International Entrepreneurship and Enterprise Development

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geboren op 29 oktober 1984
te Purmerend

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Ubi volentia est, via est.

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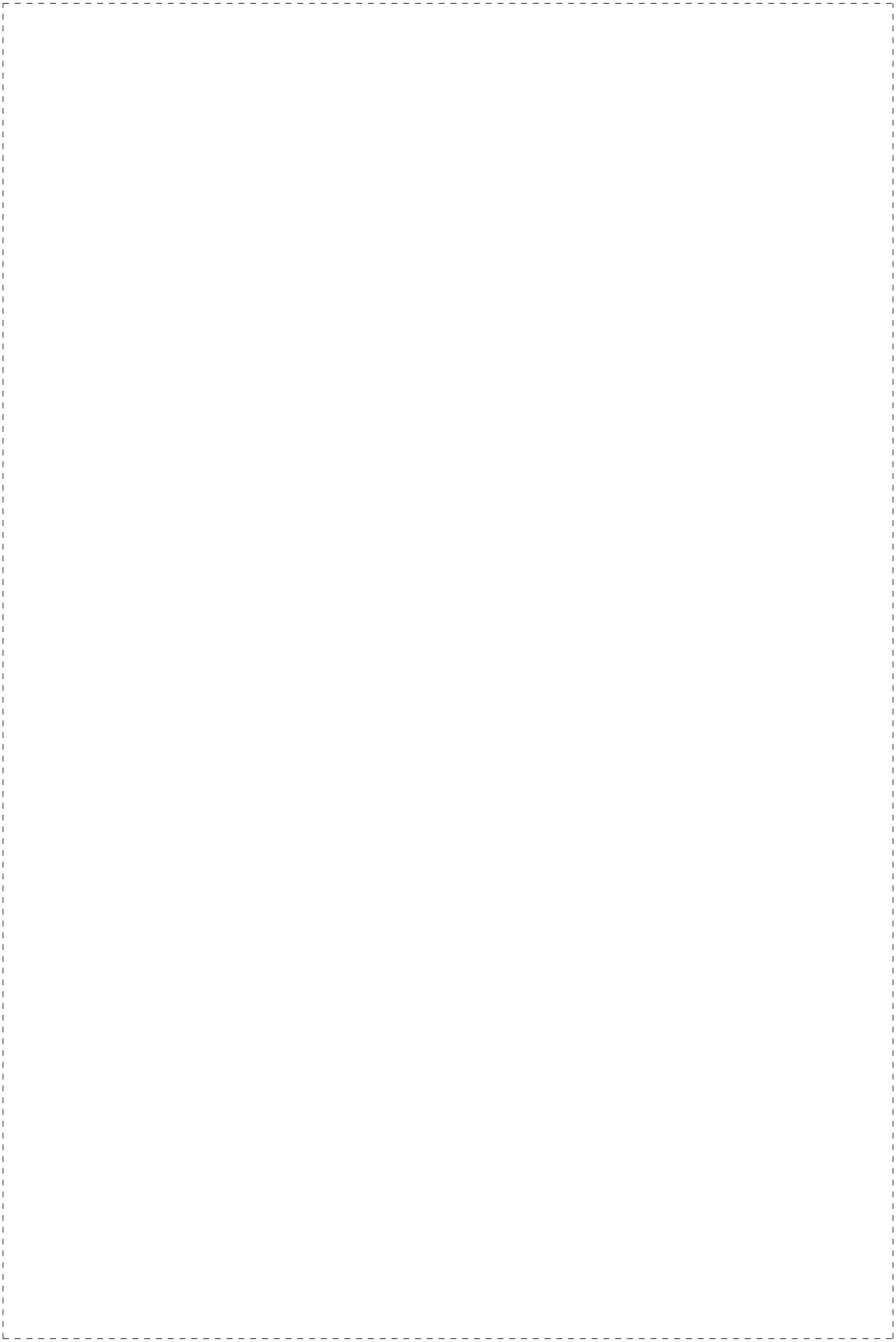
Huib en Josine, you are the best parents which words cannot describe.

I am so happy you are here, this manuscript is dedicated to you.

Martijn

September 25, 2012



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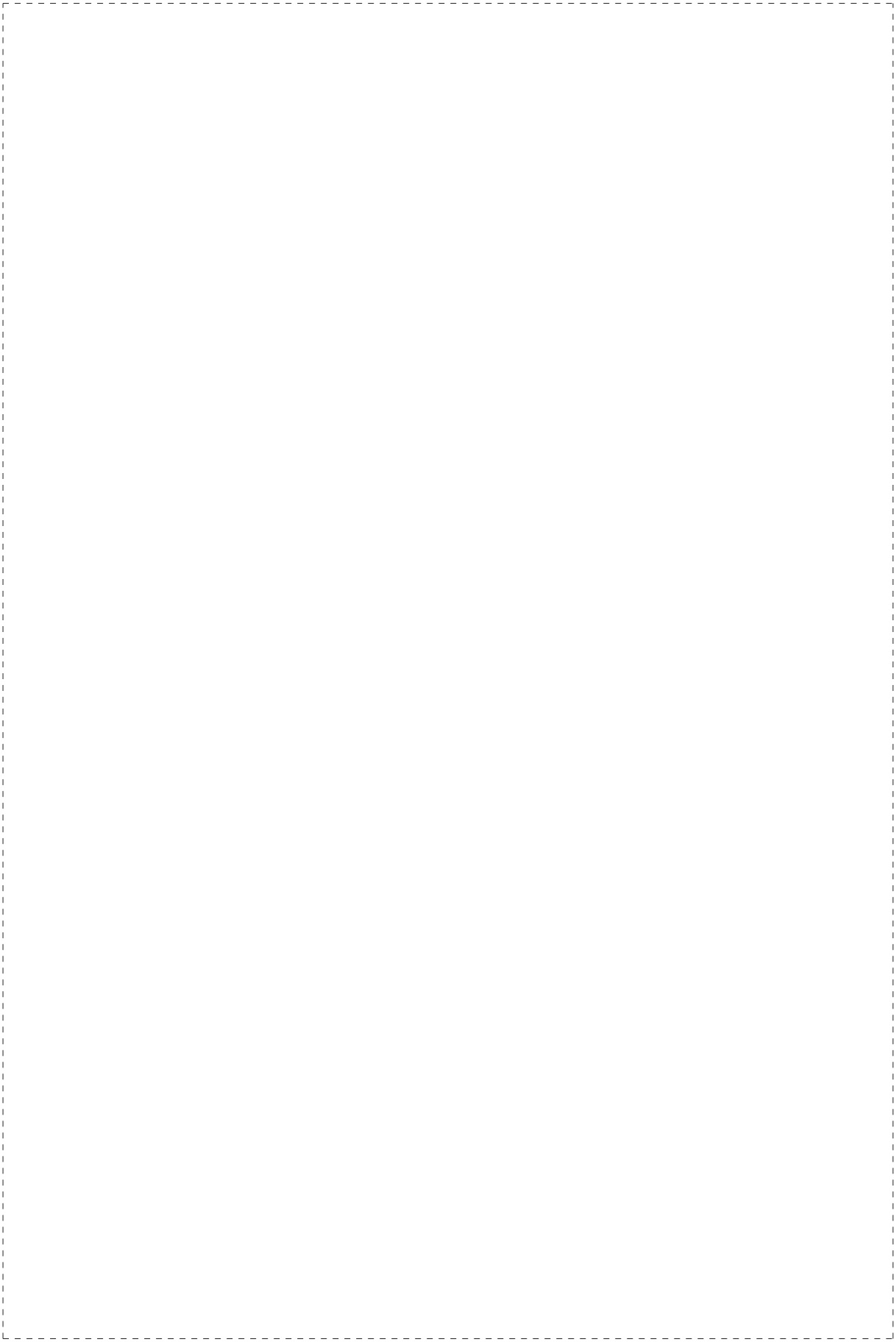


I. INTRODUCTION

1. Internationalization, innovation, and firm performance

The internationalization of the firm has been a key feature of globalization. The fall in trade costs, trade liberalization and increasing global integration provide managers with strong incentives to internationalize their firms. Clearly, the internationalization of the firm has a profit-seeking motive. The traditional argument for international expansion is that firms benefit from increasing returns to scale (Helpman & Krugman, 1985). In addition, firms that have access to foreign markets are better able to retrieve investments, expand product scope and diversify risks. Moreover, increased competition in foreign markets forces firms to become more efficient. On a strategic level, internationalization yields long-term benefits beyond economies of scale and scope. International activities allow for technological transfers, foreign inputs, and other knowledge flows. In the strategic management literature it is often stressed that firms go abroad because it exposes them to international business contact from which they learn new ways of doing business, strengthen managerial capabilities and update their best practices (Teece et al., 1997).

To reap the benefits from internationalization, firms also incur significant costs. These costs are at the core of most theories that explain which firms internationalize and which do not. A first approach, common in economics, models trade costs as abstract sunk investments and iceberg costs at the margin, so that only productive firms with high profitability find it worthwhile to enter foreign markets (Melitz, 2003). What these models predict is that large and productive firms are engaged in international trade. Also the dominant Ownership-Location-Internalization (OLI) approach in international business studies implicitly assumes that international firms are large Western entities with complex managerial structures (Dunning, 2000).

Still, a core assumption in the aforementioned standard approaches in international economics and international business studies remains problematic. That is, it is assumed that the internationalization of the firm is a consequence of organizational excellence because of high productivity and/or a unique resource configuration that give the firm a sustainable competitive advantage in the world market (Chang & Van Marrewijk, 2011; Naudé & Matthee, 2012). Indeed, in congruence with the theoretical shift from macro and industry level studies to research that focuses on the micro-level and the organization of firm, with the increasing availability of micro data, a large empirical literature on the internationalization of the firm is emerging. The empirical work mainly focuses on relatively large Western firms (Bernard et al., 2012; Zhou, 2007). From these studies the basic conclusion arises that for advanced economies, the internationalization of the firm does not affect productivity, thus safe-guarding the foremost assumption of exogenous productivity. To explain these findings, presumably big multinational corporations already operate with the best available technological inputs and organizational structures compared to other firms. As such, the data suggest that for large firms from high income countries, internationalization leads to an expansion in sales and does not bring improvements in firm productivity or augment the firm's resource base.

These conclusions are currently being challenged by two recent phenomena. First, small firms are also increasingly engaged in international trade, often in niche markets and in business-to-business activities. These small firms often concentrate their activities in nearby markets (Hessels, 2007). The reason is that costs are lower in terms of transport and taxation. However, since these are similar for all small and medium sized enterprises (SMEs), the firms that internationalize often have low 'psychic distance' for their managers have gained experimental knowledge of the foreign business culture and institutional restrictions. As such, experience is build-up over time in various stages, internationalization of SMEs can be modeled as a gradual process of deeper commitments (and thus potentially higher risk) that follows from a fall in the cultural and institutional costs associated with dealing with foreign parties (Johanson & Vahlne, 1977). Cleary, new ventures that hire internationally experienced managers with well-developed global business networks and skills can internationalize quicker and can from inception become 'born global' firms (Knight & Cavusgil, 2004). Consequently, in addition to profitability, it is the firm's

managerial resources that determine the differences in scope and pace of internationalization across firms. The motivation to internationalize for these small firms transcends the mere sales and profit seeking motive in the short run, because SMEs want to adopt best practices, incorporate new technologies and learn from their experience abroad to improve their productivity and expand the firm's resources. Such experimental learning by SMEs is hard to reconcile with the prediction that only large, productive firms have international activities.

Second, although Western firms still dominate the international business landscape and are regarded as most productive firms, more firms from developing countries are entering the global market place. Large enterprises from Brazil, China, India, Russia and South-Africa that may not be the most productive are still able to compete abroad and acquire key positions in various industries such as aircraft engineering, biotechnology and ICT. To improve their productivity, these firms engage in foreign direct investment (FDI) to gain access to strategic assets. Moreover, exporting activities allow for further learning-by-doing effect and expose these firms to greater competitive pressure. Corresponding to this upsurge from developing countries, which include emerging markets and economies in transition, recent theoretical papers in the economics literature stress that, like some SMEs in developed markets, these non-Western companies deliberately try to influence firm productivity through internationalization. Hence, if internationalization is a strategy to increase productivity, this not only opens-up the black box of firm productivity, but also renders it endogenous. One key research area in this respect is the returns from R&D efforts and innovation. A recent strand of literature focuses on how export participation increases the incentives for firm to invest in R&D which in turn raises firm performance (Aw et al., 2008, 2011; Melitz & Constantini, 2008). As such, there is an intricate connection between internationalization and innovation where the causal relation may run both ways. Thus, it may not only be large, innovative firms that are more likely to internationalize, but SMEs and firms from less-developed markets may internationalize to become more innovative and increase the competitiveness of the firm.

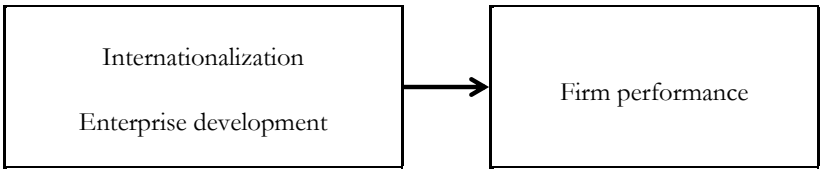
In line with the tradition view of internationalization, more innovative firms have a competitive advantage which they can exploit abroad, again leading to the selection of the large and productive firms into international activities. Nonetheless, precisely small businesses and firms from developing countries may benefit the most

from international activities, as the learning gap between these enterprises and large multinational appears to be the greatest. On the other hand, given the initial conditions for these companies internationalization strategies appear most costly and difficult to implement.

2. Contributions

Figure 1 provides an overview of this thesis and its main contributions. Broadly speaking there are two relevant fields of research. First, a large current research stream highlights the various effects of internationalization on firm performance. In a way, one could think of internationalization as a means to increase innovation and firm performance. However, to do so, that is, to internationalize and to reap benefits from this experience, firms face several restrictions ex ante. Therefore, a second field relates to several studies that analyze how the effects of internationalization are moderated by particular initial conditions at the individual firm, which include human, financial and institutional restrictions.[1]

Figure 1: Thesis overview and main contributions



Initial conditions and institutions	**Current research stream**
Ch. II. Organizational legacy	Ch. II. Transition economies
Ch. IV. Managerial capabilities	Ch. III-IV. Emerging markets
Ch V. Financial constraints	Ch. V. Development
Ch. VI. External resources	Ch. V-VI. Small business

[1] Certainly, these two fields intersect. For example, several papers by Bernard and Jensen (1995, 1999, 2004) show that more productive firms self-select into exporting, meaning that those firms that have more favorable initial conditions, such as larger in size, will internationalize. At the same time, their key finding is that firms from the United States that are starting to export do not increase their productivity, meaning that internationalization has no effect on firm performance.

