinese OFDI. Quer et al. (2015) reviewed empirical research on Chinese OFDI published in 22 of the top journals between 2002 and 2014. Of the 112 total papers in the sample, almost half (51) used institutional theory. The next highest theoretical framework was used in about one fifth of papers (24), namely Resource-based view/Organizational capabilities perspective. After that the incidence of other theoretical frameworks employed dropped even more.

> As Chinese OFDI continues to rise, more firms are becoming outward investors and more foreign affiliates will be established. In turn, a growing number of these are likely to establish a rising number of their own affiliates abroad. This context means that it may simply become impossible to meaningfully review and approve each OFDI project – the creation of a huge bureaucracy would be required to undertake this task, otherwise the approval system would simply collapse under its own weight (Bath 2011). In fact, even now it appears that a number of firms (especially SMEs) invest abroad without formal approval, i.e., they manage to elude the approval process altogether. This diminishes the ability of the government to direct FDI into the areas that it considers a priority. The implication is that sooner or later, the government will have to move to a simplified approval regime in which only the largest (or most sensitive) projects will require approval, while a simple registration process would suffice for the great majority of OFDI projects (Sauvant and Chen 2014: 13).

This is indeed what happened. But this does not provide a theoretical model for how such institutional change takes place over time. The assertion here is that the scale of growing OFDI made it simply untenable to continue to regulate it in the same way. The previous system was becoming unwieldy given the spike in OFDI and the need to facilitate these outflows for continued growth as the economy matured. But I propose a different analytical lens to possibly explain the liberalization tendencies in the OFDI regulatory framework. I propose to use Douglass C. North and his work on institutional change as a basis. This work later inspired two scholars in the mid-2000s to study Chinese institutional change that I think can provide explanatory power for the phenomenon of OFDI regulatory reform.

North (1990) sets forth an explanation as to institutional change. In his view, institutional change needs to be understood in the context of continuous interaction between institutions and organizations in the economic setting of scarcity. Such competition forces organizations to continually invest in skills and knowledge to survive. The kinds of skills and knowledge individuals and their organizations acquire will shape evolving perceptions about opportunities and hence choices that will incrementally alter institutions. I believe this process is what we have seen at work in Chinese evolving OFDI regulatory framework. The OFDI regulatory framework is the institution in North's setup. Chinese firms, initially mostly State-owned enterprises (SOEs) but now increasingly privately owned enterprises (POEs), are the organizations. They have been developing skills and knowledge related to OFDI as a result of the "Going Out" policy. This experience has then, in turn shaped their perception and behavior, which has helped to change the institutions over time.

In China's case, where the relationship between economic and political actors are very close, it is quite easy to envisage how senior SOE and POE executives, having been implementing the Going Out strategy, should help to formulate the evolving liberalization of the OFDI regulatory regime in conversations and interactions with senior government officials. Indeed, there is even a natural mechanism for this kind of interaction in the form of the Communist Party, which brings together senior officials in both the political and economic sectors (for a discussion of the relationship between Party membership and private firm performance, see Li et al. 2008). North argues that this kind of institutional change, given economies of scope, complementarities, and network externalities, make institutional change overwhelmingly incremental and path dependent. I believe this is what we are witnessing in the case of OFDI regulatory reform in China.

Three scholars have applied this kind of thinking to other areas, but whose contribution can be leveraged to help explain evolving Chinese outward investment economic policy. To begin, Robert Wade published his seminal 1990 book *Governing the Market,* followed by a 2005 article entitled "Bringing the state back in: lessons from East Asia's development experience." A year later, Kellee Tsai published a 2006 article entitled, "Adaptive Informal Institutions and Endogenous Institutional Change in China." Shortly after that, Sebastian Heilmann published a 2008 article entitled "Policy experimentation in China's Economic Rise". I find their arguments very interesting

and compelling. They do not apply their ideas to Chinese OFDI policy reform, but I believe that the theoretical arguments and insights they provide in other contexts can be combined to provide a new theoretical framework that can help answer our research questions. I shall first briefly outline their contributions, and then explain how this new theoretical framework can help explain China's OFDI policy path.

Mechanism 1 for understanding OFDI reform: governing (or nudging) the market

Wade (1990/2004) analyzes the success of East Asian economic growth in his seminal book entitled 'Governing the Market', arguing that states can constrain and accelerate competitive dynamics to guide economic development through industrial policy. Wade applies his analysis to six East Asian economies: Taiwan, China; the Republic of Korea; Japan; Hong Kong, China; and Singapore, delving into greater detail with the first two cases. In essence, these states adopted a political economy that 'governed' the market rather than leaving economic outcomes to laissez-faire, 'free'[72] market forces. Wade describes as 'authoritarian' and 'corporatist' the organization of the state and private sector in these economies. The governed market approach posits that these regimes used a number of active policies to further their industrial development. These included land reform, control of credit, macroeconomic stability, directing investment, assisting specific industries, moderating the impact of foreign competition, export promotion, and an emphasis on developing technology. States were able to do so by being 'hard' in that they resisted the pressures and demands of private sector interests. In particular, Wade suggests that the evidence for this approach can be seen across a few dimensions, including: a) the existence of effective policy instruments to govern the market; b) the existence of an institutional framework to manage the instruments; and c) the existence of national goal setting that guides the use of these instruments by the institutions. I posit that this argument and this evidence applies to China and its investment policy path, both IFDI and OFDI.

Wade (1990/2004) calls this form of industrial policy 'below-the-radar' or 'low-powered' industrial policy, one that guides firms to behave a certain way through

> "'nudging'[73] foreign firms to switch supplies from imports to domestic producers, or nudging established industries quickly to provide markets for firms in innovative industries, hence accelerating the rate of innovation… The nudging policies have been sectoral, not 'horizontal' or 'across the board'; but they have been going on across swathes of industrial sectors. They involve a mix of methods… This kind of low-powered industrial policy, whose scale can be cut according to the cloth, is much more implementable in a wider range of state capacities than the big-scale "make them winners" kind.[74]

In this passage, Wade is talking about the actions Taiwanese Industrial Development Bureau officials. However, he could equally well be talking about Chinese officials from the former Ministry of Foreign Trade and Economic Co-operation (MOFTEC), now renamed the Ministry of Commerce (MOFCOM) (see chapter six and chapter seven, especially section C 'OFDI regulatory framework').

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[72] I place 'free' in single quotations as it seems unlikely that a perfectly free market exists in the real world, given market failures, market concentration, etc.

[73] Just a few weeks before this dissertation was formally defended in 2017, Richard Thaler won the Nobel Prize in economics for his work on Nudge Theory. The use of the very same term by Wade in the context of governing the market is remarkable.

[74] Wade (1990/2004): xxii.

In his later writings, Wade even presciently hints at the role that OFDI policy can play, in addition to IFDI policy, as states govern the market: "It is important for industrial policy strategists not to think only of inward-FDI, but also of *outward-FDI* as a strategy – using banks awash with funds to make mergers and acquisitions and perhaps green-field investments in core economies… Taiwan and other East Asian cases show how the government can help to orchestrate these outward-investments in line with national interest"[75] (emphasis added).

Another way to think about the role of the state in governing the market is through situating different behavior according to a typology of state control over industry, as showcased in the matrix below (figure 33).

Figure 33: Typology of state control over industry

Type of State Control	Goals	Government-Business Relations	Methods
Expansionary	Deliberate orientation	Enhances central control	Emphasis on reregulation: new and reformulated rules increase central discretion
Strategic	**Deliberate orientation**	**Enhances central control**	**Emphasis on liberalization: rules increase central discretion and achieve sector-specific goals**
Delegated	Mixed orientation	Mixed outcome	Emphasis on reregulation: rules delegate regulatory enforcement to lower levels of government
Decentralized	Incidental orientation	Undermines central control	Emphasis on liberalization and deregulation: rules relinquish rulemaking and enforcement to local governments

Source: Hsueh (2011): 23

How does this thinking and how do these mechanisms apply to China, and what is the evidence? China has used investment policy strategically in a deliberate orientation that enhances state control through a combination of liberalization, protection, and support – in various permutations –

[75] Wade (2005): 115.

depending on the sector and the sector's evolving capacity. We can see this with its gradual opening to IFDI, and its gradual relaxation of OFDI. We can also see this in directing IFDI and OFDI to specific sectors, as discussed below in its various strategy documents, especially the Made in China 2025 plan.

The three tests of whether an authoritarian and corporatist state is governing the market are also met: China has state institutions to guide investment policy; these institutions have a number of instruments that they use to do so; and the overall strategic direction as to how these institutions should use these instruments is clearly articulated through national goal setting. See chapter six and chapter seven, section C 'OFDI regulatory framework' for a detailed discussion of the instruments and institutions.

In terms of clearly articulate national goal setting, in 2004 the National Development and Reform Commission (NDRC) and the Export-Import Bank of China (EIBC) jointly issued a circular to encourage overseas investment in specific areas: "(1) resource exploration projects to mitigate the domestic shortage of natural resources; (2) projects that promote the export of domestic technologies, products, equipment and labor; (3) overseas R&D [research and development] centers to utilize internationally advanced technologies, managerial skills and professionals; and (4) [mergers and acquisitions] that could enhance the international competitiveness of Chinese enterprises and accelerate their entry into foreign markets."

More recently, in 2015 China released a new strategic document for investment policy through its Made China 2025 plan. This document lays out both an inward and an outward FDI strategy, which shows the bridge in the mind of the Chinese, and that the two are connected; otherwise it would make much more sense to have a separate inward FDI strategy and a separate outward FDI strategy. But China has issued *one* strategic document.[76] Made in China 2025 identifies nine strategic tasks[77] and ten key sectors[78] to be advanced through investment policy. The state has thus provided a roadmap for institutional actors to align their instruments behind strategic tasks and key sectors. For these priorities, the state has assumed an active, deliberate orientation. For sectors that are less important to its strategic goals, it is happy to delegate or decentralize control (see figure 33).

Mechanism 2 for understanding OFDI reform: adaptive informal institutions

Tsai (2006) presents an argument for how "adaptive informal institutions can serve a vital intermediate role in explaining the process of endogenous institutional change," especially in a country like China where one would intuitively think that the autocratic system would not countenance incremental and organic change, but would require upheaval for significant reform (Tsai 2006: 117). Tsai defines adaptive informal institutions as creative responses to formal institutional environments that actors find too constraining. If adaptive informal institutions are

[76] The connection between IFDI and OFDI will be examined empirically in detail in chapter eight, using both quantitative and qualitative evidence, but already the fact that the strategy document covers both is quite telling.

[77] Improve manufacturing innovation; Foster Chinese brands; Enforce green manufacturing; Promote breakthroughs in key sectors; Restructure manufacturing industry; Promote service-oriented manufacturing and manufacturing related services industries; Strengthen industrial base; Deeply integrate informatization and industrialization; Internationalize manufacturing

[78] New information technology; Aerospace and aviation equipment; Energy saving and new energy vehicles; Medicine and high performance medical devices; New materials; Oceaneering equipment and high-tech ships; High-end numerical control tools and robotics; Advanced railway equipment; Power equipment; and Agricultural machinery.

sufficiently adopted, these may in turn both motivate and facilitate political elites to undertake reform. The adaptation provides demonstration effects of the alternative approaches, which are then formally legitimized after they have already been informally tolerated. I believe that this kind of phenomenon may be one of the factors that has undergirded OFDI regulatory reform.

Tsai writes that "the accumulation of informal interactions between local state and economic actors provided both the impetus and the legitimizing basis for these key reforms… Ultimately, both the designers and enforcers of China's formal institutions have proven to be flexible, and even responsive, to the actors driving the country's economic growth—private entrepreneurs" (Tsai 2006: 118). She argues that in reform-era China, there were certain conditions that were conducive to the emergence of adaptive informal institutions: different formal institutions with the same overlapping mandate, bureaucratic decentralization, and alignment of local state and non-state actor interests (Tsai 2006: 140). In the case of OFDI regulatory reform, several of these hold. There were different institutions with authority, from the NDRC to MOFCOM to provincial departments of commerce; there was increasing decentralization of decision-making and authority to the provinces; and local actors had an incentive to boost economic growth at all costs (since both career advancement and political stability were closely linked to economic performance). This incentive was aligned with entrepreneurial desire to expand OFDI.

Tsai applies this argument to the dynamics of private sector development in China since the late 1970s, but I think it can equally be applied to OFDI policy reform from 2004 to 2014. There are several sources of evidence to support this claim.

The first is that, as we saw above, there is evidence that some POEs are simply undertaking OFDI without going through the formal system: "even now, it appears that a number of firms (especially SMEs) invest abroad without formal approval, i.e. they manage to elude the approval process altogether" (Sauvant and Chen 2014). This is an example of what Tsai has described as the informal coping strategies devised by local actors to evade the restrictions of formal institutions. In this case, Chinese firms were evading the formal OFDI approval process, and perhaps brought about the realization on the part of the Chinese government that the system had to be reformed as it was not working; or in other words, endogenous institutional change took place in OFDI reform. Very briefly, to preview one of the case studies below, it is striking that Geely made cars for about 3 years (1998 to 2001) without having an automobile manufacturing license, only another kind of license. The state saw that it was making an economic contribution, and only then gave its activities industrial sanction (see chapter eight, section J, case study 1).

The second source of evidence is that different provincial and local government officials compete with each other to attract FDI by testing the limits of the guidance provided by the central government, and sometimes crossing those boundaries (Phelps and Raines 2003). For instance, these officials might provide more incentives to foreign investors in the hopes to lure them. Comparing the three provinces of Shenzhen, Xiamen, and Dalian, for example, one study found that these provinces competed with each other to attract FDI (Oman 2000). Such competition took place through tax incentives, land concessions, infrastructure, human capital resources, or national treatment (similar market access as to Chinese firms). I propose to extend this clear example of IFDI related adaptive information institutions to OFDI as well. If provinces are able to compete with each other and bend the rules for IFDI, it seems highly likely that they could do the same when competing to generate OFDI if this last is also an objective of the state.

The third source of evidence is the role of interactions between the private sector and the public sector in driving economic reforms. I posit that firm interests – whether SOEs or POEs – have been mobilizing for greater liberalization of OFDI policy. For instance, the All-China Federation

of Industry and Commerce (established in 1953 under the leadership of the Communist Party of China), plays an important role in bringing together leading actors and in articulating industry positions. Anecdotal evidence of industry 'lobbying' is provided by Sauvant and Chen when they identify senior industry leaders recommendations to senior government officials:

> [There is] pressure on government by firms that seek to internationalize in response to domestic and international competition. Formal fora in which firms can make themselves heard and exercise pressure on government policies include the National People's Congress (NPC) and the Chinese People's Political Consultative Conference (CPCCC). For instance, during the 2013 NPC and CPCCC sessions, a Senior Vice President of Midea Group called for more reform and policy innovation to provide broader support (e.g., finance, technology, fiscal policy, human resource development) for Chinese companies going abroad ('Outward FDI chapter' 2013). Other major representatives of the business elite such as Dongsheng Li, President of TCL, and Shufu Li, President of Zhejiang Geely Group, also encouraged the government to liberalize its OFDI review process and provide more resources and information to support OFDI ('Outward FDI chapter' 2013). Deming Chen, the Minister of Commerce at the time, responded that China's approval process has thus far focused only on the direction and amount of OFDI, but would inevitably become less cumbersome (Sauvant and Chen 2014: 2).

Evidence shows that private entrepreneurs are increasingly important regarding OFDI. Though initially dominated by SOEs, POEs are becoming more and more significant in the OFDI landscape both in terms of the number of actors and the size of their investments (Lardy 2014).

Mechanism 3 for understanding OFDI reform: transformative policy experimentation

A complementary analytical lens is offered by Heilmann (2008), who argues that China embraces 'transformative policy experimentation' as a distinct mode of governance. In his view, policy experimentation is the key to understanding the emergence of an unexpectedly adaptive authoritarianism in China (Heilmann 2008: 2-3). Policy experimentation is used by the Chinese polity to produce and test novel policy options, thereby minimizing the risk, resistance, and cost of policy reform. If the experiment goes well, the reform is expanded and replicated; if not, it is abandoned.

In China's case, experimentation comes in three main forms: (1) experimental regulations, (2) experimental points (e.g. demonstration or pilot projects), and (3) experimental zones (e.g. local jurisdictions with discretionary powers) (Heilmann 2008). To substantiate his claim, Heilmann examines regulations dealing with the economy during the first two decades of China's economic reforms (1980-2000); during this period, well above 30% of the total were marked in their titles as provisional or experimental or as regulating experimental points and zones Heilmann 2008: 5-6). This is a striking statistic. Western democratic states are used to *de jure* reforms being implemented and then evaluated; China reverses this logic. It tests different approaches before *de jure* changes are made, thereby informing the very form and content of the *de jure* reforms. This approach seems highly reasonable – a policy application of the old Chinese adage that one should cross the stream by feeling for the rocks. As Heilmann writes:

> Experimentation prepared the ground for major policy breakthroughs by unspectacularly furthering dispersed institutional and policy changes, initiating learning processes and ideological reorientation among policymakers, undermining entrenched interests, and providing test runs for innovative administrative and business practices. Experimentation over time fundamentally transformed the economic policy context for local and central decision-makers (Heilmann 2008:22)

Though Heilmann does not apply this argument to OFDI regulatory reform *per se*, I think it serves quite well to explain this phenomenon. Many of the 81 regulatory reforms examined in this chapter

have taken the form of pilot projects or interim measures that were tested before being finally adopted. And by showing the positive effect for Chinese economic development of liberalization of both inward and outward investment flows, this served to weaken any ideological resistance that might have initially impeded OFDI regulatory reform. Over time, the demonstration effect and the learning by doing through pilot projects allowed national OFDI regulatory reform to take place.

Evidence for transformative policy experimentation in the formulation of Chinese investment policy was recently showcased at the highest levels: During the last National People's Congress, Premier Li stated, "Local governments can, within the scope of the powers granted by law, adopt preferential policies to attract foreign investment. China's door is going to keep on opening wider, and China will keep working to be the most attractive destination for foreign investment."[79] Commentators opined that this "gives the green light to local governments to try special incentives, such as those in the Shanghai Free Trade Zone, to attract foreign companies." If these experimental approaches work, it is highly likely the state will then support and adopt them more widely.

Theoretical framework contribution

Bringing these three different mechanisms together, I believe that one can develop a theoretical framework to help explain OFDI policy reform. In essence, the state has played a dominant role, governing the market and guiding it according to its strategic plan. This plan has been incremental in nature, cautious and based on empirical experience, as the state has tested different investment policy choices through experimentation. Those policy choices that proved to be the most effective at helping to achieve strategic objectives have been adopted and expanded. In this way, we see that China opened gradually to IFDI and lifted restrictions gradually on OFDI, increasing ceilings and sectors over time.

At the same time, the state is not monolithic, and there are various different agencies and views at play within the central and state governments. There has thus been an iterative process of discovery of these policies tested through experimentation. I suggest that these policy choices have been identified through informal institutions operating side by side with formal institutions. In such a large country as China, it is impossible for institutions to operate according to one strict model – some institutions in some places allow relatively more (inward and outward) investment and a relatively more active private sector. Competition between investors and other market actors helped shape a dynamic economic context within the larger policy framework. This dynamic economic context showed that internal competition (brought about by FDI) and external engagement (brought about by OFDI) led to better results in terms of achieving China's strategic goals. As a result, the informal behavior of various economic actors, tolerated but initially not fully sanctioned by the state, helped shape the country's investment policy.

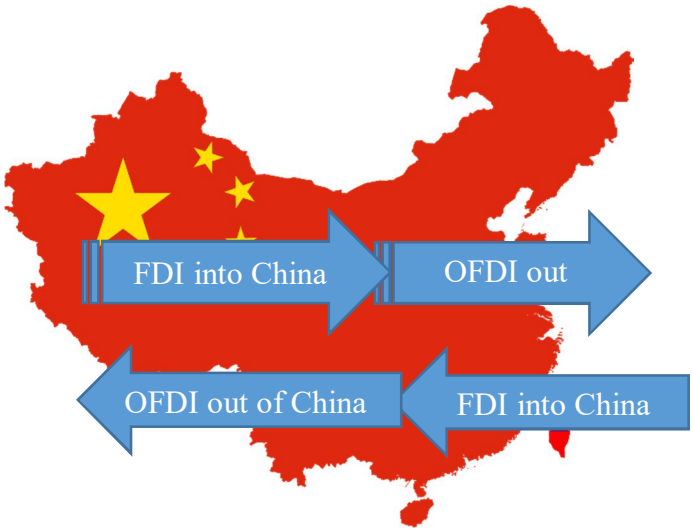
In essence, top-down strategic planning and bottom-up economic activity met in the middle to shape an evolving OFDI policy path.

[79] Dasgupta, Saibal and Joyce Huang, "China Taking Political Risks for Economic Reforms, Foreign Investments" 6 March 2017, VOA, Published: https://www.voanews.com/a/china-economic-reforms-foreign-investments/3751213.html

E. Conclusion

The Chinese approach to regulatory reform is incremental and cautious. Reforms are tested and evaluated before being rolled out more widely. Chinese OFDI regulatory reform, however, has liberalized quite dramatically between 2004 and 2014. Whereas before there were pre-OFDI certificates to be procured, and post-OFDI inspections to satisfy, now all OFDI except in a few sensitive areas require only administrative filing rather than approval. China first incrementally increased the threshold below which approval was necessary. It even increased the threshold to $1 billion for a short time before doing away with that requirement as well. In this respect, OFDI reform is an interesting case study, as it has come along so far so quickly. This chapter has tried to first lay out the evolution over time, and then to provide some theories that might explain why and how this has happened. However, it is noteworthy that there is still a filing system in place, and that there is still some discretion by the State regarding OFDI that might be considered sensitive. China is still reluctant to fully give up its potential regulatory levers. Finally, given that many of the previous policy recommendations to reform the regulatory framework laid out by scholars have recently been adopted (NB Davies 2013), it will be interesting to see over the next few years the implication for Chinese firms and for their international investment decisions. In particular, an important area of future scholarship will be the increasing role of corporate social responsibility in Chinese OFDI. The growing political scrutiny by advanced economies of Chinese OFDI, and the recent decision in early 2017 by the Chinese government to focus on a more quality rather than quantity approach to OFDI, together open a new chapter in the future analysis of this phenomenon.

8. The relationship between inward and outward investment flows: a novel contribution to explain Chinese OFDI (3/3 of the argument)



This chapter seeks to examine whether there is a relationship between the record levels of FDI that China has received over the last several decades and the recent spike in OFDI over the last decade. As China is both one of the biggest recipients and sources of FDI, it is an ideal candidate to investigate this relationship. The possibility of such a relationship is not orthogonal to the role of determinants discussed earlier, but complementary. There is a lot of debate in the literature about economic effects to FDI, both regarding the actual mechanisms and the efficacy of those mechanisms. There has also been quite a bit of scholarship on the determinants of Chinese OFDI. This chapter seeks to contribute to the research through bridging these two channels of enquiry. The chapter uses input-output analysis to examine whether one can establish a relationship between the sectors that have received FDI and the sectors that are now producing OFDI. In essence, are the sectors and industries that received the highest levels of FDI economically connected to the sectors that produced the highest levels of OFDI? These connections could be in the form of being in the same economic activity, or related economic activities, such as through a value chain-type relationship. It is also important to consider a potential lagged effect, as the effects of these linkages can take time to develop (e.g. learning effects).

If established, the relationship between FDI and OFDI has important governance implications, given that it could argue for policies that encourage FDI into sectors and industries that then lead to developing capacity for generating OFDI. This could then be seen as an important component of a country's economic development strategy.

This research question and analytical approach, which was developed in 2013 and presented in January 2014 in the Preliminary Thesis Dissertation, have been vindicated by two very recent pieces of scholarship, one in 2016 and one in 2017, which find a strong and positive relationship between inward FDI and outward FDI in China on a country-to-country level and within one specific sector. The contribution of this chapter remains original, however, as it uses input-output analysis to consider a sector-to-sector level for the first time, and thus provides a complimentary contribution to the burgeoning literature that investigates this important policy and development issue.

This chapter is structured in ten sections: section A introduces; section B explains the input-output model and analysis; section C presents some challenges and caveats to using this model; section D

argues why this model is relevant in China's case; section E presents the hypothesis being tested; section F reviews existing literature regarding the relationship between FDI and OFDI; section G describes the data used in this research; section H lays out the methodology; section I presents the results; section J concludes and considers the potential utility of this line of enquiry for governance and national development strategies in other countries.

A. Introduction

In the last few years, while China has continued to receive record levels of inward FDI, it has also generated record levels of OFDI. Before 2004 the size of Chinese OFDI was trivial. From 2004, however, OFDI grew significantly, alongside a dramatic expansion of China's current account surplus (Zhang and Daly 2011). Its OFDI grew at a compound annual growth rate of 16% between 2003 and 2015. In 2014, China had the second highest OFDI flows in the world after the United States (USD 337 billion vs USD 143 billion) (UNCTAD 2015a). However, Hong Kong, China was also not far behind, with USD 116 billion.

As a result of these numbers, in 2015 OFDI out of China overtook FDI into China for the first time (USD 143 billion vs. USD 129 billion). With economic weakness in many international markets since the 2009 financial crisis, cash-rich China has enjoyed a window of opportunity to expand and acquire assets overseas. As of 2014, Chinese investors had established over 25,000 overseas enterprises in 184 countries and regions (MOFCOM 2014). Chinese OFDI is expected to continue to grow in the double digits for the foreseeable future.

These impressive facts are quite clear and uncontested, and are regularly updated by the Chinese Ministry of Commerce (MOFCOM) and the UN Conference on Trade and Development (UNCTAD). The determinants of FDI into China have been thoroughly researched. What is less clear, however, are the factors driving the boom in Chinese OFDI. Very recently, scholars have used new and original data sources to identify the main determinants of Chinese OFDI in the European market (Amighini, Rabellotti and Sanfilippo 2013) (see chapter two). What is unclear, however, is the relationship between FDI into China and OFDI out of China. There is a lacuna in the research agenda, and in our collective body of knowledge.

The scant work on the question of whether FDI and OFDI are connected is examined in section F. Intuitively it seems reasonable that investment flows coming into a country bring with them knowledge, resources, linkages, etc. that engenders structural transformation that creates capacity for outward investment. Myriad transmission mechanisms between FDI flows and OFDI flows have been suggested. But there is a big void in applying this line of enquiry in the Chinese context. In particular, only a couple of recent papers have offered data to examine the relationship between FDI and OFDI, and whether these are connected; and these have not yet looked at sector-to-sector relationships.

This sectoral dimension is the novel theoretical and empirical contribution of this chapter. For the first time, the rather dusty input-output model and its commensurate analysis are applied to analyzing investment flows in China. The aim is to see whether one can establish a quantifiable relationship between the sectors that have received FDI and those sectors that are now producing OFDI. In other words, are the sectors that received the highest levels of FDI economically connected to the sectors that produced the highest levels of OFDI? These connections could be in the form of being in the same economic activity, or related economic activities, such as through a value chain-type relationship. The null hypothesis that I am setting out to disprove is that there

is no relationship between FDI and OFDI flows; or in other words, this chapter aims to provide quantitative evidence for the theory that there is such a relationship.

B. What is the input-output model?

The input-output model is a way to describe how industries within an economy are related to one another, or how one economy is related to another economy. This relationship is one of inputs and outputs: a) how much of a particular industry's output goes as input into other industries' production functions; b) how much of these other industries' outputs go as inputs into the particular industry's production function; and c) how much of a particular industry's output goes as input into its own production function. These input-output relationships can either be expressed as a currency value or as a ratio, in which case they are represented as technical coefficients. The key element that explains these input-output production relationships is technology. According to the model, it is technological evolution that explains the changes in the value of the inputs that flow out of certain industries and into other industries.

To capture these relationships, Wassily Leontieff created the input-output matrix, and was rewarded the Nobel Prize in economics in 1973 for this contribution. To wit, an economy is divided into a certain number of different industries. The number of divisions can vary, depending on the level that is either desired or possible given data availability. Each industry will have a row entry and a column entry in the matrix. As a result, for each pair of industries A and B, there will be entries that describe the input of industry A into the production of B and the input of industry B into production of A. In addition, there will be an entry for the input of industry A into the production of A, and the input of industry B into the production of B. The reason is that to produce something, one often needs inputs of that something in the production process. For instance, to produce steel sheets, one needs steel tools.

As mentioned above, the key element that determines technical coefficients in the matrix is technology. Changes in technical coefficients over time will therefore reflect changing relationship between industries brought about my technological change. Another way of thinking of technological change is economic transformation. Some industries become more efficient, or more central to an economy, playing a bigger role as inputs into other industries, with concomitant increases in the value of their technical coefficients. For instance, computer equipment with the advent of information technology, or transportation mining equipment if new oil deposits are found. Conversely, some industries become relatively less important to an economy, with concomitant falls in the value of their technical coefficients. For instance, small farming equipment as an economy industrialises and urbanises.

The input-output model gained prominence in the 1950s and 1960s as countries tried to manage their national production in what has been called planned economies or a *dirigiste* approach. The idea was that with sufficient understanding of the production relationships between different industries, central planners could identify the total amount desired from each industry, and set that amount as the target. If the appropriate amount was identified, targeted, and then produced, then all the input-output relationships would work smoothly, and the total desired production of each good and service in the economy would be reached. This is, of course, a monumentally difficult task, and as economies become more and more complex, the difficulty increases.

The Soviet Union was particularly fond of using this model. Modern economies, however, continue to use input-output analysis, so it is a widely accepted model, even if challenging in terms of data demands. Most OECD economies produce input-output tables. For instance, the United

States Department of Commerce's Bureau of Economic Analysis (BEA) has produced input-output tables from 1947 to 2014. The changing nature of the economy over time can be seen in that the model initially divided the economy into 46 industries (1947-1962), then 65 industries (1963-1996), and then 71 industries (1997-2014).[80] It is worth noting that the BEA produced a much more detailed division of the economy into an input-output matrix of 389 industries, but only in 2007. The data and labor demands for this level of detail are just too unwieldy to be done consistently.

The European Commission, in turn, helped fund what is known as the World Input-Output Database, which provides input-output information for forty countries (including 27 EU countries), while also providing a model for the rest of the world.[81] The idea is that this database can inform research pertinent not only intra-EU economic relationships, but also global growth that takes place across wider international borders.

The OECD even draws from national data of its members to compile a harmonised input-output table:

> "The latest set of OECD harmonised national Input-Output Tables presents matrices of inter-industrial flows of goods and services (produced domestically and imported…) in current prices (USD million), for all OECD countries and 27 non-member economies (including all G20 countries), covering the years 1995 to 2011... *The OECD IOT database is a very useful empirical tool for economic research and structural analysis at the inter- national level as it highlights inter-industrial relationships covering all sectors of the economy*" (emphasis added).[82]

C. Challenges to input-output modeling

At the same time, there are challenges to using this approach. Christ (1995) in a seminal National Bureau of Economic Review paper evaluates this model, and identifies several assumptions that must hold for the model to work.

First, data needs to be comparable, available, and manageable. The oft-cited challenge of comparing apples to apples and oranges to oranges is particularly true in the case of input-output analysis. The meaning of industry categories needs to be constant over time if longitudinal comparisons are to be valid. For instance, the definition of information technology and computer services has changed radically over time. More and more new goods and services fall into this category, such as digital streaming or cloud computing. These just did not exist when information technology and computer services were first introduced. So to compare the coefficients of an information technology or computer services industrial category from 1980 and 2010 may lead, if not to comparing apples and oranges, at least apples and apple-pears. Statisticians are very aware of this issue, and take pains to ensure as much comparability as possible over time, even as new industrial categories are added to capture an economy's evolution and increasing complexity.

At the same time, data demands are phenomenal. As a result, it takes several years for statisticians to compile the information necessary to create input-output matrixes for a particular year. In China's case, these are published about three years following the observed time period. But in other countries this time period can range from five to even seven years. This is a question of resources, and is not insuperable, but challenging. Computational challenges are correspondingly immense, as the multiplications necessary to invert the input-output matrixes increase

[80] http://www.bea.gov/industry/io_annual.htm, retrieved September 5, 2016
[81] http://www.wiod.org/new_site/home.htm, retrieved September 5, 2016
[82] http://www.oecd.org/trade/input-outputtables.htm, retrieved September 5, 2016

exponentially. As Christ states, "for a 38-by-38 inverse about 50,000 multiplications are required; for a 190-by-190, about 7,000,000; and for a 450-by-450, about 90,000,000" (Christ 1955: 145). Fortunately, modern computing means this challenge can be addressed.

Second, the input-output model requires an assumption of constant returns to scale, something that is not generally seen in the real economic world. In certain industries – such as transportation infrastructure, electricity transmission, or telecommunications services – large installations are necessary before any output is created (Christ 1955). As a result, there is no output for initial levels of input, and then suddenly, an output appears after a critical threshold is reached. This violates constant returns to scale.

Third, the input-output model requires an assumption that no substitution is possible among inputs in the production of outputs. Another way to state this assumption is that there is a unique combination of inputs for each output. However, in the real economic world, there is often substitution between different inputs depending on changes in relative cost. For instance, a factory might substitute between different types of energy sources (oil, coal, renewables) depending on the relative changes in prices of these different inputs.

The second and third assumptions are generally defended on the grounds of simplicity, and that overall these assumptions are reasonable in the big picture, even if not in certain particular instances of production. Even though substitution may take place in some instances, in most instances it is small enough to be ignored without changing the ultimate analysis. Also, statisticians can adjust technical coefficients if either of these assumptions – constant returns to scale and no substitution – are violated. Fine tuning is therefore in the remit of the modeler to take into account industry nuances and peculiarities.

One final note on the issue of the utility of this model. Its "proponents contend that it is particularly valuable in situations where in a short period of time great changes occur in the amounts of final goods and services produced, such as in wartime (Christ 1955: 159). I would contend that though there was no conflict in China over the last 30 years, the country witnessed an extraordinary period of great change in the production of goods and services during a short time. In an economy at a somewhat static state, without great transformative change, perhaps the input-output model might have a hard time identifying nuances, and technical coefficients might not precisely reflect the economic relationships at play; but in a country like China, which has witnessed some of the most dramatic economic transformation in the past century, the model will have an easier time capturing the changing industrial relationships given that these have dramatically evolved from one measurement period to the next.

D. Why input-output model is relevant in the case of China

The above description of input-output modeling makes clear that it is most suited as an analytical approach when an economy adopts a centrally planned approach to production. China is a statist economy *par excellence*. The national government has identified, since 1953, economic production priorities in its famous Five Year Plans. This kind of central planning – laying out national targets for economic industries – is congruent with input-output modeling.

China, relative to other countries, has both the manpower to collect the information, and the brainpower to process it. In addition, given its centrally planned nature, it has the systems in place for reporting and aggregating information. I therefore would suggest that, relative to many other countries, China is exceptionally well suited and equipped to successfully create and use input-

output analysis. As a result, I think that using this approach to study China's economic structure and ensuing policies is highly appropriate. On account of its capacity and governmental structure, the probability that the input-output tables created by the Chinese statistical agencies be accurate is higher than in many other economies.

This is especially true because we are not talking about absolute levels of production, but relative levels of inputs and outputs. Chinese data has been criticized for government officials having incentives to overstate production levels and GDP growth in order to receive *kudos* from the central government and increase the chances of bureaucratic advancement. But as input-output tables are not stand-alone measurements of output, but rather the pieces must fit together, it is much less likely that this analysis will suffer from data massaging and overstatement to which GDP figures might be prone.