In the top-right frame of Figure 1, a selection of four gaps in the current research stream is identified which will be covered in this thesis. Firm-level studies on internationalization are rapidly expanding; still there are several streams of research at their infancy. Broadly speaking, the thesis will analyze two such areas in the literature on internationalization and firm performance, that is, i) less-developed markets (cq. transition economies, emerging markets, developing countries), and, ii) small businesses. These categories are chosen because recent studies hint at the fact that these firms may have the highest potential to gain from internationalization (Bustos, 2011; De Loecker, 2007; Van Biesebroeck, 2005). That is, typically SMEs and non-Western firms do not have access to the most advanced technological inputs and are commonly thought of as the low productivity type compared to large, Western multinationals. Because there are such large differences across firms and across countries, small businesses and firms from non-Western countries can learn from internationalization and climb up the technological frontier to improve the firm's competitive advantage. Actually, there is little systematic evidence that these firms can enhance their innovative capacity and improve firm performance after they venture abroad, which makes it interesting to study.

In general, the contributions of the selected papers in this thesis can be summarized as follows. First, there is a mushrooming literature on internationalization and innovation. With greater European integration, Eastern European countries are struggling with the new business landscape as these firms are lagging in technology advances (Filatotchev et al., 2007; Meyer, 2001). Due to massive trade liberalizations, not only are managers in these countries confronted with increased foreign competition and an influx of foreign capital, but they also have new possibilities regarding internationalization. From a policy perspective it is important to understand how local businesses can benefit from the opening-up of markets and further integration processes with the global economy. To do so, there exists a small number of country level studies in transition economies that document a positive impact of international activities on firm performance. This evidence still remains highly fragmented. As depicted in Figure I, Chapter II focuses on "Transition economies" and analyzes the effects of internationalization in innovation which can be seen vital for improvements in firm performance.

Similarly, the topic of internationalization is becoming exceedingly important for firms from emerging markets. Figure I shows that next, Chapters III and IV, will

contribute to the literature on the effect of internationalization in "Emerging markets". While current research is dominated by firm-level studies from the West, rich countries are losing their leadership positions in the global market. Dragons, tigers and multilatinas (Cuervo-Cazurra, 2008; Luo & Tung, 2007; Mathews, 2006) seem to have a latecomer advantage Still, there is a lacuna in our understanding of how and why firms from emerging economies are moving abroad. One explanation is that emerging market firms are trying to acquire strategic assets from abroad to upgrade their own production processes in the home country by learning from foreign partner's resources. However, as elucidated in Chapter III, we know little how this process might work. Although the institutional environments in emerging markets like China and India are relatively weak compared to the West, these firms potentially reap significant rewards from internationalization. Chapter VI shows that in such environments managerial capabilities are vital support to the process of learning from international participation.

Third, enterprise development with possible congruent or subsequent internationalization is an important conduit for economic growth and development. Figure I points out that there are several studies that link the internationalization of the firm to enterprise development in developing countries (e.g. Van Biesebroeck, 2005; Boermans, 2010; Wagner, 2007, 2011). For these firms it is often problematic to start exporting because they are too small and lack the financial capital to overcome sunk costs involved with participation abroad. Therefore, to anylze the performance of firms in a development context, access to finance comes to the forefront. Moreover, in risky environments, looking at entrepreneurship and barriers to enterprise development is vital as they are a prologue to the internationalization of the firm. So, Chapter V does not explicitly deal with internationalization but looks at the performance of microenterprises in a developing country in order to better understand how firm characteristics that may relate to this knowledge gap affect firm behavior.

Finally, not only firms from developing countries may view international market participation as a conduit to climb up the technology ladder, but for SMEs there is in princinple great scope for learning and upgrading. What stands out is that the vast majority of the studies on the effects of internationalization employ external databases which include only relatively large firms. Consequently, little is known about entrepreneurs from developed markets or about small businesses in general.

Surprisingly, there is little evidence in this regard for SMEs from rich countries, possibly because in the theoretical literature the role of small business in international trade is largely overlooked. Moreover, previous studies for firms from advanced markets generally find no effects of internationalization on innovation and firm performance. Therefore, a challenge lays ahead to identify potential learning mechanisms for small firms from rich countries with respect to internationalization. In this respect, there is a small set of papers that finds that international activities create new potential for innovation processes. Also, research shows that for these small firms, internationalization is associated with improved performance. Chapter VI contributes to this field of research and analyzes the effect of internationalization on both innovation and performance for SMEs from the Netherlands.

To wrap up, the first part of this thesis will cover firms from non-Western countries such as India, Poland and Russia as depicted by the labels in Figure 1 "Transition economies" and "Emerging markets". The second part of this manuscript will focus on "Small businesses", both from the perspective of developing countries (Tanzania) and an advanced economy (the Netherlands). As outlined, these two, not mutually exclusive categories are a logical choice to study since the gains from internationalization are potentially most important for these two broad groups, and, have not been extensively studied in the empirical literature on the internationalization of the firm.

3. What are the mechanisms for internationalization?

Before firms internationalize they make use of their unique resources and capabilities. For developed country firms, most studies capture such heterogeneity by firm size and productivity measures. Still, although such factors are important to explain the mechanisms behind internationalization, it begs the question how internationalization leads to improvements in firm performance. The initial conditions of the firm matter for the internationalization process, especially with regards to the learning and upgrading potential. We complement to the existing literature and highlight four specific initial conditions related to the firm that elucidate how international activities may improve the competitiveness of the firm. As presented in Figure 1, these restrictions to internationalize relate to firm-specific aspects such as human and financial capital and institutional quality which includes

external resources that may facilitate the internationalization process such as infrastructure and export policies.

First, as this manuscript starts out in developing countries, a restriction that involves both firm-specific characteristics and institutions is what is termed "Organizational legacy" in Figure 1. Generally, in transition economies, there is still much overhang of the communist institutions that shape the governance structure of firms. It is well-known that former state-owned enterprises are still relatively badly organized (Bloom et al., 2011). Consequently, at the firm the degree of legacy influences the internationalization decision. Hence, Chapter II is among the first papers to explicitly take into account the organizational legacy in order to obtain a good estimate of the impact of internationalization, conditional on the initial conditions of the firm. For instance, firms with foreign ownership are more likely to become internationally active. Not taking into account these favorable initial conditions would lead to a bias when estimating the impact of internationalization on innovation.

Second, in emerging markets, key resources that give firms a sustainable competitive advantage are often missing. There are several studies in the international business literature that suggest that these firms can acquire resources from abroad in a process of leverage, linking and learning (Mathews, 2006). At the core of this approach are the managerial capabilities that shape the impact of internationalization for emerging market firms. Figure 1 shows that Chapter III and Chapter IV outline the importance of specific "Managerial capabilities" like education, experience and business networks that shape the internationalization patterns of firms from emerging markets in unique ways. Chapter IV is among the first empirical papers that explores how foreign business education and international work experience relate to exporting and FDI in an emerging market, India.

Third, in developing countries, entrepreneurship is dependent on the access to finance. Similarly, following the traditional economics modeling, internationalization requires firms to make significant sunk investments. As such the initial conditions related to the firm's financial position largely determine the internationalization decision. It is well-documented that financial constraints affect firm performance and also hamper the internationalization process (Bellone et al., 2010). A less explored area is how financial constraints interact with risk taking behavior – where internationalization is regarded as a risky strategy (Sapienza et al.,

2006). As presented in Figure 1, Chapter V investigates how lifting "Financial constraints" can improve firm performance while accounting for differences in risk taking behavior.

Finally, apart from internal resources, such as organizational legacy, managerial capabilities and access to finance, external resources moderate how internationalization affects firm performance. Across the globe, many governments have set-up export promotion programs (Belloc & Maio, 2010) to smooth the international activities of the firm. Most of these programs assist firms with going abroad. Especially in OECD countries, export promotion receives a lot of attention in public policies. These institutional configurations thus provide firms from these rich countries external resources that stimulate the internationalization of the firm. In particular, the better the external resources provided the more likely firms are not only to venture abroad, but also to gain knowledge to improve innovative capacity and expand sales. As depicted in Figure 1, Chapter VI will focus on "External resources" that may moderate the effects of internationalization. Specifically, to this end small companies which took part in a export promotion program in the Netherlands were sampled.

4. Data

Most of the conclusions of this thesis are derived from empirical testing. These analyses rely on two types of data sources, both based on survey techniques for which senior managers and owners of the firm were interviewed.

First, I use public registries of large firm-level data. Chapter II and Chapter IV use micro data from the European Bank of Restructuring and Development (EBRD) that were gathered in collaboration with the World Bank in 2008-2009. The Management, Organisation and Innovation (MOI) Survey objective is to measure management practices, to assess constraints to private sector development and to stimulate a policy dialogue on management and innovation (see Bloom & Van Reenen, 2010). It also provides information about different international activities of the firm. Nearly 1,800 senior managers of manufacturing firms across 12 countries were interviewed. The advantage of such database is that they rely on cross-country investigations and make use of validated sampling methods. Also, various other scholars are using the data for related purposes. Finally, public availability increases the ease of replicating my findings.

Second, besides large scale firm survey data I implement two other surveys which give unique primary data. Chapter V is based on detailed data of 674 households from Tanzania. Entrepreneurs who are affiliated with a microfinance institute were interviewed in 2010 to investigate the growth of microenterprises. The surveys were completed in collaboration with the Amsterdam Institute for International Development of the University of Amsterdam. Next, for Chapter VI primary data about small businesses in the Netherlands were collected. I developed a questionnaire for internal research on the effectiveness of a government-sponsored export promotion program for which the Foundation Innovation Alliance (SIA) Regional Attention and Action for Knowledge circulation program has given financial support. I constructed a survey that was sent in 2011 to owners and senior managers of Dutch microenterprises which were planning to venture abroad, which has given me the opportunity to study the effects of internationalization.

Although it is a rather time-consuming process, primary data gathering allows for much flexibility in the design of the questions. In addition, being part of the questionnaire design, sampling and construction of the database increases the researcher's familiarity with the topic at hand and problems related to the sample. It is my wish that soon both datasets will become available so that other researchers can benefit from the data and build on my findings.

5. Overview

The outline of this thesis is as follows. Part I provides insights on international venturing in transition and emerging economies. Part II will focus on the internationalization and enterprise development of small businesses.

To give an informal overview of the contents, a word cloud program called "Tagcrowd" created by Daniel Steinbock is used. Tagcrowd generates a clustered list of most common words that appear in this manuscript. As such, below the key words can be summarized as follows:

1. *Firm-level labels:*
   "firms", "entrepreneurship", "business", "management" and "resources".
2. *International dimensions:*
   "internationalization", "exporting", "FDI", "trade", "foreign" and "abroad".
3. *Outcome measures:*
   "productivity", "performance", "innovation", " growth", and "sales".

Part 1

International entrepreneurship in transition and emerging economies

II. THE EFFECTS OF INTERNATIONALIZATION ON INNOVATION: FIRM-LEVEL EVIDENCE FOR TRANSITION ECONOMIES[2]

1. Introduction

A burgeoning literature on firm heterogeneity provides as a stylized fact that only the most productive firms within an industry enter foreign markets (Melitz, 2003). By contrast, more recent papers stress that firms can influence productivity levels through export participation (Melitz & Constantini, 2008). Instead of treating the productivity draw as exogenous, these studies highlight the importance of within firm decision-making in which managers anticipate the gains from exporting by choosing to upgrade technologies so as to improve the productivity of the firm. Further, internationalization allows firms to take advantage of technological spillovers and organizational learning.

Recently, for individual middle-income countries several empirical studies demonstrate that firms that internationalize learn and improve productivity (Aw et al. 2008, 2011; Damijan et al., 2009; De Loecker, 2007). We contribute to this agenda by studying the impact of various internationalization modes on innovation using a broader dataset that consists of firms from 10 transition countries. In these transition economies, at the firm-level organizational behavior is shaped by the rapid transformation of society (Berglöf et al., 2010; Meyer & Peng, 2005). However, firms have reacted differently to the opening-up of the economy. After major reform and economic development, some firms have been unable to take advantage of the transition to a market-oriented economy due to the planned economy legacy that still affects organizational norms and practices (Estrin et al., 2009; Gelbuda et al., 2008). We use the variation in response to institutional change in order to isolate the causal effects of internationalization on firm productivity and innovation.

[2] This Chapter is co-authored with my supervisor Hein Roelfsema.

To analyze the impact of internationalization one must take into account that firms with high productivity and low communist legacy self-select into exporting and FDI (Filatotchev et al., 2008; Helpman et al., 2004). To account for self-selection, we use propensity score matching techniques which allow for the comparison of domestic and internationally active firms. Based on data of 1.355 firms, the estimates show that international activities enhance R&D efforts, product innovation, and international patenting. These impacts are most pronounced for exporting compared to other forms of internationalization. Hence, the paper provides support for the view that stresses the importance of the gains from trade liberalization at the micro-level for firms from middle income countries that come about through productivity improvements and stronger innovative capabilities.

Section 2 provides related literature on firm heterogeneity, trade and innovation and shows a wide variety of related empirical studies that analyze the effects of internationalization on productivity. It also identifies several important features of the transition context. Section 3 explains the principles behind propensity score matching and describes the data used in the analysis. Section 4 gives the main results. Section 5 concludes with a discussion of the effects of internationalization on innovation in transition economies. As is common for research using propensity score matching, an extended Appendix gives in-depth information on the methods deployed in this study and discusses the properties of the matching procedure in detail.

2. Theoretical background

International trade and firm heterogeneity

The seminal Melitz' (2003) model has revolutionized theoretical developments in the field of international trade. At its core is the observation that exporters within an industry are the most productive firms, an assumption founded on early empirical work in the late 1990s (Bernard & Jensen, 1999; Clerides et al., 1998; Roberts & Tybout, 1997). Melitz (2003) focuses on the effects of trade liberalization; however, the clever treatment of firm heterogeneity in the model's set-up has inspired a growing literature that focuses on the interaction between productivity and

internationalization strategies.[3] These studies start from Melitz' assumption that productivity differences are exogenously given to the individual firm by a draw from a known productivity distribution. Therefore, individual firm productivity levels are revealed (or have already materialized) to the firm's management before the internationalization decision is taken. Only the most productive firms are internationally active and can overcome the sunk costs associated with foreign market entry and exploitation. This assumption is important, because in a steady state the framework implies that the causality runs from productivity to international activities, for which several econometric studies for developed economies provide supporting evidence (Bernard & Jensen, 2004; Bernard et al., 2012; Wagner, 2007, 2011).