China has in fact been producing input-output matrixes at the national level since 1987, and more recently for regional relationships as well (i.e. the input-output relationships between different regions in the country). The seriousness with which this process is taken can be gleaned from the origin of the governmental decisions to gather this information and produce these matrixes. The decision emanates from the Notice on Conducting National Input-Output Survey (No. 18, 1987), issued by General Office of the State Council, the pinnacle of government authority in the country. The State Council mandated that national input-output matrixes (called Tables in China's case) be created every five years. However, the country has also generated them for a few additional years. As a result, China has input-output tables for 1987, 1990, 1992, 1995, 1997, 2002, 2007, and 2012. The last volume was only completed in October 2015, so the information is still relatively recent. This reflects the fact that the data complexity is so challenging as to require several years following measurement for the full matrix to be created.

I have studied all of these tables in detail, and will talk about them in the methodology section. I will just mention here that the Chinese statistical authorities have taken great care to keep industrial categories as consistent as possible over time, even as new categories have been added, and existing ones at times reconfigured, to reflect changing economic structures. The need for comparability across time to use input-output tables from different years is therefore, to a large degree, met. In cases where it is not adequately met, the data cannot be used. We would be in a situation of comparing apples and oranges.

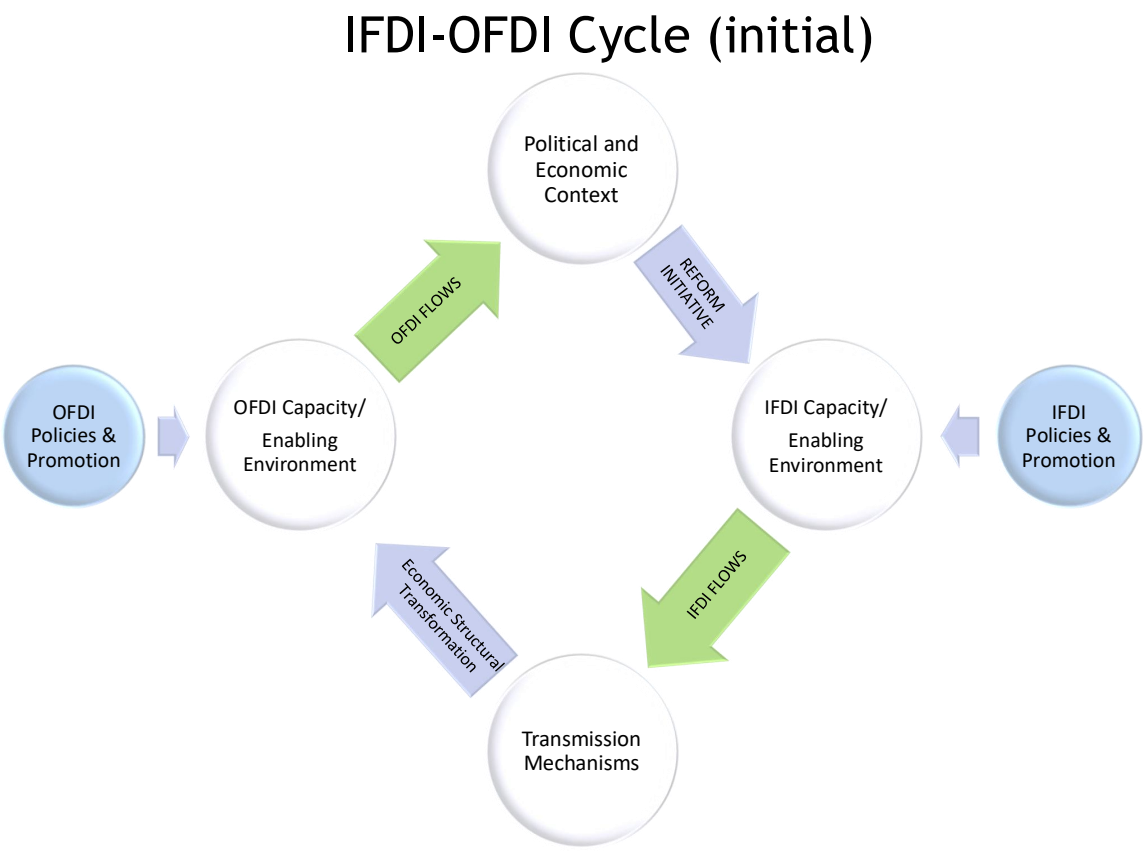
That input-output analysis is relevant and appropriate in the case of China is confirmed by the use of this analytical tool by modern academics. To cite a few examples, Pan et al. (2012) investigated inter-industry technology spillover using China's input–output tables for 1997, 2002 and 2007. Wu and Ito (2015) recently used China's input-output tables to identify inconsistencies in China's national accounts. As the authors state, "Chinese input-output tables (IOTs) provide a more detailed industrial classification, i.e. over 100 compared with less than 10 sectors available in the GDP accounts, and are available in both product-by-product and industry-by-industry tables" (Wu & Ito 2015: 2). In yet another case, a 2009 book entitled "Input-output Economics: Theory and Applications Featuring Asian Economies" has chapters on several Asian economies, including China (ten Raa 2009). The book lays out the different elements of input-output analysis, building a case for its utility.

These are just a few examples of recent academic work to corroborate the active use of this data source in analyzing China's economy. It therefore seems clear that this methodology is currently being used to analyze China's economic system. I propose to apply it in the case of China's investment flows, something that has heretofore never been done.

E. Hypothesis

The hypothesis that I propose is that the form of FDI into China (guided by state policy), produced certain mechanisms that – through domestic economic transformation – led to the capacity and the existence of OFDI out of China (supported by state policy). This hypothesis is graphically represented by the following figure.

Figure 34:



Source: Author's elaboration.

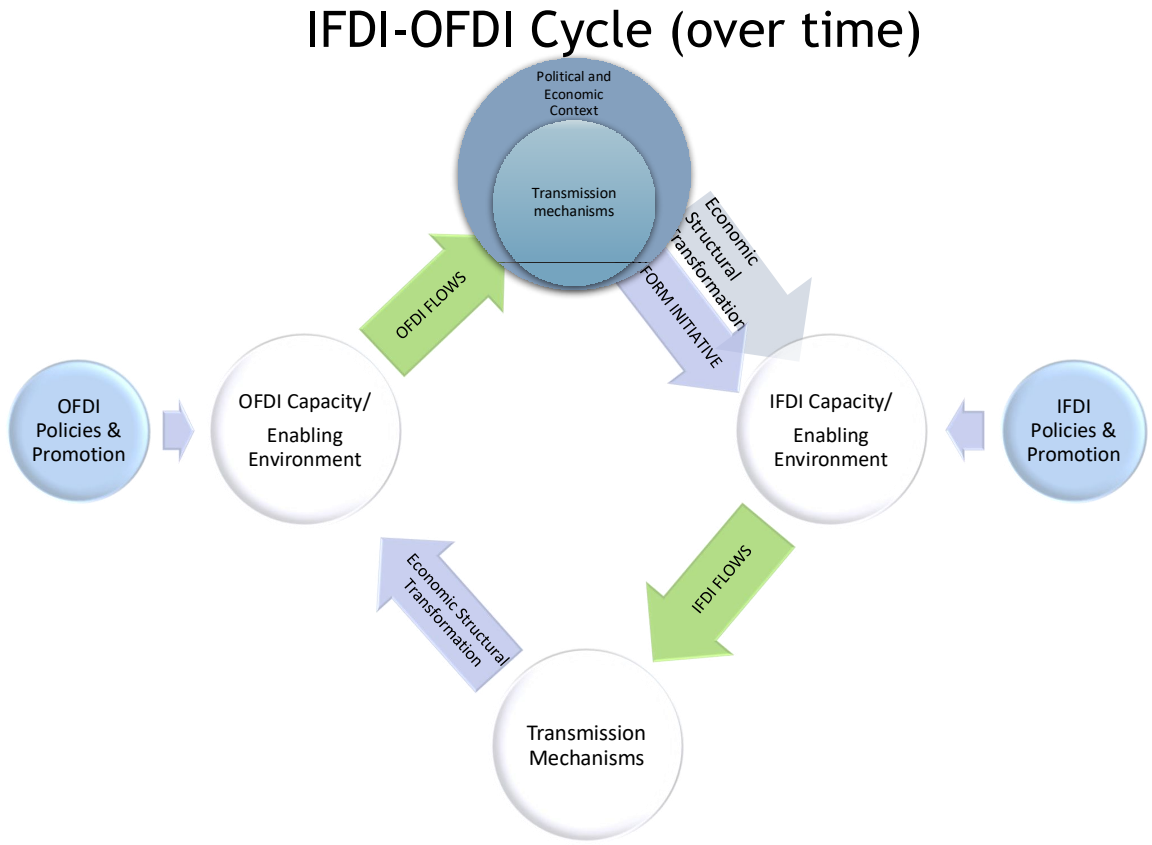
Since I am using input-output analysis to test this hypothesis, I have highlighted the FDI flows and OFDI flows in yellow. But it is important to provide a theory for the ways in which FDI flows could affect OFDI flows.

The transmission mechanisms in question could include things like technology transfer, spillover effects, learning by doing, and firm linkages between China and FDI home countries as discussed in detail in chapters two, three, and four.

This cyclical dynamic would be initiated from the political and economic context (the top central circle in figure 34). This context would lead to a certain enabling environment, which coupled with IFDI policy and promotion, would bring about economic structural transformation through certain transmission mechanisms. In essence IFDI host effects are taking place. In terms of the diagram, we are in the bottom half. However, this economic structural transformation would then lead to a certain enabling environment for OFDI, which coupled with OFDI policy and promotion, would *then also* bring about economic structural transformation through certain transmission

mechanisms. In essence OFDI home effects are taking place. In terms of the diagram, we are in the top half. The IFDI-OFDI Cycle would therefore become slightly more complex (figure 35).

Figure 35:



Source: Author's elaboration.

This cyclical relationship would then continue, as inward and outward investment flows would continue to have effects on the economy, both through IFDI induced host effects and OFDI induced home effects. These effects would also help shape an evolving political and economic context, which would shape the evolving capacity of the economy to attract IFDI or generate OFDI. Policies and promotional measures for both would also help guide this process, as these would be the levers to 'govern' (in Wade's parlance) or 'nudge' (in Thaler's parlance), the market.

F. Is there a relationship between FDI and OFDI?

Is there a relationship between inward and outward FDI in China? Or to flesh out the question a little bit, is there a relationship between the sectors that received FDI and the sectors that are now generating OFDI? To my knowledge, there is no study that tries to connect the two, although the theoretical link has been suggested by Alan Rugman. He examined how Canada relied upon inward FDI (mainly from the United States) for many years until, by the 1980s, Canada had developed its own set of MNEs that started to invest abroad (Rugman 1985, 1986). He then suggested that "a similar transition to a two-way system of both inbound and outbound FDI is possible in many of the world's less developed economies. There is evidence that it is already taking place in India,

Korea, Singapore, Taiwan, and even in China itself … western MNEs have upgraded the macroeconomic infrastructure of these economies leading to the emergence of new MNEs from these host economies" (Rugman 2007: 3). Rugman was a distinguished international business scholar, one of the ten most cited in his field, so I was very happy to discover this passage in his work after articulating and beginning my own research agenda.

There is a little scholarship that addresses this link, but not much. Banga (2008) mentions on a theoretical level the idea of FDI leading to OFDI, but her unit of analysis is all developing Asian economies. She states, "Inward FDI flows have been identified as one of the drivers of outward FDI, which improve the capabilities to undertake outward FDI" (Banga 2008: 213). This is one of the few examples of a scholar mentioning the potential relationship between these investment inflows. Banga then discusses three drivers of OFDI, including capability of firms, trade openness, and domestic policies/home-country measures. Presumably the capability of firms could be affected by FDI (i.e. FDI could increase the capability of firms) – which could then provide the wherewithal to produce OFDI – but this pass-through mechanism to consider the relationship between FDI and OFDI is not further developed.

Poncet (2009) has a book chapter tantalizingly entitled "Inward and Outward FDI in China" in which she considers the determinants of inward FDI and then the determinants of outward FDI. But these are treated sequentially and separately. In effect, she treats the analysis as if there were two disconnected events, one for FDI and one for OFDI. But this seems an artificial distinction. And more importantly, it seems that there could be significant relationship between the two. However, Poncet, does not consider the (theoretical or empirical) relationship between FDI and OFDI.

Apergis (2009) provides, as far as I know, the only multi-country empirical work examining the possible relationship between inward and outward FDI. The study uses panel data set for 35 economies from 1981 to 2004, and finds that inward FDI has a significant long-run relationship with outward FDI, as the two are co-integrated (Apergis 2009: 24). Interestingly, the study finds bi-directional causality, meaning that inward FDI is associated with higher levels of outward FDI, and vice-versa (Apergis 2009: 26).

There are three recent studies that examine the relationship between inward and outward FDI in the context of China.[83]

First, Mo (2014) uses panel data set of ten main industries from 2003 to 2012. The study finds that inward FDI (IFDI) is negatively related to OFDI in China. In particular, the "study argues that the IFDI data shows a decreasing trend in the recent ten years while OFDI shows an increasing growth in this period. Therefore, this study argues that in the recent ten years, China's OFDI will be negatively related by IFDI" (Mo 2014: 110). The study emphasizes entrepreneurial behavior as a mechanism to understand the link between inward and outward FDI. In other words, IFDI affects entrepreneurial behavior, and entrepreneurial behavior then affects OFDI. One way in which the relationship could be negative is that the presence of inward FDI obviates the need for Chinese entrepreneurs to seek knowledge using OFDI, since that knowledge assets have already entered the home market. In that sense, the presence of inward FDI makes OFDI unnecessary, explaining the negative relationship between the two. Yet the study does not consider any other variables that might affect this relationship, such as business networks, linkages, learning effects, sectoral capacity, etc. And the argument could well be flipped: Chinese firms use IFDI to gain the

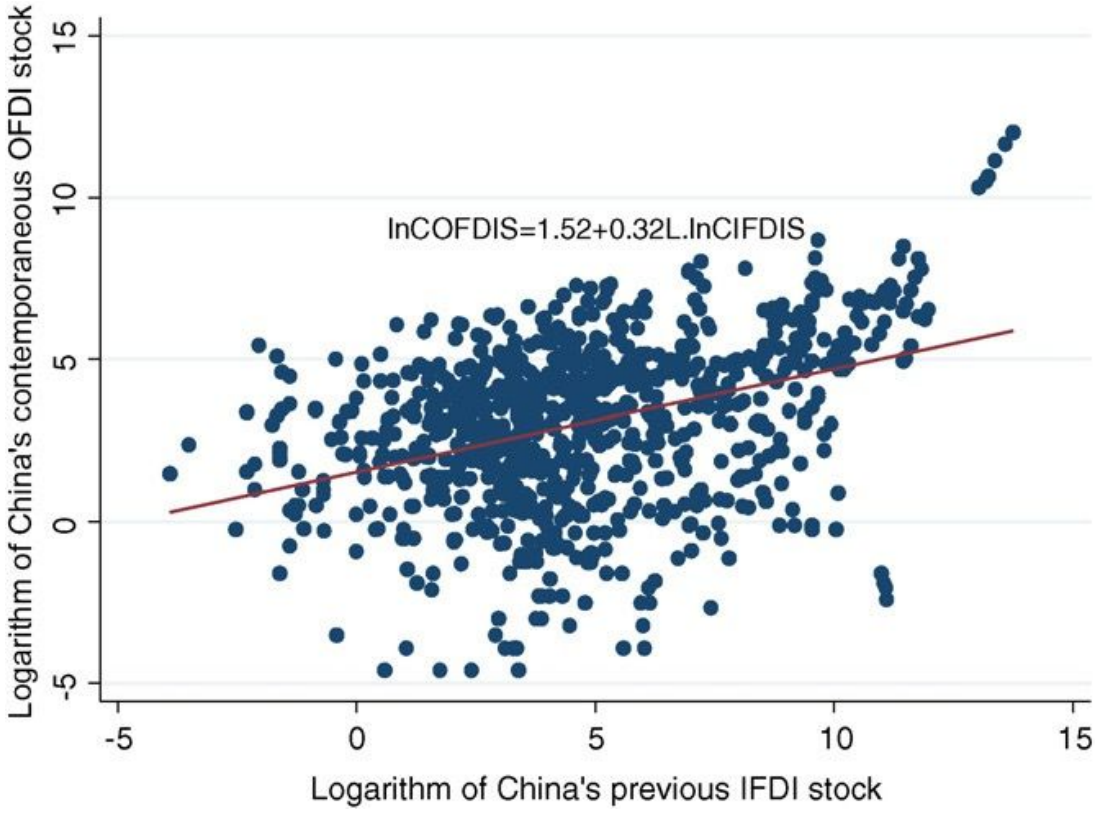
[83] These three articles were published well after the initial formulation of the research questions investigated in this dissertation. The research question was formulated in the Preliminary Research Dissertation during 2013, and formally submitted in January 2014. The three articles were published, respectively, in 2014, 2016, and 2017.

knowledge needed of foreign markets before undertaking OFDI. However it is important to acknowledge that an earlier study has approached the question of inward and outward FDI through this one dimension of entrepreneurial behavior, and finds a negative relationship, the opposite result of the present research.

In contrast, a more recent and thorough study finds a positive relationship between inward and outward FDI in China. Yao et al. (2016) examine Chinese OFDI in 172 host countries from 2003 to 2009. What is important to note is that this study looks at the country-to-country relationship, not the sector-to-sector relationship, in examining inward and outward FDI.

The study finds that a country's inward FDI stock in China motivates China's outward FDI stock in that country at the 10% significance level (Yao et al. 2016: 61). Numerically, a 10% rise in lagged IFDI stock from a host country leads to a 1% increase in the contemporaneous Chinese OFDI stock in that country, *ceteris paribus* (Ibid.). The study suggests that the mechanisms for this relationship could be things like information and knowledge spillovers as well as business networks. The study goes on the disaggregate between high-technology countries and low-technology countries, and finds that this effect is present in both, though stronger in high-tech countries and takes longer to play out (Yao et al. 2016: 68). The authors argue that the reason may be that Chinese OFDI is technology seeking, but that it takes time for Chinese OFDI to adjust to targets with higher levels of technology, since these have higher adjustment costs (Yao et al. 2016: 64).

Figure 36: Relationship between China's IFDI and OFDI stocks



Source: Yao et al. 2016: 61

However, it is noteworthy that this pioneering study concludes that, "the data used in this study has … limitations … the aggregate measure of IFDI stock cannot reflect the mechanisms through

which the externality effect takes place or *explain the difference between sectors*" (Yao et al. 2016: 68; emphasis added). It is precisely this sectoral approach that the current research aims to provide.

Finally, one very recent study looks at similar questions, but focusing on only one industrial sector: auto components. Hertenstein, Sutherland, and Anderson (2017) find that Chinese OFDI in this industry is shaped by sub-contracting supply relationships that were established with foreign firms that entered through FDI. Business networks are thus seen as the 'glue' that brings together inward and outward investment flows. These networks shape OFDI patterns through geographic location choices, strategic asset-seeking orientation, pace of internationalization, and entry mode decisions (Hertenstein, Sutherland, and Anderson 2017: 69). This recent study thus provides clear evidence of how this dynamic relationship works in one specific sector, while this dissertation tries to consider the relationship across economic sectors.

G. Data used

To try and answer this question, in essence to test the hypothesis of whether one can ascertain a relationship between FDI inflows into China and OFDI outflows out of China, I propose to use China's input-output tables. To my knowledge, input-output tables have not before been used to test this kind of hypothesis.

As mentioned above, the State Council mandated that national input-output tables be created every five years, but a few more have also been created, producing tables for 1987, 1990, 1992, 1995, 1997, 2002, 2007, and 2012. The 2012 volume was only completed in October 2015, so the information is still relatively recent. We do not expect another volume, that for 2017, to be published until the end of 2020. This reflects the fact that the data complexity is so challenging as to require several years following measurement for the full matrix to be created. So for the purposes of this study, the data is relatively 'fresh' and up-to-date.

What is worth underscoring is the highly official nature of this data. Is it issued jointly by the Chinese National Bureau of Statistics, National Development and Reform Committee, and Ministry of Finance. It is then published by the China Statistics Press. So there is no controversy over the official quality of the data.

In addition, unlike growth or employment data, which might be overstated for various political reasons, there is no incentive for this data to be biased either up or down. It is used as central planning tool, and none of these figures would ever see the light in any speech or newspaper. Finally, the various inputs and outputs have to work in a unified way – with each industry producing inputs into every other industry – so there is a kind of check that ensures the numbers work *in toto* and are grounded in reality.

China's input-output tables are going to be used to provide numerical data to see if one can establish a relation between FDI and OFDI. But to know which industries to examine, one also needs to examine FDI data *per se*, and OFDI data *per se*. I used official Chinese data in both cases.

For FDI data I used the *Almanac of China's Foreign Economic Relations and Trade*, published annually from 1984 to 2002. Thereafter, the same source was renamed *Commerce Yearbook*, and was published annually from 2003-2015. These are huge documents, over a thousand pages for each year. Within each there is a table that details the sectors that received the most FDI, and provides dollar figures for these sectors.

For OFDI data I used the Ministry of Commerce's *Statistical Bulletin of China's Outward Direct Investment*. This likewise includes tables that detail the sectors that produced the most OFDI, and provides dollar figures for these sectors. China's Outward FDI Statistics System was only established at the beginning of the century, and the first year for which data exists is 2002. The most recent data available is 2014. Data for 2015 should become available towards the end of 2016.

Finally, though these data sources worked very well for most sectors, manufacturing provided a particular challenge as the official FDI and OFDI data are not disaggregated by different kinds of manufacturing industries, while the Input-Output tables are. I therefore used a couple of secondary sources to determine which were the most important manufacturing industries for FDI and OFDI flows. These include the detailed study by Lemoine (2000) entitled "FDI and the Opening Up of China's Economy" and Broadman & Sun (1997) "The Distribution of Foreign Direct Investment in China", coupled with the recent work drawing from an original emerging market database by Amighini, Rabellotti & Sanfilippo (2013) entitled "Do Chinese state-owned and private enterprises differ in their internationalization strategies?". These secondary sources provided information, respectively, on the top manufacturing industries for FDI and OFDI.

H. Methodology

The approach I used takes place in three different phases: an FDI phase, an OFDI phase, and an FDI-OFDI phase, which in itself contains many steps.

Phase I

I saw in the statistical yearbooks that FDI into China was rather modest until 1991. Though China opened up to FDI as of the early 1980s, these flows remained fairly modest during the first decade. However, in 1991 FDI increased by 81.6%, from USD 6,596 million to USD 11,977 million. Thereafter, FDI flows continued to expand rapidly. I therefore decided to start looking at FDI flows as of 1991 and up to 1997, when the Asian Financial crisis likely skewed the data for a few years.

Taking the period 1991-1997, I found the chart in each Almanac of China's Foreign Economic Relations and Trade that detailed the top sectors that received FDI (this was challenging because it was all in Chinese and at times there was no index). I took note of the top ten sectors each year. These remained quite consistent over time. The position of the different sectors changed, but not the top ten sectors themselves. This produced, along with the secondary sources mentioned above, the following list of the top ten sectors in China that received FDI from 1991-1997:

- Manufacture of Textiles
- Manufacture of Transport Equipment
- Manufacture of General Purpose and Special Purpose Machinery
- Manufacturing of Communications Equipment, Computer and Other Electronic Equipment
- Real Estate
- Construction
- Transportation and Warehousing
- Food and Beverage Manufacturing
- Electricity, Steam and Hot Water Production and Supply
- Raw Chemical Materials and Chemical Products

Phase II

Similarly to Phase I, I saw in statistical yearbooks that OFDI out of China was modest until 2004 (data only being collected as of 2002). While the year-on-year increase from 2002 to 2003 was 5.6%, in 2004 OFDI increased by 93%, from USD 2.85 billion to USD 5.50 billion. Thereafter, OFDI flows continued to expand rapidly. I therefore decided to look at OFDI flows from 2004 to 2014, the latest year for which data is available.

Taking the period 2004-2014, I found the chart in each *Statistical Bulletin of China's Outward Foreign Direct Investment* that detailed the top sectors that produced OFDI. I took note of the top ten sectors each year. These remained quite consistent over time. The position of the different sectors changed, but not the top ten sectors themselves. This produced, along with the secondary sources mentioned above, the following list of the top ten sectors in China that produced OFDI from 2004-2014:

- Leasing and business service
- Wholesale and retail trade
- Metal mining
- Finance and insurance
- Metal manufacturing
- Transportation equipment
- Consumer electronics manufacturing
- Real estate
- Transport and warehousing
- Construction

Phase III

As mentioned, China has produced Input-Output tables for 1987, 1990, 1992, 1995, 1997, 2002, 2007, and 2012. However, the 1992 table presents the data in a different format (in-kind and not either through currency or technical coefficients), so I could not use it. I also did not use the 1987 table since the period under consideration starts in 1991. As a result, I used the tables from 1990, 1995, 1997, 2002, 2007, and 2012.

China's Input-output tables present the information in a number of different ways. First, a less detailed input-output table relating commodity to commodity is presented (this can vary from 33 commodities in the oldest tables to 42 commodities in the newest tables). Second, the input table relating commodity and industry. Third, the output table relating commodity and industry. Fourth, a more detailed input-output table relating commodity to commodity (for instance, the 2012 table contains a 135- commodity by 135- commodity matrix).

Since we want to look at the relationship between different parts of the economy, it makes most sense to use either the first or the fourth table. Given the level of detail that is available in Chinese official FDI and OFDI data, to facilitate comparability I used the first table, not the most disaggregated table, as this allowed for the closest fit in terms of level of detail.

(Note: Given that the oldest tables have 33 commodity entries and the newest tables 42 commodity entries, this creates a challenge of comparability. However, many of the commodity entries do not change. Some are combined and some new ones are created, but for the most part, they stay rather constant. One can imagine that Chinese statisticians aim to retain the same categories, as much as

possible, for comparison over time. In the situations where categories changed, I made a note in the databases that I created, and was not able to use those entries. In other situations where new categories came into existence that didn't exist before (for instance in the most important sector for Chinese OFDI, 'Leasing and Business Services', I entered N/A for not available. All this information is presented in the Appendix).

Within each of these four different tables, there are different kinds of matrixes, often three different kinds. In the case of the first table, there are 1) a basic matrix, 2) a matrix of direct input coefficients, and 3) a matrix of cumulative input coefficients. For the purposes of this analysis, it makes most sense to use the third matrix.

I therefore found the matrix of cumulative input coefficients for each of the years 1990, 1995, 1997, 2002, 2007, and 2012. For each matrix, I looked at the entries for the top ten sectors that received FDI. For each of these sectors, I found the five most important inputs into each sectors at the beginning of the 1990s, consulting the oldest tables. The five most important inputs were reflected in the five highest coefficients amongst all the different inputs. In many cases, one of the top five inputs into a sector was the sector itself, for the reason mentioned above that one needs steel tools to make steel.

Often I was constrained to abandon one of these five highest input categories because the data changed over time – entries were reconfigured (fusing different entries into one) or disappeared, so that the data stopped being comparable. Fortunately, this did not happen frequently, so that I was generally left with four most important inputs into each of the ten top FDI sectors. A few of the FDI sectors have only three of the most important inputs, and some retain all five.

For each of the most important inputs into the top 10 FDI sectors, I extracted the technical coefficient from the Matrix of Cumulative Inputs Coefficients for each of the years mentioned. This allowed me to see how the coefficients changed (or not) over time. In essence, it allowed me to see whether the most important inputs initially became increasingly important in the production of that sector (coefficients increased), remained the same (coefficients stayed the same), or became less important (coefficients decreased). If the coefficients increased, this would argue that FDI was producing structural transformation in the domestic Chinese economy, as the sectors that were receiving FDI were requiring relatively more and more of the inputs that were most important to their production.

The appendix includes all the technical coefficient information extracted from China's input-output tables. Below is just one illustration of the data for FDI. I have chosen the most iconic of FDI sectors into China, manufacturing of textiles, to illustrate this exercise.

Figure 37: FDI example of technical complete consumption technical coefficients extracted from input-output tables

Sector with significant FDI (Source 1991-1997 China Yearbook)	1987	1990	1992	1995	1997	2002	2007	2012
Industry								
Manufacture of Textiles								
Manufacture of textiles		0.6874149		0.7086519	0.6574995	0.523844	0.652920	0.713896
Manufacture of wearing apparel, leather and products of leather and fur		0.6576174		0.7641989	0.6118597	0.504900	0.649650	0.705596
Other manufacturing/Industries		0.2530271		0.2297676	0.2080947	0.149933	0.179380	0.187592
Paper and stationery manufacturing		0.2406576		0.2803828	0.1509707	0.041113	0.064391	0.111049

I then followed exactly the same process, but for the top ten sectors that produced OFDI from China. For each of these top ten sectors, I used the Matrix of Cumulative Input Coefficients to identify the five most important inputs. I then extracted these technical coefficients from the matrix to see their evolution over time. As before, if the technical coefficients went up, then this would provide numerical evidence that the most important inputs into the top OFDI sectors were becoming increasingly important in the production processes of those sectors. In essence, that technological change was taking place, since the coefficients represent the technological relationship between inputs and outputs. This would be evidence that the top OFDI sectors were structurally transforming the domestic economy. I shall discuss the actual results in the next section.

Below is just one illustration of the data for OFDI. As with FDI, I have chosen for illustrative purposes an iconic OFDI sector, metal mining, on account of the controversies surrounding Chinese investment in natural resources in places like Africa.

Figure 38: OFDI example of technical complete consumption technical coefficients extracted from input-output tables

Sector with significant OFDI (Source: MOFCOM Outward Direct Investment Bulletin)	1987	1990	1992	1995	1997	2002	2007	2012
Industry								
Metal mining								
Metal manufacturing		0.1430839		0.1257435	0.2115938	0.145460	0.263740	0.312868
Metal mining		0.1580024		0.1363142	0. 2276841	0.084765	0.143770	0.193237
Metal products		0.0590377		0.0821817	0.1070632	0.082583	0.131270	0.146339
Electrical machinery		0.0376428		0.0408142	0.0737785	0.050143	0.109980	0.121720

Until now, however, the preceding methodology is a quantitative technique to see whether FDI has an impact on the structure of the host economy, or whether OFDI has an impact on the structure of the home economy. It does not relate FDI sectors to OFDI sectors. It does not investigate whether this is a relationship between FDI and OFDI.

So I then mined the input-output tables for complete consumption technical coefficients that related the top ten FDI sectors to the top ten OFDI sectors.

For each of the top ten FDI sectors, I therefore found the coefficients of the top ten OFDI sectors for each year of available data. This created a 10 by 10 matrix for 1990, 1995, 1997, 2002, 2007, and 2012.

Below is an example of one of the top ten FDI sectors (manufacturing of textiles again) as it relates to the top ten OFDI sectors over time.

Figure 39: Top ten FDI sectors relating to top ten OFDI sectors over time

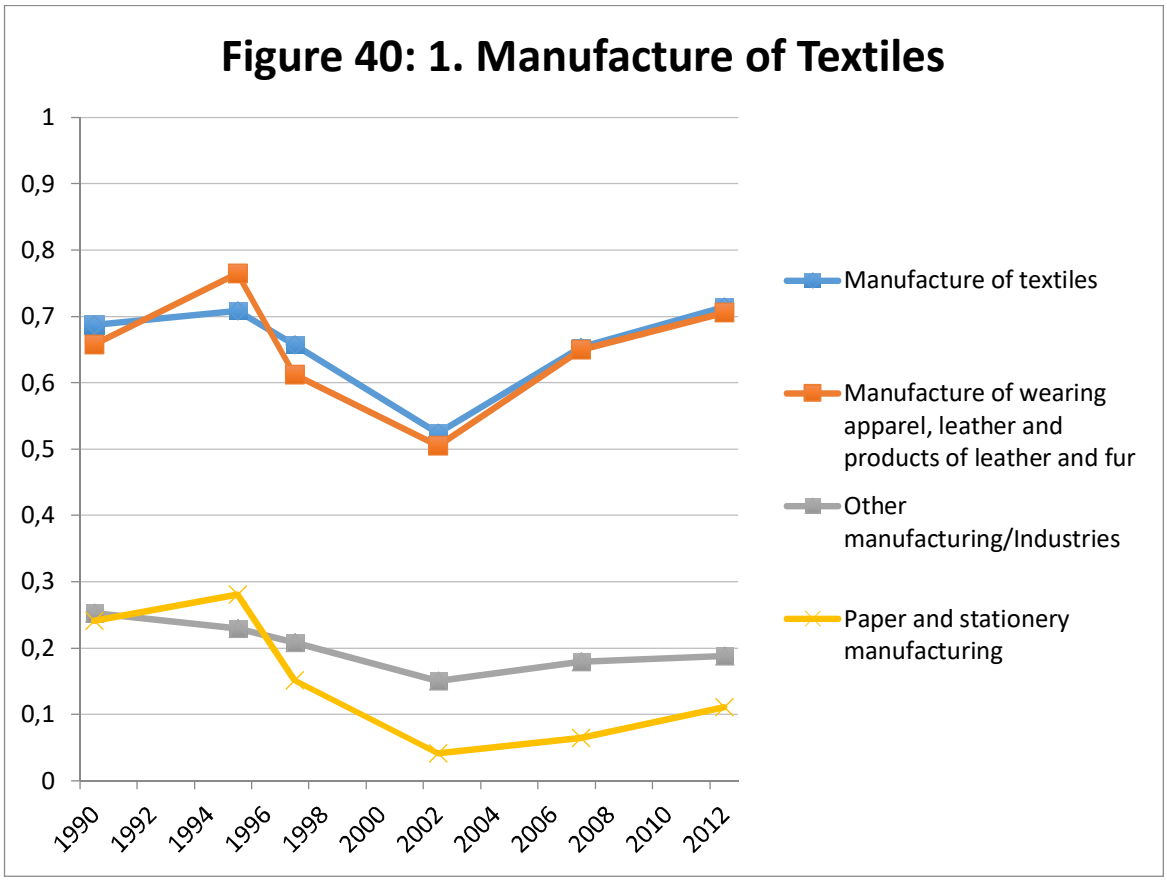
FDI Sector	1990	1995	1997	2002	2007	2012
FDI 1: Manufacture of Textiles						
OFDI 1: Leasing and business service	n/a	n/a	n/a	0.016676	0.045288	0.034435
OFDI 2: Wholesale and retail trade	0.0924543	0. 0343270	0.0445146	0.014545	0.01910	0.008170
OFDI 3: Mining metal	0.0676210	0.0596184	0. 0404876	0.012293	0.016025	0.015807
OFDI 4: Finance and insurance	0.0063125	0.0358903	0.0227158	0.007403	0.009079	0.015192
OFDI 5: Metal manufacturing	0.0664459	0.0508197	0.0354762	0.011197	0.013834	0.014593
OFDI 6: Transportation equipment	0.0761483	0.0623634	0.0561863	0.016886	0.029067	0.034055
OFDI 7: Consumer electronics	0.063261(?)	0.0502069	0.0428730	0.015882	0.019185	0.019398
OFDI 8: Real estate	n/a	n/a	0.0146559	0.004061	0.007292	0.007430
OFDI 9: Transport and warehousing	0.0498605	0.0395104	0.0251951	0.009737	0.015484	0.014936
OFDI 10: Construction	0.0754174	0. 0656296	0.0436230	0.016460	0.018878	0.021168

By seeing the change in the technical coefficients that related the top FDI sectors to the top OFDI sectors, one can produce quantitative evidence to evaluate whether the two are becoming increasingly connected. If the technical coefficients go up over time, this would be evidence for the importance of FDI being an input into OFDI.

I. Results

Using all of the above-mentioned data, I then created graphs for a) the coefficients over time of the inputs into each of the top ten FDI sectors, b) for the coefficients over time of the inputs into each of the top 10 OFDI sectors, and c) for the coefficients over time of the interaction between the top ten FDI sectors and the top 10 OFDI sectors. For each of these three different categories, this created ten graphs, for a total of 30 graphs. I shall present the graphs for each category in turn, and then provide analysis, before moving to the next category. The critical thing to look for in these graphs is whether the line charting the technical coefficients goes up, stays constant, or goes down.

Technical coefficients of top ten FDI sectors



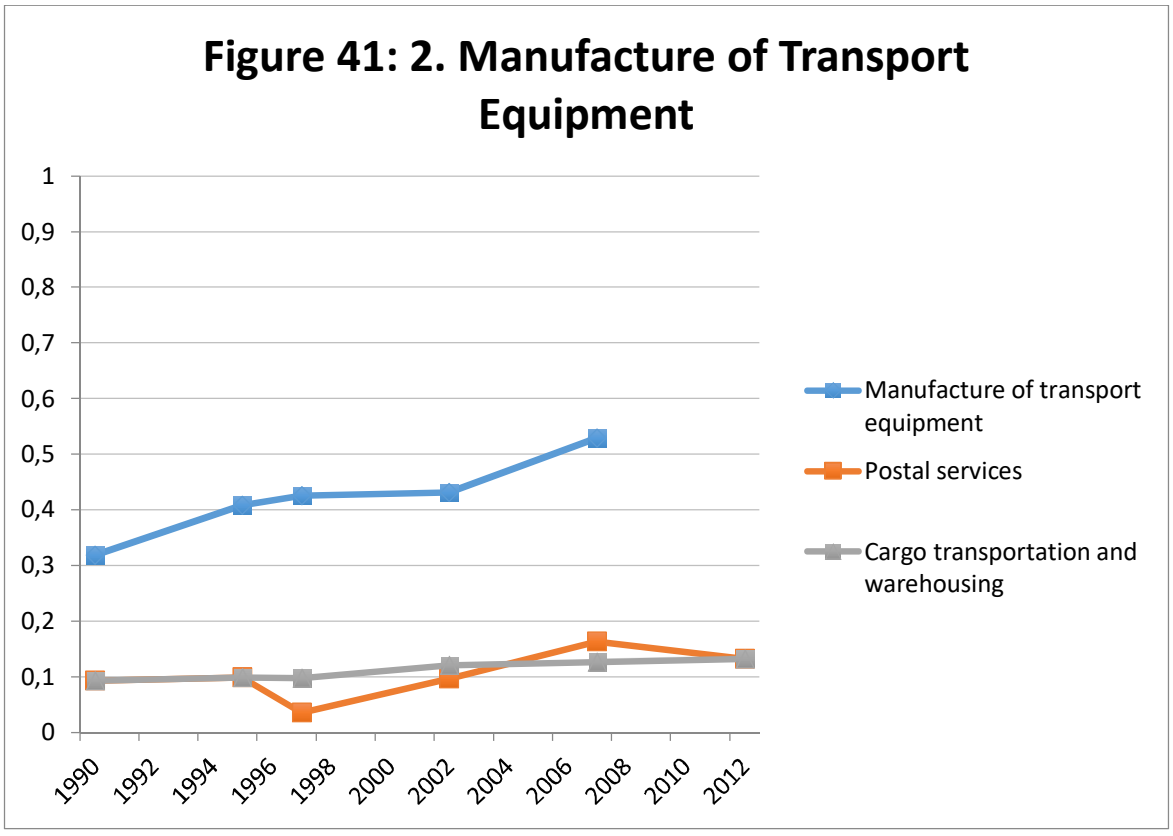


Figure 42:

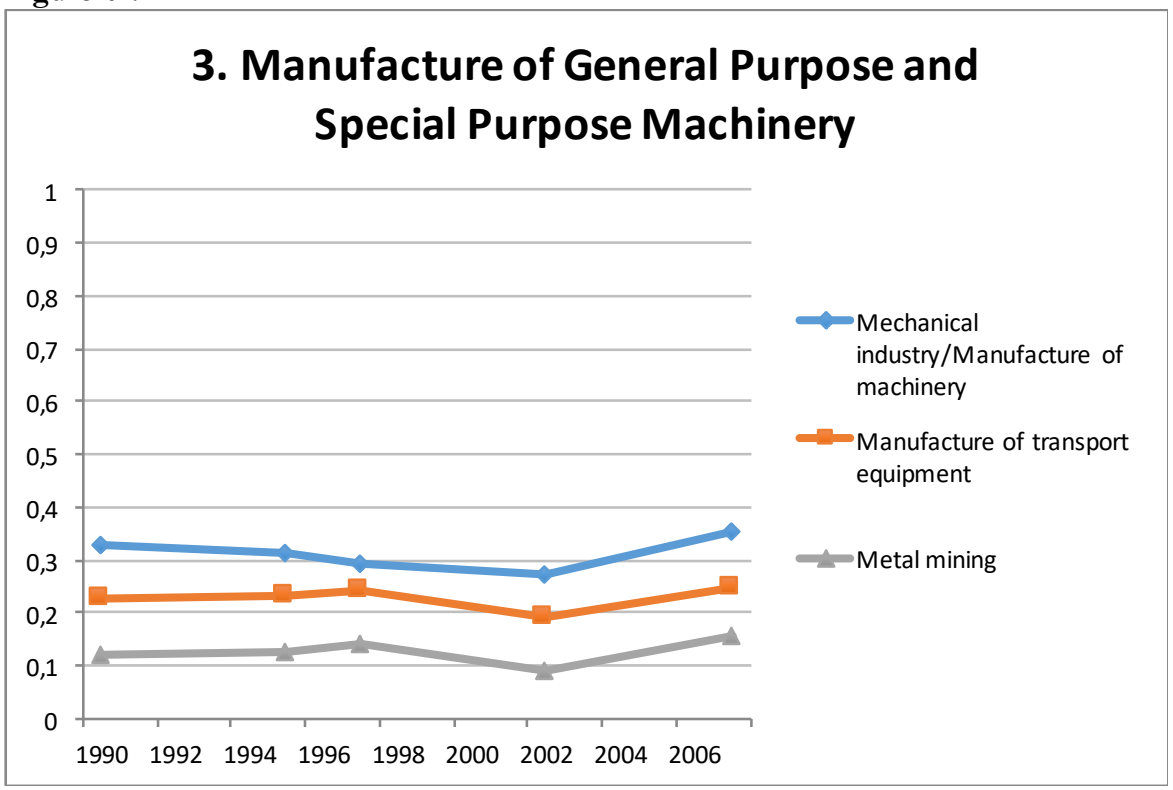

3. Manufacture of General Purpose and Special Purpose Machinery
1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
Mechanical industry/Manufacture of machinery
Manufacture of transport equipment
Metal mining

Figure 43: 4. Manufacturing of Communications Equipment, Computer and Other Electronic Equipment

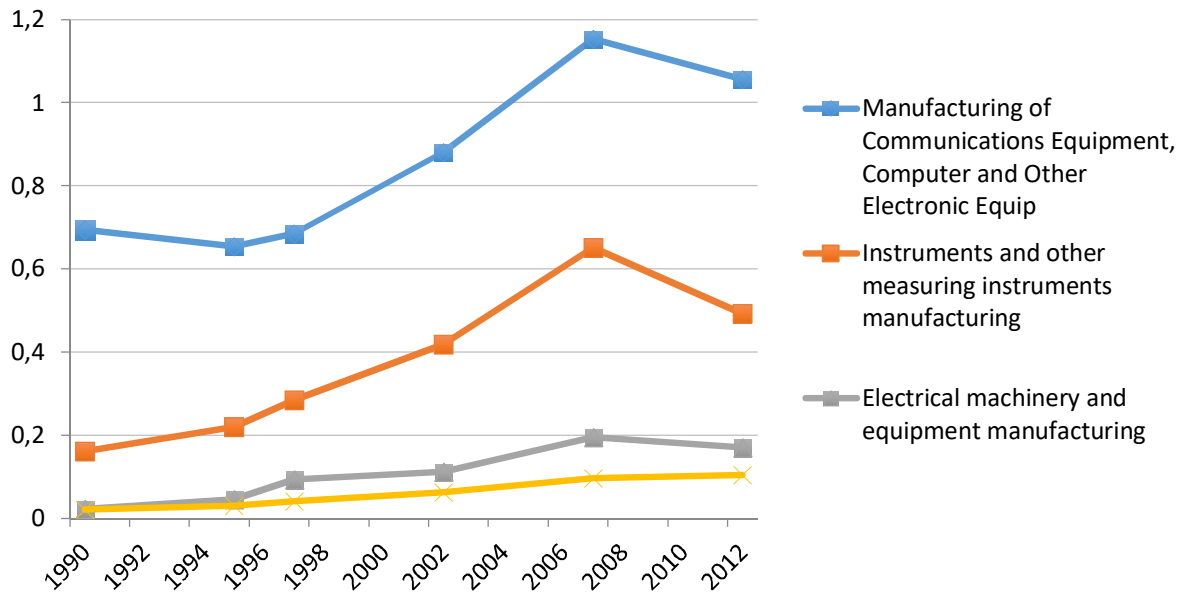


Figure 44: 5. Real Estate

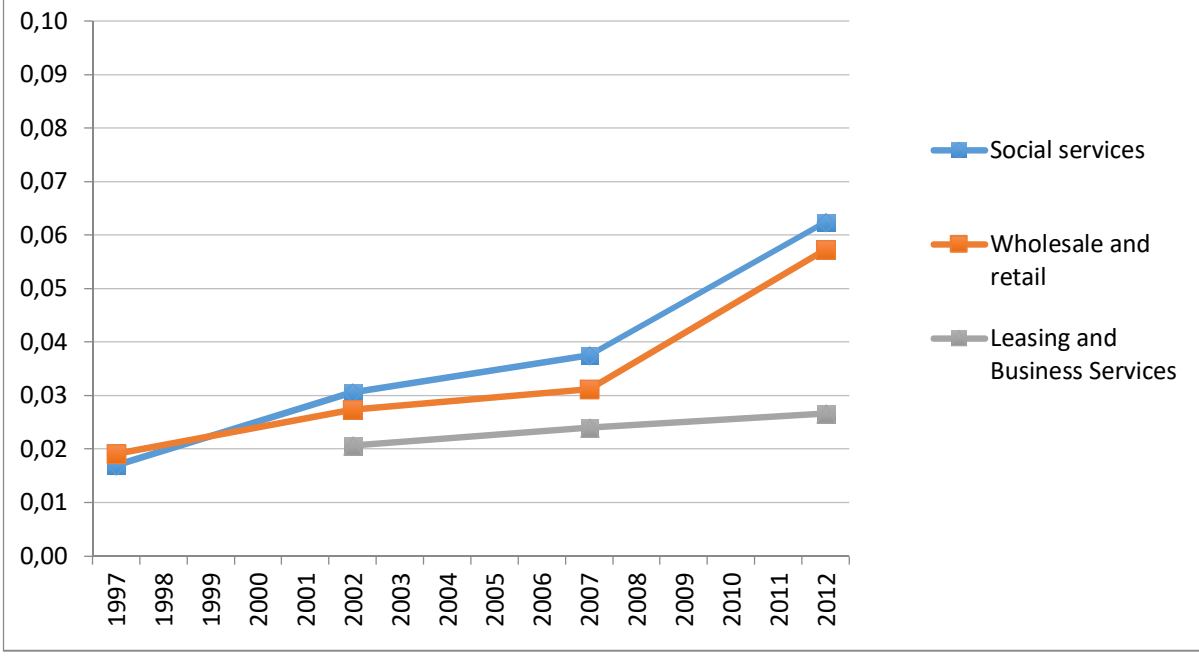


Figure 45: 6. Construction

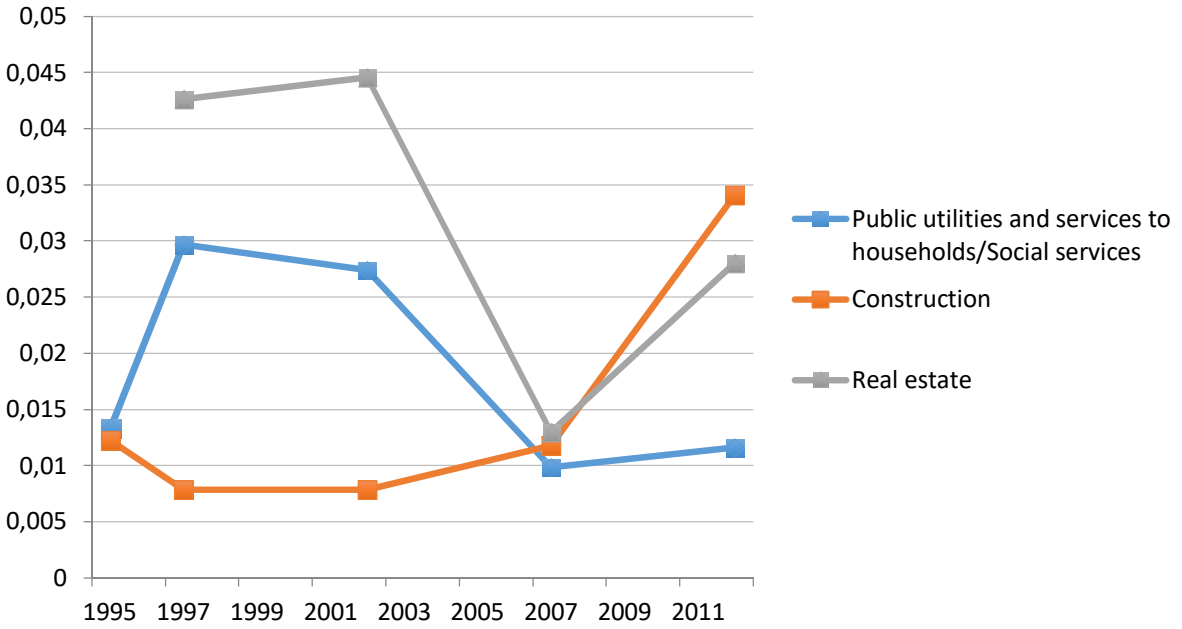


Figure 46: 7. Transportation and Warehousing

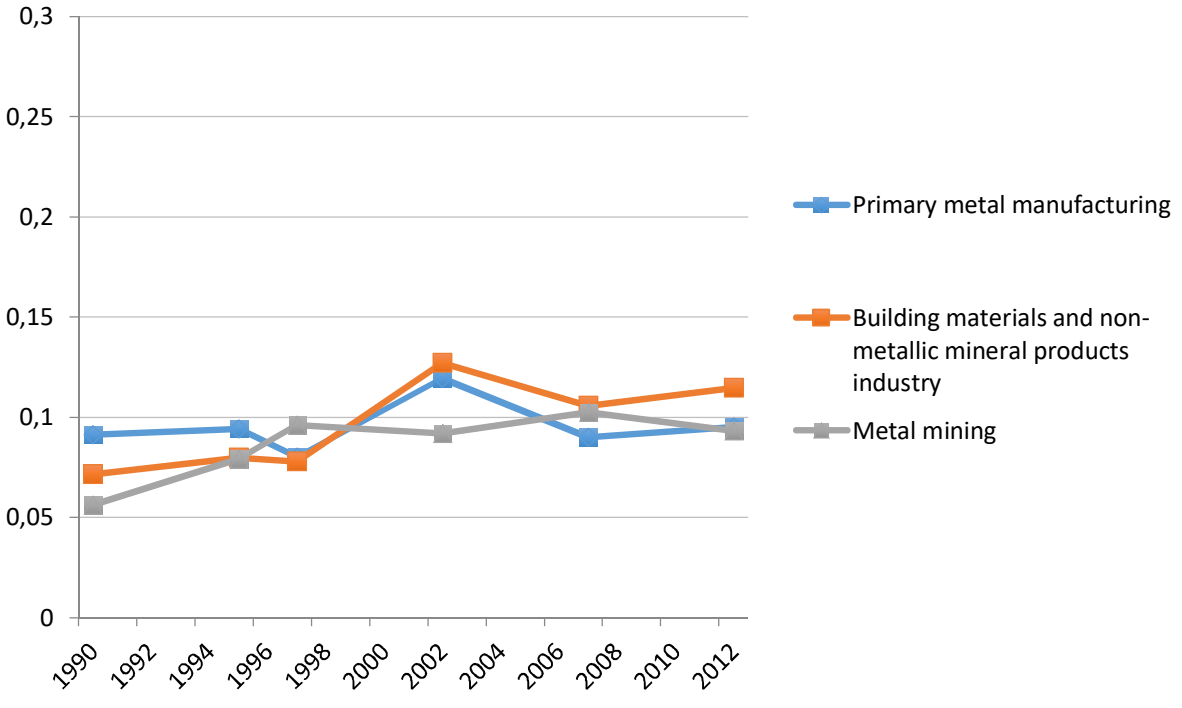


Figure 47: 8. Food and Beverage Manufacturing

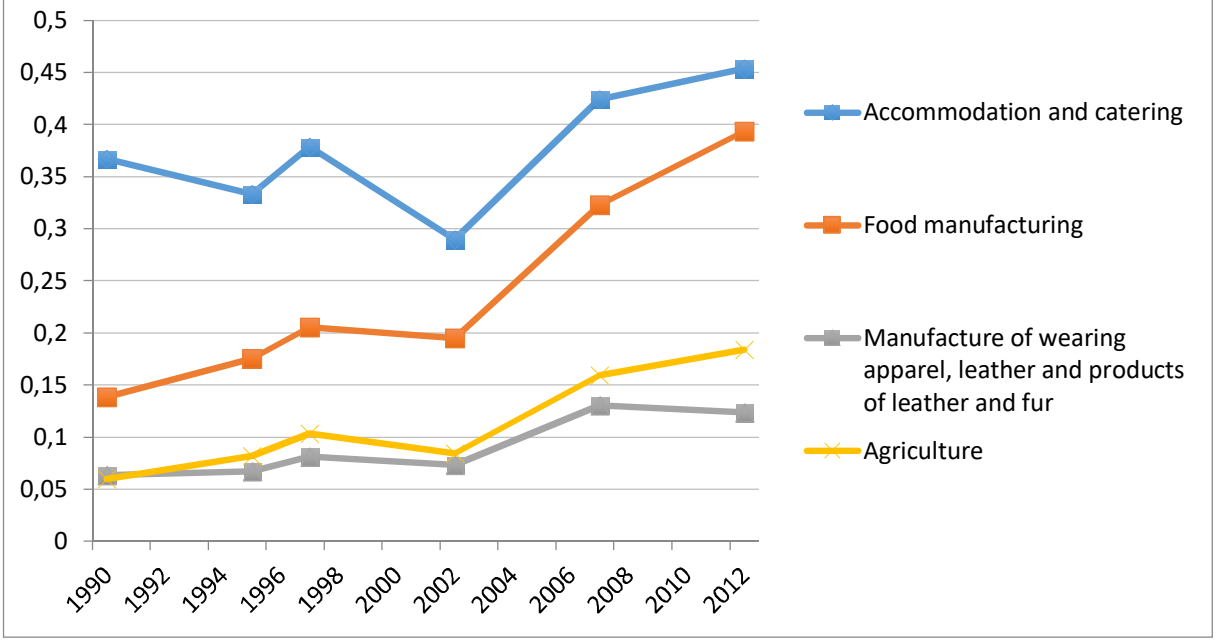
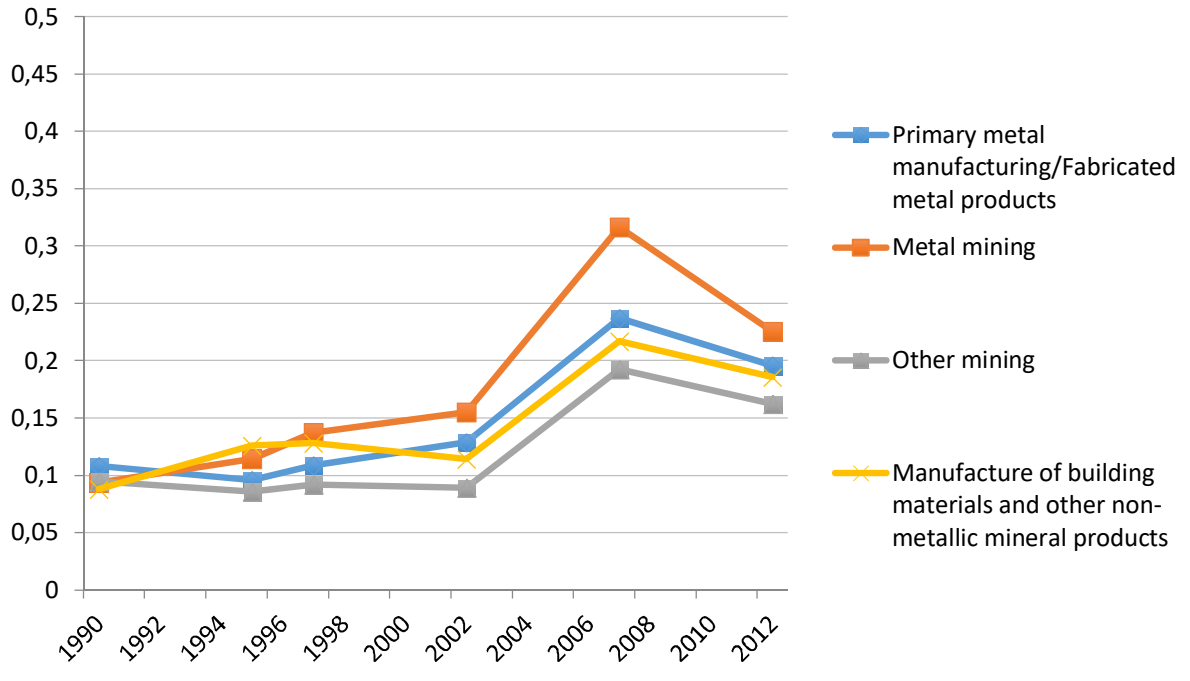
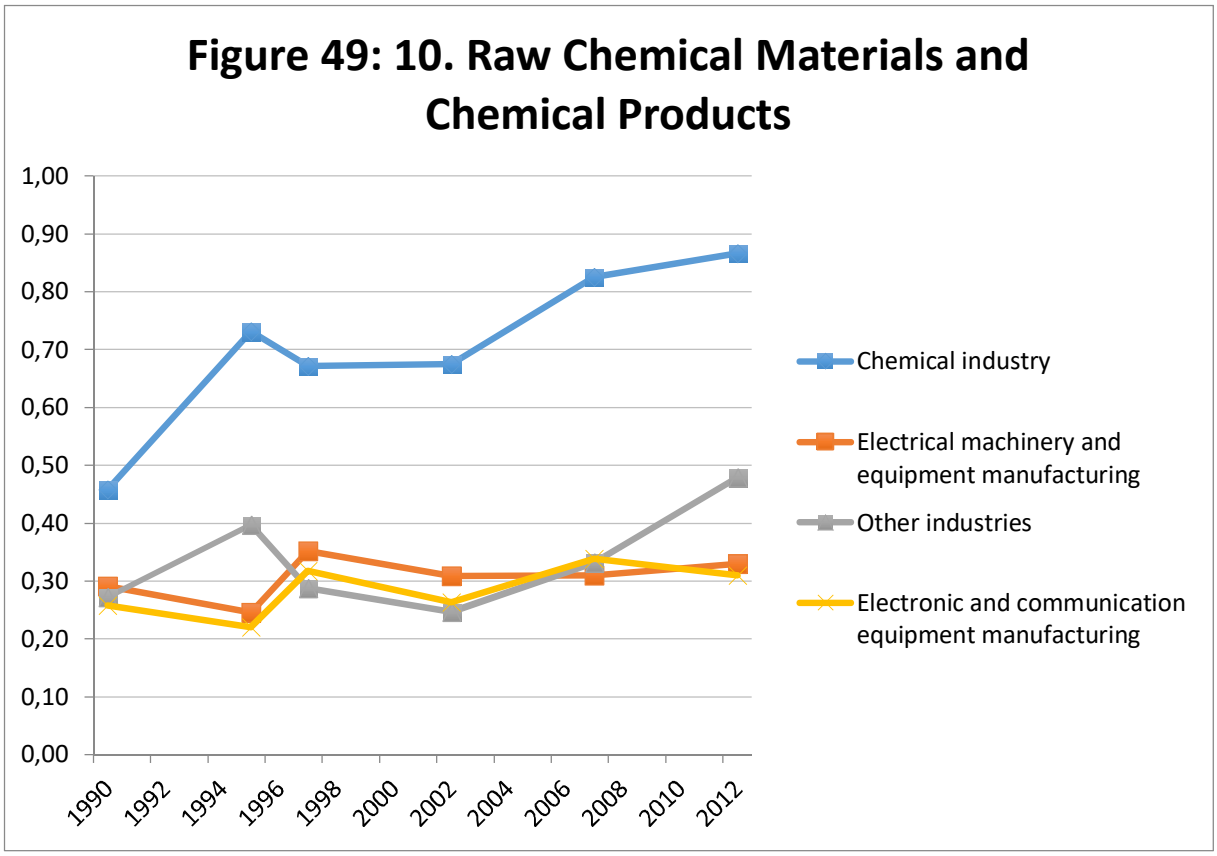


Figure 48: 9. Electricity, Steam and Hot Water Production and Supply





How can we interpret these graphical results? There is a clear upward trajectory for most of the inputs to most of the sectors, most the time. This does not hold true absolutely, but it makes sense that there should be idiosyncrasies for different sectors and different inputs – some may be more sensitive to the effects of FDI than others; or in other words, the transmission mechanisms discussed may work differently in different sectors. Some may pass through a larger effect than others; and in some cases, sectors may be less sensitive because of differences in the characteristics of a sector. However, it seems that the general hypothesis that FDI is producing structural change in the domestic Chinese economy is substantiated in the gradual increases in the technical coefficients of the most important production inputs over time. In essence, the advent of FDI is changing the nature of the inputs that go into the production of the FDI sector. This change is reflected in the technological relationship that is captured by the coefficients.

A few sectors that seem particularly to substantiate the theory include:

- 2. Manufacture of Transport Equipment
- 4. Manufacturing of Communications Equipment, Computer and Other Electronic Equipment
- 5. Real Estate
- 7. Transportation and Warehousing
- 8. Food and Beverage Manufacturing
- 9. Electricity, Steam and Hot Water Production and Supply
- 10. Raw Chemical Materials and Chemical Products

For the purpose of this study, I am not going to dive deeper into a sub-sector analysis to try and explain the variation across sectors. Perhaps this could be something for further analysis at a later stage.

However, I believe there are some general elements that could be important to consider in trying to understand how different sectors react differently to the effect of FDI.

For instance, some sectors might have relatively more *private sector participation*, while others might have relatively more government sector participation (i.e. SOEs dominate). The transmission mechanisms, it could be argued, might operate more readily in terms of host private firm to home private firm interaction than host public firm to home private firm interaction. The reason is that private firms may more readily adopt changes in ways of doing business through foreign examples, while public entities may have stronger or stricter operational modalities/procedural rules. Another way of putting this is that there might be a culture of adaptation for the bottom line in the private sector while a culture of following protocol or tradition in the public sector.

Another element may be the *importance of technology* in a particular sector. It seems likely that a sector heavily dependent on technology or know-how will respond more to the effect of FDI than one which has relatively less technology embedded in its production processes.

Still another element may be the *level of protection* in a particular sector. Although all of these industries are the top recipients of FDI, the Chinese government may impose different kinds of limitations in different cases, for protectionist reasons. These protections could be for national interests (security or stability), vested interests that have lobbied for protection, a desire to nurture an industry's growth (a la infant industry argument), etc. The level of protection may vary across industry and across time; but it may be an important dimension of the effectiveness or presence of transmission mechanisms between FDI and the domestic economy.

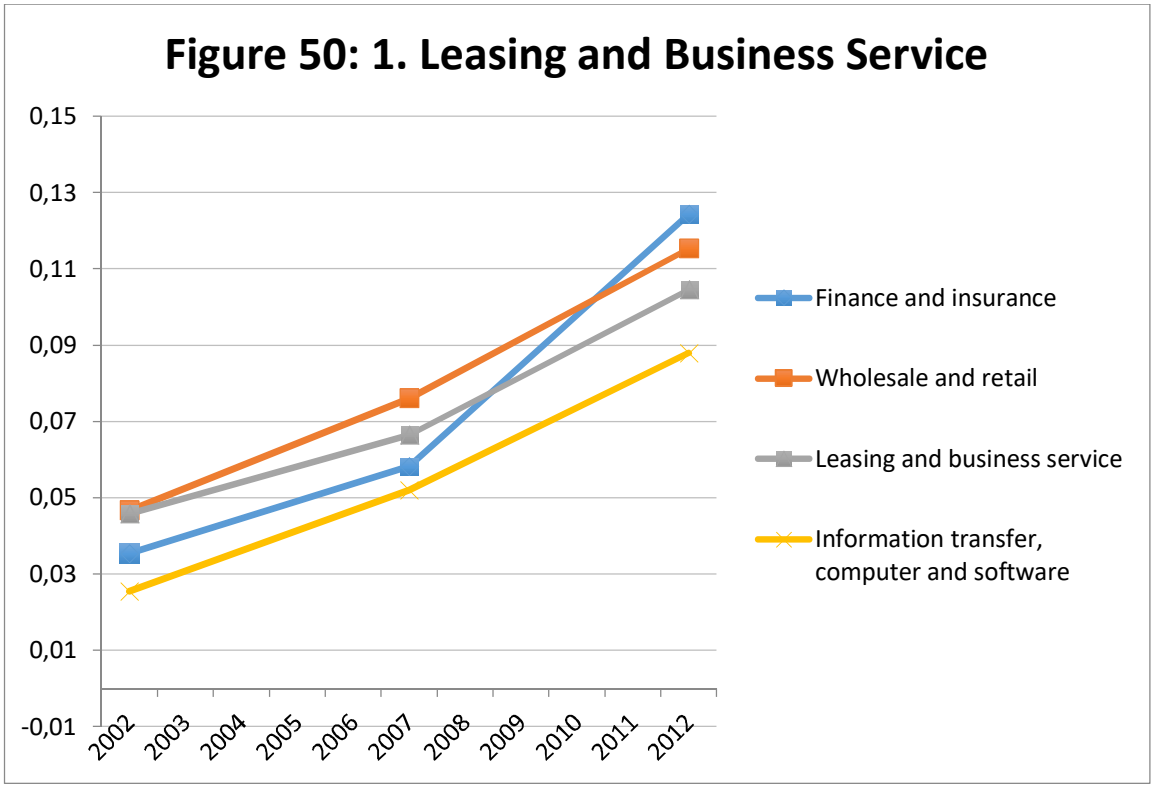
Yet another element may the degree to which *services are important in the production processes* of a sector.[84] The services component may respond differently to the effect of FDI than the goods component. In the case of goods, learning how to produce a good more efficiently may provide more of a specific technical innovation for one instance and not necessarily provide broad-based learning. In the case of services, services may take longer to react to FDI, because services are perhaps a bit more protected from foreign impact (e.g. legal services, which in China have been relatively closed to foreign participation). However, once the services component is liberalized, or the transmission mechanism takes place, the FDI effect may kick in and may provide more structural change and widespread learning.

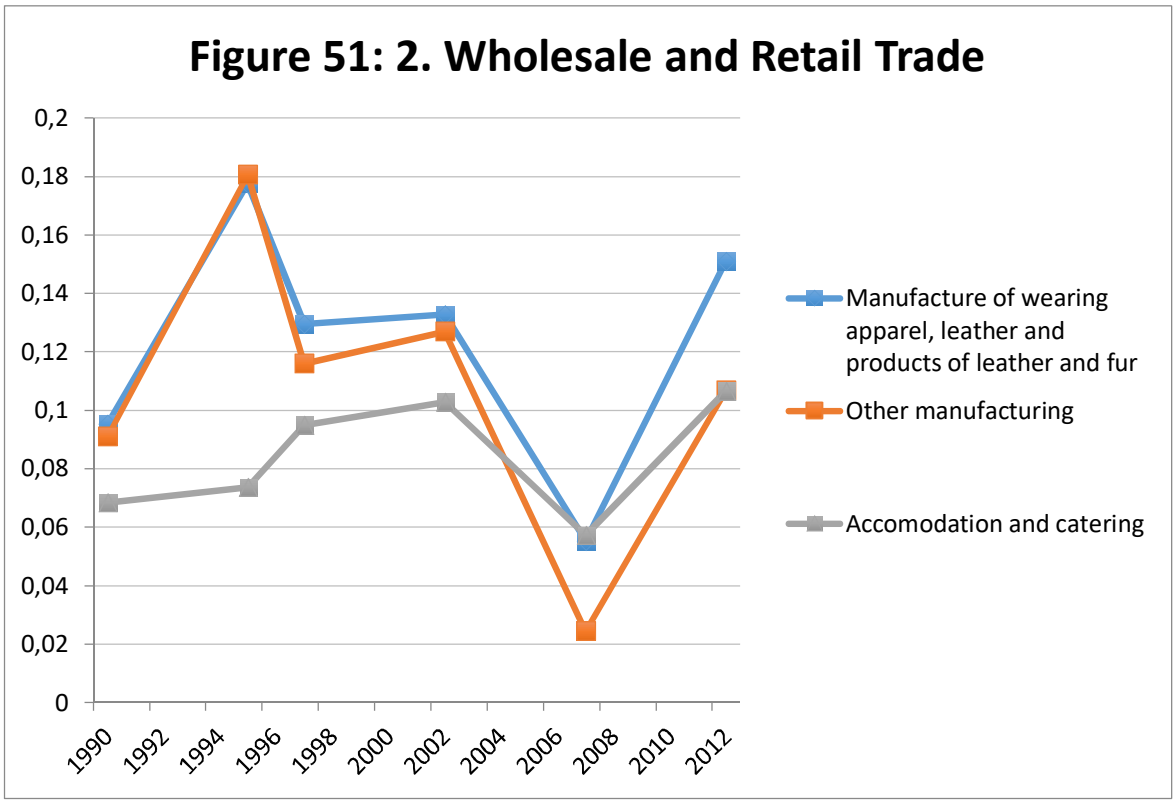
This kind of threshold effect may also explain how there is not only a uniform slope for technological coefficients, but rather that the slope moves up faster or more slowly at different times; the kind of step-wise learning described above could explain how, after reaching a certain threshold, the transmission mechanisms effect brought about by FDI kicks in; however, beforehand, it does not.

Finally, Chinese national interest, development strategy, and economic specificities will together determine if, when, and how a sector is opened to FDI. These elements may in turn dictate the real effect of FDI on domestic economic transformation.