However, the initial convenient modelling assumption of the exogenous productivity draw has more recently inspired several authors to investigate modifications where firm management can influence productivity. Although he does not use the Melitz' model itself, Yeaple (2005) studies a situation where a set of homogenous firms can make investments to increase productivity, which in turn affect the internationalization choice. The backward induction strategy in this paper opens-up to reverse causality, as productivity is influenced by the expectation that investment in skills and R&D will increase the firms profit through (a higher probability of) success in foreign markets. Melitz and Constantini (2008) present a model in which firms anticipate trade liberalization by making investments to upgrade the production process through innovation. The reason is that higher expected profits from internationalization are contingent on higher productivity. Using the same logic, Bustos (2011) shows that especially firms with medium productivity levels have an interest in investing in productivity, since these firms are at the fringe and are most probably hit by the selection processes following trade liberalization.[4]

[3] By now, there are many extended versions of the Melitz' (2003) workhorse model which include inter alia endogenous mark-ups and pro-competition effects (Impullitti & Licandro, 2010; Melitz & Ottaviano, 2008), multi-product firms (e.g. Mayer et al., 2011), multiple export destinations (Arkolakis, 2011), and, selection within firms (Bernard et al., 2012). For a brief introduction on the development of "new new trade theory" see the "Trade in a Globalizing World" (WTO, 2008). For an overview of empirical work in this field, see Bernard et al., (2012).

[4] Whereas these studies focus on how trade influences production decision within the firm, others stress that in imperfect information settings exporting firms learn about the condition in foreign markets, which reveals their competitive advantages, so as to provide stronger or weaker incentives for deeper foreign commitments. For example, this can result in sequential exporting, in which there are relatively few firms with wide market scope and deep penetration (Albornoz-Crespo et al., 2010; Arkolakis, 2010; Arkolakis & Muendler, 2010; Eaton et al., 2008).

From the early empirical literature on trade and heterogeneous firms arises the stylized fact that productivity causes firms to internationalize. However, nearly all these studies concentrate on developed economies for which it is less likely that the causality runs the other way around (Damijan et al., 2009; Wagner, 2011). The reason is that innovation and productivity growth in these countries are already connected to a comparative advantage in knowledge intensive production. Hence, firms that are engaged in international trade do so because they already possess competitive advantages in knowledge intensive production processes and have adopted world-class technologies to compete abroad. The first-order effect of trade liberalization therefore is to reallocate resources towards the most productive (knowledge intensive) firms as predicted by the Melitz' model, and not so much making existing firms more productive.[5]

To investigate potential spill-back effects of internationalization of the firm on productivity, several authors have turned to developing and middle-income countries. It is expected that firms in these regions use their trade contacts with developed countries to upgrade technology through the imports of knowledge intensive capital goods and learn from their partner's business practices and capabilities. At the macro level, knowledge spillovers from trade are at the core of many endogenous growth models, however, only recently these mechanisms have been incorporated into papers that study the effects of exports on productivity at the micro level.

The primary focus of these studies is to show the (beneficial) effects of trade liberalization for middle income countries, and find that more trade results in quality upgrading and product differentiation within the firm.[6] In a study using plant-level panel data from Chilean manufacturers Pavcnik (2002) estimates the changes in productivity over a period of massive trade liberalization. She finds within plant productivity gains in sectors that face most import competition, which can be attributed to trade liberalization. More recent work also exploits the regime shift of rapid trade liberalization. Using Canadian plant-level data, Lileeva and Trefler (2010) show that trade liberalization induces firms to invest in product innovation.

[5] Exceptions are Balwin and Gu (2007) and Wagner (2002) who find positive effects of exporting on labor productivity for Canada and Germany respectively.

[6] Verhoogen (2008) shows that during the Mexican peso-crisis exporting firms raise product quality more compared to domestic firms. Baldwin and Robert-Nicoud (2008) also demonstrate that trade liberalization creates selection effects which affects innovation, however, whether this effect of trade-induced innovation will be positive depends on the type of international knowledge spillovers.

Goldberg et al. (2010) use firm-level data from India to find that trade liberalization induces domestic firms to use newly available foreign inputs. Bustos (2011) studies the effect of trade liberalization on R&D efforts of Argentinean firms. She shows that firms in sectors where reductions in tariffs are pushed furthest exert the highest growth in R&D. Hence, international trade opportunities result in a different allocation of the firm's resources in equilibrium and boost innovation.

In contrast to the clever use of trade interventions, other papers look at firm-level productivity trajectories before and after entry into foreign markets (see for a review Bernard et al. 2012). For Taiwan, Aw and others (2007) show that productivity gains from exporting are higher when firms also invest in R&D and train workers to facilitate technological transfers. Furthermore, they allow for feedback effects from exporting on productivity to demonstrate that exporters are more inclined to make complementary firm-level investments in productivity enhancing activities. Castellani and Zanfei (2007) explore the effects of exporting and FDI on productivity and innovation using data from 785 large Italian manufacturers. They find that cross-border activities are associated with higher productivity given the level of innovation. Criscuolo and colleagues (2010) use Community Innovation Survey (CIS) data for the United Kingdom and focus on multinational firms. They find that firms that are active abroad generate more innovation outputs, but also use more inputs for knowledge production. Bloom et al. (2011) find that increased competition from Chinese imports induces selection effects among European firms where the most productive surviving firms tend to innovate more in terms of R&D, patenting and upgrading IT technologies. For individual EU countries, several studies rely on data from Spanish manufacturers to analyze the relationship between internationalization and innovation. Salomon and Jin (2010) find that exporting raises productivity regardless of the level of innovative capacity. Kafouros and others (2008) show that internationalization increases the firm's capacity to raise productivity through innovation, while Monreal-Pérez and colleagues (forthcoming) find no additional learning effects from exporting on product or process innovation. Garciá and others (forthcoming) show that exporting increases productivity and that the size of the gains is larger for more innovative firms which is suggestive for greater absorptive capacity for knowledge transfers from foreign market participation.

For developing countries, Amiti and Konings (2007) use a tariff reform shock in Indonesia to uncover that firms who start importing increase productivity levels through learning, increased product variety and improved quality. Blalock and Gertler (2004) also analyze firm-level data from Indonesia and show that exporters increase productivity faster than non-exporters. Kasahara and Rodrigue (2008) find that Chilean manufacturers that import foreign inputs become more productive. Van Bieseboeck (2005) uses microdata from several African countries and presents evidence that exporting results in higher labor productivity, especially when firms trade with more developed economies. Close to our topic is empirical work by Wilhelmsson and Kozlov (2007) who look at the productivity trajectories of Russian firms. They provide some support for learning by exporting effects, but after several years of exporting this effect disappears. The positive effect of starting to export on productivity is not destination dependent. Concluding, studies that concentrate on middle income and developing countries show far more evidence in favour of the hypothesis that internationalization results in higher productivity and innovation.

Evidence from matched firms

A few studies have applied matching methods to disentangle the impact of internationalization using firm-data from a single developed country.[7] In this field, among the first studies to employ these techniques is Wagner (2002). He uses pooled data from Eastern German manufacturers and examines the effect of 182 export starters in the period before reunification of East and West. In his letter he explains how matching exporting firms to a constructed control group can yield insights on the effect of exporting. To account for self-selection into export participation, Wagner (2002) uses firms size, value added and wage levels. From the analysis he concludes that firms that start exporting grow faster but there is no effect of exporting on labor productivity.

Arnold and Hussinger (2005) use CIS data to match German exporters and non-exporters on total factor productivity, size, R&D expenditure, new product development, and wages levels, but find no gains in productivity from exporting. In related work, Girma and colleagues (2004) use a difference-in-difference approach based on propensity score matching on size, ownership and wage levels to account

[7] In contrast to our methodology (see Section 3), these studies take advantage of the time-dimension in the large panel datasets, which means they are able to match on the basis of lagged firm characteristics.

for selection into exporting of British firms. They find that starting to export improves productivity growth, but these effects are rather short-lived and disappear one year after internationalization. Navaretti and Castellani (2004) apply a similar matching estimator for Italian firms that invest in foreign establishments for the first time. They find that FDI increases productivity and output growth. Damijan and Kostevc (2010) analyze the sequencing between exporting and innovation. Using firm-level data from Spanish manufacturers they apply propensity score matching techniques and pair first-time exporters and first-time innovators to non-exporters and non-innovators based on value added, capital, size, foreign ownership and sector dummies. The results show that importing precedes innovation, but such sequencing between exporting and innovation is less strong although still important for small and medium sized firms. Firms higher on the technology ladder benefit more from trade participation than technologically laggard firms.

Our paper is also close to De Loecker (2007) who uses matching methods to study the effects of internationalization in a transition economy, Slovenia. Clearly, small Slovenia may be considered an interesting special case, as it is the most developed and open part of the former Yugoslav Republic next to Austria and the North of Italy. De Loecker (2007) shows that when accounting for selection effects exporting results in higher levels of productivity growth. In a recent study, Hagemejer and Tyrowicz (2012) use propensity score matching to evaluate the impact of foreign ownership on the performance of Polish firms. They find that inward FDI improves productivity, but note that foreign investors prefer and choose to invest in Polish firms that are exporting. Overall, these studies based on matching methods find some learning-by-exporting effects but do not provide a consistent picture.

Context specific studies

Over the past twenty years, many countries from Central and Eastern Europe (CEE), the Commonwealth of Independent States (CIS) and Central Asia have experienced a turbulent period marked by a transition towards a market economy. One central feature of this transformation has been the opening-up of the domestic markets to foreign trade and investment (Marinov & Marinova, 2011).[8] For instance, in the early

[8] The broad systematic changes in transition economies entail two types of reforms (Svejnar, 2002). The first type includes price liberalization, the dismantling of the communistic system and rapidly opening-up of the economy to international trade. The second type involve building law, regulations

1990s privatization of state-owned firms was widely regarded as a milestone in the transition, because private ownership combined with market forces would ensure efficient allocation of resources and economic performance. Djankov and Murrell (2002) and Estrin and others (2009) evaluate prior literature on the effects of privatizations in transition economies. In general, most empirical firm-level studies find that privatizations to foreign owners significantly improve firm productivity and related measures of firm performance (see Hagemejer & Tyrowicz, 2012). In a broader context, these results reflect the limited skills, management practices, corporate governance and access to capital and foreign markets of local managers. During the restructuring period, foreign investors provide knowledge and invest in training local managers. In addition, reorganization efforts increase the demand for managerial capabilities to run a firm in a more competitive environment (Filatotchev et al., 2003; Kriauciunas & Kale, 2006; Newman, 2000).

There is evidence that the contacts with foreign partners and the influx of capital are associated with organizational learning. In their celebrated work, Lyles and Salk (1996) study the role of knowledge acquisition in Hungarian international joint ventures at the onset of the transition phase. This study highlights the central role of top managers in the process of organizational restructuring and how absorptive capacity and ties with foreign partners affect knowledge transfers. Using foreign inputs, domestic firms can quickly unlearn old organizational routines and thus be liberated from the legacy of the communist system (Newman, 2000). In this process of overcoming the administrative heritage based on central planning, contextual factors play a critical role for firms to build dynamic capabilities and organizational routines to meet demands of a market-oriented economy (Dixon et al., 2010; Kriauciunas & Kale, 2006; Steensma et al., 2008).

Following the wave of privatization efforts and institutional transformations there is still a legacy in terms of administrative heritage form the former Soviet period which affects organizational routines and the management of the firm (Estrin et al., 2009; Gelbuda et al., 2008). Signs of inertia and slow adaptation to organizational excellence are evident in Bloom and Van Reenen (2010). In a cross-country comparison they find relatively low scores on management and organizational practices in transition economies. Bloom and others (2011) show that this gap is especially large in Central Asian transition economies that have relatively

and institutions that ensure the functioning of a market economy based on well-defined property rights, enforcement of contracts and limited corruption.

low levels of competition, foreign investment and human capital. Ultimately, increasing market reforms and trade liberalization can foster competition, foreign investment and put pressure on education to install better management.

There is a small set of studies that investigates the drivers of internationalization in transition economies at the firm-level. Rojec and colleagues (2004) show that Estonian and Slovenian manufacturers which are owned by foreigners are more efficient, and that ownership in turn affects the propensity to export. Using a sample of 406 firms from Estonia, Hungary, Poland, Slovakia and Slovenia, Filatotchev and others (2008) find that foreign investment and control of the firm has a positive effect on export intensity. Further, greater foreign control over the strategic management of the firm increases exporting. Work by Wagner (2002) looks at export-starters from Eastern Germany before the reunification of East and West and finds some indication that exporting increases firm performance. By using CIS data, Damijan and others (2010) show that exporting results in higher levels of R&D spending. Work by Hagemejer and Kolasa (2011) builds on data from Polish firms and distinguishes three internationalization modes. They find that exporting as well as firms with foreign affiliates are more productive than domestically oriented firms. Our paper is close to Damijan and others (2009). They study how trade and FDI inflows affect learning and productivity improvements in six transition economies. Using a Heckman selection model, they find that in Slovenia and Romania, exporting to advanced markets gives rise to greater learning than with trade to less developed economies. Inflows of foreign capital allows for firms to learn in Bosnia-Herzegovina, Croatia, Romania and Serbia, but this positive effect of FDI on productivity is insignificant in Bulgaria and Macedonia.

3. Methodology

A common problem in the international trade literature that deals with firm heterogeneity is that there is an obvious selection effect into exporting. The early papers clearly show that internationally active firms are more productive, however, does productivity cause firms to be international (Bernard & Jensen, 1999; Clerides et al., 1998)? To isolate the causal effects of productivity differences on internationalization, most authors use a conditional logit procedure that correlates the differences in exports and productivity across firms conditioning on the factors

that drive the firm towards international activities (Castellani & Zanfei, 2007). As discussed in the related literature section, a stylized fact is that indeed productivity differences increase degree of internationalization of the firm (Bernard et al., 2012).

The selection of more productive firms into exporting causes major problems for studies that try to uncover the causal effects of internationalization on firm performance. This emerging literature deals with selection effects in two ways. A first strategy is to cleverly pick events that generate variance in both internationalization and the variable of interest (productivity, innovation), for example because of a new regional trade liberalization agreement. Then these papers over time observe the changes in the path of the variables of interest (Bustos, 2011; Goldberg et al., 2010; Lileeva & Trefler, 2010; Pavcnik, 2002; Verhoogen, 2008).