[84] Economists have recently realized that services provide much more of the value-added of the production of goods than previously realized. NB the OECD-WTO Trade in Value Added (TiVA) Database: https://stats.oecd.org/index.aspx?queryid=66237

Technical coefficients of top ten OFDI sectors





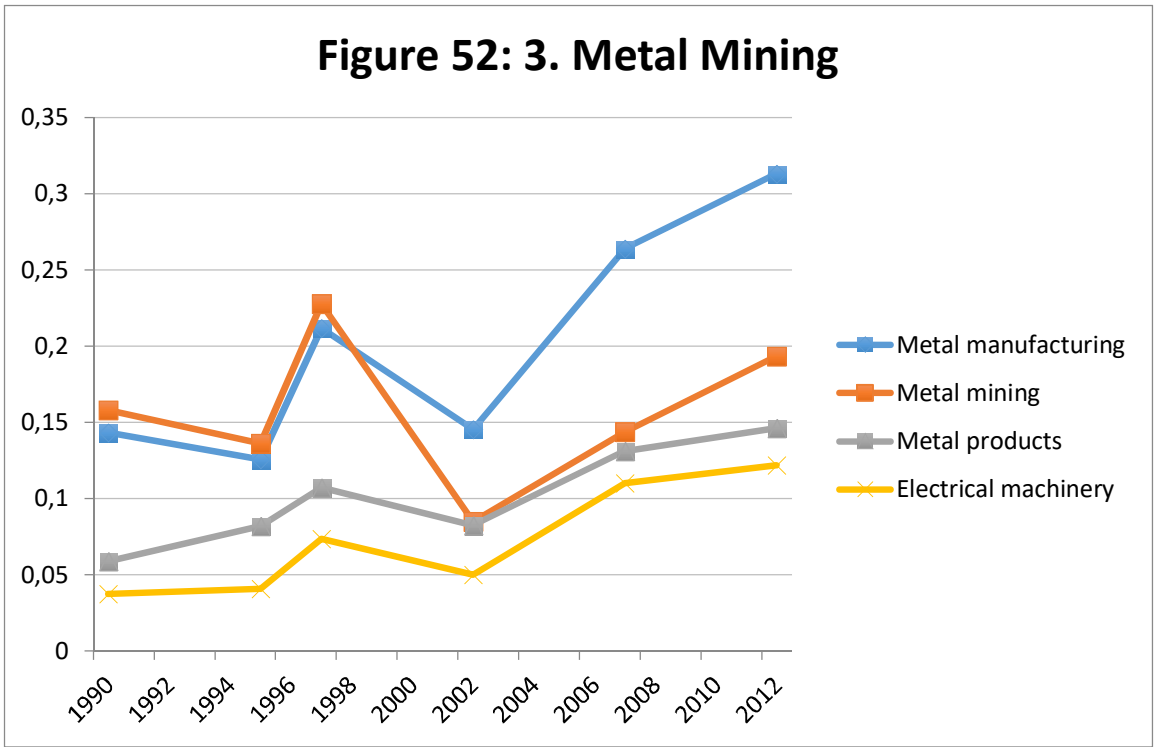


Figure 52: 3. Metal Mining
0,35
0,3
0,25
0,2
0,15
0,1
0,05
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Metal manufacturing
Metal mining
Metal products
Electrical machinery

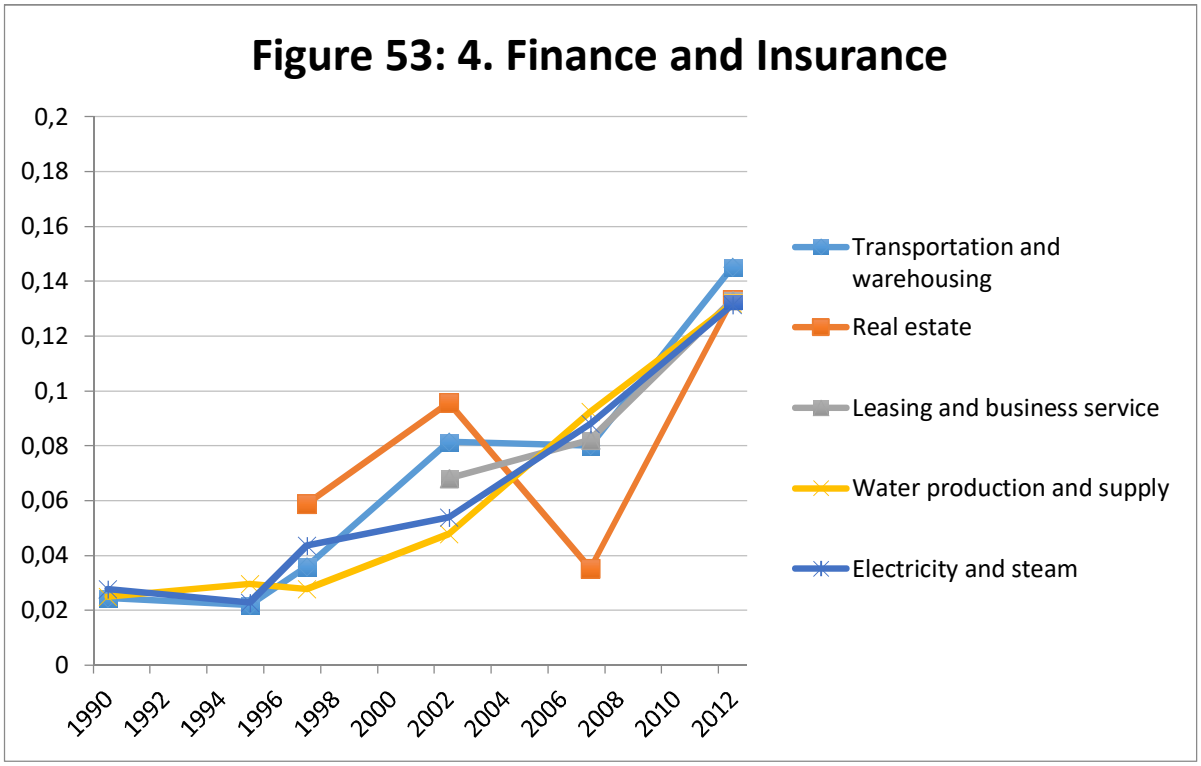


Figure 53: 4. Finance and Insurance
0,2
0,18
0,16
0,14
0,12
0,1
0,08
0,06
0,04
0,02
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Transportation and warehousing
Real estate
Leasing and business service
Water production and supply
Electricity and steam

Figure 54: 5. Metal Manufacturing

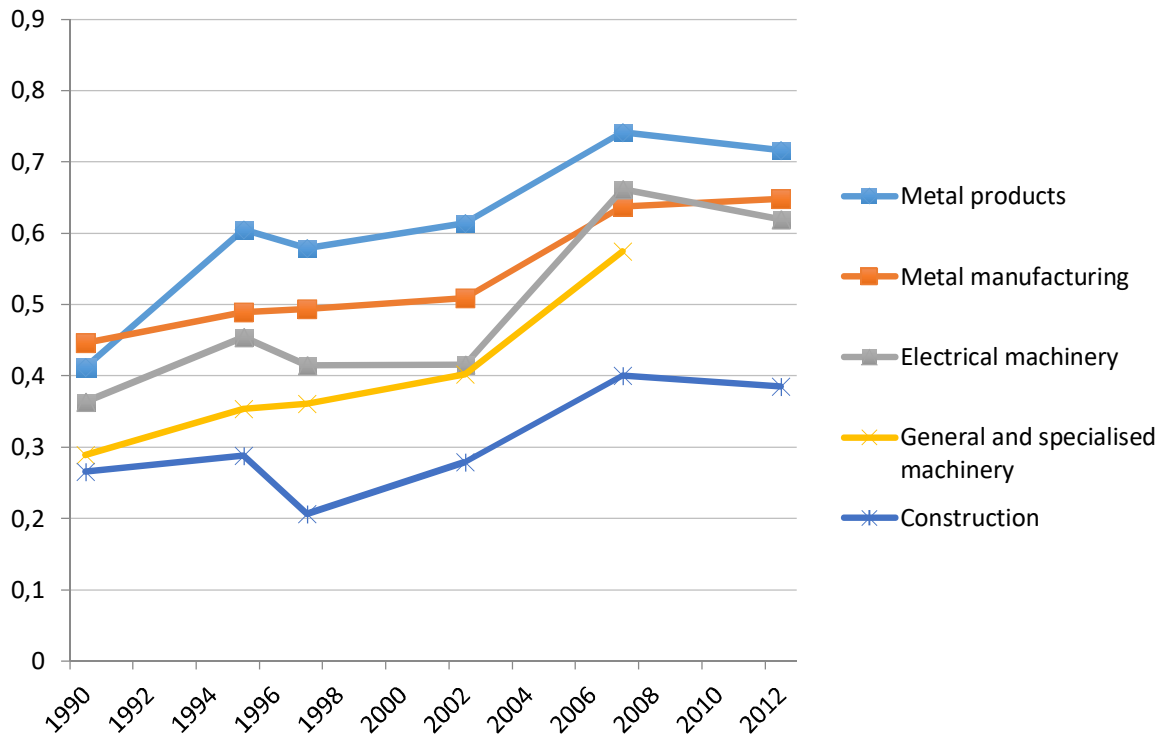


Figure 55: 6. Transportation and Equipment

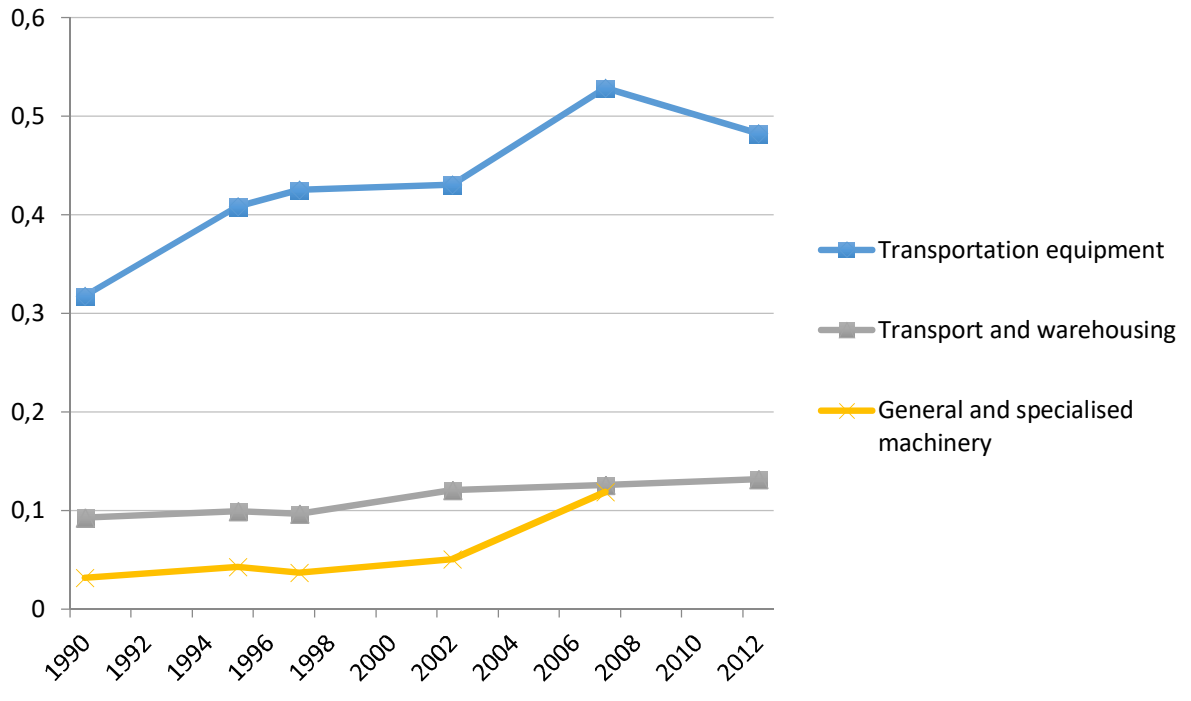


Figure 56: 7. Consumer Electronics Manufacturing

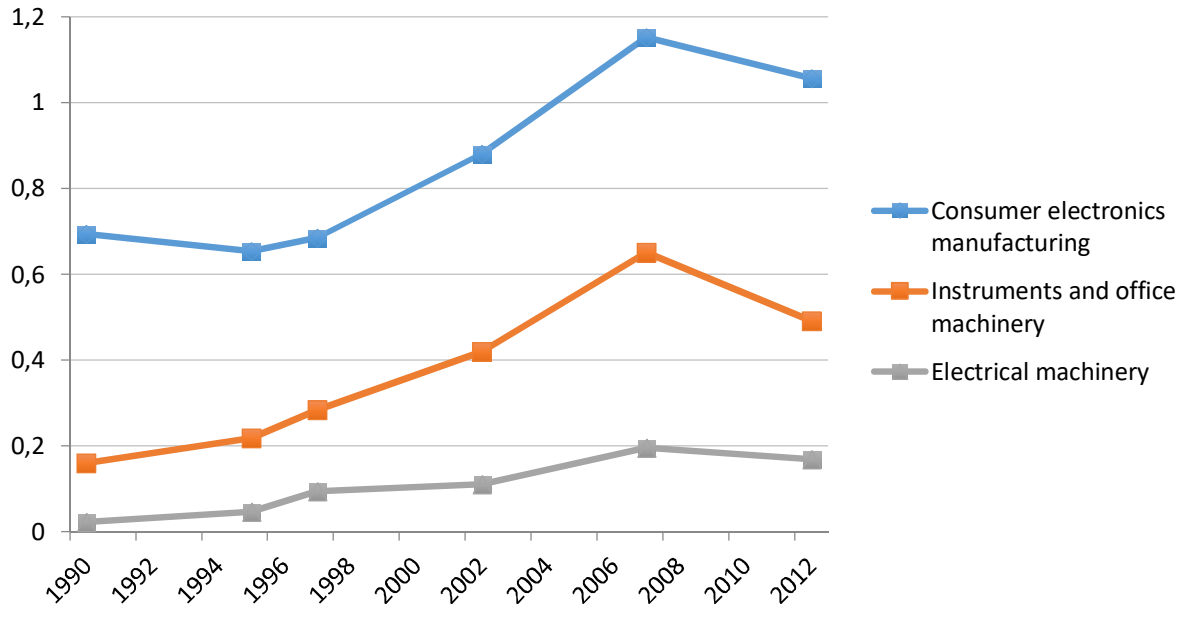
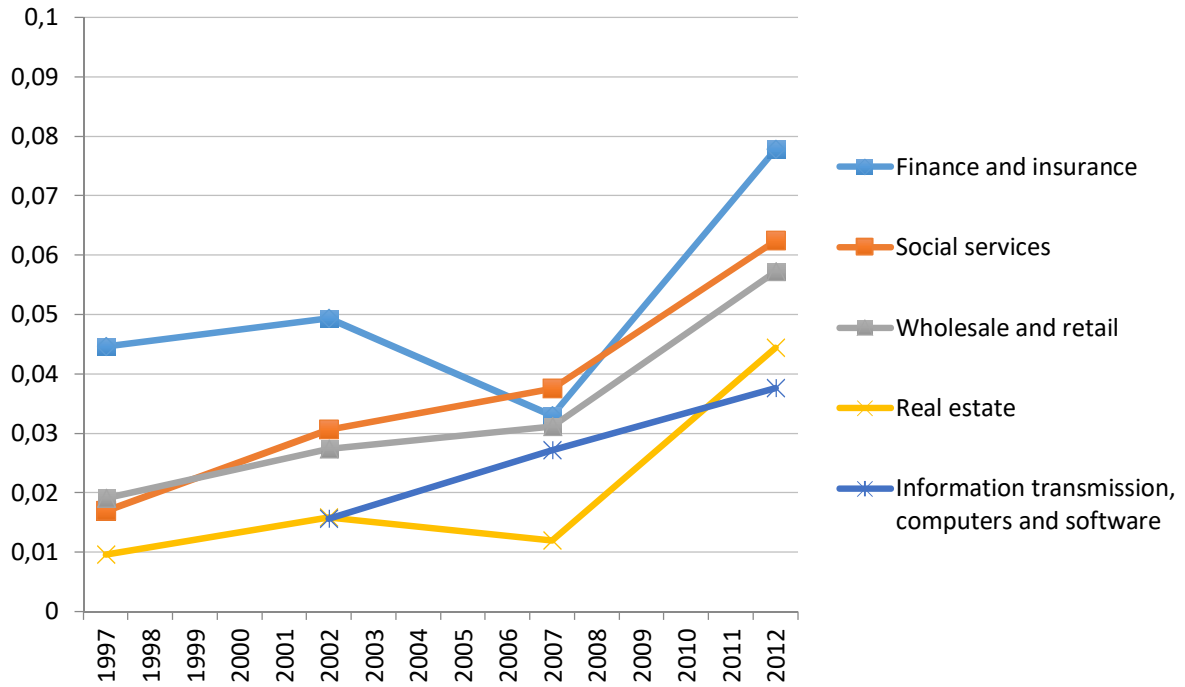
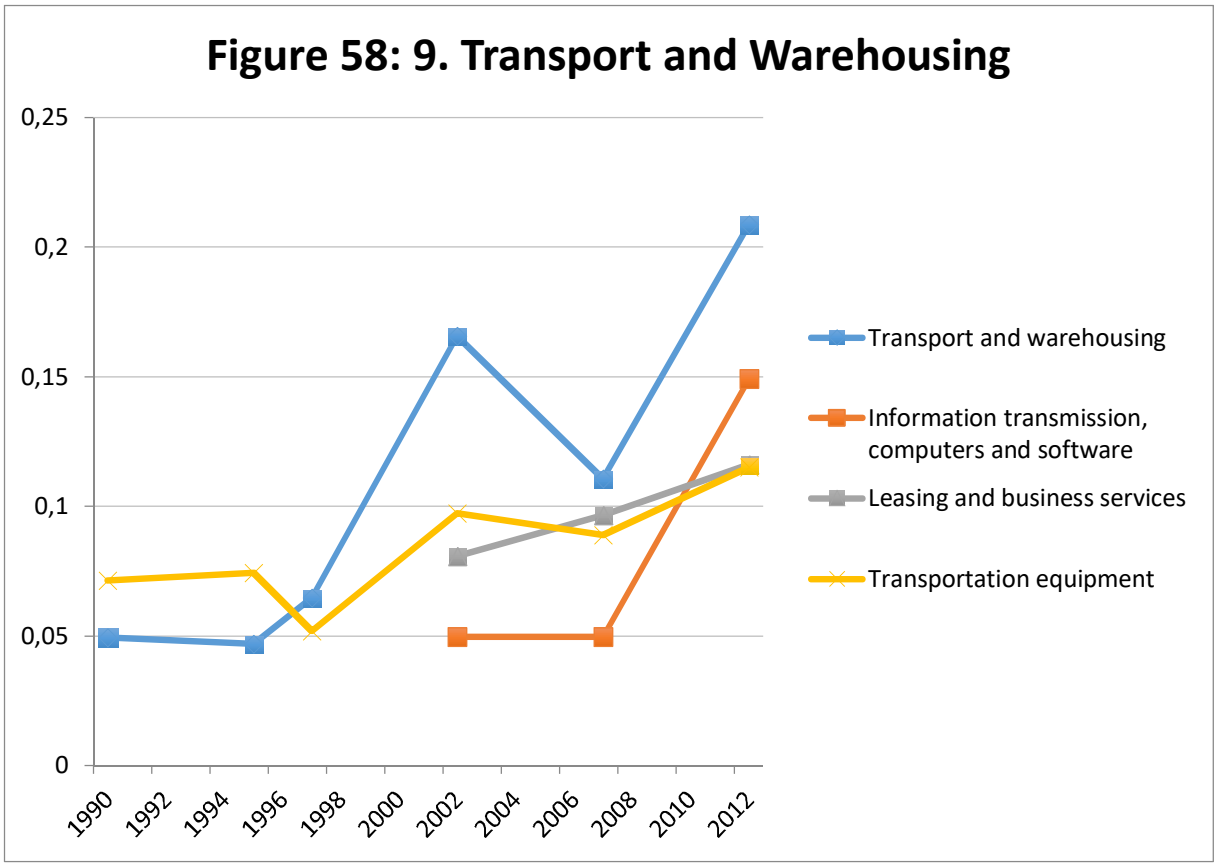
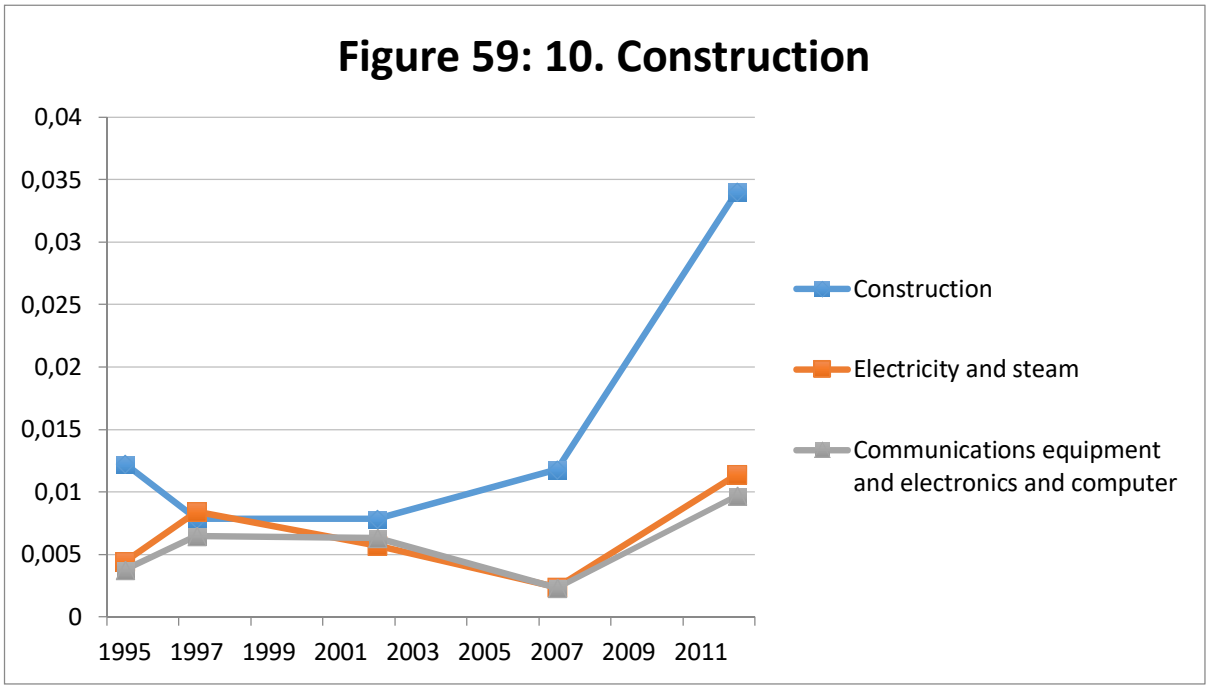


Figure 57: 8. Real Estate







The interpretation for the OFDI graphical results is even clearer. In the case of the OFDI technical coefficients, they go up in all cases. This is strong evidence for the transformative effect of Chinese OFDI on the Chinese economy, and also a vindication of this methodology.

As discussed above with respect to FDI, specificities and particularities between sectors may impact the actual effect of OFDI on the Chinese economy. But in all cases, the upward trend of the technical coefficients is undeniable. Technological change is on the march.

It is important to address questions of endogeneity and the direction of causality: for instance, is the technological change taking place through OFDI, or through other mechanisms (e.g. domestic R&D) that are being picked up by the technological coefficients? Other scholars have worked on the issue of OFDI driving domestic economic transformation, so here I can rely on their work as support for the role of OFDI driving this dynamic (van Pottelsberghe de la Potterie and Lichtenberg 2001, Yujuan & Ligao 2008, Ying & Si-feng 2008, Jie 2009, Ming-xia 2009, Amighini, Rabellotti, and Sanfilippo 2010, Sukun & Huiyan 2009).

The main conclusion of these papers is that technology-seeking OFDI produces reverse technology and spillover effects at home. In China's case, however, these effects were initially small because OFDI flows were small. But as these flows increase the size of the effect is increasing as well.

This is made clear by more recent scholarship that uses a novel database called Emerging Multinationals Events and Networks DATAbase or EMENDATA.[85] Using this database, Amighini et al. (2014) argue that there is "robust evidence in support to the view that outward FDI from China have so far resulted in an increase of domestic activities, contributing to enhance either firms' productivity and their scale of operation, measured through assets, sales and employment" (Cozza, Rabbellotti & Sanfilippo 2014: 1).

Therefore, even though there may be several simultaneous effects (e.g. OFDI and domestic R&D) the role of the OFDI in bringing about domestic economic structural transformation seems well supported.

[85] EMENDATA includes all cross border greenfield investments, mergers & acquisitions and minority investments from multinationals in emerging countries, occurred from 2003 to 2011. The main data sources of EMENDATA are: *fDiMarkets* from the Financial Times providing information on greenfield investments, *Zephyr* from the Bureau van Dijk (BvD) and *SDC Platinum* from Thomson Reuters both collecting data on Mergers and Acquisitions and other minority investments

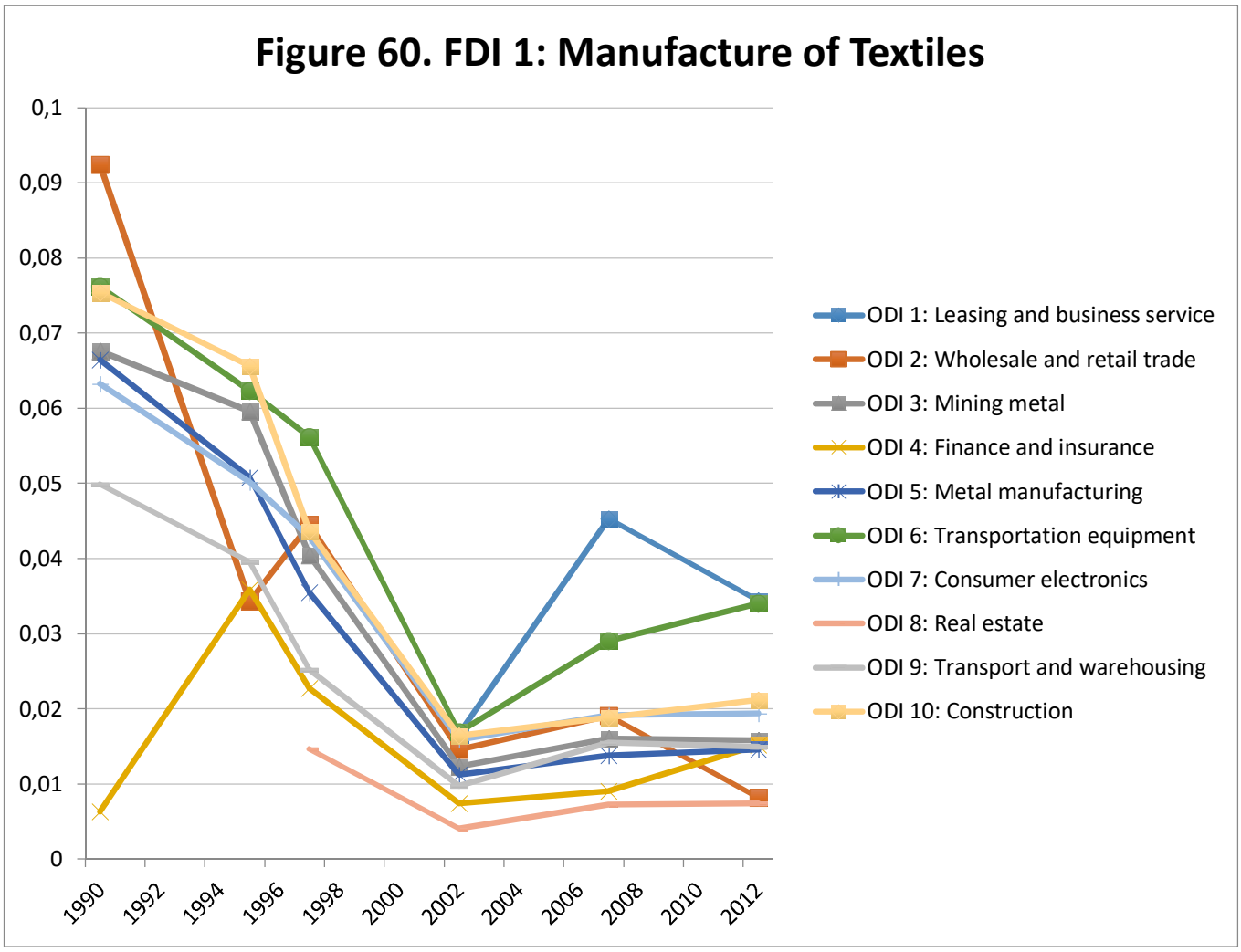


Figure 60. FDI 1: Manufacture of Textiles
0,1
0,09
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
ODI 1: Leasing and business service
ODI 2: Wholesale and retail trade
ODI 3: Mining metal
ODI 4: Finance and insurance
ODI 5: Metal manufacturing
ODI 6: Transportation equipment
ODI 7: Consumer electronics
ODI 8: Real estate
ODI 9: Transport and warehousing
ODI 10: Construction

Figure 61. FDI 2: Manufacture of Transport Equipment

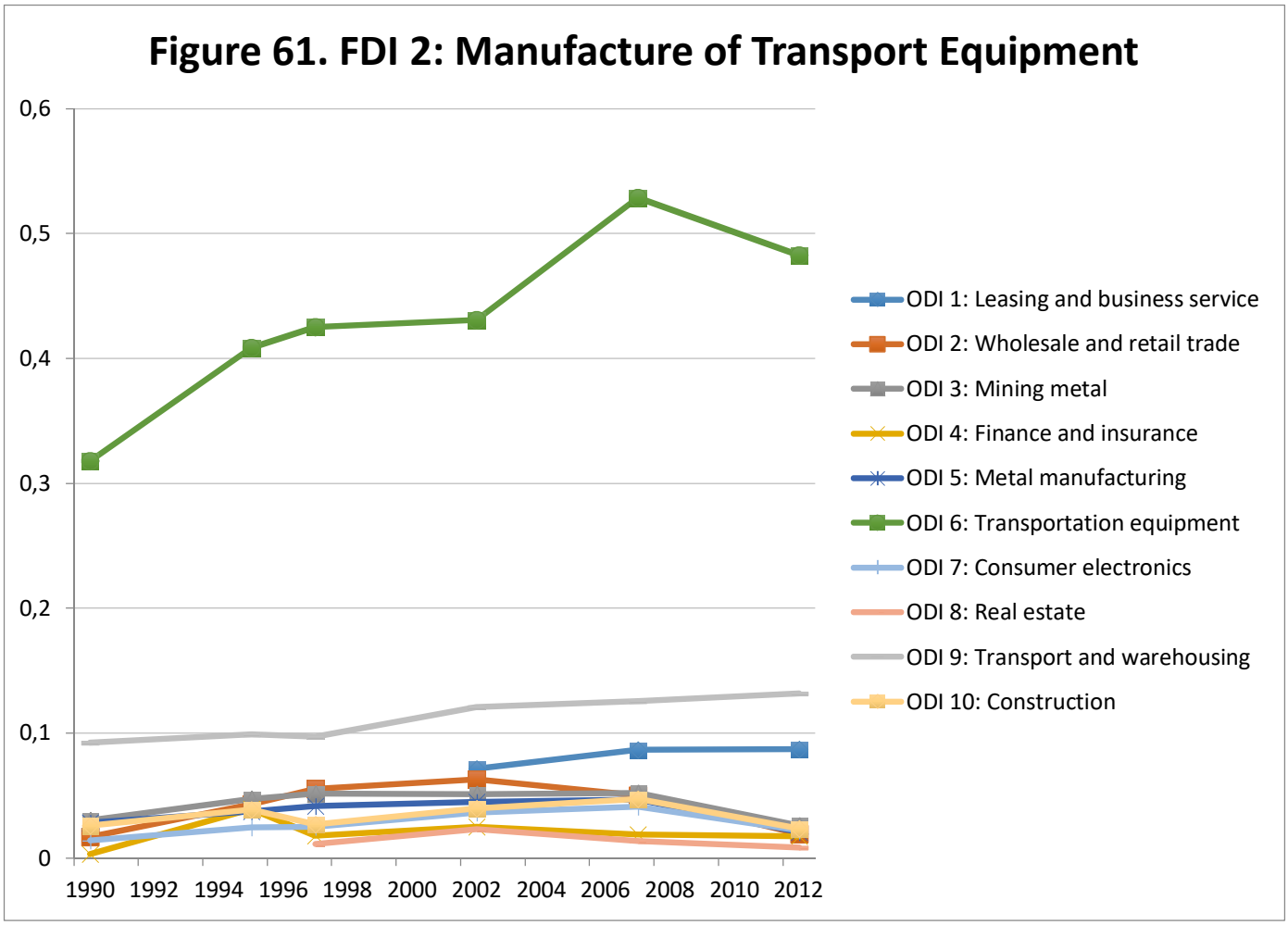


Figure 62. FDI 3: Manufacture of General Purpose and Special Purpose Machinery

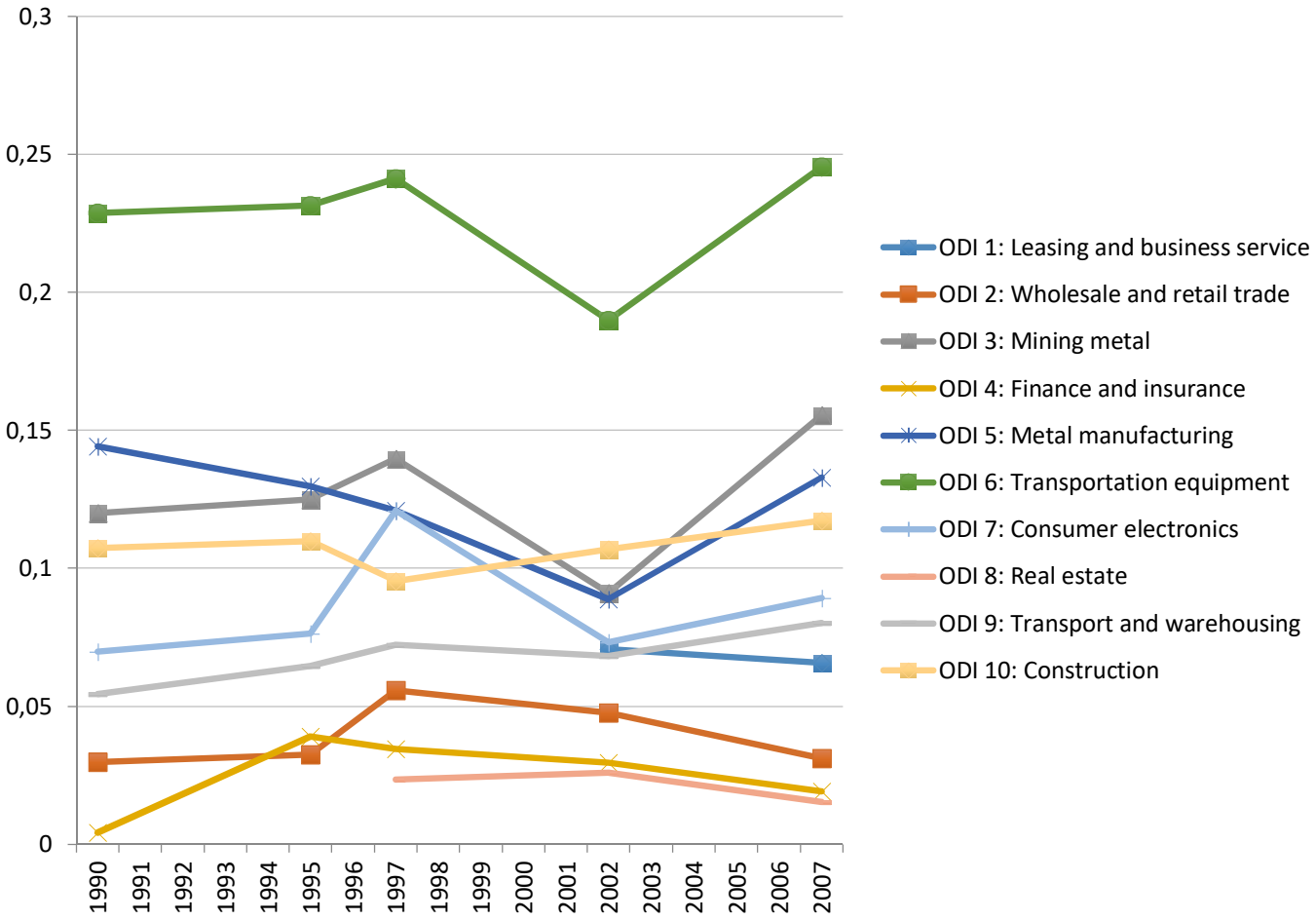
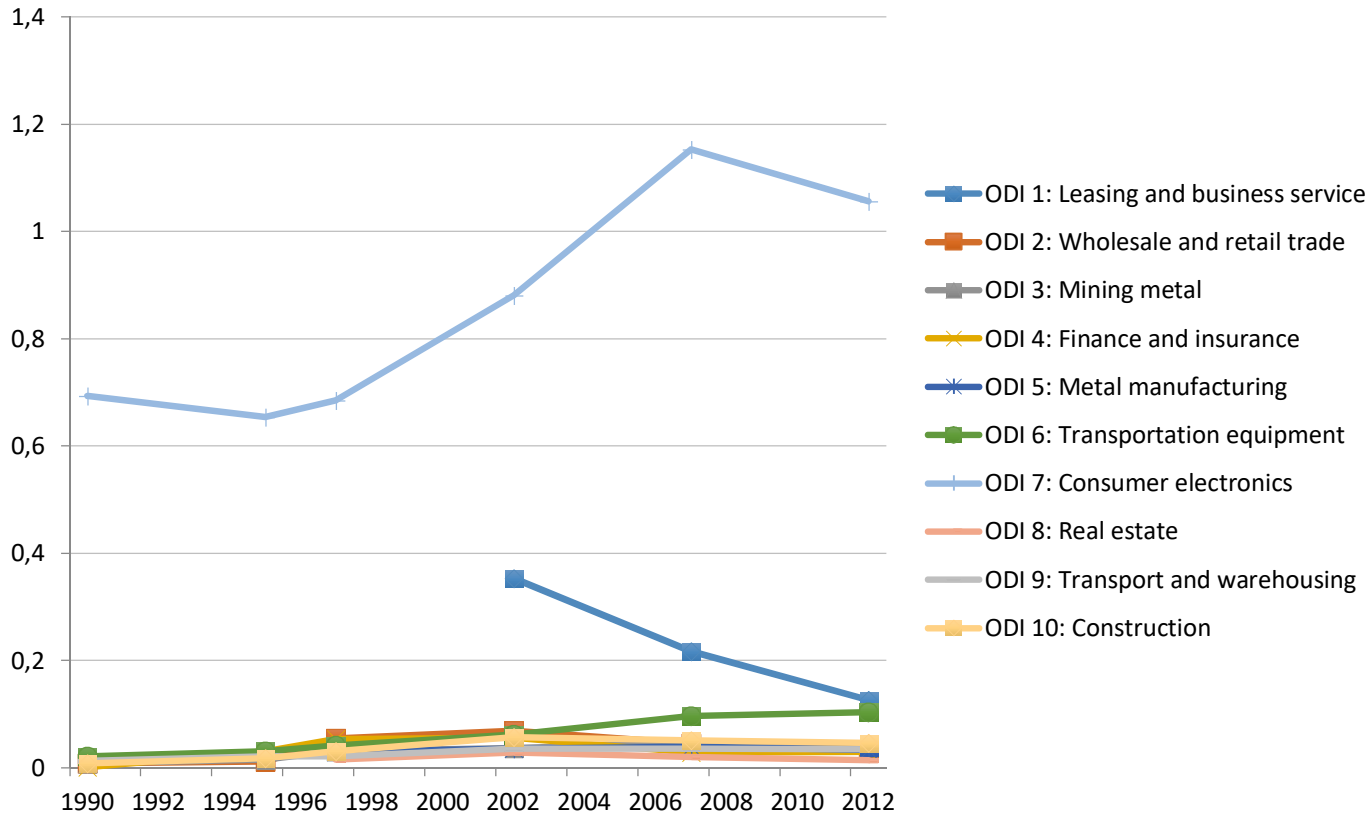