However, firm-level data collection often involves survey methods for which it is difficult to trace individual firms over time and as such warrant panel analysis. The data from transition economies is a cross-section of firms, which means we cannot observe the firm-level adjustments over time. To overcome possible selection biases, a second set of papers uses matching techniques to extract causal effect of internationalization. How does this matching method work? Suppose that in a cross section setting we ask whether internationally active firms are more innovative. In order to obtain a credible estimate of the effect of internationalization for the firm, we must asses these effects in contrast to those in a counterfactual. The crucial problem arises when such counterfactuals cannot be found in the data because of selection effects (Girma et al., 2004; Wagner, 2002). In our case, we look for two types of counterfactuals. For internationally active firms, we have to compare the outcomes to firms that are of 'the same type' but are not internationally active. By contrast for internationally inactive firms we have to compare them to firms with the same characteristics that do engage in international trade in terms of, say, productivity. But then if all high productivity firms export and all low productivity firms do not export, we cannot find such counterfactuals in the cross sectional data from which we can infer the (unbiased) effects of internationalization on innovation.

To control for selection we want to match 'the same types', but what if selection reduces the number of counterfactuals from the dataset to such an extent that there too few pair-wise observations? Rosenbaum and Rubin (1983) have provided a way out of this problem by introducing the propensity score, as being the probability that a firm is, in our case, internationally active. By using the 'estimated

but not actual' internationalizers as counterfactuals to internationally active firms we can infer a causal effect of internationalization for internationally active firms. In addition, by using the estimated non internationally active firms who are in fact internationally active as control for non internationally active firms as counterfactuals we find the causal effect of internationalization on firms that are presently not internationally active (for more details, see Appendix 3).

We use data from EBRD-World Bank Management, Organisation and Innovation (MOI) survey. The survey was implemented based on face-to-face interviews with two top managers in transition economies during the period from October 2008 to March 2009. The interviews took on average 50 minutes. The response rate was 44 percent.

The survey is designed around questions related innovation, and includes various measures for R&D, product innovation and patents. Also, this survey also gives information about internationalization of firms. More specific, the data provide information on export, FDI and outsourcing, which allows us to link internationalization modes to innovative activities at the firm-level. In total, 1.355 firms are included in a sample from 10 transition economies. Table 1 gives summary statistics and correlations between the variables of interest; for the sake of brevity, the operationalization of the variables is in Appendix 1.

In the sample 23.4 percent of the firms are exporters, 6.9 percent has foreign affiliates, and 9.2 outsource to other countries. Certainly, there is much variation in international activities across the transition countries. For example, Bulgaria, Lithuania, Poland and Romania, countries that have adopted massive market reforms and are now part of the European Union, have the highest share of exporting firms: for each EU Member, more than a third of the firms is counted as exporter, whereas the lowest shares are found in Kazakhstan and Russia with less than ten percent exporters. Lithuania and Poland also have relatively the most firms with establishments abroad, with average shares above 15 percent, while in Ukraine and Uzbekistan only about one percent of the firms is engaged in FDI. Outsourcing towards other countries is (by far) most common in Lithuania where 47.0 percent of the firms outsource and, least common in Uzbekistan where less than one percent outsources. An observation is that on average internationalization patterns tends to follow transition towards a market economy, explaining to a large extent the difference between countries (see Appendix 1).

Table 1: Summary statistics and correlations

		mean	s.d.	1	2	3	4	5	6
	Internationalization								
1	EXPORT	0.23	0.42						
2	FDI	0.07	0.25	0.09					
3	OUTSOURCE	0.09	0.29	0.13	0.18				
	Innovation								
4	R&D	0.38	0.49	0.04	0.10	0.10			
5	PROD_INNOV	19.33	25.05	0.06	0.04	0.10	0.27		
6	PATENT	0.08	0.27	0.16	0.22	0.11	0.14	0.07	
	Controls								
7	SIZE	5.04	0.92	0.12	0.11	0.06	0.20	0.09	0.16
8	UNIQUENESS	2.94	1.17	0.19	0.02	0.07	0.10	0.10	0.09
9	FOREIGNOWN	0.13	0.34	0.20	0.31	0.12	-0.02	0.01	0.09
10	STATEOWN	0.13	0.34	-0.07	-0.03	-0.04	0.04	-0.01	0.03
11	MNE_EXP	0.03	0.13	0.11	0.08	0.10	0.03	0.10	0.03
12	MBA	11.56	27.46	0.05	-0.02	0.07	0.00	0.04	0.06
13	BESTPRACTICE	3.77	0.79	0.09	-0.00	0.00	0.05	0.02	0.03
14	CONSULT	0.06	0.24	0.02	0.20	0.15	0.15	0.05	0.04
15	DEMOCRAT	0.24	0.25	0.07	0.01	0.15	0.08	0.10	0.03
16	ORGLEVELS	15.38	28.48	-0.03	0.07	0.02	-0.02	-0.02	-0.01
17	COMP	3.47	0.76	0.06	-0.01	-0.02	0.03	0.03	-0.04
18	COMP_MNE	0.50	0.50	-0.55	0.02	-0.02	0.09	0.06	-0.07

Note: n = 1.355. None of the not-presented correlations coefficients are above 0.20 (expect for SIZE and AGE; SIZE and STATEOWNED; AGE and STATEOWNED; UNIQUENESS and COMP (negative), which are all between 0.20 and 0.30).

To match firms, we use a parsimonious set of variables that capture differences in internationalization and innovation. To match on propensity of internationalization, it is common to use firm size and industry dummies, which account for a large share of variation across firms. As argued, institutional legacy is potentially an important determinant in explaining the variation in internationalization and innovation, therefore we include some factors that capture such differences across firms. For the data give information on managerial practices, stakeholders and competitive environment, we are able to paint a picture of conditions within the firm that relate to such a legacy. More specific we include measures for perceived organization excellence by employees and managerial capabilities, formal involvement of state and foreign actors, and, number and presence of domestic and foreign competitors within the firm's main market. Further, differences in institutions at the country level may at the firm-level explain the variation in organizational legacy, internationalization strategies and innovation. Therefore, firms are only matched with other firms that at located in countries that have a comparable score for the transition phase (see Appendix 1).

4. Results

We start by presenting the first stage results for the matching process. To keep the matching equation parsimonious, we have worked from general to specific. Table 2 shows that both firm size as well as the organizational characteristics correlate with internationalization. Appendix 3 shows that including the organizational characteristics is crucial for the matching procedure. For example, with respect to R&D, including organizational excellence on top of firm size in the first stage allows us to avoid matching large firms with very different legacies, which in itself could capture the differences in internationalization and thus innovation. The results show that this substantially reduces the bias in the matching procedure and thus alters the results in the second stage.

Table 2: First stage probit regression results

	1	2	3
	EXPORT	**FDI**	**OUTSOURCE**
SIZE	0.251***	0.198***	0.0869
	[0.0562]	[0.0615]	[0.0645]
UNIQUENESS	0.265***		
	[0.0509]		
FOREIGNOWN	0.555***	1.192***	0.349**
	[0.133]	[0.133]	[0.156]
STATEOWN	-0.367**		-0.307
	[0.150]		[0.212]
MNE_EXP			0.613*
			[0.325]
MBA	0.00342*		0.00482***
	[0.00192]		[0.00178]
BESTPRACTICE	0.150**		
	[0.0677]		
CONSULT		0.757***	0.637***
		[0.172]	[0.188]
DEMOCRAT			0.876***
			[0.209]
COMP	0.250***		
	[0.0787]		
COMP_MNE		0.162*	
		[0.103]	
Key statistics			
No. Firms	951	1343	1081
Chi^2	118.9	128.6	80.41
Pseudo R^2	0.171	0.198	0.116

Note: *** p<0.01, ** p<0.05, * p<0.10. Robust standard errors in brackets. Sector dummies included, but not presented here.

The main results of the paper are presented in Table 3. In general, the internationalization of the firm spurs innovation. The findings show a significant effect of exporting on all three measures of innovation: R&D, product innovation, and international patents. The absolute differences in the average treatment effects between the treated and the comparison group for these innovation variables are 8.1, 4.7 and 8.0 percent respectively. In economic terms this means that exporting firms have a 20.0 percent higher probability to invest in R&D, earn a 24.1 percent larger share of sales from new developed products, and are 81.9 percent more likely to hold intellectual property abroad in the form of international patents.

FDI has a significant impact on R&D and international patents. The difference in the average treatment effect for R&D between firms engaged in FDI and matched counterparts is 15.8, which implies that firms that have affiliations abroad on average have a 41.5 percent higher chance of being included in the firms

that devote a significant share of their resources to R&D investments – when compared to similar firms that do not have affiliations abroad. Further these firms have substantially more international patents, as shown by the difference in average treatment effect between the treated and control of 23.8 percent. This converts in the right panel to a 263.6 percent higher probability of owning such patents. The results show that outward FDI is not connected to higher sales from product innovation.

We find no impact of outsourcing on R&D and international patents, but outsourcing has a significant effect on product innovation. The mean absolute difference is average treatment effect on the treated compared to the control is 4.7 percent for the share of sales from product innovation. The effect size of outsourcing on the share of sales from product innovation is 20.1 percent, meaning that on average outsourcing firms earn 20.1 percent more as the share of sales from new products.

Table 3: The impact of internationalization on innovation

	Panel A: ATE (mean difference)			Panel B: estimated effect size		
	R&D	**Product innovation**	**Patent**	**R&D**	**Product innovation**	**Patent**
EXPORT	0.08**	4.70*	0.08**	20.0%**	24.1%*	81.9%**
FDI	0.16***	1.60	0.24***	41.5%***	7.1%	263.6%***
OUTSOURCE	0.07	4.70*	0.06	14.9%	20.1%*	42.7%

Note: *** p<0.01, ** p<0.05, * p<0.10. Nearest neighbour matching (n=5), without replacement, caliper (0.1). Exact forced matching on transition category. Significance levels are determined by bootstrapping with 500 replications.

Overall, the key finding as presented in Table 3 is that internationalization of the firm is key to the understanding the variation in firm productivity. This study provides evidence that exports, foreign affiliates and international subcontracting activities have a large impact on innovation, which is seen a chief determinant of firm productivity and economic growth. These outcomes are not sensitive to the particular matching procedure applied (for robustness tests, see Appendix 3).

5. Conclusion

This is the first study that explores the different impacts of exporting, FDI and outsourcing on innovation using firm-level data. Overall, exporting raises innovation across the board. This result fits into the learning-by-exporting thesis, which argues that contact with foreign partners allows firms to tap into more diverse knowledge and improve the technological capabilities of the firm. In addition, the findings show a positive impact of FDI on R&D and international patents. This suggests that foreign affiliates transfer technological inputs and increase the absorptive capacity of the firm through R&D investment. Also, firms with foreign affiliates protect their intellectual property outside the domestic market. However, there is no relationship between FDI and importance of product innovation.

Although we use a broad survey that covers multiple countries, as we use cross-sectional data, it is difficult to convince that we are presenting causal relations. Certainly, future research may use time series data, however, for the moment we are restricted to time-invariant results from questionnaires. Studies that use secondary databases to create time-series often have to rely on proxies for internationalization and productivity that may lack credibility of capturing the true within firm effects of innovation. Further, especially in the context of transition economies a common problem is the potential for unobserved variables to affect the results of the estimation. However, we make use of one of the first well-validated datasets for these countries that offer detailed firm-level information about management, organization and innovation.

Our study offers micro-level evidence of the benefits of trade liberalization and integration in the world economy for transition economies. Reducing barriers to trade to firms from these countries, for example, through membership of the European Union, has a positive effect and lasting effect on the productivity levels of firms. Moreover, trade reforms in transition economies spur the adaptation of new technologies and firm growth. If the micro-evidence of this paper translates into macro effects, we may conclude that for middle income countries globalization fosters economic development.

Appendix 1

In this Appendix 1 we explain in detail how each of the variables employed in this study is measured. In particular, we use measurements for internationalization, innovation and a set of controls that focus on transition and legacy related variables. For further details, see Table 1 for summary statistics and correlations among the key variables.

Table A1: Summary statistics of key variables by transition phase

Transition	Countries	Obs.	Export	FDI	Outsource	R&D	Prd.Inn.	Patent
Low	Belarus, Kazakhstan, Serbia, Uzbekistan	485	0.15	0.06	0.04	0.32	16.55	0.07
Medium	Romania, Russia, Ukraine	513	0.16	0.04	0.06	0.37	18.90	0.06
High	Bulgaria, Lithuania, Poland	357	0.45	0.12	0.20	0.45	23.79	0.11

Internationalization: In the survey two top managers respond to question items related to exporting, FDI and international outsourcing. First, *EXPORT* is measured using a variable that indicates if the firm sells its main product mostly abroad, that is, most sales are international. This assignment means that there are firms grouped as "not exporting" that may sell a part of their production abroad and may potentially be large exporters in volume. Qualitative, the export indicator applied here shows if the domestic production of the firm is focused on exporting the product. In our sample 23.4 percent of the firms report that their sales are mainly international and are thus counted as "exporters". Second, *FDI* is also a dummy variable which shows whether the firm has any establishments abroad based on the specification of the total number of establishments that the firm has abroad. As such, this variable picks up if the firm has any foreign affiliation but not the importance of the outward orientation, simply because there is no information about the sales generated in each foreign affiliates. On average, in our sample only 6.9 percent of the firms indicates that they have one or more than one establishments abroad and are thus classified as engaged in FDI. The median number of establishment for these firms is three foreign affiliates. Third, *OUTSOURCE* indicates whether or not the establishment subcontracts production to another country. That is, only international

subcontracting activities are captured in our outsourcing measure. By this definition outsourcing does not include production activities that the firm does for a foreign partner, because this would be included in the exports variable. In our sample 9.2 percent of the firms outsource, with Germany as most frequent destination.

Innovation: we focus on three innovation measures, namely R&D, sales from product innovation and international patents. First, the *R&D* measure is constructed using information about whether the firm invests in research and development (R&D), defined as creative work undertaken systematically to increase firm knowledge. In the sample 37.8 percent of the firms invests in R&D. Second, *PROD_INNOV* is a measure of the share of sales attributed to new products and services that were introduced over the past three years. In total 67.4 percent has launched new products or services. Of these firms, on average the share of annual sales accounted for by these new products and services that were recently introduced is 30.1 percent, with a median share of sales of 20.0 percent. Third, *PATENT* is a dummy variable that measures whether the firm has any registered patents abroad. In total, 8.0 percent of the firms has any such international intellectual property right protection in the form of a patent or patents.

Control variables: in this study we use two types of control variables. To start we use a small set of key firm and industry characteristics that are common in the internationalization literature and also correlate with innovation measures. *SIZE* is the log of the number of employees. Also, top managers estimate to what extent the firm produces unique products and services. Specifically, *UNIQUENESS* measures on a five-point ordinal scale how long it would take the largest customer of the firm to find an alternative supplier for its main product if the establishment shuts down its business. In addition, eight industry dummies are included: *CHEMICALS* (4.0 percent), *CLOTHING* (garments and textiles, 14.4 percent), *ELECTRONICS* (4.4 percent), *FOODS* (15.7 percent), *MACHINERY* (9.1 percent), *METALLURY* (13.9 percent), *PLASTICS* (4.2 percent), and 'other manufacturing' (34.3 percent) is used as baseline.

In addition, a rich set of control variables employed in this research is connected to the degree of institutional legacy faced by the firm after the transition phase towards a market-led economy. In transition economies, the legacy is

potentially an important factor that affects internationalization and innovation of the firm. This second type of firm characteristics focuses on management and organizational features that may signify the degree of legacy (see Section 2.2).

First, we include two variables about the ownership of the firm. Firms that are still state-owned enterprises may witness greater legacy effects than firms that are currently owned by foreigners. *FOREIGNOWN* is a dummy variable that indicates if a foreign owner holds the largest single stake in the firm, where the foreign investor (individual, family, or firm) must hold a largest share of at least 25 percent in the firm. *STATEOWN* measures state ownership of the firm for at least the past three years. Firms were asked if the 'national' state was largest owner three years ago, and, whether this has changed.

Apart for these measures, we use information about six other management and organization variables. Firms that have managers with prior work experience at multinationals, business education or who adopted best managerial practices, or hire consultants to improve the management, and who are more open to ideas from worker are expected to have moved further in transition process and, hence, have a lower legacy at the firm-level. *MNE_EXP* captures the share of top managers that have prior work experience at a multinational organization. *MBA* measures the share of top managers with a Master of Business Administration degree. *BESTPRACTICE* is used as a measure of organizational excellence. More specific, each top manager was asked to indicate how well-managed the firm is using a five-point scale of best practices in terms of three items, namely people management (promotions, rewards, hiring people, etc.), operations management (processes, production, etc.) and in overall terms. Another variable that relates to the degree of legacy as well as the internationalization and innovation measures is *CONSULT*, which indicates if the firm recently hired an external consultant to help improve any area of the management of the firm. A five item scale *DEMOCRAT* (Cronbach's alpha = 0.63) measures if management asks employees for their opinion with regard to decisions about i) working hours, ii) days of factory holidays, iii) employing new workers, iv) making investment decisions (purchasing fixed assets), and, v) setting prices. *ORGLEVEL* measures the number of hierarchical levels in the chain of command structure of the firm, which can be thought of as an indicator of the degree of decentralization. Finally, we use information about the competitive environment of the firm because more competitive pressure is indicative of a greater movement away

from the state-led economy. *COMP* is a four-point ordinal measure that captures how many competitors the firm faces in its main product market. *COMP_MNE* is a dummy variable that indicates if there are any multinational firms producing in the same main market.

Transition Indicator: firm-level, market, and sector differences capture much of the variation in legacy to the transition. Still, it is important to consider how much countries have commenced towards democracy and market-based economies. For instance, Krammer (2009) looks at the drivers of innovation in Eastern Europe. He stipulates the wide regional differences in institutional heritage and commitment to technological upgrading before and after the regime shift. His results indicate that more favourable business climate, intellectual property rights protection and foreign investments increase the number of patents, implying that the institutional legacy is an important factor to account for. On a five-point scale, the EBRD provides a Transition Indicator for each country which gives a score on the progression to a "well-functioning" market economy. The scores over 29 transition countries range between 1.4 and 4.0, where we categorize countries with a score below a 3.0 as "low", those with a score between 3.0 and 3.5 as "medium" and those with 3.5 or higher as "high" (see Berglöf *et al.* 2010).

Table A1 presents an overview of the transition phase groups and a summary of the key variables. As can be seen, the firms in transition countries that have restructured their economies the most also obtain on average the highest scores on internationalization and innovation. Also, firms in the low transition group are in general among the least internationalized and innovative, although the differences with the medium group are not significant for most measures. So, the institutional context of the firm's geographic environment is important for the tendency to internationalize and innovate.

Appendix 2

In this Appendix 2 we provide some details about the matching properties. In particular, we check if there is a balance between the treated and comparison firms, because after matching the treated and controls should be "statistically equivalent". Propensity score matching aims to find a proper a comparison group that is statistically equivalent to the internationalized firm, except for the treatment (here: internationalization). Finding such firms is difficult because of non-random assignment to the treatment; that is, firms that choose to internationalize are different and tend to self-select into international activities. Hence, on average, firms that are not international are unlikely to be a good comparison for the treated group because of *selection bias*. For example, larger firms have a higher probability to internationalize, and thus comparison between the treated and non-treated is biased, because it is easier for larger firms to engage in innovation related activities (the outcome). Simple OLS regression techniques cannot be applied. So, when evaluating the impact of internationalization on differences in innovation between the treated and untreated, it is difficult to isolate the effect of internationalization because of self-selection into internationalization. The key benefit of propensity score matching is that it accounts and adjusts for these innate dissimilarities across international and non-international firms (Dehejia & Wahba, 2002). Internationalized firms are matched with individual firms that are not internationalized based on an estimated probability that the firm would internationalize (the propensity score), hence it requires selection on observables and the existence of an untreated firm that can be compared to a treated firm. In absence of randomization, the groups must differ not only in terms of international activities, but also on their values of the observed characteristics in order to extract propensity scores.

A first requirement of matching is to account for these differences in observables by controlling for a set of covariates (*conditional independence*). More formally, there must be a set of observable covariates such that when accounting for this set, the potential outcomes are independent of the treatment status. Hence, after controlling for several observables, the selection into the internationalization of the firm "looks" random; this is essential of the 'construction' of a counterfactual.

A second requirement is that firms can be sufficiently matched to counterparts such that there is overlapping between the observable characteristics of the treated and the untreated firms (*common support*). Formally, common support

means that for each value (or range) of the covariates, there is a positive probability of being both treated and untreated to ensure substantial overlap in the characteristics of international and not-international firms.

To estimate the propensity score a probit model can be used, given that the treatment is dichotomous. The set of X must include all relevant covariates that relate to both internationalization as well as the outcome (here: innovation), which produces the specification of the selection model (see Table 2). Following Rosenbaum and Rubin (1983), satisfying the conditional independence and common support assumptions implies that the treatment assignment is "strongly ignorable". One setback in cross-sectional data is that the measures applied as controls may be confounded with the outcome variable or the anticipation of the treatment. However, it has been established that the quality of matching is not influenced by a high correlation between the controls and the outcome. Furthermore, the inclusion of irrelevant variables that not affect internationalization is best avoided because they increase the variance of the estimates and may give problems to the common support.

A2.2. Balancing tests

The balancing property of the matching procedure can be tested by looking at the differences between the covariate means of the treatment and comparison group before and after matching. Simple *t*-tests of equality of the mean can evaluate if propensity score matching succeeds in balancing the characteristics between treated and untreated firms. For our purpose it is important that the transition and legacy related variable make a significant contribution to the matching properties on top of the standard firm and industry characteristics. There are several indications that this is the case, such that matching firms without these variables would lead to a biased comparison group. That is, we may compare large firms that are internationally active to another firm of similar size that is not internationally active, where the former turns out to be foreign owned and the latter state owned. In the context of transition one may doubt if such comparison is warranted.

For each international firm, its comparison firm or counterpart is the untreated (non-international) firm with the most similar characteristics (in terms of the value of X). Here the propensity score is calculated, which is the probability of internationalization given X, or P(D=1|X). To test the quality of the matching under

the conditional independence assumption, covariate imbalance testing checks if the estimated propensity scores adequately balance the characteristics between the treatment and the control group firms by evaluating the difference in covariate means (see Rosenbaum & Rubin, 1985). As Rosenbaum and Rubin (1983) show, if it is appropriate to match firms based on covariates X, then it is also valid to match on simply the propensity score $p(X)$. That is, strongly ignorable treatment allocation (SITA) means that $p(X) = P(D=1|X)$ and therefore avoids the curse of dimensionality because matching is done on the propensity score only which contains all relevant information over the set of covariates in relation to the treatment.

Overall, results suggest a high quality of the matches between exporters and non-exporters, firms engaged in FDI and those that do not, and, outsourcing firms and non-outsourcing firms on a set of observable variables that are significant in the first stage probit regressions in explaining the internationalization of firms (see Table A2.1 to Table A2.6).[9]

Table A2.1 and Table A2.2 present the mean differences between the variables on which exporters are matched with non-exporters for each innovation measure. As expected, there are significant ex ante differences between exporters and non-exporters in terms of observables that can explain the self-selection of firms into export participation. Exporters are larger, have more unique products, are more often foreign owned, score higher on organizational excellence, and, face greater competition than non-exporters. Also, the exporters are less often state-owned than non-exporters. There are no difference in terms of the share of managers with a MBA. After matching firms the characteristics between exporters and non-exporters are negligible. Notice that after matching the treated group of exporters even scores lower on best practices and is more often state-owned than non-exporters. This type of overcompensation is important because apparently these transition and legacy

[9] Rosenbaum and Rubin (1985) also suggest that the standardized difference can be calculated, which is the size of the difference in means of the covariate between the treatment and comparison firms scaled by the square root of the average of the sample variances. As long as the standardized difference for each covariate is lower than 20, the differences between the treated and controls are small. For the matching of exporters and non-exporters, none of the standardized difference of any covariate was larger than 20. Before matching, the average differences across six covariates were between 27.69 and 29.06, while after matching this is reduced to average difference between 7.92 and 9.27. For matching on FDI none of the standardized difference of any covariate was larger than 20. Before matching, the average differences across six covariates were between 48.08 and 49.15, while after matching this is reduced to average difference between 4.64 and 7.56. Also for outsourcing none of the difference was larger than 20. Before matching the differences ranged on average between 33.92 and 35.14, and, after matching this was only between 4.78 and 6.98.

variables are very different between exporters and non-exporters even while conditioning on the other variables. A similar issue happens in relationship to the share of managers with a MBA. As such, to ensure a high quality match, we only observe, say, large exporters and large non-exporters where the former has a much greater likelihood not to be state-owned. Combined, this set of variables play a significant role in the first stage probit estimations of export participation (see Table 2).

Table A2.3 and Table A2.4 show the average differences between firms that engage in FDI and those that do not before and after they are matched for each innovation variable. As we anticipated, there are ex ante large differences between FDI and non-FDI firms. In general, larger, foreign owned firms, that receive consultation about management practices and have more organizational levels self-select into FDI participation. Only the difference in competition by multinationals is not significant. These observables, including competition by multinationals explain in the first stage probit regressions much of the variation of having any foreign affiliations (see Table 2). After matching on these observables the difference between the treatment and comparison group disappears.

In Table A2.5 and Table A2.6 we find the balancing properties in terms of the mean differences between outsourcing firms and non-outsourcing firms while matched for the three innovation outcomes. Outsourcing firms with partners abroad are very different from their counterparts. Firms that subcontract production abroad are much larger, have a greater share of managers with experience at a multinational, receive more consultation about management practices, are more often owned by foreign investors and, have more a democratic work environment compared to non-outsourcing firms. These factors explain an important part of the self-selection into international subcontracting activities (see Table 2). After matching outsourcing and non-outsourcing firms on these characteristics, there are no differences on these variables such that there is no selection bias on observables.

Table A2.1. Before matching exporters (unmatched, mean differences)

	Exporters	Non-exporters	% difference	t-value
Panel 1: R&D				
SIZE	5.31	4.99	33.3	4.80***
UNIQUENESS	3.36	2.81	48.5	6.53***
FOREIGNOWN	0.23	0.10	37.1	5.69***
STATEOWN	0.11	0.15	-12	-1.60*
MBA	11.90	9.92	7.7	0.98
BESTPRACTICE	3.89	3.70	23.7	3.30***
COMP	3.59	3.46	16.9	2.32**
Panel 2: Product innovation				
SIZE	5.29	4.97	33.9	4.71***
UNIQUENESS	3.36	2.80	49.9	6.49***
FOREIGNOWN	0.22	0.09	36.5	5.39***
STATEOWN	0.11	0.15	-10.9	-1.39
MBA	10.87	9.79	4.3	0.53
BESTPRACTICE	3.87	3.70	21.5	2.88***
COMP	3.57	3.47	13.5	1.80*
Panel 3: International patents				
SIZE	5.29	4.97	33.4	4.72***
UNIQUENESS	3.36	2.80	49.8	6.55***
FOREIGNOWN	0.24	0.09	39.5	5.97***
STATEOWN	0.10	0.15	-12.9	-1.67*
MBA	11.68	9.81	7.4	0.92
BESTPRACTICE	3.88	3.69	23.6	3.22***
COMP	3.58	3.47	15.1	2.04**

Table A2.2: After matching exporters (matched, mean differences)

	Exporters	Non-exporters	% difference	Bias reduction (%)	t-val.
Panel 1: R&D					
SIZE	5.30	5.23	7.1	78.7	0.73
UNIQUENESS	3.34	3.37	-3.3	93.1	-0.39
FOREIGNOWN	0.21	0.25	-9.0	75.6	-0.85
STATEOWN	0.11	0.07	13.1	-8.6	1.65
MBA	11.88	16.94	-19.6	-155.6	-1.73*
BESTPRACTICE	3.87	3.99	-15.5	34.5	-1.67*
COMP	3.57	3.52	7.6	55.0	0.83
Panel 2: Product innovation					
SIZE	5.28	5.27	2.0	94.1	0.19
UNIQUENESS	3.34	3.35	-0.8	98.4	-0.09
FOREIGNOWN	0.20	0.25	-13.5	63.0	-1.21
STATEOWN	0.11	0.07	12.8	-17.9	1.55
MBA	11.18	14.94	-15.1	-249.5	-1.28
BESTPRACTICE	3.86	3.96	-13.1	39.2	-1.38
COMP	3.56	3.52	5.3	60.7	0.55
Panel 3: International patents					
SIZE	5.27	5.18	8.8	73.5	0.89
UNIQUENESS	3.34	3.32	1.6	96.8	0.18
FOREIGNOWN	0.22	0.24	-7.6	80.6	-0.70
STATEOWN	0.11	0.06	13.2	-2.3	1.66*
MBA	11.48	16.82	-21.0	-185.1	-1.80*
BESTPRACTICE	3.87	3.98	-14.6	38.2	-1.53
COMP	3.57	3.53	5.8	61.9	0.62

Table A2.3. Before matching FDI (unmatched, mean differences)

	FDI	Non-FDI	% difference	t-value
Panel 1: R&D				
SIZE	5.50	5.00	50.6	4.89***
FOREIGNOWN	0.52	0.10	100.4	11.62***
CONSULT	0.23	0.05	55.2	7.08***
ORGLEVELS	23.61	14.85	24.5	2.74***
COMP_MNE	0.54	0.49	9.6	0.86
Panel 2: Product innovation				
SIZE	5.48	4.99	51.9	4.58***
FOREIGNOWN	0.48	0.10	91.2	9.95***
CONSULT	0.24	0.05	56.7	6.92***
ORGLEVELS	24.92	15.04	26.4	2.82***
COMP_MNE	0.56	0.49	14.5	1.21
Panel 3: International patents				
SIZE	5.52	4.98	54.5	5.12***
FOREIGNOWN	0.50	0.10	97.7	11.01***
CONSULT	0.24	0.05	57.0	7.08***
ORGLEVELS	24.32	14.90	25.6	2.79***
COMP_MNE	0.55	0.49	10.9	0.93

Table A2.4: After matching FDI (matched, mean differences)

	FDI	Non-FDI	% difference	bias reduction (%)	t-val.
Panel 1: R&D					
SIZE	5.41	5.44	-3.4	93.3	-0.21
FOREIGNOWN	0.49	0.50	-3.8	96.2	-0.20
CONSULT	0.20	0.19	2.1	96.2	0.11
ORGLEVELS	24.11	22.46	4.6	81.1	0.23
COMP_MNE	0.55	0.50	9.2	4.2	0.58
Panel 2: Product innovation					
SIZE	5.41	5.45	-3.7	92.8	-0.21
FOREIGNOWN	0.45	0.47	-5.7	93.8	-0.28
CONSULT	0.19	0.18	6.5	88.5	0.34
ORGLEVELS	25.32	22.72	7.0	73.6	0.33
COMP_MNE	0.56	0.49	14.9	-3.2	0.89
Panel 3: International patents					
SIZE	5.42	5.45	-3.2	94.1	-0.19
FOREIGNOWN	0.47	0.49	-7.4	92.5	-0.36
CONSULT	0.20	0.19	4.5	92.1	0.23
ORGLEVELS	24.92	22.87	5.6	78.3	0.25
COMP_MNE	0.56	0.51	11.4	-4.6	0.68

Table A2.5. Before matching outsourcing firms (unmatched, mean diff.)