Figure 63. FDI 4: Manufacture of Comms, Computer and Other Electronic Equipment



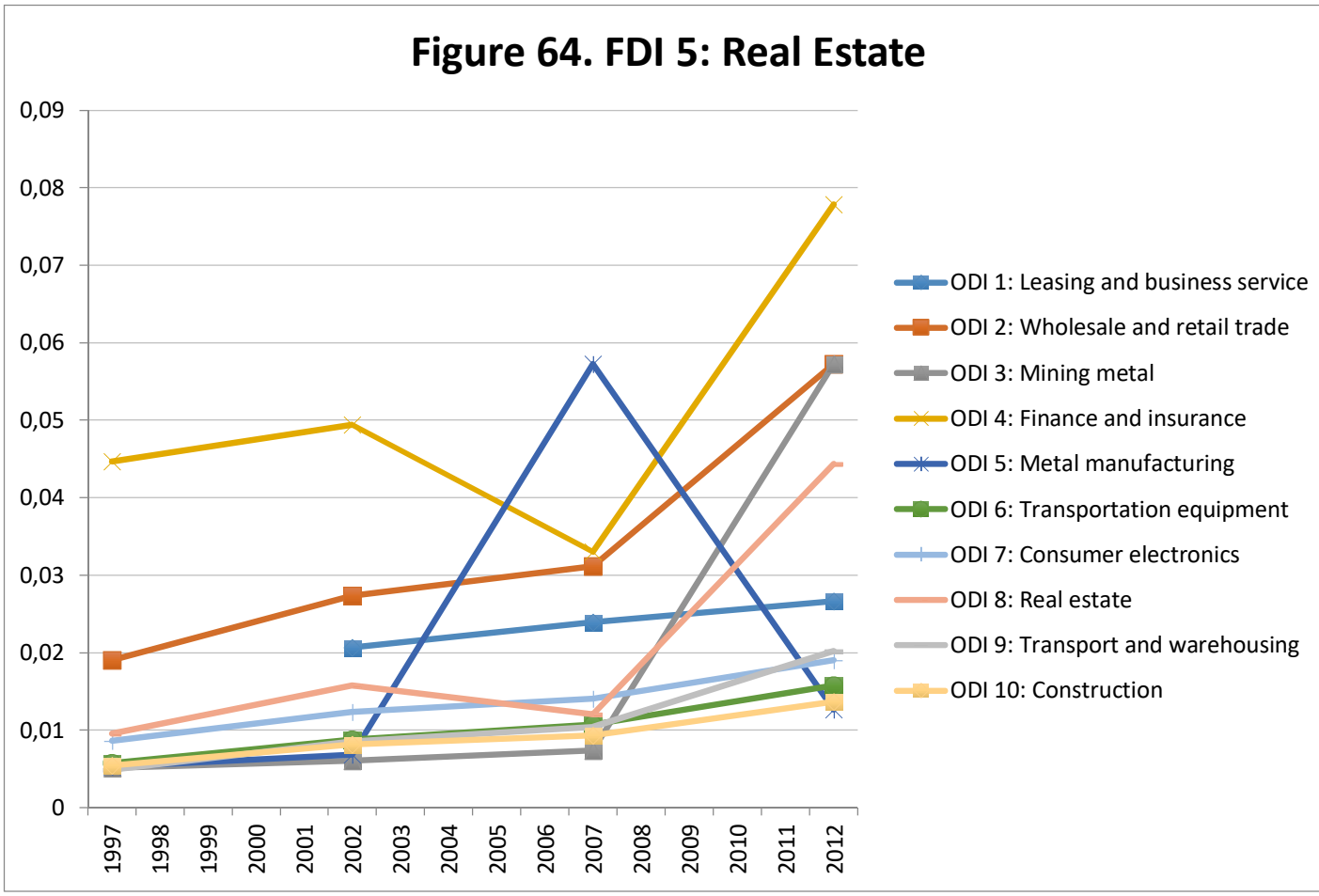


Figure 64. FDI 5: Real Estate
0,09
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
ODI 1: Leasing and business service
ODI 2: Wholesale and retail trade
ODI 3: Mining metal
ODI 4: Finance and insurance
ODI 5: Metal manufacturing
ODI 6: Transportation equipment
ODI 7: Consumer electronics
ODI 8: Real estate
ODI 9: Transport and warehousing
ODI 10: Construction

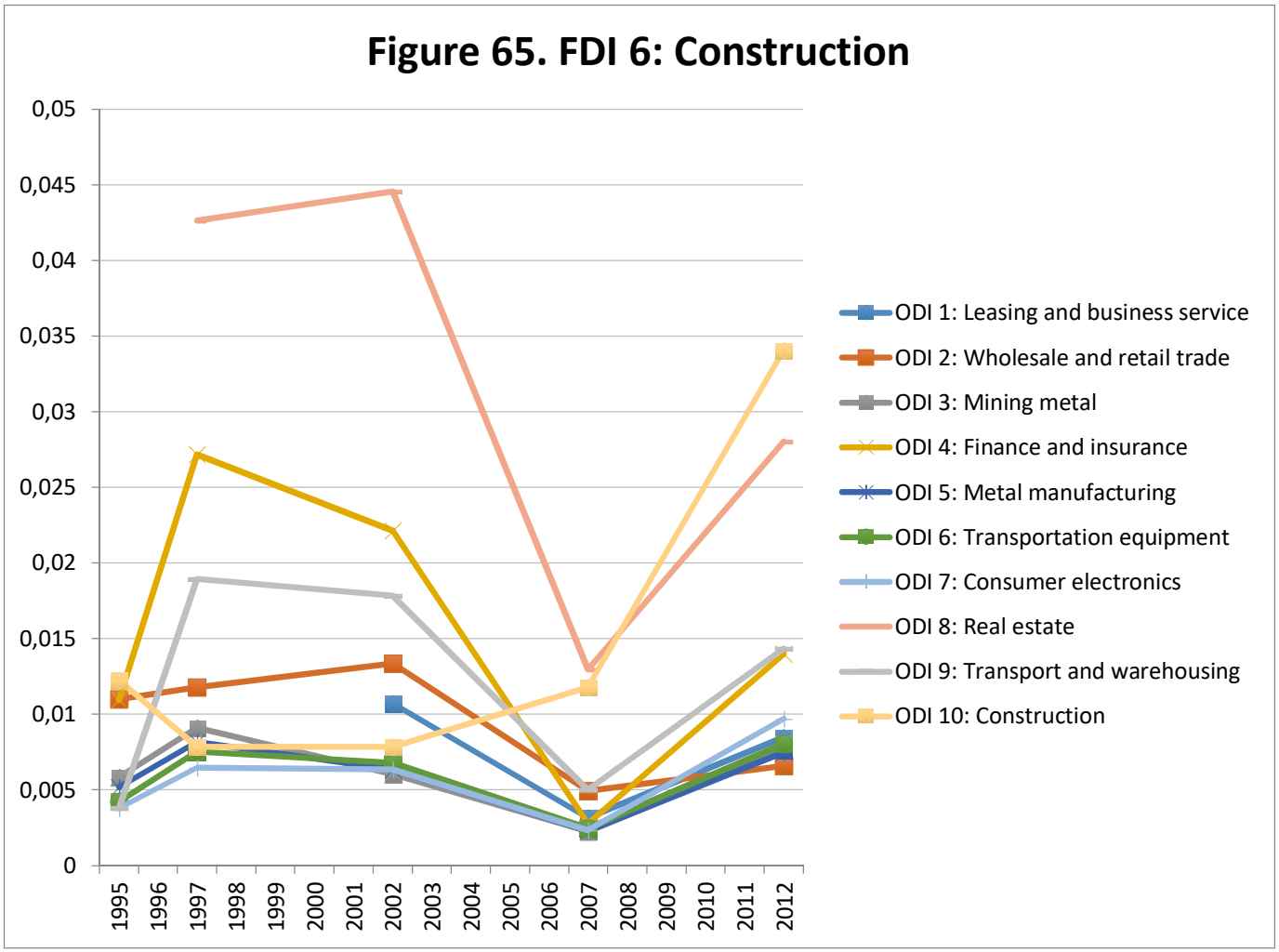


Figure 65. FDI 6: Construction
0,05
0,045
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ODI 1: Leasing and business service
ODI 2: Wholesale and retail trade
ODI 3: Mining metal
ODI 4: Finance and insurance
ODI 5: Metal manufacturing
ODI 6: Transportation equipment
ODI 7: Consumer electronics
ODI 8: Real estate
ODI 9: Transport and warehousing
ODI 10: Construction

Figure 66. FDI 7: Transportation and Warehousing

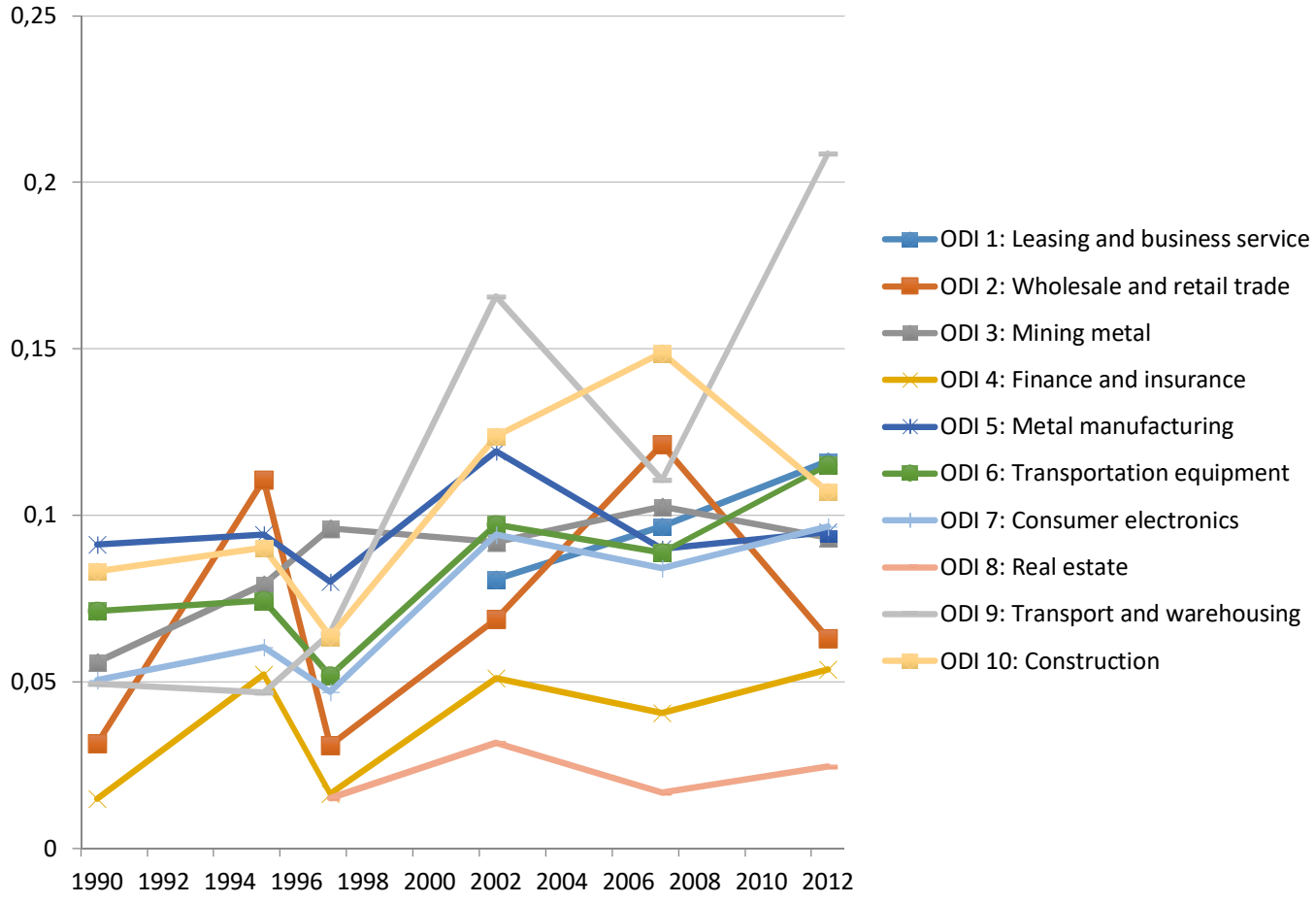


Figure 67. FDI 8: Food and Beverage

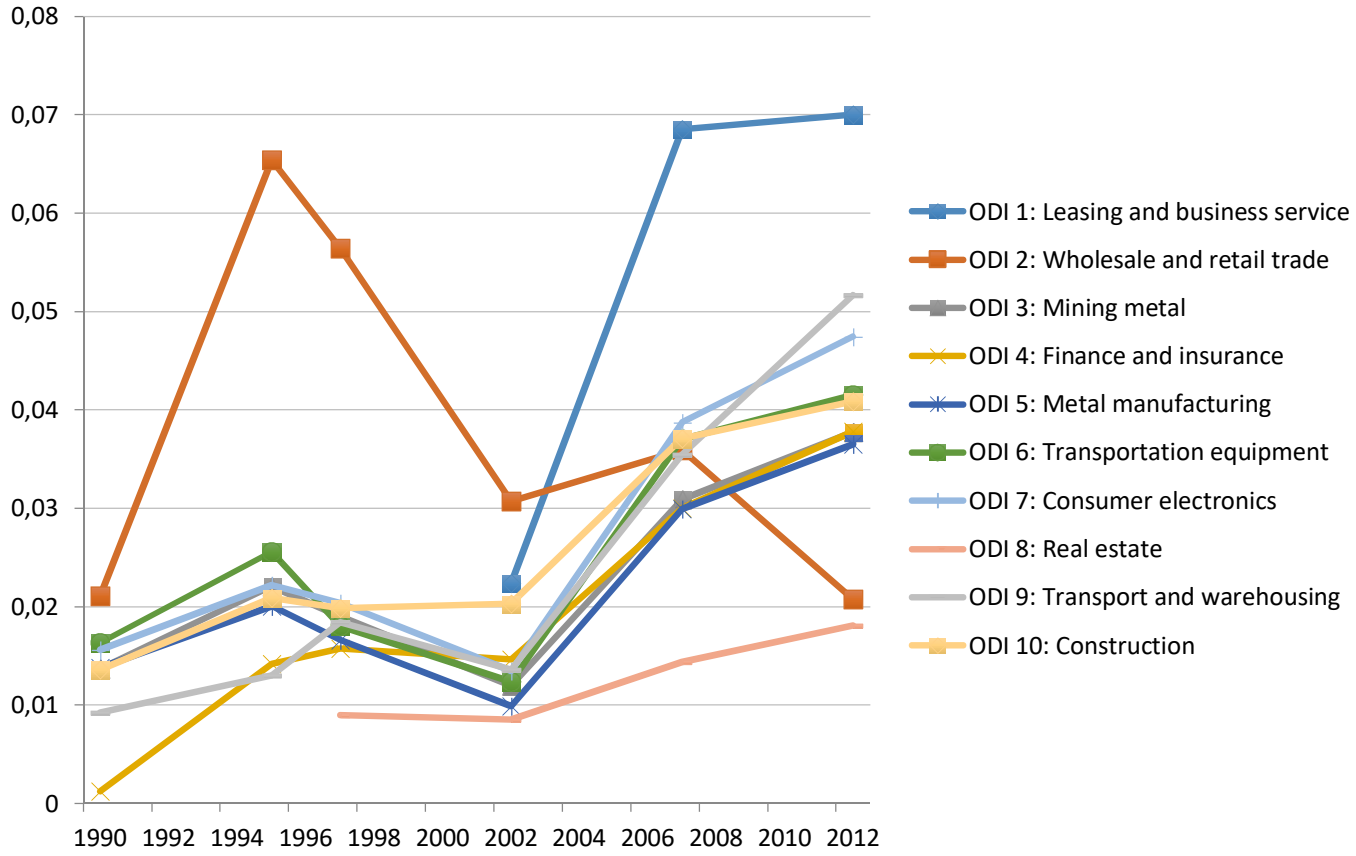


Figure 68. FDI 9: Electricity, Steam and Hot Water Production and Supply

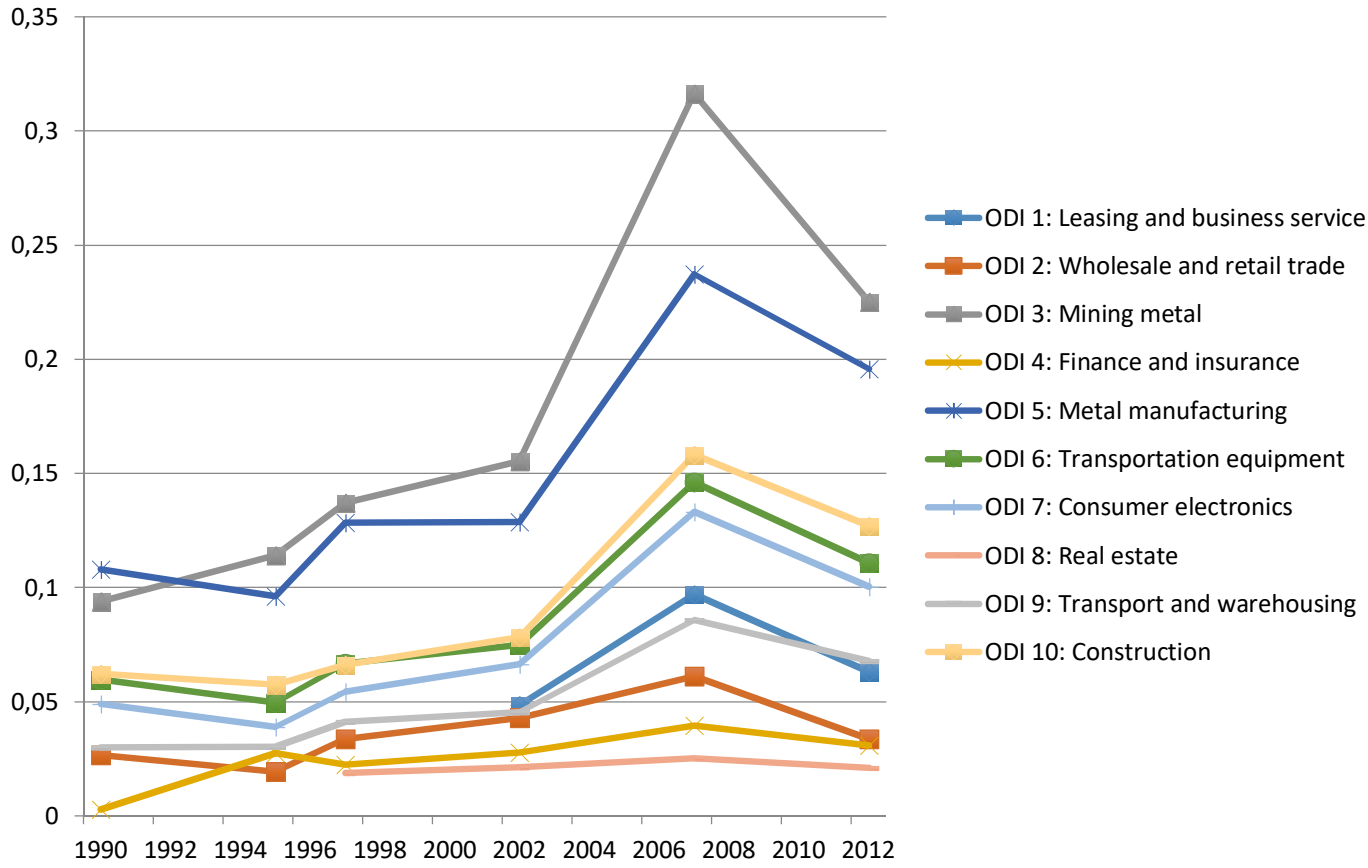
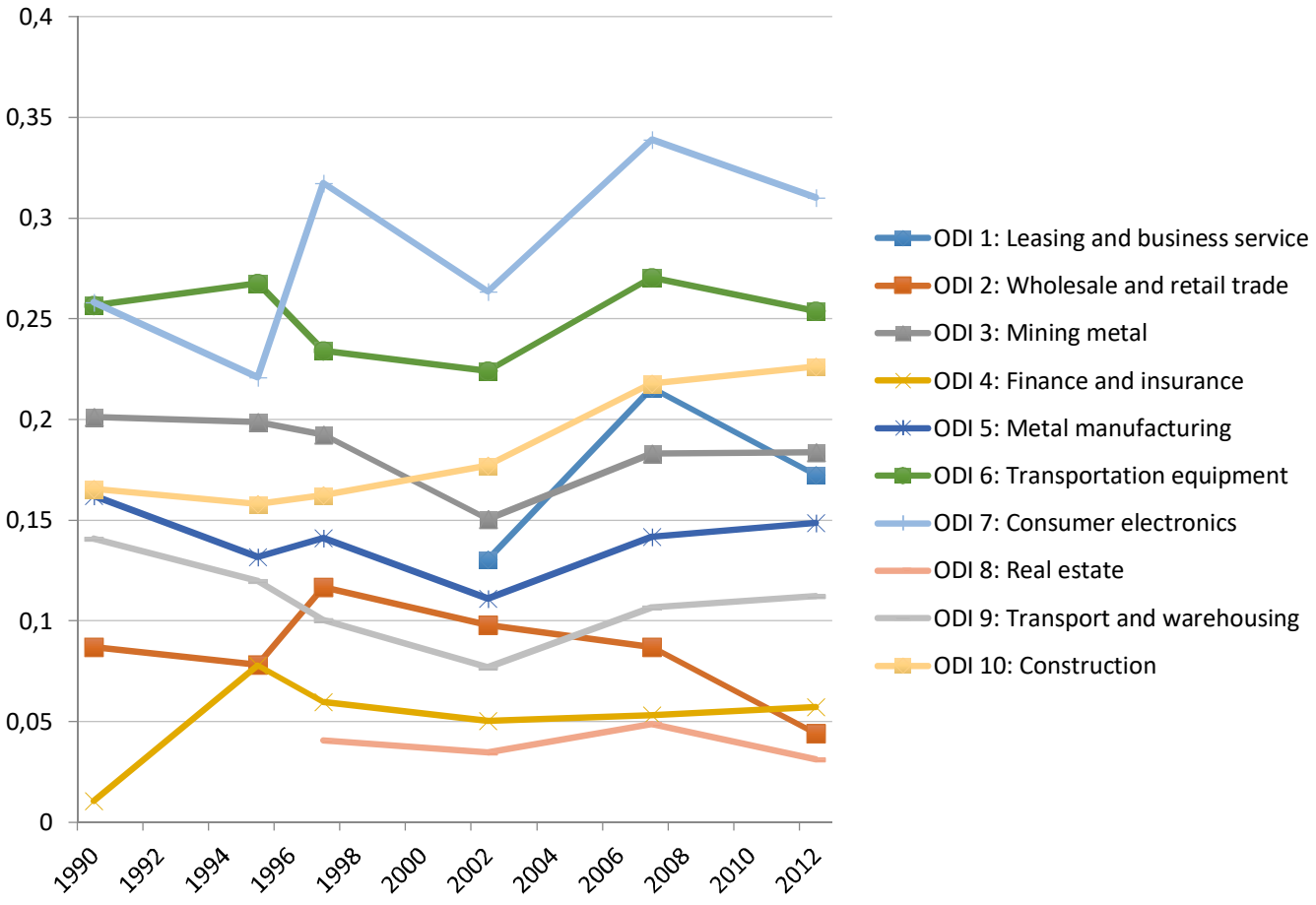


Figure 69. FDI 10: Raw Chemical Materials and Chemical Products



Analysis of results

How can we interpret these graphical results? The FDI-OFDI coefficients also go up over time, though the relationship is not as clear as for FDI or OFDI coefficients *per se*. However, in several there is a clear upward trajectory.

These include:

- FDI 5: Real Estate
- FDI 7: Transportation and Warehousing
- FDI 8: Food and Beverage
- FDI 9: Electricity, Steam and Hot Water Production and Supply
- FDI 10: Raw Chemical Materials and Chemical Products

Less pronounced, but still an upward trajectory include:

- FDI 2: Manufacture of Transport Equipment
- FDI 3: Manufacture of General Purpose and Special Purpose Machinery

- FDI 4: Manufacture of Communication, Computer and Other Electronic Equipment

One FDI-OFDI interaction has a mixed relationship, with some coefficients trending upwards and others downwards:

- FDI 6: Construction

Only one FDI-OFDI interaction has a clearly downward slope:

- FDI 1: Manufacture of Textiles

I believe the hypothesis is corroborated by the eight graphs that show an unmistakable increase in the value of the coefficients over time. In these cases, the data provide quantitative evidence for the transformative effect of Chinese FDI on Chinese OFDI. It is strong evidence in support of the hypothesis that eight out of ten relationships considered indicate a positive relationship, only one of ten produces a mixed result, and only one out of ten produces a negative result.

In the case of the mixed picture, where certain top OFDI sectors react quite positively, but others that do not, this does not argue against the hypothesis. It can simply mean that in the case of certain FDI-OFDI relationships the effect is strong, and in others not. Intuitively this kind of conclusion makes sense, given the heterogeneity between sectors of the economy. As mentioned above, different effects may be at play to different degrees in different sectors for idiosyncratic reasons. For instance, construction is relatively unique in that it is domestically based and generated.

To understand what is taking place within the eight sectors that do demonstrate a clear upward trajectory, in terms of the technical coefficients relating the top FDI sectors to the top OFDI sectors, requires looking more closely at the specific characteristics of those sectors.

I think it is worth noting that five sectors that have the strongest effect all seem more services oriented. I think it is also worth noting that all three of the relationships that present a positive but less accentuated dynamic are in the manufacturing sector. It would seem that the pass-through between FDI to OFDI may be more pronounced in sectors that are services based than in sectors that are manufacturing based. Perhaps manufacturing sectors have 'low-hanging fruit' when it comes to transmission mechanisms, but services sectors have more structural and fundamental shifts when the mechanisms effects are finally transmitted. This effect might take longer, but only the transmission in place, the effect might be stronger because more of a structural, persistent change takes place.

Another possible explanation is the differential strategic approach on the part of the Chinese government for high-tech and low-tech sectors. In the case of high-tech, the government may have adopted a more 'strategic regulation' approach, as discussed in the theoretical section (see chapter seven, section D). This explanation is substantiated by the fact that the sectors that have a stronger effect are in high and medium-high tech[86]:

- Manufacture of Coms, Computer and Other Electronic Equipment (high-tech)

[86] The determination of whether a sector is high, medium, or low tech is done using Eurostat (2017a); see also Eurostat (2017b) on identification of knowledge-intensive services.

- Manufacture of transport equipment (medium-high tech)
- Raw chemical materials and chemical products (medium-high tech)
- Manufacture of General Purpose and Special Purpose Machinery (medium-high tech)

In contrast, 'manufacture of textiles', which clearly exhibits a negative relationship, is low-tech and therefore of low strategic priority. In addition, an addition consideration to explain this strong negative relationship in the manufacture of textiles, I think it is significant that this sector is the iconic sector for FDI into China. Many foreign firms initially chose the Chinese market in the 1980s to assemble t-shirts, sports shoes, etc. There were many controversies over working conditions at the time, discussed in the global press. I would suggest that because FDI in this sector is so iconic, it may have preceded FDI in some of the other sectors. As a result, the data may not be capturing the effect adequately. If the investment took place in large part in the 1980s, before the data that we are looking at (which starts in 1990), then the FDI-OFDI relationship may have been taking effect in the 1980s and not as much in the 1990s, by which time the transmission mechanisms would already have taken place. As a result, this seemingly negative relationship may simply reflect the fact that we are not looking in the right place (due to do data limitations) to see the FDI-OFDI relationship effect at play.

Another possibility to understand sectoral differences in the relationship between IFDI and OFDI is the role of land policy. Land policy may be holding back some of the pass through of the technological benefits that could be taking place from IFDI to OFDI. One cannot own land in China, only lease it (the lease period is between 70 and 40 years depending on the kind of use; most commercial uses is for 50 years). What happens after this term is not clear, as it has not yet been tested. Land policies may be holding back market adjustments. Specifically, inward FDI that require land use (e.g. manufacturing) are not able to transition smoothly and efficiently to OFDI activities.

To illustrate, if a foreign investor invests in a joint venture factory to make routers in China, and then the JV decides to undertake outward investment in sensors to acquire technology for the internet of things, but because the Chinese investor does not own the land, he/she may have a harder time moving out of one activity and into the other, either by selling the land or changing the use of the land. The high regulation of land use may be limiting the adjustments and change that can take place, which is not the case regarding service-oriented activities, which are not tied down by the same constraint, and where the technological change can therefore be more readily passed through from the inward investment to new, outward investment activities.

One further idea is worth noting as context to interpret these results. An economy is not going to undertake OFDI across all sectors evenly and equally. Rather, its OFDI pattern will also be affected by certain endowments and strategic interests beyond the sole effect that FDI might have brought about through its transmission mechanisms. So the context requires a more nuanced understanding, especially of political and strategic motives for investment flows, and not just economic drivers.

As a result, one might conjecture that those sectors that respond more clearly to the positive FDI-OFDI relationship are reacting more to economic drivers, while the sectors that have more of mixed picture could be reacting to a mixture of drivers: economic, but also political and strategic. Construction does seem to have such characteristics, if one thinks of the numerous construction projects (e.g. stadiums and roads and bridges in Africa), which may be undertaken by the Chinese authorities not for purely investment potential but as part of deals with local leaders to have access to natural resources.

J. Two case studies

"Case studies show that the task for industrial policy strategists in identifying products of sub-sectors for targeting is not particularly difficult – it involves estimating costs of production, comparing with import prices and quality, estimating demand elasticity, and so on, with same sort of calculations as transnational corporations make every day…" (Wade 2005: 211).

This quantitative analysis can be complemented with qualitative analysis in the form of case studies. Looking at firm-level experience allows this dynamic to take life, and become tangible in the minds of the reader. This dissertation will therefore select two sectors for which the quantitative relationship between IFDI and OFDI was particularly noteworthy, and examine these dynamics through the investment path of two Chinese firms.

The first case study will look at the automotive sector, perhaps one of the most important in terms of IFDI into China and subsequent OFDI out of China, and examine the experience of Geely, one of the earliest private sector automotive firms in China. The second case study will look at the telecommunications manufacturing sector, which is one of the most regulated in terms of IFDI into China but one of the most active in terms of OFDI out of China, and examine the experience of Huawei, today a household name across the world.

These two case studies were chosen because they are in sectors that received significant IFDI and generated significant OFDI, so we can fruitfully examine if there is in fact a bridge or relationship between the two. The two case studies were also chosen because they reflect quite different approaches on the part of the Chinese state to managing the opening to IFDI: the automotive manufacturing sector welcomed IFDI with open arms (although guiding this foreign investment through a number of policies and programs); in contrast, the telecommunications manufacturing sector remained much more closed to IFDI (although it still received it, as we shall see). The aim was therefore to select case studies from sectors that reflected a different policy path, and see whether the IFDI-OFDI relationship still held.