	Outsource	Non-outsource	% difference	t-value
Panel 1: R&D				
SIZE	5.22	5.00	21.2	2.22**
MNE_EXP	0.08	0.03	28.2	3.67***
CONSULT	0.18	0.05	40.6	5.47***
FOREIGNOWN	0.24	0.12	32.0	3.76***
DEMOCRAT	0.36	0.23	52.4	5.50***
Panel 2: Product innovation				
SIZE	5.24	5.01	25.7	2.56**
MNE_EXP	0.07	0.03	24.4	2.74***
CONSULT	0.19	0.05	45.4	5.94***
FOREIGNOWN	0.22	0.11	29.2	3.21***
DEMOCRAT	0.36	0.23	51.1	5.02***
Panel 3: International patents				
SIZE	5.23	5.01	24.5	2.49**
MNE_EXP	0.06	0.03	24.8	2.86***
CONSULT	0.17	0.05	36.8	4.68***
FOREIGNOWN	0.23	0.11	32.2	3.66***
DEMOCRAT	0.36	0.23	51.4	5.19***

Table A2.6: After matching outsourcing firms (matched, mean differences)

	FDI	Non-FDI	% difference	Bias reduction (%)	t-value
Panel 1: R&D					
SIZE	5.19	5.20	-1.9	91.0	-0.14
MNE_EXP	0.07	0.05	13.2	53.3	0.90
CONSULT	0.16	0.15	3.9	90.4	0.26
FOREIGNOWN	0.22	0.22	0.5	98.6	0.03
DEMOCRAT	0.35	0.36	-3.9	92.6	-0.27
Panel 2: Product innovation					
SIZE	5.20	5.13	6.7	73.8	0.48
MNE_EXP	0.06	0.05	5.0	79.5	0.31
CONSULT	0.17	0.13	11.3	75.2	0.71
FOREIGNOWN	0.20	0.20	-0.5	98.2	-0.04
DEMOCRAT	0.35	0.38	-10.4	79.6	-0.68
Panel 3: International patents					
SIZE	5.18	5.15	3.5	85.6	0.25
MNE_EXP	0.06	0.05	8.5	65.6	0.54
CONSULT	0.14	0.13	5.6	84.9	0.36
FOREIGNOWN	0.21	0.20	3.6	88.9	0.24
DEMOCRAT	0.35	0.36	-4.7	90.9	-0.31

Appendix 3

Obviously, after calculating propensity scores for each firm, there are various ways to match international firms to counterparts. First, matching can be done with or without replacement (Dehejia & Wahba, 2002). Second, there are alternative assessment methodologies for the closeness of the match to be considered (see Smith & Todd, 2005). The problem is that after deriving propensity scores, there is no assurance that a treated firm will have a counterpart that is close enough so some firms may be dropped (see common support requirement, Appendix 2). Third, researcher can weight cases in the analysis, for instance using kernel matching. Finally, the number of comparison firms matched to each treated firm must be determined, for example by specifying the number of nearest neighbours. To interpret the results of the impact, standard errors of propensity score matching estimates are obtained using bootstrapping although this produces error estimates that are asymptotically unbiased, meaning that in small samples there is no guarantee of unbiased estimates.

In this part we re-estimate the main results from Table 3 by relying on several modifications to the matching procedure. It is generally known that the outcomes of matching can be sensitive to relative small adjustments in the matching technique. Therefore, three major changes are implemented yielding 12 different specifications. First, instead of using nearest neighbour matching, two other matching procedures, Epanechnikov kernel, and, one-to-one with no replacement, are applied. Second, we abandon the principle of forced (exact) matching of firms on transition stage of the country. Finally, the first stage covariate list is adjusted. In this case we choose to match firms only on SIZE, AGE and industry characteristics. In addition, in some of the first stage probit regressions we include country dummies (see Table A3, note for details).

Table A3 shows that overall the results are robust. The bottom of Table A3 gives an overview of the simple averages in the mean differences of the average treatment effects across the 12 specifications. These results are highly comparable to the main findings in Table 3. The impact of exporting on R&D is somewhat lower than in the main results, and only significant in 4 of the 12 alternative specifications. The effect of exporting on the share of sales of product innovation is also lower, but significant in half of the other analyses. The impact of exporting on international

patent is on average larger and significant in all of the sensitivity tests. With respect to FDI we find that the mean differences in average treatment effect between firms with foreign affiliates and those without on the innovation measures is comparable to the benchmark. As shown at the bottom under *AVERAGE*, the effect of FDI on R&D is highly comparable and significant in each alternative specification. The impact of FDI on the product innovation is on average larger when compared to the main results, however, this effect is only significant in two of the analyses. Therefore, the robustness test also show that FDI is not a driver of product innovation. The impact of FDI on international patents is similar to the main finding from Table 3. Here we find a significant effect of FDI on patents in all specifications. Finally, the outcomes show that on average, outsourcing only has a significant impact on product innovation, which is also shown in Table 3. On average, the impacts on R&D and international patent are somewhat higher compared to main results, while the effect on product innovation is somewhat lower. In nine of the twelve sensitivity analyses outsourcing is a significant determinant of the share of sales from new products. In contrast, in seven of the twelve specifications we find a significant effect of outsourcing on R&D and international patents.

Table A3: Mean differences in ATE on treated and control

	Innovation measure	EXPORT	FDI	OUTSOURCE
1	R&D	0.04	0.13**	0.05
	PROD_INNOV	2.50*	2.40	3.60*
	PATENT	0.10**	0.26***	0.11**
2	R&D	0.10**	0.20***	0.04
	PROD_INNOV	0.20	2.00	3.70*
	PATENT	0.10**	0.27***	0.08
3	R&D	0.04	0.10**	0.14**
	PROD_INNOV	1.20	2.40	4.70*
	PATENT	0.09***	0.26***	0.06
4	R&D	0.05	0.20***	0.09*
	PROD_INNOV	3.50*	6.10*	4.30*
	PATENT	0.10***	0.25***	0.08
5	R&D	0.06*	0.15***	0.11**
	PROD_INNOV	2.80	2.70	7.60**
	PATENT	0.10**	0.24***	0.10*
6	R&D	0.04	0.09*	0.10**
	PROD_INNOV	2.20*	1.20	0.80
	PATENT	0.09**	0.25***	0.06
7	R&D	-0.02	0.25***	0.03
	PROD_INNOV	4.90**	5.40	5.60**
	PATENT	0.10**	0.27***	0.12**
8	R&D	0.01	0.14**	0.09
	PROD_INNOV	1.90	0.80	6.60**
	PATENT	0.06*	0.19**	0.12**
9	R&D	0.10**	0.09*	0.19***
	PROD_INNOV	2.00	-0.50	-2.90
	PATENT	0.10***	0.26***	0.10*
10	R&D	0.04	0.16**	0.05
	PROD_INNOV	3.90*	5.90*	6.60**
	PATENT	0.10**	0.25***	0.12**
11	R&D	0.05	0.11*	0.12**
	PROD_INNOV	-1.40	1.40	6.50**
	PATENT	0.08**	0.22***	0.10*
12	R&D	0.09**	0.11**	0.14**
	PROD_INNOV	4.60**	0.10	1.20
	PATENT	0.10***	0.28***	0.08
AVERAGE	**R&D**	0.05	**0.15**	0.09
	PROD_INNOV	**2.54**	2.42	**4.08**
	PATENT	**0.09**	**0.25**	0.08

Note: matching procedure is similar to Table 3. Specifications 1-3 use forced (exact) matching on the transition indicator categories, while specifications 4-12 do not apply exact matching. Specifications 4-6 use nearest neighbour matching (n=5). Specifications 1 and 7-9 use Epanechnikov kernels for matching treated and controls. Specifications 2 and 10-12 use one-to-one matching with no replacements. Specification 1,2,4,7, and 10 use the full set of covariates, where specifications 4,7 and 10 also include country dummies. Specifications 5,8 and 11 also apply the full set of covariates but without country specific information. The analyses from 3,6,9 and 12 are based on a minimum set of covariates, where in specification 3 firms are matched on SIZE, AGE and industry dummies before exact matching on transition group. Specifications 6,9 and 12 match on SIZE, AGE, industry and country dummies.

III. A RESOURCE-BASED VIEW OF INTERNATIONALIZATION IN EMERGING ECONOMIES[10]

1. Introduction

One of the most remarkable phenomena of recent times is that many firms from emerging economies have come to dominate their markets and enter into the class of global innovation leaders. Firms that once specialized in cheap but high quality substitutes (for example Brazil's Embraer), fast second mover strategies (Korea's Samsung), and outsourcing services (India's Wipro) are now firmly at the core of the global productivity and innovation frontier. In addition, many small and medium sized local firms that started as exporting joint ventures have moved abroad on their own account.

So far, the International Business literature mostly uses the eclectic OLI approach to explain the rise of emerging market MNEs. This conceptual model examines the drivers for internationalization and has pointed to market and strategic asset seeking motives for the internationalization strategy of firms from emerging markets. As a specific form of OLI thinking, the now dominant linking-leverage-learning (LLL) approach provides a framework in which firms from emerging markets create ownership advantages by integrating links with foreign partners. This integration allows for the leveraging of specific assets within the relationship and upgrading these with the help of new alliances and acquisitions.

Although the OLI and LLL approaches take more than the first bite out of the question what drives the outward movement of firms from emerging markets, in our opinion they fall short on two accounts. First, by focusing on the catching-up process of emerging market MNEs, they do not explain the inclusion of many of those firms in the global innovation frontier. In our view, emerging market firms have created strong firm specific advantages by themselves, which is not recognized

[10] This Chapter, co-authored with my supervisor Hein Roelfsema, is published in M.A. Marinov and S. Marinova (eds.), *Impacts of Emerging Economies and Firms on International Business*, New York: Palgrave MacMillan, 2012.

in the two other approaches. Such firm specific advantages are often grounded in unique resource bundles as described in the Resource-Based View (RBV) of the firm. Hence, so far there is a gap in the literature in explaining the emergence of such unique resource bundles in emerging economies and their effect on internationalization. Second, the studies so far do not adequately explain the exponential rise in internationalization of the many small and medium sized enterprises from emerging markets. For such firms internationalizing is often evolutionary rather than strategic and should be analyzed using the stage model or use theories that analyze the conditions for fast internationalization of SMEs. Clearly, these approaches are complementary, for evolutionary theories of internationalization draw heavily on insights from the RBV of the firm. For this reason, this Chapter aims to provide RBV micro-foundations for the LLL view of internationalization.

The structure and build-up of the central argument is as follows. We start by briefly reviewing the dominant explanations for the global rise of firms from emerging economies. After we have argued that the firm's sustainable global competitive advantages can only be explained by making use of the RBV of the firm, we introduce the key insight from the RBV and ask what is has brought to the study of International Business. We then turn our new conceptual lens on the studies of the internationalization of emerging market firms to see what it adds to the existing explanations. We end with a concluding discussion on the major implications of our study, followed by some lessons for the managerial practice in emerging economies.

2. Theoretical background

The thinking about the drivers of internationalization is firmly rooted in three broad pillars that describe the nature of the firm. Towering over this literature is Coase's (1937) insight that the firm can be viewed as a set of contracts that maximize the value of transactions and describe the boundaries of the firm in terms of hierarchy and markets. This is at the heart of the transaction cost approach of internationalization (Buckley & Casson, 2009; Williamson, 1975), which argues that the firm's international organization is a rational solution to minimizing the costs of connecting various actors that are needed for production and distribution. The institution based view argues that the nature of the firm can best be understood as

stemming from the interaction with the environment in which it operates (e.g. Peng et al., 2008, 2009). Finally, a large part of the literature is rooted in the resource based view (RBV) of the firm (Barney, 1991; Peng, 2001; Penrose, 1959), which argues that the firm can be described in terms of (unique) bundles of resource to the disposal of management. Certainly, these three approaches are complementary, however, the key empirical question is which elements best describe firm organization and behavior in practice.

The rationalistic transaction cost approach translates into the eclectic Ownership Location Internalization (OLI) approach of internationalization (Dunning, 1981, 2000). Here it is stressed that organization of the firm across countries can best be described as minimizing international transactions costs. More explicitly, geographically fragmented production within the boundaries of the firm can be analyzed as a rational solution to the optimal deployment of ownership advantages and the use of specific locational advantages. The choice of how to engage in international transactions can then be seen as a commitment mode in agency relationships, where the nature of the ownership advantage of the principal proscribes his choice of a certain relationship with an agent in the foreign country. The lowest form of commitment includes exporting, which is associated with relatively low ownership advantages, whereas higher commitment modes are associated with stronger ownership advantages that need protection through internalizing production and delivery modes. In Dunning's view, ownership advantages are firm-specific and can be related to superior technological capabilities, managerial resources and market power (Dunning, 2000). The locational advantages are related to the local market size, comparative advantages, and the availability of specific inputs.