Case study 1: Geely, from imitation to innovation

Geely's story is remarkable. Li Shufu founded a small firm in 1986 to make refrigerators. By 1994, it had upgraded to manufacturing scooters. A few years later, in 1997, it received a license to make vehicles, but not automobiles. At this point the story is a little murky, and parallels the rapid transformation that was taking place in the Chinese economy following reforms. Notwithstanding the fact that it's license was not for automobiles, it started manufacuturing automobiles in 1998, with its first model named the *Haoqing* (HQ). Geely would only receive official certification for making automobiles in 2001, three years later. When it finally received this certification, it officially became the first private automobile firm in China. Interestingly, facing an insufficient pool of trained talent, Geely opened a private university in 2000, called 'Beijing Geely University'. This is a remarkable testament to the fact that the firm needed skilled employees to be successful, and found that the extant institutions did not provide the labor supply it needed. Following a period of growth and successful expansion, Geely started exporting vehicles in 2003. This stepping stone sequence, of first exporting before investing abroad, is in line with the experience of many firms, that first export when they have ownership and location advantages (the 'O' and 'L' in Dunning's OLI Model), and only export when they have internalization advantages as well (the 'I' in Dunning's OLI Model) (see chapter two, section C).

Starting in 2005 the firm started to gain some international attention. That was the year it presented in the Frankfurt Motor Show, followed by the Detroit Auto Show in 2006. A few years later marked Geely's first OFDI transaction, which took place in 2009. It acquired bankrupt Australian transmission maker Drivetrain Systems for AUD 70 million.

The Drivetrain Systems deal is noteworthy for at least four reasons. First, Drivetrain Systems had been the world's second largest automatic transmission producer, producing for Ford, Chrysler, SsangYong and Mahindra, in addition to producing for Geely itself. So Geely gained first-hand experience as a customer of the firm before undertaking OFDI. Second, Geely's first OFDI transaction took place in Australasia, relatively close in geographic proximity to China. This follows the theory that geographic (as well as psychic) distance increases the cost of doing business and decreases the facility with which OFDI can be successfully leveraged (see chapter two, section E, sub-section 5 'Gravity variables'). Only after Geely gained confidence and experience through OFDI in its own neighborhood, relatively speaking, did it start to undertake OFDI further afield in Europe and the United States. Third, this deal aimed to acquire Drivetrain Systems, intellectual property, as the firm had "designed high-torque, seven-speed and eight-speed automatic transmissions, hybrid transmissions (for petrol-electric cars), dual clutch transmissions and continuously variable transmissions".[87] Fourth, the approach that Geely took to integrating its new acquisition was in line with the post-acquisition 'light-touch integration' discussed below (see chapter nine, section B, 'Managerial practices for OFDI to act as a channel for domestic upgrading').

The very next year, in 2010, Geely suddenly captured international attention with its OFDI acquisition of globally recognized car-maker Volvo. Geely paid USD 1.8 billion for the firm, which also included Volvo's intellectual property. This represented China's biggest foreign car maker acquisition to date. It is also an example of emerging market firms seizing opportunities to pick up distressed assets during the 2007 Global Financial Crisis and 2009 Euro Financial Crisis as leading firms stepped back from their international footprint to consolidate their operations following the downturn (see chapter two, section A). Just to provide some context of the distress that car makers (and other firms) were under as a result of the crises, Ford had paid USD 6.5 billion for Volvo in 1999. What is also interesting is that Geely founder and chairman explicitly endorsed the post-acquisition light-touch integration approach upon acquiring Volvo, stating that he would unleash the potential of the firm, but not try dictate its way of doing business: "A tiger belongs to the forest. It belongs to the wild world and not confined in a zoo. We need to liberate this tiger".[88]

[87] Jones, Howard "Hard to compete with DSI factories in China on cost", 29 July 2013, *The Border Mail*, published: http://www.bordermail.com.au/story/1668073/hard-to-compete-with-dsi-factories-in-china-on-cost/

[88] Bolduc, Douglas "Volvo buyer promises to 'liberate' the brand", 29 March 2010, *Automotive News*, http://www.autonews.com/article/20100329/COPY01/303299901/?template=print

Figure 70: Geely's origins and expansion

Source: Author's elaboration.

Thereafter, Geely's global roll accelerated. It used OFDI to acquire bankrupt London Taxi Company (the iconic Black Cab) from Manganese Bronze Holdings in 2013 for only GBP 11 million. By 2015, Geely had also successfully integrated Volvo in its operations. That year Volvo became the first company to sip made-in-China vehicles to the United States. The following year, 2016, Volvo sold more vehicles and made a greater profit than at any time since its founding. This also marks the year that the Volvo XC90 won the North American Truck of the Year Award, beating BMW, Mercedes, and Audi.

Notwithstanding successfully using OFDI to acquire foreign firms, Geely also used OFDI to start greenfield operations for its traditional car offering. By 2016, it had production or assembly facilities in Belarus, Egypt, Iran, Sri Lanka, Ethiopia, Iraq, and Sudan. Its global presence might have gone undetected for longer since perhaps policymakers and business people from the West do not operate with as much facility or frequency in these markets. So Geely's expansion went relatively unnoticed. This was a savvy strategy, in the sense that it targeted markets that might have been relatively unattractive for Western firms on account of either geopolitical dynamics (e.g. sanctions) or perception of greater risk (see chapter two, section E, sub-section 3 'Institutional variables').

Geely also leveraged the knowledge it acquired from its OFDI to start new greenfield operations, including moving into a more sophisticated market segment. In 2016 it founded Lynk&Co, using several market innovations. These cars will focus on internet connectivity, as well as being customized for, and sold directly to, each customer, bypassing traditional retail operations (somewhat similar to the successful model developed by Tesla for its sale of electric vehicles). What is particularly interesting is that Lynk cars will be positioned halfway between Geely and the Volvo brand. In this way, Geely aimed to contest the more economic market segment with its Geely brand, the mid-point market with Lynk&Co, and the high-end market with Volvo. However, the firm did not stop there.

In 2017, Geely used OFDI to acquire Malaysia's Proton to access Southeast Asian market, one of the fastest growing. This deal also gave it majority shareholding of the UK-based brand Lotus, which manufactures cars for the luxury market. Geely's strategy therefore seems to be to contest

all market segments, from the lower to the very highest, by having a different brand in each market segment. However, the firm did not stop there either. To help contest these more contestable higher-end, sophisticated markets, in 2017 Geely signed an agreement with Sweden to set up an innovation center. By then, the firm had design centers in Sweden, Shanghai, Barcelona and California. It used OFDI to set up these centers and tap into local talent.[89]

In 2017, Geely also used OFDI to acquire Terrafugia, a United States' firm founded by graduates from the Massachusetts Institute of Technology (MIT) that produces 'transition roadable aircraft'. Or in common parlance, flying cars. Following the announcement of this deal, one commentator noted, "Although it will take many years for makers of flying cars to achieve commercial success, it makes good sense for Geely to first go in and acquire the know-how for their long-term agenda".[90] Geely is using OFDI to position itself for future success.

Figure 71: Geely's future and innovation

Source: Author's elaboration.

[89] *En passant*, the use of OFDI to set up R&D facilities abroad is a fascinating and understudied phenomenon. There seems to be a trend of developed markets using OFDI to set up R&D facilities in developing countries, where the cost of these activities is much lower, but where there can be strong intellectual capacity (e.g. Silicon valley firms opening offices in Bangalore, India), while developing countries seem to be using OFDI to set up R&D facilities in developed countries, willing to spend funds in more costly markets to tap into knowledge at the frontier (e.g. Indian firms opening offices in Silicon Valley, California, United States). The relationship between OFDI, R&D, and development is understudied and ripe for analytical exploration.

[90] Barclay, Andrew, "Geely buys US start-up Terrafugia and promises a flying car by 2019" 15 November 2017, *South China Morning Post*, published: http://www.scmp.com/business/companies/article/2120084/geely-buys-us-start-terrafugia-and-promises-flying-car-2019

Summary of Geely's commercial timeline

- 1986: Li Shufu founds Geely to make refrigerators
- 1994: Starts making scooters
- 1997: Receives license to make vehicles (not cars)
- 1998: Starts making cars, the Haoqing (HQ)
- 2000: Establishes private Beijing Geely University
- 2001: Receives official certification to make cars (first private car firm in China)
- 2003: Starts exporting vehicles
- 2005: Presents at Frankfurt Motor Show
- 2006: Presents at Detroit Auto Show
- 2009: Acquires Australian Drivetrain Systems for AUD 58 million
- 2010: Acquires Volvo for USD 1.8 billion
- 2013: Acquires bankrupt London Taxi Company for GBP 11 million
- 2015: Volvo becomes first company to ship made-in-China vehicles to US
- 2016: Volvo sells more vehicles and makes higher profits than since founding
- 2016: Geely plants in Belarus, Egypt, Iran, Sri Lanka, Ethiopia, Iraq, and Sudan
- 2016: Founds Lynk&Co
- 2017: Signs an agreement with Sweden to set up an innovation center
- 2017: Acquires Malaysia's Proton and Lotus cars
- 2017: Acquires United States' Terrafugia

This impressive narrative can be understood through IFDI into China bringing about domestic economic structural transformation that made it possible for Geely's to undertake OFDI out of China. In one sentence, IFDI policies by the Chinese state brought about technology transfer from foreign to domestic firms that can directly help explain Geely's OFDI. The story starts in another part of Asia, with another automotive firm called Daihatsu. The reader may or may not be familiar with this brand. But everyone will have heard of the Daihatsu's minority shareholder that eventually fully acquired the firm: Toyota.[91]

In 1984, a licensing agreement was signed between Daihatsu and Tianjin Motors. This agreement is not IFDI, since it did not involve direct investment on the part of Daihatsu in China. IFDI will come later. But this licensing agreement is the first step in the process.

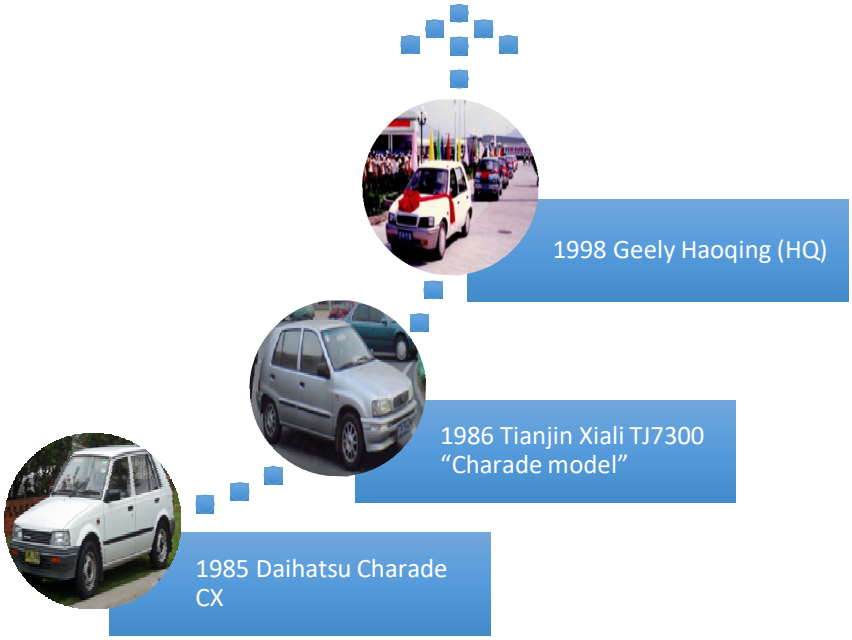
Daihatsu had been producing the Daihatsu Charade CX in Japan. Tianjin Motors then started to produce the Tianjin Xiali TJ7300 "Charade model". Both of these were produced in the mid 1980s. However, Geely started exporting its Haoqing (HQ) in 1998. What is noteworthy, is that the Haoqing was essentially a Charade but under another name:

> "Original components, *copied Charade components*, and components of other vehicles were combined to produce the Haoqing. The body design was very similar to that of the Charade. Many suppliers of the Charade were contacted for the purchase of components. At the beginning, around 60 per cent of the components (including engine and transmission) were purchased directly from the supplier of the FAW Xiali. Copied components of the Charade represented 10 per cent of Haoqing's components. *In total, around 70 per cent of the components were interchangeable with that of the Charade model*… other Geely models could also be characterized by their quasi-open modular architecture. The Maple 203 and 303 produced in Geely Shanghai plant were *based on the imitation* of Citroen ZX, the French car assembled in the DFM [Dong Feng Motor] Citroen joint

[91] Toyota became a minority shareholder of Daihatsu in 1967, and eventually acquired the company completely in 1998.

venture" (Freyssenet 2009: 392; emphasis added).

Figure 72: IFDI technology transfer in action…



Source: Author's elaboration.

Critical to the process, however, was supportive government policy that led to technology transfer. In 1993 China relinquished central control of the automotive sector. This was partially accomplished through the China National Automotive Industry Corporation, which had been charged since 1982 with planning and project approval, becoming an industry association. The following year, however, China enacted a new *Industrial Policy for the Automotive Industry,* modeled on the Republic of Korea's approach in the 1970s (Richet, Hua, and Wei 2001). This policy included a number of measures intended to strengthen and grow the domestic automobile industry. It included tariffs on imports and imported parts. It strengthened existing requirement of joint ventures with foreign ownership limited to 50% of the firm. Local content requirements were also established for parts and components of at least 40% of production, but higher levels were strongly encouraged. Finally, there were knowledge transfer requirements to domestic partners, and the establishment of joint technical centers for training Chinese workers. The state therefore played a strong and active role in governing or nudging the market through using 'strategic regulation' (see chapter seven, section D). Into this policy context, enacted in 1994, stepped Toyota.

Toyota was very keen to enter the Chinese market, given its size but especially potential. The joint venture (JV) requirement with a Chinese local firm limited Toyota's options to gain a foothold in the market. The two largest Chinese automobile manufacturers (FAW and Dongfeng) had already established JVs with foreign partners. The third largest Chinese automobile manufacturer (Shanghai Automotive Industry Corp.) had refused a JV with Toyota, and Toyota had refused a JV with Guangzhou Motor. The only option left was Tianjin Motor. At the time it was only a mid-ranked company, but it did have a licensing agreement with Daihatsu, in which Toyota was already a significant shareholder and which would fully become part of the Toyota Group just a couple of years later.

What is fascinating is that Toyota did not initially want to partner with Tianjin, but was compelled to do so through Chinese IFDI policy: "Toyota did not want to tie up with Tianjin Motor, as it [Tianjin] was in the midst of a financial crisis caused by sluggish sales of its mainstay model, the Charade. Toyota management foresaw difficulty if China set the rebuilding of Tianjin Motor as a condition of a joint venture. Toyota eventually opted to accept the deal, however."[92] Toyota preferred to do things the 'Toyota way', namely through setting us a sales network in a foreign market and gradually raising the rate of local car production. But because of Chinese IFDI policy, this was not an option: "The Chinese government put emphasis on nurturing peripheral industries and employment, and came up with the condition that parts manufacturers had to make inroads into China at the same time Toyota did".[93]

As a result of China's 1994 *Industrial Policy for the Automotive Industry*, Toyota established one technical center and four JVs in China in just three years:

- 1995: China Domestic Production Technical Support Center (technical)
- 1995: Tianjin Fengjin Auto Parts Co. Ltd. (axles and differentials)
- 1996: Tianjin Toyota Engine Co., Ltd. (engines)
- 1997: Tianjin Toyota Forging Co. Ltd. (steel)
- 1997: Tianjin Jinfeng Auto Parts Co. Ltd. (propeller shafts and other parts)

Here is where the two threads of the story come together in one strand. IFDI policy led Toyota to bring and transfer technology to Tianjin Motor Co. But recall that this is the very same firm from which Geely was learning! (see figure 72). And just look at the timeline: Toyota transferred technology to Tianjin from 1995 to 1997. Geely adopted this technology from Tianjin and successfully started exporting the Haoqing in 1998… What is particularly noteworthy is that the 1998 Haoqing was in fact the fourth prototype, the first three having failed, not meeting quality and security tests. So it seems clear that IFDI was key to bringing and transferring knowledge and technology for Geely to produce its first successful car, which was the basis of its later OFDI.

The story does not stop there. Supportive policy measures on the part of the Chinese state to help develop its automotive industry continued. As a result, a case was brought against China in 2006 at the WTO by Canada, the European Commission and the United States, and was joined by Australia, Brazil, Mexico, Japan, Thailand and Argentina. The case was ruled against China in 2008. This prompted China to loosened some rules, but it kept others in place, while also simply adopting new regulatory instruments[94]. In addition to the rules on market entry, exit, and local content requirements, the central government also employed company-level interventions, which varied according to strategic value:

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[92] Takayama, Ichiro, "Tianjin tieup Toyota's only way to get China joint venture nod", 26 August 2004, *Japan Times,* Published: https://www.japantimes.co.jp/news/2004/08/26/business/tianjin-tieup-toyotas-only-way-to-get-china-joint-venture-nod/#.Wm4tl5M-fOQ

[93] Ibid.

[94] Examples of new regulatory instruments include enactment of new traffic laws by local government, development of legal and financial support systems for consumption, encouraging industry consolidation by domestic automakers, setting an investment floor for new entrants, subsidies to taxi fleets and local governments to support high-tech and environmentally friendly cars, and directing state electricity grids to establish electric car charging stations (Hsueh 2011: 221).

> "To promote technological upgrading in passenger cars, the government regularly participated in negotiations with foreign automakers on behalf of domestic partners. For example, in 2006, a senior Chinese Communist Party official on the legal team of the National People's Congress participated in contract negotiations with DaimlerChrysler and BMW on behalf of Lifan Group, a quasi-private producer of motorcycles and passenger cars…Moreover, despite strict controls on FDI entry and exit, the government willingly struck company-level bargains with FDI in exchange for terms that increased its strategic goals. It relaxed the 50 percent ownership threshold when it permitted Honda to own two-thirds of its assembly plant in Guangzhou after Honda promised to export production in Europe" (Hsueh 2011: 221-22)

The regulatory framework has kept evolving in a dynamic way. The new *Catalogue for the Guidance of Foreign Investment Industries* released in July 2017 introduced a national negative list for IFDI. This also cut down restrictive measures from 93 to 63 compared to 2015 *Catalogue*. In doing so, it changed its regulatory stance on vehicles. The new framework eliminated restrictions on batteries for new energy vehicles and motorcycles. It also removed the limit on the number of JVs that foreign enterprise can establish for manufacturing electric cars (previously capped at two). These recent reforms are in line with the strategic regulatory approach of liberalizing IFDI in sectors Indicative of how China liberalizes IFDI in sectors in which it has already developed strong domestic industries and now wishes to foster competition (e.g. batteries of new energy vehicles) or that are no longer key to domestic upgrading (e.g. motorcycles).

Case study 2: Huawei, becoming a 'European' firm

Huawei, the now globally recognized Chinese telecommunications manufacturing firm, provides another tangible example of how IFDI into China brought about domestic economic structural transformation that can help explain OFDI out of China. The telecom industry was chosen to complement the automotive industry for three reasons. First, both have been very significant in terms of IFDI and OFDI flows, respectively into and out of China. Second, looking at the input-output results in the previous section relating IFDI technical coefficients to OFDI technical coefficients, telecom manufacturing is one of the top IFDI-OFDI linked sectors (see figure 63). Third, in contrast to the automotive industry, the telecommunications manufacturing industry has been very closed to IFDI. If one can therefore see a relationship between IFDI and OFDI in such a closed sector, then the argument is more strongly defended, as even in such a closed sector, in which IFDI was severely limited, the transmission channels and transmission mechanisms can be seen to work. A high bar would have been met, and the argument could then more easily be extended to other sectors and industries less closed to IFDI.

The story of Huawei's relationship to foreign direct investment, both IFDI and OFDI, takes places in three phases. Huawei was founded in 1987 as a small company providing local line communication services. A few years later, it decided to switch technology and offer GSM and CDMA, while also manufacturing telecoms equipment. Just before the turn of the century, the firm undertook its first OFDI transaction, investing in Africa in 1999, and thereby launch the first phase.[95] This kind of South-South OFDI follows the theoretical framework discussed earlier, where emerging market firms use OFDI into other developing countries as a 'stepping-stone' strategy. Because of their institutional advantage operating in these environments, emerging market firms – such as Huawei from China – are better able to navigate market conditions (e.g. dealing with corrupt officials), and even provide products and services that are more adapted to these markets (e.g. telecommunications equipment that is hardier or easier to repair). Huawei's first OFDI may

[95] It is worth noting that just a decade following this investment, by 2009 the firm already had a presence across the African continent with offices in 18 countries, seven training centers, one R&D facility (in South Africa), for a total OFDI investment on the African continent of USD 1.5 billion.

therefore be a very good example of these dynamics. Also in 1999, Huawei opened an R&D center in Bangalore. The very next year, Huawei continued to seek knowledge and technology through using OFDI to open a R&D center in Stockholm, and then year after that, 2001, the firm opened four R&D centers in the United States. Clearly knowledge and technology acquisition was seen as paramount for its commercial expansion and success.

After these smaller forays into foreign markets, a long period of IFDI joint ventures took place, launching the second phase. One can speculate that the few early OFDI transactions in Sweden and the United States may even have been with the aim of familiarizing the foreign market with Huawei's products and services (and especially future potential), and thus planting the seeds of the commercial cooperation that was about to launch. What is especially important for the argument is that this commercial cooperation took place through IFDI, that it took place in the form of joint ventures and that in the vast majority of cases these joint ventures were located in China. This is quite surprising, given the *a priori* understanding that telecommunications manufacturing was quite closed to IFDI.

This began in 2003 with a joint venture with United States firm 3Com (the joint venture was named H3C) in Beijing and Hangzhou. The joint venture focused on R&D, production and sales of data networking products. Huawei later divested its 49% stake in H3C for US$880 million in 2006. Over the next five years, from 2003 to 2007, Huawei then completed a series of joint ventures will the 'who's who' of global telecommunications giants.

In 2005 Huawei established a joint venture with Siemens (the joint venture was named TD Tech) in Beijing. The joint venture focused on developing 3G/TD-SCMA mobile communication technology products. Huawei invested $100 million for 49% stake, while Siemens held 51%. Just a year later, Huawei established a joint venture with Canadian Nortel, North America's largest telecom equipment supplier at the time, for an undisclosed amount. In a press announcement, Nortel declared: "We'll combine their technology, our knowledge of the market, some of our technology and drive products into one of the significant regions and segments of the globe".[96] This could not be a stronger vindication of the argument that Huawei was leveraging IFDI, in the form of joint ventures with the leading telecommunications firms of the world, to develop knowledge and technology to improve its productive capacity.

Still in 2006, Huawei entered into another joint venture, this time with leading United States firm Motorola. It established a joint R&D center in Shanghai to develop UMTS technology. 2006 was a very busy year for Huawei, as it also established a joint venture with Telecom Venezuela (the joint venture was named *Industria Electronica Orinoquia*). This focused on R&D as well as sales of telecommunications terminals, with Telecom Venezuela owning 65% and Huawei 35%. This joint venture still seems to operate, but it is worth clarifying that this particular venture does not seem to have taken place in China, but rather in Venezuela. Finally, in 2007 Huawei entered into one more joint venture, with leading United States firm Symantec (the joint venture was named Huawei Symantec) in Chengdu. The joint venture focused on developing security and storage solutions, with Huawei owning 51% and Symantec 49%, which it sold in 2012.

Thereafter, Huawei embarked on a streak of OFDI deals for the next decade, launching the third phase. In 2008, the firm opened an innovation center in Australia. The next year, it established a regional hub in Hungary to service the European market. This hub is responsible for manufacturing, repairing and providing spare parts throughout the continent. It is estimated that

[96] Reuters, "Nortel, China's Huawei in joint venture. Alliance will enhance Huawei's line of broadband access equipment and give Nortel openings in China", 3 March 2006, *CNet*. Published: https://www.cnet.com/news/nortel-chinas-huawei-in-joint-venture/

Huawei has invested cumulatively at least $1.5 billion in Hungary over time.

The next couple of years, from 2012 to 2014, where particularly busy for Huawei as it leveraged OFDI across a number of different markets. In 2012 the firm set up manufacturing facilities in Chennai, India in order to produce network equipment. The next year it did the same in Brazil. Also in 2013, Huawei used OFDI to acquire Dutch firm Caliopa, a Ghent University technology spin off (the OFDI amount was undisclosed). Huawei used the same strategy a year later in England, acquiring Cambridge-based Neul for $25 million to enter the internet-of-things business. By 2014, Huawei had focused so many resources and so much attention in developing an innovation-based model that it was the largest patent filer in the world, according to WIPO. To this title it could add in 2015 the title of largest Chinese telecommunication equipment manufacturer. Not content to lay on its laurels, in 2016 Huawei more than doubled its OFDI in India, injecting $ 170 million into the country, for a total of $300 million cumulatively. As a result of this incredible expansion, by 2016 the firm employed 170,000 employees, of which almost half were in R&D. These 76,000 employees are distributed across 21 R&D institutes in Belgium, Canada, China, Colombia, France, Germany, India, Israel, Ireland, Pakistan, Russia, Sweden, Turkey, the UK, and the U.S. Already in 2014, the firm's R&D budget was a staggering $6.4 billion.[97]

First phase

- 1987: Huawei founded to provide local communication services
- 1993: Switches technology, manufactures telecoms equipment
- 1999: OFDI begins in Africa
- 1999: OFDI in Bangalore to establish an R&D center
- 2000: OFDI n Stockholm to establish R&D center
- 2001: OFDI in the United States to establish 4 R&D centers

Second phase

- 2003: JV with United States firm 3Com (named H3C) in Beijing and Hangzhou
- 2005: JV with German firm Siemens (named TD Tech) in Beijing
- 2006: JV with Canadian firm Nortel
- 2006: JV with United States firm Motorola in Shanghai
- 2006: JV with Telecom Venezuela (named Industria Electronica Orinoquia)
- 2007: JV with US firm Symantec (named Huawei Symantec) in Chengdu

Third phase

- 2008: OFDI in Australia to establish innovation center
- 2009: OFDI in Hungary to provide manufacturing, repair and spare parts to Europe

[97] This information is drawn from a number of online sources. These include, but are not limited to, the following web pages:
http://www.h3c.com/en/AboutNewH3C/History/
https://www.huawei.eu/blog/european-hub-hungary
http://www.lightwaveonline.com/articles/2013/09/huawei-buys-silicon-photonics-startup-caliopa.html
https://www.theregister.co.uk/2014/09/22/huawei_buys_cambridge_internet_of_things_pioneer_neul
https://dial.uclouvain.be/memoire/ucl/en/object/thesis%3A2916/datastream/PDF_01/view
http://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=1518&context=njilb
https://ipfs.io/ipfs/QmXoypizjW3WknFiJnKLwHCnL72vedxjQkDDP1mXWo6uco/wiki/Huawei.html

- 2012: OFDI in India to produce network equipment
- 2013: OFDI in Brazil to produce network equipment
- 2013: OFDI in Netherlands to acquire Caliopa
- 2014: Largest patent filer worldwide
- 2014: OFDI in England to acquire Neul
- 2015: Largest Chinese telecommunication equipment manufacturer
- 2015: OFDI increased in India
- 2016: 21 R&D institutes across the world

The sequence between the second phase and the third is remarkable. During the second phase, IFDI into China induced technology transfer to Huawei through a series of joint ventures. During the second, phase all investment transactions are IFDI related. Almost like clockwork, the third phase starts the year after the second phase, and all investment transactions are OFDI related. This dramatic transition is unexpected, and provides incredibly strong circumstantial evidence that IFDI increased Huawei's knowledge and technology capacity that it was then able to exploit and build on through OFDI.[98]

But can we provide any more substantiation than just this circumstantial evidence? The answer is yes. The Chinese state adopted a strategic regulatory approach in the telecommunications sector, with the aim of using IFDI to transfer knowledge and technology to domestic Chinese firms, such as Huawei, to build their capacity and competitiveness. Even though China joined the WTO in 2001, with ensuing commitments to open the domestic market, "developments in the post-WTO era reveal that the dominant pattern of state control of telecommunications enhanced government control over industry, emphasized reregulation, and remained deliberate in orientation" (Hsueh 2011: 117). China followed the WTO liberalization schedule with what can be called 're-regulation'. This included introducing new rules and control mechanisms that enhanced the state's control over "network development, technology, and promoted domestic sector development" (Ibid.). In short, China used strategic regulation in telecommunications to open to IFDI in ways that nurtured the capacity of its domestic industry, which was then able to leverage and build on this capacity through OFDI. Examples of measures to reregulate include: a discretionary licensing regime, local content policy, ceiling in foreign equity, state-led setting of technical standards, restructuring of SOEs, infrastructure planning, and fiscal incentives for domestic sector.

To conclude, Huawei founder Ren Zhengfei is quoted as once stating that "in a few years our idea is to make people perceive Huawei as a European company" (Schechner 2014). Through leveraging IFDI, which transferred knowledge and technology to the firm, Huawei was then able to undertake a massive drive in OFDI, and is coming close to realizing this vision.

[98] *En passant*, it is worth mentioning that the reason the world's telecommunications giants were so active in setting up joint ventures with Huawei is the huge market potential they saw in China. Commentators have described as a 'Faustian Bargain' the willingness of foreign firms to transfer technology to Chinese firms through such joint ventures as a condition of market access. These foreign firms understood that the revenue stream they were getting from the market access was time-bound, as the technology they were transferring was building up a future market rival. Even with this understanding and realization, the market demands for revenue, and competitive pressures from other firms, led these giants to enter into this bargain.

K. Conclusion

This chapter has attempted to consider the hypothesis that there is a relationship between investment that has flown into China over the past 20 years, and investment that has flown out of China over the past ten years. This relationship, though somewhat intuitive, has only in the last year or so been analysed in the literature, and only in a couple of articles; in light of the global economic and geopolitical significance of China's growth, this lacuna is striking.

The reason that little analysis has been carried out on the relationship between Chinese inward and outward investment is probably threefold: first, the boom in Chinese OFDI is fairly recent; second, data limitations have prevented seeing what is really taking place; and third, it is hard to disentangle all the potentially confounding factors.

Input-output tables provide a novel approach to investigating the hypothesis put forward. This data source and the use of this information are both well-established; but this data has never before been used in this way. This chapter provides the first quantitative evidence that FDI flows have had an impact on future OFDI flows. In addition, two case studies were provided to complement this quantitative evidence with qualitative evidence. The firm-level analysis looks at two very different sectors – automotive manufacturing and telecommunications manufacturing – and in both the experiences of a single leading Chinese firm tracks with the theoretical framework proposed and the quantitative evidence presented.

In essence, this dissertation has tried to use both extant literature and new thinking and data to argue that the relationship depicted graphically in figures 34 and 35 of section E is in fact taking place. Namely, that FDI flows work through certain transmission channels and mechanisms to produce economic transformation that creates the capacity for OFDI flows. And that these processes, have, in China's case, been accompanied by supportive policy choices on the part of the Chinese government both during the FDI phase (chapter six) and during the OFDI phase (chapter seven).

Looking forward

Whither Chinese OFDI? As mentioned in chapter two, in 2015 OFDI out of China overtook FDI into China for the first time. This poses interesting questions regarding where China is currently on the Investment Development Path (IDP), and where this path might lead in the future. IDP theory posits that long-run inward and outward FDI flows will reach some sort of equilibrium (see chapter two, figure 2). However, I have some doubts as to whether we shall see such equilibrium in the short term; instead it seems much more likely that Chinese OFDI will outpace Chinese FDI for a while, and that this may in fact bring about new political economic tensions between China and other economies.

There are a number of reasons why OFDI out of China may outpace FDI into China in the foreseeable future. First, estimates of China's OFDI potential or OFDI equilibrium level indicate that it is above current levels of OFDI (Yao et al. 2016). As a result, it seems likely that OFDI will continue to grow, a trend that seems substantiated with recent increases in flows and stocks. At the same time, inward FDI into China has slowed. This is a result of China's new normal of a lower long-term growth rate, as the economy moves from catching up from a low base to building on an already large base, bringing with it a natural slowdown in growth. This has been accompanied by rising factors prices in China. Both of these phenomena mean that international interest in China as a low-cost factory of the world has waned, and with it some of the interest in efficiency-seeking

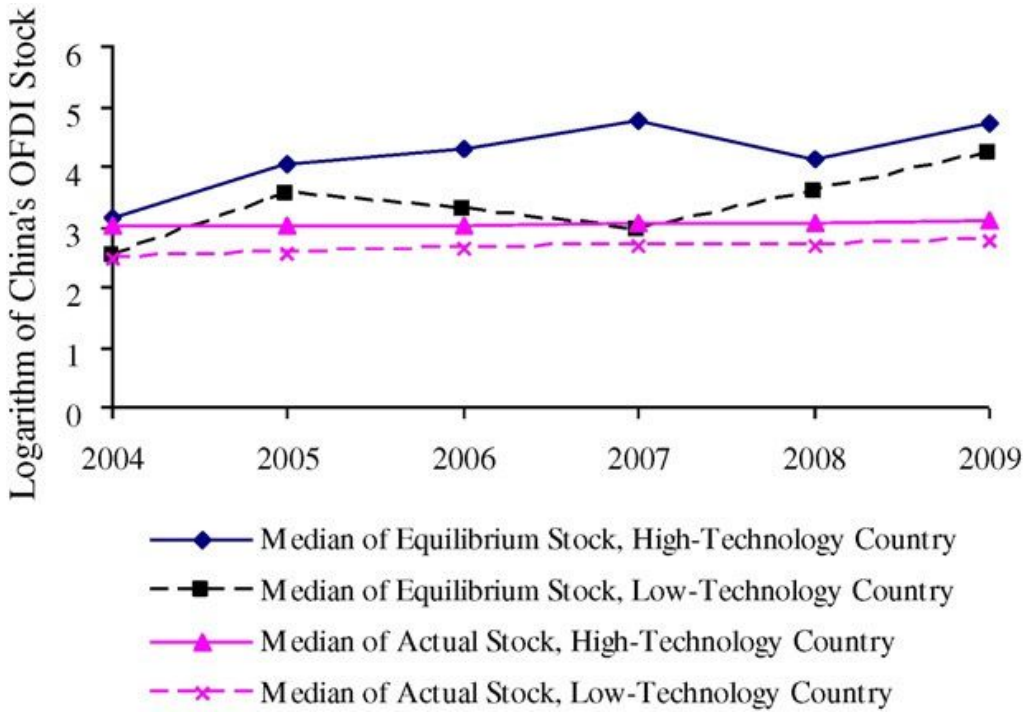
FDI. This is not to say that other forms of FDI may not pick up, particularly market-seeking FDI as China's economy continues to expand, but a slowdown in FDI into China is also confirmed in the data.

This growing gap between Chinese OFDI and Chinese IFDI may have significant political economy consequences, as countries increasingly feel the presence (and potential threat) of Chinese capital, and see China as a harder market to enter with Chinese regulations impeding a two-way level playing field. We are already seeing some of these political economy tensions in U.S. and European government foreign investment screening activities (see chapter seven). These are likely to only grow in number and political importance over time.

Perhaps as a result of wanting to avoid some of these dynamics – as well as the natural maturing of its infant industries and growth in absorptive capacity – China has recently lifted restrictions on inward FDI. The government is trying to encourage FDI into certain key sectors. If successful, this could also potentially modulate some of the political economy tensions by opening up new sectors of the Chinese market to FDI, and thereby leveling the playing field.