A key question in the recent emerging markets literature is how the internationalization of firms from these regions may be driven by ownership advantages. Even stronger, how can we understand the rise of multinationals from emerging economies if these firms "lack" traditional ownership advantages rooted in the knowledge basis of the firm? The dominant explanation is that ownership advantages are dynamic and acquired through international cooperation. At the macro level, this is well recognized in the IDP approach (Dunning & Narula, 1996). At the firm and industry level, more recently the Linking Leverage Learning (LLL) explanation has come to the fore. This explanation argues that successful

internationalizers from emerging markets acquire ownerships advantages over time through their interaction with international partners and their experiences in foreign markets (Mathews, 2002, 2003, 2006). What is still a black box is how the build-up of knowledge based ownership advantages in firms from emerging markets arises out of the dynamic building up of capabilities within the firm.

The unpacking of the LLL approach and providing micro-foundations for it should most plausibly come from the RBV scholars, who have for long analyzed how the processes within the firm shape organization and performance, in particular the role of managerial capabilities (Felin & Foss, 2005). Certainly, a focus on resources to explain internationalization of Western firms has been highly successful. Starting from Johanson and Vahlne (1977), the building-up of capabilities is seen as central to explain the process of internationalization. In the Uppsala model, the initial foreign market steps of the firm are driven by the degree of psychic distance of senior management, who then incrementally increase the international knowledge basis, which results in deeper foreign market commitments. With some good will, a lower degree of psychic distance of senior management can be seen as an important part of the resources of the firm. This insight is later refined in the born global literature, which stresses that international networks and entrepreneurial traits are important moderators to psychic distance and incremental learning (e.g. Bloodgood et al., 1996; Coviello & Munro, 1997; Jones & Coveillo, 2005; Knight & Cavusgil, 2004; Oviatt & McDougall, 1994).

However, so far the RBV approach to international business has not been central to the study of the internationalization of firms from emerging markets. One explanation is that the field is relatively young, so that the first studies are limited by data availability at the firm level and thus use country level data. Such data are only capable to shed light on the contextual drivers of the OLI model such strategic asset seeking behavior of firms from emerging markets, which for example is derived from the host market characteristics of FDI. Another potential explanation for the dominance of the OLI approach in explaining the behavior of emerging market firms is that in the popular press the rational strategic motives of firms from China and India have received much attention, which in turn drives case study research in Western business schools (Athreye & Kapur, 2009; Buckley et al., 2007; Guillén & Garcia-Canal, 2009; Luo & Tung, 2007). And clearly, as cultural distance at the aggregate level is a major barrier for firms from emerging markets, this leaves much

room for explanations that use insights from the institutionalist approach (Peng et al., 2008, 2009). At the most fundamental level, the RBV may not be dominant as a starting point for analysis, as it is not obvious that (managerial) resources play an imperative role as ownership advantages in firms from emerging markets.

3. Introducing the RBV

The RBV (Barney, 1991, Wernerfelt, 1984, 1995) is strongly influenced by the *Penrosian view* of the firm (Penrose, 1959) which acknowledges that the optimal growth of the firm involves a balance between exploitation of existing resources and a path dependent development of new ones. Penrose is among the first scholars to characterize firms as a bundle of resources, or more precisely "a collection of productive resources" (Penrose, 1959, p.24). *Resources* are generally defined as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (Barney, 1991: p.101).[11] Resources in the Penrosian view contribute to the firm's competitive advantage to the extent that resources are effectively exploited and efficiently deployed within the firm's organization to earn rents. Thus, managerial capabilities, dynamic learning and other behavioral elements determine the development process of the sustainable competitive advantages of the resource bundles (see Barney & Arikan, 2001; Teece et al., 1997). In the modern version of the RBV firms must hold *heterogeneous* resource endowments that result in different internal capabilities, organizational routines or core competencies.

[11] There are various definitions of firm resources out there, all similar in spirit to the one we use (see Barney, 1991). Barney and Arikan (2001, p.138) define resources as the tangible and intangible assets firms use to conceive of and implement their strategies. They say (p. 139) that "resources that are typically more tangible include, but are not limited to, a firm's financial capital (e.g., equity capital, debt capital, retained earnings, leverage potential) and physical capital (e.g., the machines and buildings it owns). Resources that are typically less tangible include, but are not limited to, a firm's human capital (e.g., the training, experience, judgment, intelligence, relationships, and insights of individual managers and workers in a firm) and organizational capital (e.g., attributes of collections of individuals associated with a firm, including a firm's culture, its formal reporting structure, its reputation in the market place, and so forth)." In a related classification, Amit and Schoemaker (1993, p.35) define firm resources as the stock of available factors owned or controlled by the firm, which includes know-how that may be exchanged such as patents and licences, financial or physical assets like property, plants and equipment, and human capital. The latter delineate capabilities or intangible assets which define the firm's capacity to deploy resources, e.g. tacit knowledge and experience that depends on employees (see Andersen & Khean, 1998). Hence, in our classification of the RBV and related to Penrose, resources include firm capabilities that enable exploitation of resources in the implementation of strategies and is associated with Teece et al. (1997) dynamic capabilities that focus on the ability of firms to learn and evolve.

In line with Penrose, resources bundles that are distinctive or superior to those of competitors are the basis for sustainable competitive advantage and firm growth if they are aligned with opportunities in the market environment.[12] Peteraf (1993) identifies four related conditions for firms to have a (sustainable) competitive advantage. First, resource heterogeneity implies differences in marginal costs and efficiency across firms such that some firms can earn monopoly rents in certain markets.[13] This assumes that resources are limited in supply and that some firms can sustain a competitive advantage if their resources cannot be expanded freely or imitated by others. Second, to ensure the existence of rents on resource configurations there must be ex post limits to competition to prevent resource redundancy.[14] In other words, to add value to the firm the condition of heterogeneity must be relatively durable, which requires imperfect substitutability and imperfect imitation of capabilities. Following Porter (1980), substitutability by competitors erodes rents from resources. Moreover, firms must be able to shield competitors from copying their resources. In this spirit, Rumelt (1984) uses the term 'isolating mechanisms' to refer to phenomena which protect firms from imitation such as intangible assets, tacit knowledge and absorptive capacities that defy the erosion of rents (see Mahoney & Pandian, 1992). An influential study by Dierickx and Cool (1989) argues that unique resources and 'dynamic capabilities' stem from an accumulative process of learning which depends on organizational skills (see Barkema & Vermeulen, 1998; Luo, 2000; Teece et al., 1997). Here, resource development is path-dependent in the sense that it is contingent upon preceding

[12] Barney (2001) outlines how the RBV fits into the standard neoclassical microeconomics framework as well as into evolutionary economics. Situating the RBV in relation to neoclassical microeconomics helps us how to understand the Penrosian idea of disequilibria that allow for the existence of rents, and whether or not equilibrium analysis can be applied in resource-based analyses, whether the RBV is tautological, and identification of attributes of resources and capabilities that lead them to be inelastic in supply. Putting the RBV in an evolutionary economics setting facilitates the development of explanations how routines and capabilities change over time.

[13] Prahalad and Hamel (1990) illustrate how core competencies - which also involve collective learning and are knowledge-based - are enhanced as they are used by the firm. That is, firm resources are self-perpetuating. Therefore, dynamic resources can provide both the basis and the direction for the growth of the firm, e.g. an irreversible natural trajectory embedded in the firm's knowledge base and organizational capacities. Hence, the current configuration of firm resources and capabilities may both impel and constrain future learning, innovation and investment activity. Incremental growth and renewal of such limited resources, however, is not inconsistent with a Ricardian view of rent and competitive advantage (see Peteraf, 1993).

[14] Put differently, the first condition of firm heterogeneity in resource bundles is consistent with models of market power and monopoly profits that influence the second and third ex post and ex ante competition barriers, just as the first condition follows Ricardian rents. What distinguishes such power from rents is it arises from a deliberate restriction of output rather than an inherent scarcity of resource supply. Put differently, among others factors, spatial competition, economies of scale, product differentiation, branding may let apparently homogeneous firms earn monopoly profits.

levels of resources and subsequent learning, innovation and investment activity. Hence, history matters because competitors are restricted by the difficulty of discovering and repeating the developmental process needed to build-up unique resource bundles (Dierickx & Cool, 1989; Peteraf, 1993). Finally, imperfect mobility of resources ensures that rents can be sustainably harvested within the firm. Concluding, these four conditions imply that strategic assets that give firms a sustainable competitive advantage through firm resources and capabilities must be *VRIO*: Valuable, Rare, Inimitable and non-substitutable, and appropriable by the Organization (Barney, 1991).

Within the strategic management literature it is now taken for granted that successful firms hold diverse resource endowments, and that it consequently takes effort and time to adjust firm resource endowments given the organizational structures of the firm, e.g. resource bricolage. Within the RBV it are bundles of resources that shape corporate strategies, for instance in terms of the value proposition. The productivity of resources will depend upon the nature of their allocation and the firm's internal capabilities with which a strategy or business model is implemented. Wernerfelt (1995, p.173) explains that "strategies which are not resource-based are unlikely to succeed in such [competitive and dynamic] environments. This is so obvious that I suspect that we soon will drop the compulsion to note that an argument is 'resource-based'. Basing strategies on the differences between firms should be automatic, rather than noteworthy." In echo, Barney and Arikan (2001, p.174) argue that the "resource-based theory has a very simple view about how resources are connected to the strategies that a firm pursues. It is almost as if once a firm becomes aware of the valuable, rare, costly to imitate, and non-substitutable resources it controls, that the actions it should take to exploit these resources will be self-evident."

Following the early literature on the RBV, important developments have been made in linking firm resources and capabilities to internationalization strategies (Andersen & Kheam, 1998; Barney et al., 2001; Peng, 2001; Westhead et al., 2001). In line with the RBV, much IB work presupposes that firms require a competitive advantage in order to internationalize, where firms in the process learn and further acquire more unique resource-specific advantages (Barney et al., 2001; Hitt et al.,

2006; Johanson & Vahlne, 1977, 2009; Westhead et al., 2001).[15] This Chapter does not aim to give an overview of the vast empirical evidence for the role of various firm resources in shaping internationalization strategies (see for review Amstrong & Shimizu, 2007; Barney & Arikan, 2001; Newbert, 2007), however, we select some studies that provide insight into how international business scholars have called upon RBV factors. The RBV of internationalization stresses the importance of three resource bundles. First, there are previously acquired resources which are valuable, rare and appropriable by the organization that affect the incentives for internationalization. Following the monopolistic advantage theory, firms internationalize because they have unique resources that they can use to create tangible ownership advantages, which they can subsequently leverage to international competitive advantages at little additional costs (economies of scale and scope), see e.g. Caves (1982) and Rugman (1981).[16]

The second class of resources and capabilities are latent or intangible. These resources are developed over time, giving them unique advantages to the firm, because they are path-dependent, hard to imitate in the short run and non-substitutable (e.g. Castanias, & Helfat, 2001; Helfat & Peteraf, 2003; Teece et al., 1997; Westhead et al., 2001). For example, experiential knowledge acquired in foreign markets will often be unique to the firm and such tacit knowledge resource often depends on the dynamic resource configuration, experience and learning activities

[15] The empirical support for this consensus view that matches IB and the RBV is predominately rooted in firms from advanced economies (Child & Rodrigues, 2005; Filatotchev et al., 2009; Luo & Tung, 2007; Mathews, 2006; Yiu et al., 2007). A common plague in the RBV literature is how to measure resources empirically. Overall, the RBV of the firm seems to have received wide empirical support (e.g. see overview by Barney & Arikan, 2001), although scholars question whether most studies form an explicit test of the full framework or only parts of it (e.g. Arend, 2006; Armstrong & Shimizu, 2007; Newbert, 2007). To start, clear definitions of resources, internal and external capabilities, core competencies and the like are lacking (Priem & Butler, 2003). Many core resources are intangible and therefore difficult to operationalize (where such challenges inherent in measuring resources have generated concern about the testability of the RBV (e.g., Priem & Butler, 2001, 2003; Arend, 2006) but may also spur further research and innovations in the RBV (Peng, 2001). For instance, Peng (2001) notes that in the field on international business, no studies have directly measured organizational learning as intangible resource. Many RBV studies suffer from potential reversed causality issues that have not been properly addressed; time-series analysis may be a fruitful area of study. Also, empirical analysis using large samples across countries may not be feasible, because each institutional environment requires different bundles of resources.

[16] Notice that the RBV differs from the transaction cost explanation, where the latter suggests international expansion as a result of external market failure (e.g. licensing) due to opportunism, while the RBV explains internationalization due to resource heterogeneity and superior capabilities of multinationals in deploying know-how indoors. Also, in contrast to the transaction cost approach which emphasizes exploitation, the RBV shows there is a dynamic process of development where firms build on capabilities and learn from international experience (Peng, 2001, p.813-814). Hence, the RBV highlights that internationalization is not only a result of a push by firm-specific resource advantages, but also stems from pulls by resources and capabilities that firms obtain from participation abroad to develop new advantages.

within the firm.[17] The RBV also shows how mergers and acquisitions create synergies across locations and organizations to facilitate knowledge flows within the firm. In this respect, Barney and colleagues (2001, p. 629) note that "significant international experience by top managers represents firm-specific tacit knowledge that is difficult to imitate. The RBV contributes to foreign entry mode research by suggesting that such strategies are pulled by the resource capabilities of firms abroad as well as being pushed by the firm-specific advantages possessed by the MNC." For instance, Kogut and Zander (1993) find that Swedish firms specialize in the transfer of knowledge that is not imitable and that these firms are able to expand such competitive advantages of low cost technologies abroad through deep commitment modes like FDI. Mutinelli and Piscitello (1998) show that Italian firms expand to foreign markets through joint ventures to utilize tacit knowledge and enhance technological capabilities by working with foreign partners. Only after acquiring intangible foreign assets, firms set up wholly owned subsidiaries. Athanassiou and Nigh (2000) show that internationalization of US firms is strongly related to characteristics of top managers and their knowledge and experience about the internationalization process. Ibeh and Wheeler (2005) use the RBV to explain export performance in the UK. They show that both internal resources (including managerial and organizational capabilities) and external resources (like network links and relational assets) predict exporting activities. In related work, using data from German and British manufacturing firms, Morgan and colleagues (2006) show that the degree of imitability and non-substitutability of firm resources, which are primarily founded in human, cultural, reputational and, informational resources, are positively related to export performance. Reuber and Fischer (1997) and Barkema and others (1997) empirically show that international experience and education levels of senior management result in faster and deeper internationalization. Also working abroad and prior work experience at multinational firms facilitate learning, absorption of new experiences, and stronger organizational capabilities. Such dynamic organizational learning creates new bundles of resources which combine unique sets

[17] Peng (2001, p. 820) argues that the RBV approach has benefitted much from the early IB insights: "IB's most significant contributions to the RBV lie in the identification of international knowledge and experience as a valuable, unique, and hard-to-imitate resource that differentiates the winners from the losers and mere survivors in global competition. (…) This idea of local embeddedness, that is, idiosyncratic expertise gained through in-country learning despite the liability of foreignness, predates the formal emergence of the RBV (Johanson & Vahlne, 1977), and has been well developed in the IB literature. It is not surprising that IB scholars are able to build on this idea to enrich and strengthen the RBV."

of knowledge and experience that support internationalization (Barkema & Vermeulen, 1998; Luo, 2000; Teece et al., 1997).