Looking to the future, we can therefore expect even high levels of Chinese OFDI. As Yao et al. (2016) have shown, the equilibrium stock is bigger than the actual stock, implying space for further expansion of Chinese OFDI: "China's OFDI was underinvested in all subsamples so host countries have potential to attract more Chinese FDI, irrespective of their resource endowment or level of economic development" (Yao et al. 2016: 65). This potential growth is visually manifest in the following figure, which shows the gap between actual and equilibrium Chinese OFDI stock across both high- and low-technology countries.

Figure 73: Difference between actual and equilibrium Chinese OFDI stocks



Source: Yao et al. 2016: 65

The question is whether China, and its investment partners, will find solutions to the increasing tensions that surround inward and outward investment flows. Policy considerations will play an important role in addressing (or exacerbating) these tensions, and so it with a number of policy considerations that we conclude.

9. 20 OFDI policy considerations for China: using OFDI to continue domestic upgrading and thus escape the middle-income trap

This penultimate chapter seeks to bring together much of the previous evidence and analysis to consider how China can approach OFDI going forward. The motivation for answering this question is that leveraging OFDI may provide a pathway for continuous domestic upgrading[99], and thus potentially help escape the infamous middle-income trap.

With the aim of domestic upgrading in mind, two dimensions are particularly important: productivity and innovation.[100] This chapter will therefore focus on how OFDI can be leveraged to generate these two home effects.[101] As such it focuses on one particular type of outward investment, knowledge-seeking OFDI[102], to generate reverse knowledge transfer. This knowledge transfer is 'reverse' because it takes place from host-market subsidiary to home-market parent, in contrast to 'conventional' knowledge transfer that takes place from home-market parent to host-market subsidiary.

There are three main reasons why a country like China undertakes knowledge-seeking OFDI. First, knowledge-seeking OFDI can provide a faster and cheaper alternative to developing capabilities indigenously (Pradhan and Singh 2008). Second, the proliferation of production networks embodied in GVCs means emerging markets do not need to develop full capacity at home but can use OFDI to tap into skill and technology-intensive capacities in foreign markets (Amighini et al. 2010). Third, knowledge resources are often tacit, embedded, and location-bound, and hence hard to acquire and transfer without a physical presence (Nepelski and de Prato 2015). It is for this last reason that acquiring knowledge through other commercial means (knowledge-intensive imports

[99] Domestic upgrading can be separated across different types, including process upgrading, product upgrading, functional upgrading, channel upgrading, and intersectoral upgrading. This section does not distinguish between the different types of upgrading, but the analysis applies mostly to those forms of upgrading that use new knowledge, such as process, functional, and intersectoral upgrading.

[100] While this section looks at the potential effects on the Chinese economy of outward investment, it is important to remember that there will also be effects on the Chinese economy of inward FDI (see chapter three). For instance, with respect to productivity, there is evidence that FDI into China has been greater as a channel of productivity increase (at least to date) than OFDI (Bodman and Le 2013). Policies aimed at domestic upgrading should therefore consider both inward and outward investment in tandem.

[101] It is quite possible that Chinese OFDI will generate other home effects that will have an indirect (secondary) effect on upgrading, but these will not be examined here. For instance, Chinese OFDI may generate increases in domestic employment and wages, which may in turn drive consumption of more technologically sophisticated goods and services, and thus stimulate their production. For analytical simplicity, we will focus on direct, first-order effects.

[102] Outward investment is traditionally analyzed through a four-part typology based on motivation: market-seeking, efficiency-seeking, natural resource-seeking, and strategic-asset seeking (Dunning 1981a; Dunning 1981b). As with interactions between home effects described in the preceding footnote, the four types of outward investment can all conceivably produce domestic upgrading. For instance, Chinese OFDI that is efficiency-seeking could learn new production techniques and then apply these in the home economy, driving process upgrading. For analytical simplicity, we focus, however, on strategic-asset seeking outward investment. Strategic assets have been defined as firm-specific resources and capabilities that are difficult to trade and imitate, scarce, appropriable and specialized (Amit and Schoemaker 1993 in Zheng et al. 2016). Examples therefore include knowledge, brands, reputation, etc. Clearly not all of these will be equally useful with domestic upgrading. Within strategic-asset seeking, we therefore focus on knowledge-seeking OFDI, which includes both 'hard' technology and 'soft' know-how.

or licensing agreements) may complement, but not substitute, OFDI.

Reverse knowledge transfer through outward investment is not automatic, but depends on key dimensions in the host and home economies, including complementarities between the two. For instance, if the technology gap is too great between host and home economies/firms, it may be difficult for a firm to acquire and integrate technology.

As such, there is no 'right' or 'wrong' knowledge-seeking outward investment, but there may be 'better' or 'worse' approaches for a particular firm or home economy. One has to look at the match between source and destination and whether a particular investment target is likely to produce the intended home effect, in this case increased productivity and innovation to drive domestic upgrading Domestic upgrading through OFDI thus depends on a) where a firm chooses to invest; b) how it structures the investment; c) the ability of the outwardly invested firm to absorb the knowledge, transfer it back to the parent firm, and apply it domestically; d) on parent-subsidiary integration and coordination.

The rest of this chapter is therefore structured as follows. It first looks outwards and considers how Chinese firms can choose where to invest (e.g. location, sector) and how to invest (e.g. entry mode, equity share) to maximize knowledge-sourcing. It then looks inwards and considers what domestic conditions in China can maximize knowledge transfer (e.g. linkages, absorptive capacity), and leverage knowledge-assets (e.g. integration, coordination mechanisms). These findings generate 20 policy recommendations that the Chinese government may wish to consider to support OFDI's effectiveness as a channel for continued domestic upgrading.

A. Looking Outward

Where to invest? Choosing a location

Location matters because different locations have different qualities and capabilities, whether large markets, abundant factors of production, an educated workforce, cutting-edge technology, etc., known collectively as 'locational assets'. For the purpose of using OFDI for domestic upgrading, some locations therefore present more useful locational assets than others. This section attempts to identify which locational assets might be most useful, so as to act as road map for Chinese OFDI.

Target places with high R&D intensity distributed across sectors

One of the best predictors of knowledge sourcing is R&D intensity[103]. The evidence suggests that emerging market outward investment to locations with high R&D intensity drives higher R&D expenditure at home, a proxy for innovation (Chen, Li, and Shapiro 2012; Pradhan and Singh 2008).[104] Separate evidence suggests that knowledge sourcing productivity spillovers tend to be

[103] R&D intensity is measured by R&D expenditure as a share of GDP and by R&D employment.

[104] One study of outward investment from 20 emerging markets into advanced markets from 2000 to 2008 finds that both R&D expenditure and R&D employment in host economies have a significant, positive effect on R&D expenditures of emerging market parent firms with subsidiaries in the host market. When host industry-level R&D employment increases by 1%, home R&D expenditure increases by 0.20%; when host industry-level R&D investment increases by 1%, home R&D expenditure increases by 0.10% (Chen, Li, and Shapiro 2012). Similar results have been found looking at the automobile industry in India (Pradhan and Singh 2008).

greatest in regions with higher R&D intensity (Driffield et al. 2014: 30). Locations with high levels of employment in science and technology activities within an industry also produce more opportunities for knowledge-sourcing (Jindra et al. 2016: 213). Economies whose high R&D intensity is spread across many actors and sectors may offer even further opportunities for knowledge sourcing. The reason is that knowledge in some systems can be diffuse, distributed, and embedded amongst many actors, institutions, and sectors, and not confined to individual sectors. Investing in host economies with economy-wide knowledge resources can generate significant spillovers, leading to not only direct but also indirect knowledge transfer (Chen, Li, and Shapiro 2012).

Consider places that are "closer"

Knowledge sourcing will be more effective the "closer" the target environments to China on different measures of distance. There is evidence that geographic, economic, technological, and institutional distance all reduce the effectiveness of knowledge transfer between affiliate and parent, as measured by the impact of subsidiaries on parent productivity (Driffield et al. 2016). The reason is that the cost of knowledge transfer increases with distance between home and host economies. These costs can take the form of coordination challenges (integrating information across time zones or sites), or cognitive challenges (integrating information from different business environments). Surprisingly, distance seems to reduce the positive impact of affiliates on parent productivity regardless of the kind of knowledge, whether analytical knowledge or synthetic knowledge[105] (Driffield et al. 2016). Chinese firms therefore need to balance two competing factors: on the one hand, greater dispersion across these measures of distance increases the possibility of accessing different kinds of knowledge embedded and embodied in locational assets. On the other hand, greater dispersion increases both the challenge of coordinating the behavior of subsidiaries and the costs of operating in different environments, impacting the ability to source knowledge.

Adopt regional strategies

One approach to deal with the costs of accessing distant knowledge is to adopt a regional strategy. While the distribution of foreign affiliates may be global, there are implicit regional strategies (Driffield et al. 2014).[106] These regional strategies aim to benefit from knowledge spillovers, affiliate synergies, and regional learning effects while minimizing the costs and risks of being overly dispersed across countries, systems, currencies, etc. There is evidence that the technology sourcing effects within regions are on average 15.5% greater than the more general effect (Driffield et al. 2014: 37). Knowledge-seeking OFDI may therefore be relatively more effective when carried out within rather than only across regions. Importantly, the benefits of this regional approach on productivity spillovers seem to apply regardless of sectoral differences (manufacturing, services, high-tech, medium-low tech) (Driffield et al. 2014: 35).

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[105] Analytical knowledge is knowledge that is more formal, easier to codify, and scientific. Synthetic knowledge is knowledge that is less formal, harder to codify, and often based on a novel combination of existing knowledge (Driffield et al. 2016).

[106] The study finds that 3289 out of 4505 foreign subsidiaries from 47 countries over 1996-2007 were located in the same continent (region) as the multinational parent firm (Driffield et al. 2014).

Target places with similar/strong IPR

However, institutional distance in the form of intellectual property rights (IPR) is potentially more important than other forms of distance in affecting knowledge transfer. Looking at outward investment effects on home productivity, IPR distance has been found to be twice as important as technology distance between host and home economies, and 70% more important than geographic distance (Driffield et al. 2016: 502). In other words, subsidiary productivity improves parent productivity much more when the countries have low IPR distance compared with high IPR distance. In addition, strong IPR protection in the host economy is also a strong predictor of the impact of affiliates on parent firm productivity. Strong IPR protection has a greater effect on reverse knowledge transfer than other host economy dimensions such as economic development, rule of law, or technological sophistication (Driffield et al. 2016: 501). A reason may be that strong IPR protection incentivizes host knowledge creation, creating a knowledge-rich environment, and outwardly invested firms can be more aggressive in knowledge-sourcing in these host markets because the location of knowledge is clearer and the protections to knowledge acquisition are stronger (Gaffney et al. 2016: 270).

Target MNE headquarters

Knowledge-sourcing may be most effective when targeting multinational enterprise (MNE) headquarters. The reason is that even as MNEs internationalize many production activities, they keep core competences at home (Dunning and Lundan 2008). This is likely to include cutting-edge innovative activities, even as they outsource less innovative activities. As a result, knowledge-seeking OFDI is likely to be most effective if targeted at the headquarters of firms. In addition, since within different categories of firms MNEs are more likely to be at the technological frontier, the greatest source of potential knowledge-sourcing is not from the headquarters of any firm, but from the headquarters of MNEs (Driffield et al. 2014: 29).

Target agglomerations

Evidence suggests that agglomerations provide more opportunities for knowledge spillovers. Agglomerations can take the form of places with high population density, high diversity of industries, or high concentration of foreign MNEs (Cirera et al. 2015; Jindra et al. 2016). The reason is that locations with many different industries and a significant foreign presence may provide more opportunities for spillovers across industries, between foreign affiliates, and between foreign affiliates and domestic firms (Driffield et al. 2014). Case studies from the pharmaceutical, chemical, and electronics industries provide supportive evidence (Driffield et al. 2014: 28). For instance, when leading Chinese firm Haier considered where to base its European headquarters, it selected the Italian town of Varese because the town is home to other significant firms in the white goods industry, such as Philips and Whirpool, as well as firms specialized in intermediate inputs. The agglomeration is seen as generating knowledge synergies and externalities (Duysters et al. 2008 in Amighini et al. 2010).

Where to invest? Choosing a sector and firm

There are several different ways to think about which sectors may be best for Chinese OFDI to

target with the aim of domestic upgrading. First, as seen above, the Chinese government has identified ten key sectors in the Made in China 2025 – should OFDI be used to source knowledge in these strategic sectors? Second, China currently sources technology (through patent acquisition or licensing) in certain high-technology sectors, especially related to ICT (Nepelski and De Prato 2015: 18). These include electrical machinery, semiconductors, audio-visual technology, optics, etc. – should OFDI be used to source knowledge in these high-technology sectors? Third, certain sectors where innovation is more frequent and predictable is thought to give latecomers, such as Chinese firms, more opportunities to catch up (Amighini et al. 2010: 15) – should Chinese OFDI therefore target sectors where innovation is more frequent and predictable? There is no 'yes or no' answer to these questions. Rather, it will depend on the scope for knowledge complementarity between the Chinese firm and the target sector. A Chinese firm in Shanghai specializing in financial services will not seek to acquire capabilities in the same foreign sector as a Chinese firm in Harbin specializing in manufacturing or a Chinese firm in Guangzhou specializing in logistics. In each of these three hypothetical cases, the Chinese firm will have certain foreign sectors that present greater knowledge complementarities than others. Nevertheless, there are a number of general principles that can assist Chinese firms select a sector for knowledge-sourcing OFDI.

Target high tech sectors (and maybe low tech)

While OFDI into high-technology sectors may allow Chinese firm to reach the technological frontier, evidence shows there are returns to innovation in both high-technology *and* low-technology sectors (with much lower returns in medium-technology sectors) (Cirera et al. 2015: 61). This may be a due to a 'U'-shape function for absorptive capacity of firms: firms with lower absorptive capacity target low-technology, simple knowledge, while firms with higher absorptive capacity target high-technology, complex knowledge (Tang and Altshuler 2015). Interestingly, the implication of the U-shape function is that medium technology sectors may be relatively less useful for Chinese firms seeking to use OFDI for knowledge sourcing. Evidence from Romania and Poland finds that reverse productivity spillovers from foreign affiliates to parent firms did indeed occur in both high- and low-technology sectors (Franco and Kozovska 2011 in Driffield et al. 2014: 28). This suggests that OFDI can be used to source different kinds of knowledge, even though China may wish to situate itself on one side of the 'U' and focus on complex knowledge through boosting its absorptive capacity (discussed below).

Target the same sector and go upstream

Evidence suggests that knowledge sourcing will be more effective when OFDI is targeted at investments in the same sector as the core sector of the parent firm (intra-sector) rather than in other sectors (inter-sector) (Doukas and Kan 2006 in Driffield et al. 2016: 494). The effect of affiliate productivity on parent productivity is greatest for affiliates in the same sector as their parent (Driffield et al. 2016: 501). The reason may be that a firm requires a certain baseline knowledge in order to assimilate more knowledge, and that this baseline is hard to simultaneously develop across different sectors. In addition, targeting OFDI to upstream activities may be more effective in knowledge sourcing compared to targeting it at downstream activities. Downstream activities can provide market-related knowledge, but upstream activities are more likely to provide process-related knowledge, which is more likely to be productivity enhancing. In fact, outward investment in upstream R&D activities produces the greatest effect on firm productivity relative to outward investment in other activities (Driffield et al. 2016: 501).

Target manufacturing (and maybe services)

The manufacturing sector provides larger and lower hanging fruit than the services sector when it comes to domestic upgrading through OFDI, although there are still potential gains to targeting the services sector, particularly because the cost of service-sector OFDI is relatively low. Differences between the upgrading potential of OFDI in manufacturing versus services is an important consideration for China, especially as the country seeks to shift from a manufacturing-oriented to an increasingly services-oriented economy. Evidence suggests that the returns to innovation are three times higher in the manufacturing sector than in the services sector (Cirera et al. 2015: 61). When the returns to innovation in emerging markets are separated between product innovation (more germane for the manufacturing sector) and process innovation (more germane for the services sector), studies have found that the coefficients on the former range between 1.14-1.08 while the coefficients on the latter range from 0.21-0.15 (Cirera et al. 2015: 58), indicating that the returns to product innovation are much larger than the returns to process innovation, even though the latter are also positive.

There are several reasons for the potential innovation differentials between OFDI in manufacturing and in services. First, services embody more location-specific, heterogeneous knowledge, which is harder to replicate, adapt, and apply back in the home economy. Second, the inseparability of production and consumption of services generate considerably higher costs of international services relative to international manufacturing (Kirca et al. 2016: 630). Third, there are still considerable restrictions on foreign investment in the services sector compared to the manufacturing sector, especially in professional services, limiting the scope for knowledge-seeking OFDI.

India's experience with domestic upgrading through outward investment in the services sector may be particularly instructive for China, given that India has emerged as a global leader in the services sector. One lesson from India, as well as other large emerging economies, is that services OFDI can be effective with relatively lower levels of investment compared to manufacturing OFDI. Manufacturing OFDI requires setting up foreign operations through a new plant or acquiring an existing one; in contrast, services OFDI can be undertaken through just setting up a branch office abroad (Boehe 2016: 561-2). Chinese services firms can therefore use OFDI to source knowledge with relatively lower investments by value. Since knowledge in the services sector is more locally embedded and less transportable, one takeaway may be that manufacturing OFDI is better targeted at acquiring technology-related knowledge while services OFDI may be better targeted at acquiring market-related knowledge (Kirca et al. 2016: 637).

Target larger and older firms (and maybe smaller and younger)

Chinese OFDI may wish to target relatively larger and relatively older firms when carrying out foreign knowledge-sourcing acquisitions. Evidence from the World Bank's Enterprise Survey suggests that larger firms are more likely to innovate, both in product in process (Cirera et al. 2015: 56). Other evidence suggests that when a subsidiary is larger than its parent, it is likely to be involved in higher levels of reverse knowledge transfer (Rabbiosi 2011: 109). Survey data from Brazilian firms undertaking outward investment find that older subsidiaries are more likely to provide reverse technology transfer (Borini et al. 2012: 227). Other survey data of Italian firms with foreign subsidiaries similarly find that older subsidiaries are perceived as providing more valuable reverse knowledge transfer compared to younger subsidiaries (Rabbiosi and Santangelo 2013: 168). The reason is that older subsidiaries have accumulated knowledge over time in the host country, increasing their potential as a source of knowledge. The stock of knowledge that increases with

time includes things like organizational capabilities, networks of contacts, and knowledge about products, markets, technologies, and institutional contexts (Rabbiosi and Santangelo 2013: 168). This stock of knowledge is not tradable and needs to be internally accumulated, which takes time.

However, it is important to balance this consideration with the fact that smaller and younger firms may have more cutting-edge knowledge, especially of a technological nature. Recent evidence from China also suggests that the returns to R&D spending (measured by the number of patents per million yuan of R&D spending), decline with firm size (Wei et al. 2017: 66). This means there may still be a role for targeting smaller firms as a cost-effective approach. The large number of Chinese acquisitions of high-technology but medium-sized German firms may provide evidence in support for also considering medium-sized firms as possible sources of knowledge.

How to invest?

Use M&A (and maybe greenfield investments)

There are tradeoffs to OFDI by mergers and acquisitions (M&A) versus greenfield investments, and the choice of entry mode will depend on the desired home effect and role of the subsidiary[107]; however, for the purposes of domestic upgrading, M&A is likely to be the superior entry mode. Looking at China's recent experience, OFDI by M&A favors access to knowledge, but results in short-run negative financial performance (as Chinese firms struggle to integrate the acquisition into their operations); in contrast, OFDI by greenfield investment is more likely to increase profitability and parent size (Cozza et al. 2015: 52). Given that domestic upgrading is more contingent on knowledge than profitability and size, M&A seems to be a better entry mode. If greenfield investment is instead used to source knowledge, Chinese investors should realize that the pace of payoffs will be slower as it will take longer for knowledge to be sourced from the host economy (Rabbiosi and Santangelo 2013: 168).

The role of the subsidiary will also determine whether M&A or greenfield investment is the preferred entry mode. Earlier work has generally found that the level of knowledge transfer from subsidiaries to parent companies is higher for greenfield subsidiaries than for acquisitions, presumably because greenfield subsidiaries are more aligned with the strategy of the parent firm (Frost 1998; Zhou 2002 in Rabbiosi 2011: 105). More recent work, however, has disaggregated the analysis by subsidiary type, and particularly whether the subsidiary role entails a high or a low level of innovation.

For subsidiaries whose role in innovation is high, M&A is preferable, on account of both the ability and willingness of subsidiary managers to transfer knowledge back to the parent. First, regarding ability, for subsidiaries to act as a source of knowledge they need to integrate local knowledge networks, which takes both time and understanding of the host economy. While subsidiaries

[107] The three subsidiary types are: (1) implementer subsidiaries (adapt products to local market needs) (2) contributor subsidiaries (exploit the MNEs' technological competencies on a global basis) and (3) innovator subsidiaries (augment or create new technological competencies abroad) (Ghoshal 1986 in Rabbiosi 2011). Implementer subsidiaries rarely possess knowledge relevant for the parent firm, and therefore seldom engage in reverse knowledge transfer (Rabbiosi 2011: 100). Contributor subsidiaries may provide some knowledge transfer, but much less than innovator subsidiaries. Innovator subsidiaries engage in the development of new products and technologies, discover new tastes or business practices, and are the "company's innovative spark plugs" (Ghoshal and Bartlett 1989 in Rabbiosi 2011: 153). For the purposes of this study, we therefore focus on innovator subsidiaries.

established by M&A already have this knowledge, subsidiaries established by greenfield investment need to develop this knowledge from scratch. Greenfield subsidiaries will of necessity spend more resources on developing such knowledge, leaving fewer available resources to transfer the knowledge (Mudambi et al. 2014: 53). Second, regarding willingness, acquired subsidiaries may have a greater desired to transfer knowledge because, in contrast to greenfield subsidiaries, they have less internal legitimacy with the parent firm. They therefore need to 'buy' further legitimacy, and can do so through higher levels of reverse knowledge transfer to overcome this legitimacy disadvantage (Mudambi et al. 2014: 53). However, this willingness is not guaranteed, and measures regarding how to structure the parent-subsidiary interaction may help determine whether acquired subsidiaries willingly engage in knowledge transfer or not (discussed below).

In contrast, for subsidiaries whose role in innovation is low, greenfield investment is preferable, as its disadvantages in terms of lack of embeddedness in local knowledge networks is outweighed by alignment and integration with the parent firm. At the same time, acquired subsidiaries whose role in innovation is low have little knowledge 'currency' with which to overcome their legitimacy deficit. As a result, when the subsidiary's role in innovation is low, greenfield subsidiaries perform better in terms of reverse knowledge transfer (Mudambi et al. 2014: 60). Given that we are considering Chinese OFDI with the explicit aim of domestic upgrading, it seems likely that subsidiaries with high innovation will be a preferred target, and thus that M&A may be a preferred entry mode compared to greenfield investment.

Seek the highest equity possible

Evidence suggests that wholly-owned subsidiaries are most effective in sourcing knowledge, and that if whole ownership is not possible, then the more equity stake (degree of ownership) that Chinese firms can take the better. This is an interesting finding in light of the intuition that shared equity initiatives, such as joint ventures, might provide an incentive for both partners who have 'skin in the game' to share knowledge. Evidence suggests, however, that wholly-owned subsidiaries boost parent productivity by almost 50% more than other types of affiliates (Driffield et al. 2016: 499-500). But if entering the market through 100% equity is not possible, either because of regulatory restrictions that limit foreign equity participation, or because of financial constraints on the part of the parent firm, then the higher the share of equity the better for the purposes of reverse knowledge transfer. The reason is that larger equity stakes increase control over the tangible and intangible assets of the target firm, which facilitates the transfer of knowledge (Gaffney et al. 2016: 273).[108] In other words, the higher the degree of ownership, the greater the goal congruence, and the less significant the agency problems in hampering knowledge transfer between affiliate and parent (Gaffney et al. 2016: 268). Finally, the higher equity share will probably be even more important in economies with strong protection of knowledge assets through well-developed IPR regimes, since in these cases equity participation (or other formal arrangements) will be the only way to access such well-protected knowledge.

Aim for repeated acquisitions

Chinese firms may wish to undertake repeated acquisitions in order to benefit from learning effects to OFDI. Repeated acquisitions entails going through the process several times,

[108] The study considered all completed cross-border acquisitions over USD 5 million by MNEs based in Brazil, Russia, India, or China from 2000 to 2010 compared to a sample of MNEs from the UK.

during a relatively short period, of integrating a previously external firm. Evidence suggests that firms that undertake repeated acquisitions get better at it, as they develop routines to maximize the gains from the process and minimize the frictions involved. There are thus learning effects, and firms that acquire repeatedly gain more from the process (Driffield et al. 2016: 494). As a result, when considering using OFDI to source knowledge, the more Chinese firms acquire other firms, the better they will get at sourcing and integrating knowledge from this process.

B. Looking Inward

Domestic conditions for OFDI to act as a channel for domestic upgrading

For Chinese OFDI to act as a channel for domestic upgrading, OFDI *per se* is necessary but not sufficient – China also requires supportive domestic conditions, including linkage mechanisms, absorptive capacity, and efforts at translating new knowledge into practical applications.[109]

Create linkage mechanisms for reverse knowledge transfer (abroad and domestically)

There are certain linkage mechanisms from host to home economy that need to exist for reverse knowledge transfer to translate into domestic upgrading. This linkage process takes place in two stages. First, Chinese subsidiaries that benefit from knowledge spillovers in host economies need to transfer this knowledge back to the parent firm in China. Linkage mechanisms focused on linking the host and home economies include personnel exchanges, production shifting, management rotation, etc. (Aminullah et al. 2013; Chen, Li, and Shapiro 2012). Second, for knowledge to not only increase productivity and innovation of the parent firm but also drive domestic upgrading throughout the domestic economy, linkages within the Chinese economy can help with the diffusion of knowledge. A certain amount of diffusion will take place through observation of new practices and through competition effects (as non-outwardly invested domestic Chinese firms are forced to compete with newly productive and innovative outwardly invested home firms). However, linkages mechanisms within the Chinese economy can foster diffusion of these positive home effects, as well as counterbalance the interest of individual firms to keep the knowledge in-house for competitive reasons. Linkage mechanisms focused on the home economy include things like information portals/publications to equalize asymmetric information between outwardly oriented and non-outwardly oriented firms, domestic industry associations, government-sponsored collaborations, research institutions, government procurement mechanisms that encourage partnership between outwardly invested and non-outwardly invested firms, etc.

[109] A somewhat similar tri-partite process has been theoretically articulated in the LLL Framework (Mathews 2002, 2006). This framework suggests that emerging market multinational catch-up takes place through a process of linkage to, leverage in, and learning from (LLL) external networks. Emerging market firms *link* to these networks through supplier relationships to GVCs; firms *leverage* these linkages to access resources; and they *learn* from repeating this process.

Boost absorptive capacity (firms and domestic economy)

Once exposed to new knowledge through OFDI and linkage mechanisms, however, Chinese parent firms and the Chinese domestic economy need to have the capacity to absorb this new knowledge (Zheng et al. 2016). It is on account of limited absorptive capacity in emerging markets, relative to developed markets, that home effects of emerging market outward investment have at times been more modest than home effects of developed market FDI (Globerman and Shapiro 2008). Boosting absorptive capacity should help close this differential.

One way to increase absorptive capacity is through human capital development. A more educated and well-trained workforce will be better able to absorb the knowledge quickly and fully. Evidence suggests that the effect on home productivity of outward investment into R&D is larger if the domestic labor force is more educated; at the same time, the effect of education on productivity is larger when outward investment into R&D is higher (Bodman and Le 2013). There are therefore important synergies between human capital development and OFDI's potential for domestic upgrading. For human capital expenditures to be efficient, skill development policies should be performance based and not based on seniority or relations. This will make it more likely that a meritocratic system identifies, empowers, and rewards those individuals most capable of contributing to the acquisition and application of knowledge assets.

Another way to increase absorptive capacity is through increasing R&D intensity. Recent evidence that looks at Chinese SMEs, for instance, finds that the innovation performance of SMEs is greater with higher levels of R&D intensity (Ren et al. 2015: 648).

Absorptive capacity may play a different role at different stages of internationalization (Wu and Voss 2015). A recent study using survey data on 162 outwardly invested Chinese firms suggests presents two interesting findings: first, the role of absorptive capacity in performance is more important for firms that undertake OFDI early in their life cycle. The reason is that firms need a high level of absorptive capacity if they are to capitalize on OFDI without having other firm-specific assets (e.g. brands, networks, cash flow) since they are fairly new firms. Second, and even more interesting, the role of absorptive capacity in performance becomes less important over time as firms undertake OFDI. The reason is that established routines that accumulate from OFDI "operations impede learning capability in new environments because their accumulated international experiences make them less flexible compared to international new ventures that operate internationally only a short time" (Wu and Voss 2015: 345). The implication is that the level of absorptive capacity of firms will become less important the longer the firm undertakes OFDI. The literature describes this phenomenon alternatively as firms suffering from 'core rigidities', 'competency traps', or 'success traps'. I would add one more and call it the "middle-absorptive capacity trap" as firms settle into ways of doing things with time, size, and breadth of their OFDI footprint. Firms need to be aware of this risk and adopt policies of continuous learning to escape this variously named trap.

Encourage practical application of innovations

Linkages and absorptive capacity are together not sufficient for OFDI to translate into domestic upgrading: **Chinese parent firms also need to apply and exploit the knowledge to which they are exposed and that they have absorbed.** A key dimension is to understand the market needs, and how knowledge acquired elsewhere can be applied in the home market. This is why evidence suggests that marketing capability positively strengthens the impact of internationalization on

innovation performance (Ren et al. 2015: 642). Domestic innovations systems can play an important role in helping translate knowledge sourced through OFDI into practical applications.

Managerial practices for OFDI to act as a channel for domestic upgrading

There is a high correlation across countries between the quality of managerial practices and innovation (Cirera and Maloney 2016). These results have been found through the World Management Survey, which assesses the quality of managerial practices across several dimensions, including the ability to set targets, display monitoring and foresight, provide incentives, establish organizational structure, and implement lean processes (Ibid.). The top scorers include firms in the United States, Japan, Germany, Sweden, Canada, France, etc. Certain approaches on the part of Chinese firms undertaking OFDI are more likely than others to nurture quality managerial practices and therefore increase the likelihood of reverse knowledge transfer by innovative acquired firms.

Consider light-touch, partnering integration

Chinese parent firms may wish to use a light-touch approach to integrating newly acquired foreign firms when using OFDI to source knowledge. The traditional approach of focusing on full integration to achieve efficiency gains may destroy or damage the knowledge-creating capacities of the newly acquired assets, and thus be counterproductive. Such heavy-touch approach undermines capabilities by disrupting routines and processes, or even leads to the loss of key talent whose knowledge is important to retain (Zheng et al. 2016: 178). This can take place when the parent firm insists on full operational control of everyday activities. In contrast, a light-touch, "partnering" approach allows the acquired firm to retain its organization and identity, giving the newly acquired firm autonomy, but achieves synergies through high-level coordination of business activities, especially strategic orientation. Often the target is more willing to transfer knowledge, and help the Chinese parent firm with the learning process, when treated in a light-touch, partnering manner. Looking at evidence from India, Tata Steel's acquisition of Corus adopted this approach, creating an environment for cooperation and knowledge sharing (Kale et al., 2009 in Zheng et al. 2016: 180). Other evidence from Chinese acquisitions in Germany also indicate that this light-touch, partnering approach has worked well to nurture and not destroy knowledge assets (Liu and Woywode 2013).

Adopt coordination mechanisms (autonomy and personal contact)

Chinese parent firms may wish to adopt coordination mechanisms to facilitate knowledge sourcing from the newly acquired firms. These mechanisms should combine subsidiary autonomy[110] and personal contact[111]. Evidence from developed economies suggest that

[110] The measure of subsidiary autonomy can be gaged through asking at which level of the firm the following strategic decisions are taken: (i) definition of R&D projects, planning, resources, etc.; (ii) introduction of new technologies; (iii) changes in products/services; and (iv) hiring and firing of the subsidiary workforce (Ghoshal and Nohria 1989 in Rabbiosi 2011: 104).

[111] Personal coordination mechanisms to coordinate relations between the parent company and the subsidiary include: (i) teamwork involving people from both the foreign subsidiary and the parent company, (ii) temporary (short-term) transfers of managers between the parent and subsidiary, (iii) temporary (short-term) transfers of

coordination mechanisms between the parent firms and their foreign subsidiaries can be designed to influence knowledge transfer from subsidiary to parent (Rabbiosi 2011: 110). Importantly, the effects of different coordination mechanisms on reverse knowledge transfer will depend on subsidiary role. As mentioned earlier, we focus in this analysis on innovator subsidiaries since this type is likely to be most important for knowledge sourcing. For innovator subsidiaries, a combination of a high degree of subsidiary autonomy and greater use of personal contact has been found to positively affect reverse technology transfer from foreign subsidiary to parent firm (Rabbiosi 2011).

On the one hand, autonomy enhances subsidiaries' abilities to learn from local systems of innovation and thus allows parent firms to benefit from new knowledge developed by those subsidiaries (Rabbiosi 2011). Yet subsidiaries should not have so much autonomy that it leads to organizational or mission misalignment (Mudambi et al. 2014). Subsidiary innovativeness has a positive correlation with reverse knowledge transfers to the parent up to a certain point, beyond which increasing subsidiary innovativeness is associated with lower reverse knowledge transfers (Mudambi et al. 2014: 50).

On the other hand, personal contact can facilitate collection and transfer of knowledge from subsidiary to parent. There is evidence from patent citation data that knowledge flows more within a firm when inventors have close interpersonal ties (Singh 2005). This is because knowledge transfer decisions are taken at the level of individuals and strongly influenced by their personal relationships (Lorenzen and Mudambi 2013). In addition, when subsidiary knowledge is more complex and tacit, personal coordination mechanisms offer a set of richer information transmission channels to transfer such knowledge. As a result, if reverse technology transfer is the objective, electronic-based coordination mechanisms may complement, but should not substitute, face-to-face coordination mechanisms.

The analysis above suggests 20 specific, action-oriented policy considerations for China as it seeks to use outward investment as a channel for domestic upgrading.

scientific and technical staff (researchers, engineers, etc.) between the parent and subsidiary. The counterpoint to personal coordination mechanisms are electronic-based coordination mechanisms, which include: (iv) internet-based instruments, such as forums, newsletters, e-mails, instant messages, etc., and (v) the exchange of documents, such as handbooks, blueprints and databases (Rabbiosi 2011: 104).

20 Policy Considerations

Choosing a location

1. *Target places with high R&D intensity distributed across sectors*
2. *Consider places that are "closer" in terms of geographic, economic, technological, and institutional distance*
3. *Adopt regional strategies to minimize costs and risks while increasing synergies*
4. *Target places with similar IPR regime as well as a strong IPR regimes to source knowledge at the frontier*
5. *Target MNE headquarters*
6. *Target agglomerations, including population, number of firms, number of industries*

Choosing a sector and firm

7. *Target high-technology sectors, although low-technology sectors may also drive some upgrading*
8. *Target outward investment in the same sector, and consider going upstream*
9. *Target manufacturing and service sectors, although the former may be easier to do and produce a bigger effect*
10. *Target larger and older firms, although also consider medium-sized firms as well as smaller and younger firms when these are technology oriented*

Structuring investment

11. *Use M&A and greenfield investment depending on subsidiary role and time for results*
12. *Seek the highest equity possible to increase knowledge transfer*
13. *Aim for repeated acquisitions to benefit from learning effects*

Domestic conditions

14. *Create linkage mechanisms, both between the host economy and China, and within the Chinese domestic economy*
15. *Boost absorptive capacity, both of Chinese firms and of the Chinese domestic economy*
16. *Encourage translating new knowledge into practical applications, including through national innovation systems*
17. *Continue to encourage Chinese private sector OFDI, and level the playing field with SOEs, including subsidies and access to finance* (discussed in chapter five, section B)

Managerial practices

18. *Consider light-touch, partnering integration*
19. *Adopt coordination mechanisms that give subsidiaries autonomy, and ensure personal contact is used in addition to any electronic means*
20. *Proactively address political economy issues that are growing in advanced economies because of Chinese knowledge-seeking OFDI* (discussed in chapter seven, section C)

Overall, need to consider policy for FDI and policy for OFDI in tandem, as there are interactions between the two, and they can work in complementary ways to support of structural transformation that increases productivity and innovation and hence drives domestic upgrading.

10. 10 OFDI policy considerations for other emerging markets: using OFDI as another tool for economic development

I would like to conclude this dissertation by offering a few thoughts on how China's experience may be relevant more broadly. I believe that China's experience has important governance implications. Namely, how a country manages opening its economy to FDI can potentially impact its later capacity to produce OFDI, with ensuing effects on its economy. This is an important conclusion for national development strategies that aim to use investment flows as a pathway to development.

Some might argue that China is a special case because of its market and population size, but I do not think this means China's experience cannot be useful for other countries.

First, there are other economies that are also quite large and where this kind of approach may be relevant. As one study put it, notwithstanding China's "host country specific characteristics, we can also generalize some basic implications from the above findings" (Chunlai 1997: 38). To name a few in alphabetical order, countries like Algeria, Bangladesh, Brazil, Egypt, Kenya, India, Indonesia, Iran, Malaysia, Mexico, Nigeria, Philippines, Russia, Thailand, Turkey.

Of course other countries would have to consider the lessons learned from China's experience in the context of their own national development situations and strategies, and adapt them accordingly. But the general idea that opening to FDI flows in a certain way can produce transmission mechanisms that create the capacity for OFDI flows is a consequent concept to include in the policy process and economic development strategy in other developing and emerging economies.

Second, many of the benefits of OFDI can apply to smaller economies as well, such as the potential for technology sourcing, indirect and direct knowledge effects, efficiencies through competition effects, etc. Recent empirical work has in fact found that OFDI is generalized across both large and small developing economies, including those at lower levels of development (Perea and Stephenson, forthcoming). These policy considerations are therefore relevant to countries across size and development level.

It is worth stressing, at the risk of repetition, that the following policy considerations are meant to be a starting point for dialogue with officials and stakeholders, and adapted to the particular needs and circumstances of each individual emerging economy.

1. Include OFDI policy in national development strategy

Policymakers may wish to consider including OFDI policy and supportive measures in their overall economic development strategy. From the empirical evidence, it is clear that OFDI has the potential to contribute to development. In addition, there may be complementarities between inward FDI and outward FDI, and so countries may wish to consider policies regarding both in tandem. Initial levels of OFDI may create positive feedback loops that attract more FDI, and vice-versa (Globerman and Shapiro 2008). Countries may therefore be stuck at low FDI-OFDI equilibria if initial low levels of OFDI persist. To advance along investment development paths may therefore require a comprehensive strategy that accords sufficient support and resources to OFDI. At the same time, there may be negative effects to OFDI, such as lower domestic capital formation, employment effects through outsourcing, lower tax revenue, or industrial hollowing out

(Thomsen 2010). Governments therefore need to carefully consider as part of an overall development strategy if, how, and by how much to promote OFDI (Ibid.).

OFDI policy should therefore adopt a holistic approach. It should consider both the effects on single variables and on the set of variables that policymakers care about. Just as with trade, there may be winners and losers from OFDI, but it is likely that overall the positive effects on the home economy outweigh the negative effects. Ultimately, policymaking can go a long way to minimizing the negative effects and maximizing the positive effects from OFDI.

2. Review OFDI regulatory frameworks and consider removing any restrictions

Policymakers may wish to review restrictions on OFDI and evaluate the costs and benefits of such measures. Across most developing countries, OFDI policy has gradually shifted from being restrictive to being supportive, although in some countries restrictions persist. Restrictive regulatory frameworks exist out of concern that capital outflows can negatively impact the balance of payments, cause instability, or limit capital availability in the home economy. Measures to restrict OFDI can take the form of approval requirements, reporting requirements, foreign exchange controls, ceilings on investment amounts, or limits on destination sectors or destination economies (Kuzminksa-Haberla 2012a; Kuzminksa-Haberla 2012b). Over the past decades, these have been gradually relaxed, but controls remain (see chapter four, section G and chapter seven, box 3).

Given the potential benefits of OFDI to home economies, governments with OFDI restrictions in place may wish to carefully weigh the costs and benefits of these measures and ensure that these are based on sound policy objectives, as these restrictions may be holding back positive home effects. In addition, given the recent evolution of developing economies from being only recipients of FDI to increasingly being the source of FDI as well, it is likely that regulatory frameworks related to OFDI are outdated and need to be refreshed. [112]

A metaphor here may be helpful: **study abroad programs**. Parents and governments in developing countries generally encourage young people to venture abroad for further study, in the hope that they will develop skills and capabilities that will serve them well. Those students often embark on successful careers back home after their studies. And if they remain abroad, they often send back remittances or act as a platform for other family members to undertake international activities.

In much the same way, developing country firms should be allowed to venture abroad if they identify market opportunities, as investing in foreign markets will allow learning likely to make them more successful in future corporate activities. This success can then lead to knowledge transfer, revenue generation, and upgrading in the home market, as well as plugging into global value chains. OFDI is increasingly becoming an indispensable tool for firms to maintain or increase their investment competitiveness.

[112] For discussion of how developing economies in Asia have successfully reformed their OFDI regulatory frameworks, see Rasiah et al. (2010).

3. Create the enabling environment for OFDI to benefit the home economy

Policymakers can help create an enabling environment for OFDI to benefit the home economy through 'light-form industrial policy'. Certain conditions in the home economy make it more likely that benefits will accrue from OFDI. These conditions include infrastructure, institutions, training programs to boost absorptive capacity, incentives for life-long learning, the development of linkages between the economy and outside economies and between firms, supplier development programs for local firms to develop quality and quantity production levels and plug into GVCs, etc.

Together, these have been called 'light-form industrial policy' (Moran, Gorg, and Seric 2016). They can be contrasted with 'heavy-form industrial policy', which would attempt to pick industry winners or firm champions, and provide these winners/champions with special government support and protection (Moran, Gorg, and Seric 2016: 20). Instead of 'picking' winners, government policy may have aim of gradually 'making' winners.

4. Target investment promotion efforts to new sources of OFDI

Policymakers may wish to target investment promotion activities not only to traditional sources of FDI from developed economies, but also to new sources in of OFDI from developing countries. OFDI from such countries has been growing dramatically over the past decade, and comprises an increasing share of total FDI (see chapter two). Within OFDI, South-South flows have also been growing significantly. Investment promotion agencies may therefore wish to target OFDI from other developing economies as an important potential source of investment, and policymakers makers can adopt supportive measures to facilitate these flows, such as through Bilateral Investment Treaties (BITs) or other International Investment Agreements (IIAs).

5. Target OFDI by location and sector

Policymakers may wish to support firms in targeting OFDI by location and sector. Given heterogeneity in the characteristics of different host locations, not all OFDI will generate equivalent emerging market home effects. It is therefore helpful to be clear on how different types of OFDI and different host locations can generate different kinds of home effects, whether technology transfer, export growth, domestic employment, etc. (see chapter nine, section A). For instance, in the case of knowledge or technology seeking OFDI, which is likely to have the most direct positive effect on home economies, emerging markets should target host economies with abundant knowledge and technological resources both in general and in the relevant industry (Chen, Li, Shapiro 2012). The reason is that economy-wide knowledge resources can generate significant spillovers. Emerging market OFDI can therefore benefit from both direct and indirect knowledge transfer. In contrast, if an emerging market is using OFDI to open new markets and increase exports, then targeting a large economy may be preferable. Understanding how targeting locations and sectors can bring about different home effects helps to explain patterns of Chinese OFDI across host countries with different characteristics.

6. *Understand the mediating role of absorptive capacity*

Firms and policymakers need to evaluate their absorptive capacity and realistically understand how their current level of absorptive capacity mediates the benefits of OFDI (WU and Voss 2015: 350). The key to positive home effects is that there be a match between the firm's level of absorptive capacity and the knowledge it seeks to target through OFDI (Perea and Stephenson, forthcoming). Firms starting from a more basic level of knowledge can benefit most from exposure to simpler knowledge, giving them potentially a bigger boost to productivity and innovation than if they were to target knowledge at the frontier and not be able to absorb it (Ibid.). In contrast, firms already enjoying more sophisticated knowledge can benefit most from exposure to more complex knowledge at the frontier, giving them a bigger boost to productivity and innovation than if they were to target knowledge close to that which they already master. In both cases, there needs to be a match between the ability of the home firm to absorb knowledge and the kind of knowledge being targeted. This match will change over time as knowledge is gained and as absorptive capacity increases. Policymakers may therefore wish to boost absorptive capacity at both ends of the knowledge spectrum.

7. *Aim to increase the level of absorptive capacity*

Policymakers can help increase the level of absorptive capacity to increase the potential benefit of OFDI to the home economy. Governments have a role to play in helping develop the soft skills and hard infrastructure that provide linkages between host and home economies and facilitate assimilation of knowledge and technology (Amann and Virmani 2014). Emerging market firms need to develop sufficient human capital to absorb, adapt, and use advanced techniques acquired through OFDI. They also require adequate infrastructure to absorb and use advanced technology. It is worth noting that absorptive capacity may be measured at both the level of the firm and of the economy. When undertaking OFDI decisions, it is the firm's absorptive capacity that is key to determine the appropriate match with target knowledge and technology. However, in terms of policy interventions to boost absorptive capacity, this should be considered at the level of the economy.

Officials can adopt measures that boost the absorptive capacity economy-wide rather than try and boost the absorptive capacity of individual firms to create national champions. Measures to consider include boosting R&D expenditures, increasing R&D employment, providing training programs, promoting firm linkages, building business networks, establishing institutional partnerships, creating national infrastructure, helping to diffuse information, and designing school curricula, among other measures. What is critical is an approach of continuous learning, both for firms just beginning to undertake OFDI, as well as for those actively outwardly invested.

8. *Build supportive institutions*

Policymakers can help build institutions to provide links through which OFDI can generate positive home effects. At a minimum, government institutions should remove restrictions on OFDI (Thomsen 2010). They should also should eliminate market failures that impede emerging market firms from engaging in OFDI (Moran 2008), and provide policy and legal guarantees that facilitate OFDI (Liu and Lu 2011). However, government institutions can do much more. They can put in place regulatory frameworks and supportive measures that maximize the transmission and transfer of direct and indirect positive home effects of OFDI. These can include

incentives or financial support for firms to undertake OFDI (Tang and Altshuler 2015). However, government institutions should not simply subsidize emerging market firms to engage in OFDI (Torres 2013), but rather help increase home firms' international competitiveness through enterprise reform and better domestic investment regulatory frameworks (Liu and Lu 2011).

9. Enact governance reforms, including to address political economy backlash to OFDI

Policymakers can undertake governance reforms that make it more likely OFDI will lead to positive home effects. For OFDI to produce positive home effects, there needs to be economic integration between host and home economies (Globerman and Shapiro 2008). Yet weak public and private sector governance can limit such economic integration and thus limit the home benefits of OFDI. "To the extent that changes in public sector governance play an important gatekeeper role to changes in corporate governance, the former might be a particularly important prerequisite to the growth of economically beneficial OFDI from emerging markets" (Globerman and Shapiro 2008: 263). These governance reforms can also include measures to proactively address political economy challenges and potential backlash from OFDI in knowledge-intensive sectors (see chapter seven, section C).

10. Increase understanding of OFDI through more policy-oriented research

Policymakers can help encourage more policy-oriented research to better understand OFDI and its implications for development. OFDI, being a relatively recent phenomenon, is under-researched and many questions remain. This is most clear when realizing that only a couple of academic papers have examined the relationship between inward and outward FDI, an area to which this dissertation hopes to contribute.

Other questions to examine in a future research agenda include: First, how home effects vary across OFDI type, as no work has systematically disentangled these dynamics. Second, more evidence regarding OFDI's effect on certain dimensions of the home economy (e.g. domestic investment and employment). Third, a need to better understanding of how investment incentives and other policies impact developing country firms' OFDI decisions (home determinants). Policymakers need this kind of information to make decisions regarding investment policy and its impact on developmental outcomes.

Conclusion

To conclude, OFDI from emerging markets is changing the international investment landscape. It has gradually but decisively increased since the turn of the 21st Century, accelerating rapidly following the global financial crisis. It is likely that this trend will continue, and the relative share of OFDI in global FDI will only grow. Though China is driving this phenomenon, other emerging markets are also starting to undertake OFDI. They can learn from China's experience, adapting to their own national and economic contexts the lessons and best practices that China has exhibited through its use of investment policy to support development objectives. In particular, the relationship between inward and outward FDI, and the potential of outward FDI to produce benefits for the home economy, are insights that policymakers from across other emerging markets may wish to consider in their own national development strategies.

Appendices

FDI Technical Coefficients

Sector with significant FDI (Source 1991-1997 China Yearbook)	Input-Output Table Year Complete Consumption COEFFICIENT 1990	1995	1997	2002	2007	2012
Industry (Manufacturing)						
1. Manufacture of Textiles						
Manufacture of textiles	0.6874149	0.7086519	0.6574995	0.523844	0.652920	0.713896
Manufacture of wearing apparel, leather and products of leather and fur	0.6576174	0.7641989	0.6118597	0.504900	0.649650	0.705596
Other manufacturing/Industries	0.2530271	0.2297676	0.2080947	0.149933	0.179380	0.187592
Paper and stationery manufacturing	0.2406576	0.2803828	0.1509707	0.041113	0.064391	0.111049
Wood processing and furniture manufacturing 9	0.1906786	0.1971172	0.2010892	0.046695	0.055095	0.064233
2. Manufacture of Transport Equipment						
Manufacture of transport equipment	0.3179353	0.4085129	0.4252328	0.430926	0.528740	0.482601
Machinery and equipment repair industry (23 and then 24	0.1668402	0.2951147	0.2368784	no more cat	no more cat	0.174522
Passenger transportation	0.1116338	0.1410810	0.1485648	no more cat	no more cat	no more cat
Postal services	0.0925588	0.0990442	0.0353948	0.096724	0.162780	0.131724
Cargo transportation and warehousing	0.0925588	0.0990442	0.0970591	0.120955	0.125880	0.131724
3. Manufacture of General Purpose and Special Purpose Machinery						
Mechanical industry/Manufacture of machinery	0.3296412	0.3150333	0.2951073	0.270771	0.353740	n/a
Manufacture of transport equipment	0.2287736	0.2315109	0.2412332	0.189793	0.245410	n/a
Machinery and equipment repair industry 23 and then 24	0.1880934	0.1719888	0.1399678	no more cat	no more cat	n/a
Metal mining	0.1200743	0.1248874	0.1396673	0.090979	0.155480	n/a
4. Manufacturing of Communications Equipment, Computer and Other Electronic Equip						
Manufacturing of Communications Equipment, Computer and Other Electronic Equip	0.6936693	0.6534853	0.6851400	0.880432	1.153000	1.056232
Instruments and other measuring instruments manufacturing	0.160655	0.2190552	0.2845942	0.419186	0.650690	0.491981
Electrical machinery and equipment manufacturing	0.0227830	0.0461645	0.0940639	0.111586	0.195440	0.169876
Manufacture of transport equipment	0.0214915	0.0307320	0.0411378	0.062152	0.096372	0.103989

5. Real Estate						
Leasing and Business Services	n/a	n/a	n/a	0.020690	0.023958	0.026647
Executive and other industries	n/a	n/a	0. 0170968	0.084343	0.013689	0.021060
Social services	n/a	n/a	0. 0168845	0.030551	0.037544	0.062400
Wholesale and retail	n/a	n/a	0. 0190693	0.027332	0.031179	0.057259
6. Construction						
Public administration/executive and other industries 42	0. 0000000	0. 0367434	0. 0435311	0.025757	0.016890	0.017031
Cultural, education, health and scientific research institutions/Culture, Sports and Entertainment 41	0. 0000000	0. 0152139	0. 0619734	0.018184	pooblem	problem
Public utilities and services to households/Social services	0. 0000000	0. 0133150	0. 0297010	0.027380	0.009873	0.011618
Construction	0. 0000000	0. 0122656	0. 0078380	0.007856	0.011796	0.34055
Post (and telecommunications) 28	0. 0000000	0. 0037979	0. 0388254	0.064146	0.034936	0.014328
Real estate	0. 0000000	n/a	0. 0426105	0.044542	0.012981	0.028016
7. Transportation and Warehousing						
Coking, gas and coal products industry/Petroleum processing, coking and nuclear fuel processing industry PROBLEM OF CATEGORIES		0. 1273021	0. 1301999	0. 0467321	prob cat	prob cat
Petroleum refineries 11	0. 0367561	0. 1161574	0. 0544538	0.094295	0. 075865	0. 062694
Commerce/Wholesale and retail trade 30	0. 0315930	0. 1107075	0. 0330761	0.068819	0.121350	0.063041
Primary metal manufacturing	0. 0911924	0. 0942998	0. 0800841	0.119291	0.089960	0.094993
Building materials and non-metallic mineral products industry	0. 0715023	0. 0798109	0.0778863	0.126922	0.105770	0.114459
Metal mining	0. 0559986	0. 0792025	0.0961822	0.091917	0.102560	0.093286
8. Food and Beverage Manufacturing						
Accommodation and catering	0. 3668217	0. 3331731	0. 3785828	0.289344	0.424040	0.453462
Food manufacturing	0. 1386702	0. 1754906	0. 2055017	0.195178	0.322970	0.393574
Manufacture of wearing apparel, leather and products of leather and fur	0. 0634288	0. 0674475	0. 0813711*	0.073269	0.130360	0.123617
Agriculture	0. 0595751	0. 0816335	0. 1033437	0.084246	0.159320	0.183730
9. Electricity, Steam and Hot Water Production and Supply						
Primary metal manufacturing/Fabricated metal products	0. 1079769	0. 0960747	0. 1089258	0.128785	0.237260	0.195789
Metal mining	0. 0937832	0. 1140847	0. 1371616	0.155260	0. 316370	0. 225274
Coking, manufacture of gas and coal products	0. 0744182	0. 0974834	0. 0806256	problem cat	problem cat	problem cat

Other mining	0.0945575	0.0857722	0.0917823	0.089366	0.192390	0.162347
Manufacture of building materials and other non-metallic mineral products	0.0882645	0.1258285	0.1283260	0.114384	0.217190	0.185996
10. Raw Chemical Materials and Chemical Products						
Chemical industry	0.4583211	0.7314227	0.6710657	0.675140	0.825560	0.866740
Electrical machinery and equipment manufacturing	0.2914551	0.2462795	0.3515457	0.308692	0.309710	0.329748
Other industries	0.2720605	0.3968097	0.2878277	0.247040	0.332190	0.478915
Electronic and communication equipment manufacturing	0.2583348	0.2208462	0.3172810	0.263695	0.338950	0.310271
Transportation Equipment Manufacturing 17	0.2565076	0.2677431	0.2339973	0.224072	0.270490	0.253772

OFDI Technical Coefficients

Sectors with significant OFDI (Source: MOFCOM Outward Direct Investment Bulletin)
Numbers are from 2002 classification

	1990	1995	1997	2002	2007	2012
1. Leasing and business service						
Finance and insurance	n/a	n/a	n/a	0.035462	0.058190	0.124254
Wholesale and retail	n/a	n/a	n/a	0.046602	0.076073	0.115331
Leasing and business service	n/a	n/a	n/a	0.045732	0.066392	0.104564
Information transfer, computer and software	n/a	n/a	n/a	0.025541	0.051925	0.087865
2. Wholesale and retail trade						
Manufacture of wearing apparel, leather and products of leather and fur	0.0952738	0.1774252	0.1294657	0.132752	0.055170	0.151028
Communications equipment and electronics and computer	0.0956903	0.1937474	0.1326774	0.131495	0.092813	0.131971
Other manufacturing	0.0908556	0.1806617	0.1159308	0.126866	0.024367	0.106809
Accomodation and catering	0.0684698	0.0736037	0.0948701	0.102692	0.057213	0.106471
Instruments and office machinery 2002/07 20, 2012 21	0.0782834	0.1837590	0.1139536	0.116706	0.077826	0.105763
Textile 07	0.0891363	0.1778496	0.1170761	0.112465	0.054149	0.105185
3. Metal mining						
Metal manufacturing	0.1430839	0.1257435	0.2115938	0.145460	0.263740	0.312868
Metal mining	0.1580024	0.1363142	0.2276841	0.084765	0.143770	0.193237
Metal products	0.0590377	0.0821817	0.1070632	0.082583	0.131270	0.146339
Electrical machinery	0.0376428	0.0408142	0.0737785	0.050143	0.109980	0.121720
4. Finance and insurance						
Transportation and warehousing	0.0246347	0.0220223	0.0360390	0.081490	0.080084	0.145214
Real estate	n/a	n/a	0.0589168	0.095710	0.035212	0.133225
Leasing and business service	n/a	n/a	n/a	0.068151	0.082179	0.133164
Water production and supply	0.0249698	0.0296300	0.0277597	0.047914	0.092344	0.131988
Electricity and steam	0.0277673	0.0229201	0.0436562	0.053909	0.088002	0.131534
5. Metal manufacturing						
Metal products	0.4118014	0.6046938	0.5793052	0.613889	0.741990	0.716880
Metal manufacturing	0.4458736	0.4896713	0.4936007	0.508808	0.637580	0.648437
Electrical machinery	0.3640675	0.4541253	0.4149544	0.415313	0.661570	0.619440
General and specialised machinery	0.2888901	0.3540711	0.3607207	0.402045	0.574470	n/a

Construction	0.2659541	0. 2884098	0.2061658	0.279597	0.400460	0.385415
6. Transportation equipment						
Transportation equipment	0.3179353	0.4085129	0.4252328	0.430926	0.528740	0.482601
Metal products, machinery, and equipment repair services 2012 24	0.1668402	0. 2951147	0. 2368784	n/a	n/a	0.174522
Transport and warehousing	0.0925588	0.0990442	0.0970591	0.120955	0.125889	0.131724
General and specialised machinery	0.0316654	0.0428055	0.0369167	0.050663	0.118560	n/a
7. Consumer electronics manufacturing						
Consumer electronics manufacturing	0.6936693	0.6534853	0.6851400	0.880432	1.153000	1.056232
Instruments and office machinery	0.160655	0.2190552	0.2845942	0.419186	0.650690	0.491981
Information transmission, computers and software 2002/07 29, 2012 32	n/a	n/a	n/a	0.241227	0.182000	0.249690
Scientific career 36	n/a	n/a	0.2903150	0.278079	0.157080	0.199835
Electrical machinery	0.0227830	0. 0461645	0.0940639	0.111586	0.195440	0.169876
8. Real estate						
Finance and insurance	n/a	n/a	0.0446345	0.049393	0.032991	0.077822
Social services	n/a	n/a	0. 0168845	0.030551	0.037544	0.062400
Wholesale and retail	n/a	n/a	0.0190693	0.027332	0.031179	0.057259
Real estate	n/a	n/a	0.0095602	0.015787	0.012008	0.044359
Information transmission, computers and software	n/a	n/a	n/a	0.015574	0.027103	0.037651
9. Transport and warehousing						
Transport and warehousing	0.0493511	0.0468262	0.0646396	0.165807	0.110690	0.208630
Information transmission, computers and software	n/a	n/a	n/a	0.049707	0.049600	0.149257
Leasing and business services	n/a	n/a	n/a	0.080786	0.096612	0.116178
Transportation equipment	0.0712744	0.0743697	0.0517875	0.097285	0.088873	0.115074
10. Construction						
Construction	0.0000000	0.0122656	0. 0078380	0.007856	0.011796	0.034055
Transportation and warehouseing	0.0000000	0. 0037979	0.0189367	0.017835	0.005017	0.014328
Water production and supply 2002/07 25, 2012, 27	n/a	n/a	0.0082054	0.006203	0.003656	0.013791
Electricity and steam	0.0000000	0.0044356	0.0084328	0.005703	0.002380	0.011389
Communications equipment and electronics and computer	0.0000000	0.0037851	0.0064719	0.006339	0.002324	0.009708

FDI-OFDI Relationship Technical Coefficients

	1990	1995	1997	2002	2007	2012
FDI Sector						
FDI 1: Manufacture of Textiles						
OFDI 1: Leasing and business service				0,016676	0,045288	0,034435
OFDI 2: Wholesale and retail trade	0,0924543	0,03	0,0445146	0,014545	0,0191	0,00817
OFDI 3: Mining metal	0,067621	0,0596184	0,04	0,012293	0,016025	0,015807
OFDI 4: Finance and insurance	0,0063125	0,0358903	0,0227158	0,007403	0,009079	0,015192
OFDI 5: Metal manufacturing	0,0664459	0,0508197	0,0354762	0,011197	0,013834	0,014593
OFDI 6: Transportation equipment	0,0761483	0,0623634	0,0561863	0,016886	0,029067	0,034055
OFDI 7: Consumer electronics	0,06	0,0502069	0,042873	0,015882	0,019185	0,019398
OFDI 8: Real estate			0,0146559	0,004061	0,007292	0,00743
OFDI 9: Transport and warehousing	0,0498605	0,0395104	0,0251951	0,009737	0,015484	0,014936
OFDI 10: Construction	0,0754174	0,07	0,043623	0,01646	0,018878	0,021168
FDI 2: Manufacture of Transport Equipment						
OFDI 1: Leasing and business service				0,0715	0,086836	0,087286
OFDI 2: Wholesale and retail trade	0,0169527	0,0428887	0,0555862	0,062882	0,050347	0,019376
OFDI 3: Mining metal	0,0302939	0,0474805	0,0514728	0,051281	0,051876	0,025854
OFDI 4: Finance and insurance	0,0033359	0,0392619	0,017981	0,025188	0,018879	0,017562
OFDI 5: Metal manufacturing	0,0283552	0,037432	0,0416287	0,044877	0,046663	0,020848

OFDI 6: Transportation equipment	0,3179353	0,4085129	0,4252328	0,430926	0,52874	0,482601
OFDI 7: Consumer electronics	0,0141186	0,0247979	0,0248888	0,036213	0,041167	0,022081
OFDI 8: Real estate			0,0112418	0,022991	0,013511	0,008234
OFDI 9: Transport and warehousing	0,0925588	0,0990442	0,0970591	0,120955	0,12588	0,131724
OFDI 10: Construction	0,0258544	0,0386498	0,0271051	0,03959	0,047344	0,023496

FDI 3: Manufacture of General Purpose and Special Purpose Machinery

OFDI 1: Leasing and business service				0,070749	0,06566	n/a
OFDI 2: Wholesale and retail trade	0,0296929	0,0324727	0,0558523	0,047651	0,031045	n/a
OFDI 3: Mining metal	0,1200743	0,1248874	0,1396673	0,090979	0,15548	n/a
OFDI 4: Finance and insurance	0,0041328	0,04	0,0345717	0,029462	0,019046	n/a
OFDI 5: Metal manufacturing	0,1442629	0,1296423	0,1209408	0,088822	0,13293	n/a
OFDI 6: Transportation equipment	0,2287736	0,2315109	0,2412332	0,189793	0,24541	n/a
OFDI 7: Consumer electronics	0,069731	0,0763785	0,1209408	0,073109	0,089157	n/a
OFDI 8: Real estate			0,02	0,025969	0,015328	n/a
OFDI 9: Transport and warehousing	0,0544544	0,0645991	0,0723078	0,068176	0,080156	n/a
OFDI 10: Construction	0,1072633	0,1098264	0,0953641	0,106985	0,11728	n/a

FDI 4: Manuf of Comms Equipment, Computer and Other Electronic Equip

OFDI 1: Leasing and business service				0,353168	0,21671	0,126415
OFDI 2: Wholesale and retail trade	0,0081234	0,0121776	0,06	0,069175	0,044629	0,03083
OFDI 3: Mining metal	0,008077	0,015196	0,0309415	0,036255	0,045766	0,038145
OFDI 4: Finance and insurance	0,001522	0,0303173	0,0529377	0,05537	0,028162	0,029678
OFDI 5: Metal manufacturing	0,0105042	0,0175664	0,0296775	0,035455	0,039292	0,033683
OFDI 6: Transportation equipment	0,0214915	0,030732	0,0411378	0,062152	0,096372	0,103989
OFDI 7: Consumer electronics	0,6936693	0,6534853	0,68514	0,880432	1,153	1,056232
OFDI 8: Real estate			0,0149827	0,027873	0,020244	0,014516

OFDI 9: Transport and warehousing	0,0132377	0,02	0,0212795	0,035033	0,035607	0,034739
OFDI 10: Construction	0,0084727	0,0174258	0,0310432	0,056453	0,050614	0,046033

FDI 5: Real Estate

OFDI 1: Leasing and business service				0,02069	0,023958	0,026647
OFDI 2: Wholesale and retail trade			0,0190693	0,027332	0,031179	0,057259
OFDI 3: Mining metal			0,0051208	0,006094	0,007415	0,057259
OFDI 4: Finance and insurance			0,0446345	0,049393	0,032991	0,077822
OFDI 5: Metal manufacturing			0,0052769	0,006848	0,057249	0,012644
OFDI 6: Transportation equipment			0,005784	0,008771	0,010716	0,0158
OFDI 7: Consumer electronics			0,01	0,012387	0,014084	0,019026
OFDI 8: Real estate			0,0095602	0,015787	0,012008	0,044359
OFDI 9: Transport and warehousing			0,0049093	0,008559	0,01043	0,020218
OFDI 10: Construction			0,01	0,008147	0,009343	0,013669

FDI 6: Construction

OFDI 1: Leasing and business service	0			0,01073	0,003173	0,008488
OFDI 2: Wholesale and retail trade	0	0,0110028	0,01	0,013351	0,004956	0,006585
OFDI 3: Mining metal	0	0,0058446	0,01	0,006047	0,002273	0,007623
OFDI 4: Finance and insurance	0	0,0109534	0,0271786	0,022127	0,002793	0,01399
OFDI 5: Metal manufacturing	0	0,0051558	0,008162	0,006353	0,002301	0,007499
OFDI 6: Transportation equipment	0	0,0042383	0,0075184	0,006789	0,002472	0,008061
OFDI 7: Consumer electronics	0	0,0037851	0,0064719	0,006339	0,002324	0,009708
OFDI 8: Real estate			0,0426105	0,044542	0,012981	0,028016
OFDI 9: Transport and warehousing	0	0,00	0,0189367	0,017835	0,005017	0,014328
OFDI 10: Construction	0	0,0122656	0,01	0,007856	0,011796	0,034055

FDI 7: Transportation and Warehousing

OFDI 1: Leasing and business service				0,080786	0,096612	0,116178
OFDI 2: Wholesale and retail trade	0,031593	0,1107075	0,0309414	0,068819	0,12135	0,063041
OFDI 3: Mining metal	0,0559986	0,08	0,0961822	0,091917	0,10256	0,093286
OFDI 4: Finance and insurance	0,0149685	0,052238	0,0163027	0,051063	0,040576	0,053705
OFDI 5: Metal manufacturing	0,0911924	0,0942998	0,0800841	0,119291	0,08996	0,094993
OFDI 6: Transportation equipment	0,0712744	0,0743697	0,0517875	0,097285	0,088873	0,115074
OFDI 7: Consumer electronics	0,0505078	0,06	0,0469983	0,094212	0,084221	0,096698
OFDI 8: Real estate			0,01505	0,031781	0,01675	0,024601
OFDI 9: Transport and warehousing	0,0493511	0,0468262	0,0646396	0,165807	0,11069	0,20863
OFDI 10: Construction	0,0831802	0,09	0,06	0,123679	0,14882	0,107116

FDI 8: Food and Beverage

OFDI 1: Leasing and business service				0,022412	0,068541	0,070014
OFDI 2: Wholesale and retail trade	0,0211082	0,0654257	0,0564201	0,030693	0,035924	0,020796
OFDI 3: Mining metal	0,013693	0,0220434	0,0190347	0,012002	0,030884	0,037736
OFDI 4: Finance and insurance	0,0012233	0,0142274	0,0157587	0,014627	0,03002	0,037815
OFDI 5: Metal manufacturing	0,0137932	0,020027	0,0165738	0,009914	0,029951	0,036534
OFDI 6: Transportation equipment	0,0163457	0,0255958	0,0180217	0,012354	0,037032	0,041518
OFDI 7: Consumer electronics	0,0156305	0,0222286	0,0204061	0,013483	0,038726	0,047457
OFDI 8: Real estate			0,0089665	0,008553	0,01438	0,018108
OFDI 9: Transport and warehousing	0,009245	0,0130312	0,02	0,013597	0,035444	0,05169
OFDI 10: Construction	0,0136384	0,0209122	0,0198856	0,020307	0,037123	0,040878

FDI 9: Electricity, Steam and Hot Water Production and Supply

OFDI 1: Leasing and business service				0,0486	0,096944	0,062985
OFDI 2: Wholesale and retail trade	0,0265123	0,0193536	0,0337203	0,042998	0,061213	0,033504

OFDI 3: Mining metal	0,0937832	0,1140847	0,1371616	0,15526	0,31637	0,225274
OFDI 4: Finance and insurance	0,0026567	0,0274755	0,0222628	0,027749	0,039354	0,030819
OFDI 5: Metal manufacturing	0,1079769	0,0960747	0,128326	0,128785	0,23726	0,195789
OFDI 6: Transportation equipment	0,0596021	0,05	0,0666206	0,074895	0,14617	0,110799
OFDI 7: Consumer electronics	0,0490147	0,038875	0,0542551	0,066492	0,13315	0,100447
OFDI 8: Real estate			0,0186953	0,021305	0,025101	0,020971
OFDI 9: Transport and warehousing	0,0300115	0,0302633	0,0410745	0,045297	0,085829	0,067736
OFDI 10: Construction	0,0622665	0,057478	0,0662269	0,078154	0,15825	0,127105

FDI 10: Raw Chemical Materials and Chemical Products

OFDI 1: Leasing and business service				0,130403	0,21563	0,17247
OFDI 2: Wholesale and retail trade	0,0869379	0,08	0,1166862	0,097854	0,086878	0,044169
OFDI 3: Mining metal	0,2011435	0,1988035	0,1925751	0,150477	0,18322	0,183656
OFDI 4: Finance and insurance	0,0106281	0,08	0,0598414	0,050523	0,053305	0,057181
OFDI 5: Metal manufacturing	0,1622485	0,1316582	0,1410551	0,110958	0,14193	0,148634
OFDI 6: Transportation equipment	0,2565076	0,2677431	0,2339973	0,224072	0,27049	0,253772
OFDI 7: Consumer electronics	0,2583348	0,22	0,317281	0,263695	0,33895	0,310271
OFDI 8: Real estate			0,0407292	0,034802	0,048931	0,031168
OFDI 9: Transport and warehousing	0,1407654	0,1197799	0,1005171	0,076927	0,10665	0,112512
OFDI 10: Construction	0,1655055	0,1580854	0,1624176	0,177232	0,21788	0,22636

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