Third, there is a class of firm resources of which the qualities are characterized by the external environment in which the firm operates, to which we refer to as 'external resources'. As already argued in Johanson and Vahlne (1977), the firm's international learning capabilities depend on its institutional context, where firms in unsupportive institutional settings will choose lower commitment modes (e.g. export or joint ventures over wholly owned or green fields). Brouthers and others (2008) argue that the firm's resources cannot be treated atomistically. They explain that resources are selected and deployed based on both internal factors as well as external, *institutional factors*. In empirical work, Brouthers and others (2008) test the context specific nature of resources and find support for significant interaction effects between firm resources and local institutions in relation to international entry mode choices. In other words, the firm resources that are valuable, rare, difficult to copy, and non-substitutable in one external environment may not have those resource qualities in another institutional context (see Black & Boal, 1994; Peng, 2001; Priem & Butler, 2001).

There are also firm specific advantages (FSAs) that are determined by institutions. Such locational FSAs refer to resources that provide a firm the potential to benefit from local institutions, while non-locational-bound FSA reflect a potential to reap benefits from international integration, including economies of scale and scope. In some cases, firms choose to internationalize because they face local impediments by governments (red tape) or other market imperfections that make exporting or licensing difficult. Hence, internationalization "acts as an isolating mechanism and protects the MNE's resources against dissipation" and is not the consequence of rent-seeking behavior, but originates in aiming to optimize the growth path by geographic expansion and entry mode choice (Rugman & Verbeke, 2002, p.777). Brouthers and others (2008) explain that firms with more "international experience-based dynamic learning capabilities" are much less bounded by external locational differences and can overcome at least some of the "internal isolation mechanisms" which firm encountered after doing business in a different institutional context. Concluding, some firms have valuable resources that can overcome institutional barriers in foreign markets, for example because the firm has managers with knowledge about foreign markets, who are quickly able to learn and absorb

country difference, and who have good international networks to inform them about institutional obstacles.

Although it is often not explicitly recognized as stemming from the RBV of the firm, there are other strands of IB literature that make use of the concepts discussed above. There is especially some confusion how the second type of resources and capabilities – the more latent, intangible, dynamic assets that are inimitable and non-substitutable – are used. A case in point is that the RBV of international business has been especially prominent in the MNE strategic management literature. Following Prahalad and Hamel's (1990) core competences, much of the RBV to international strategic management involves the inquiry how to develop core competencies that provide sustainable competitive advantage. The older literature focuses on the question how firms can leverage their core competences by expanding abroad.[18] However, following the path breaking work on the transnational firm, attention has shifted to how the process of internationalization itself can create core competences by combining dispersed competences in a process of global integration and learning. For example, as pointed out, a key tool for creating transnational competitive advantages is the careful crafting of international teams of managers, which facilitates the exchange of unique managerial local experience, in turn creating a pool of organizational knowledge that cannot be imitated easily by competitors.

Furthermore, the RBV is also at the heart of the born global phenomenon seen in the fast internationalization of technology intensive small and medium enterprises (SMEs) (e.g. Bloodgood et al., 1996; Coviello & Munro, 1997; Jones & Coveillo, 2005; Knight & Cavusgil, 2004; Oviatt & McDougall, 1994). One central observation is that the incremental commitment-learning steps in the Uppsala stage model fail to explain the fast internationalization of many knowledge intensive SMEs. Certainly, fast internationalization can be explained by the fact that knowledge is easily transportable across borders. However, many studies find that the firm's managerial resources have an important moderating effect. In explicit, the social and

[18] As Barney, 2001 himself admits, the processes through which firm resources provide a sustainable competitive advantage remain a *black box*. Prahalad and Hamel (1990) also conceive that resources are not something static but for a large part consist of inimitable skills, technologies, knowledge and processes in which resources are deployed in a particular manner by managers (Barney & Wright, 1997) and organizational configurations (Teece et al., 1997) to make the resources a 'core competences' of the firm instead of resources laying idle. In Penrose's definition (1959, p. 53): "One type, objective knowledge, can be taught; the other, experience or experiential knowledge, can only be learnt through personal experience (…) With experiential knowledge, emphasis is placed on the change in the services the human resources can supply which arises from their activity".

business networks of senior management play a crucial role in leveraging the firm's competitive advantages in foreign markets. Further, young knowledge intensive SMEs are financially constrained and thus hold few physical resources, so that they must rely on networks to tap external resources and build resource bundles that support a sustainable business model (Elango & Pattnaik, 2007; Yiu et al., 2007).

In the recent born global literature, the role of managerial capabilities for SMEs internationalization is explicitly recognized. Connecting to insights from empirical entrepreneurship studies, it is found that entrepreneurial traits of the CEO are a dominant explanation for SME internationalization. In the stage model framework, one may hypothesize that entrepreneurs are more willing to experiment in foreign markets, so that their firms witness a faster build-up of experience related knowledge about internationalization. Moreover, closely related to the network approach, if experiments are necessary to build up international networks so as to create unique resource bundles, then entrepreneurial qualities are central to dynamic competitive advantages of firms.

4. The RBV perspective of internationalization of emerging market firms

There is growing empirical support that the drivers of internationalization for firms from advanced economies and emerging markets are different (see Child & Rodriguez, 2005; Luo & Tung, 2007; Meyer et al., 2009). One way of testing this framework is by classifying the types of resources firms may seek abroad, e.g. via learning-by-exporting, acquisitions of foreign subsidiaries or by partnership agreements in international outsourcing. So far, only a few studies have embraced the RBV in the context of emerging economies.

Does the resource-based view of the firm offer good explanatory power for the internationalization of firms from emerging economies? This question has gained increasing attention in the recent international business literature, especially now that emerging markets and transition economies are becoming progressively more important players in the IB landscape (Aulakh, 2007; Athreye & Kapur, 2009). There are early conceptual squats that the RBV may be a good starting point to explain internationalization in emerging markets. Peng (2001) suggests that the newly arising multinationals from emerging markets can be understood from a RBV. How can we conceptually understand the connection between the RBV and internationalization of

emerging market firms? Based on the insights described above, we propose three approaches.

The first is to extend the current emphasis on strategic asset seeking with a process of how internationalization results in a new configuration of resources. The traditional approach on what distinguishes emerging market firm's internationalization strategies from those in the West focuses on the absence of ownership advantages (Child & Rodriguez, 2005; Mathews, 2002). It is argued that foreign expansion has the goal of acquiring strategic assets to 'buy' competitive advantages instead of relying on exploitation of sustainable competitive advantages and economies of scope and skill (Guillen & Garcia-Canal, 2009). In some way, such exploitative strategic asset seeking is the mirror image of the outsourcing strategies of MNEs from the West, who engage in vertical FDI to increase efficiency. The key thing is that the literature so far assumes that alliances and acquisitions are exploitative rather than explorative (Peng, 2011). However, for the new MNEs from emerging economies, what matters more is that alliances and acquisitions *augment the existing resources* in a process of exploration and experimental learning in cooperation with Western partners. Hence, in recent times, there is a shift from combining resources in a clever way to creating new bundles. In the Barney terminology, the emphasis is more on creating 'VRIO proof' competitive advantages in the global market place, rather than in the domestic market place, and to create an organizational environment and culture in which these new resource bundles dynamically result in stronger capabilities at the firm level in terms of Teece and colleagues (1997) and Bartlett and Ghoshal (1999). One example is strategies that augment country specific advantages in low cost production with innovative capabilities which result in frugal innovation. Another is to combine locational experiences with acquired technological knowledge to excel in new field such as sustainability engineering.[19]

Within an emerging market context there is some evidence that domestic firms use foreign alliances to gain resources over domestic rivals and try to build on network ties as key intangible resources (e.g. Hitt et al., 2000). A wider range of studies emphasizes the primacy of such international networks for emerging market firms so as to gain access to strategic assets (Li, 2003; Liu et al., 2009; Luo & Tung, 2007). In emerging markets, firms with managers that have foreign experience and

[19] See Column: Schumpeter in *The Economist*, 17 September 2011.

knowledge find it easier to internationalize their firms, often by leveraging their networks.[20]

Second, we have to look more closely to what specific knowledge basis creates competitive advantages for firms from emerging markets. For Western firms, there is a long Markusen-Dunning-Prahalad tradition which explains that MNE competitive advantages result from firm-specific knowledge components/assets. By contrast, firms from emerging markets rely more on country specific advantages. Central to understanding the new MNEs from emerging markets is to see that some firms are able to turn the country specific advantages into firm specific advantages by using knowledge. Hence, what matters are entrepreneurial skills and managerial knowledge to create a better value proposition with the use of country specific advantages that other firms cannot imitate. Consequently, the key drivers of internationalization in emerging markets are the access to managerial capabilities that allow the firm to create a better value proposition and business models. Successful firms in India and China are those that offer the largest value added to foreign customers by making best use of country specific advantages in terms of cheap highly skilled labor. In addition, many stories of successful entrepreneurs from emerging markets point to behavioral components of managerial capabilities and their relationships with the West, such as a (very) strong entrepreneurial orientation of the CEO or owner and a global orientation of senior management.

In general, there is only recent evidence that managerial capabilities such as knowledge, networks and experience affect internationalization for emerging economies. For instance, Tan and Meyer (2010) and Shih and Wickramasekera (2011) analyze how managerial capabilities affect internationalization. Based on a sample of Taiwanese firms Tan and Meyer (2010) find that foreign experience of managers is associated with more FDI. Shih and Wickramasekera (2011) show that managers' commitment and experience influence the export decisions of Taiwanese firms. Javalgi and Todd (2011) look at the characteristics of Indian SMEs that earn more

[20] A focus on managerial capabilities may also shred light on the prominent question in RBV research on how firms develop resources (Amit & Schoemaker, 1993; Barney et al., 2001; Arend, 2006). Another important topic in the RBV is the existence of complementarities among firm resources, a feature highlighted by dynamic capabilities (Teece et al., 1997). Firm resource do not lay idle, but require empowerment by other resource in order to reach full potential in the development process of the firm. With this respect, the deployment of resources depends on history as signified by for example organizational routines and government structures, but also on managerial capabilities and entrepreneurial attitudes. As Black and Boal (1994) concur, resources are not traits and such typology overlooks the dynamics of the creation of resources. There are vital inter-resource relationships that can be compensatory, enhancing or suppressing the unique competitive advantage of certain firm resources.

than 25 percent of sales abroad. They find a positive relationship between foreign sales and the CEO's level of education, international experience as well as the attitude towards internationalization.

A third approach is to go deeper into the role an institutional origin of social and business networks that support internationalization of firms from emerging markets. As discussed, there is a large literature that stresses that social and business networks are important drivers of internationalization of firms. For Western firms, the glue of networks is the complementarity of assets. The exploration of these complementarities often starts through social networks and over time result in business exchange networks. Networks in the foreign market come from a long evolution of inward and outward FDI which 'takes along' people living abroad. These people and firms maintain social and business ties in the home market, which provides for 'networks'. The foundation of business networks in emerging markets is frequently rooted in institutions, since the domestic institutional setting affect diasporas. It is important to understand how such institutional factors affect the internationalization of firms from emerging economies. These networks not only enable entrepreneurs to link to new knowledge pools, it also allows firms from emerging markets to combine country specific advantages by exploring competitive advantages of new resource bundles.

With respect to networks, Guillén (2000) analyzes the rise of business groups in terms of their resources and capabilities as a response to the local institutional environment. Using the RBV, Tan and Meyer (2010) examine the role managerial capabilities of business groups from Taiwan on firms' outward foreign direct investment strategies. They find that managers' international work experience is positively associated with outward FDI while manager's international education is unrelated to outward FDI. Furthermore, domestic business networks diminish the propensity of firms to undertake outward FDI. Yiu and others (2007) show that the social business ties of managers are an important driver of internationalization, but for Chinese firms find no effects of managerial capabilities on FDI. Elango and Pattniak (2007) show that international contacts and foreign partner ownership increase the share of sales for Indian firms earned in foreign markets. Prashantham (2011) looks at India software SMEs and explores the effects of managers' international networks ties on export and FDI. He finds that cross-border ties have a positive effect on the choice of higher commitment strategies.

5. Conclusion

This Chapter contributes by explaining how emerging markets firms have turned country specific advantages into competitive advantages embedded within the firm. We have connected various theoretical perspectives to establish micro foundations for the Linking-Leverage-Learning mechanism. We use the "resource-based view" of the firm to create a perspective of internationalization in emerging economies, which integrates key elements of the strategic management literature, dynamic capabilities, and the "born global" literature. The motivation for providing key elements of the conceptual model is that there is still little empirical research on such micro foundations.

Since firms from emerging markets often lack knowledge resources at the start of their internationalization process, key to understanding their success is the tapping of dynamic managerial capabilities. Where firms from developed markets rely on knowledge that creates technical, creative, and researched based competitive advantages, in emerging economies managerial and organizational talents of senior management leverage locational advantages to sustainable competitive strengths. Further, networks in foreign countries - be it social or professional - are increasingly vital to gain access to external resources and explorative cooperation. We have argued that differences across emerging economies can be traced back to historical institutional differences. This can explain the differences in the nature of FDI from emerging markets, for example why especially Indian firms are successful in building global alliances based on networks and Chinese firms are focused on natural resource seeking, due to the different nature of these diasporas networks. Lastly, managers of firms from emerging markets make excellent use of the opportunities of decoupling of the value chain, by being at the frontier of the creation of new business models that leverage VRIO proof resources.

What are the implications for managers in emerging markets? A first lesson to take away from this Chapter is that managers should focus more on how to redesign their resource bundles to create core competences at the firm level, so as to outcompete their domestic rivals in the global market place. In addition, when firms are expanding abroad the focus should be on the key question how the acquired resources help to create resources which upgrade capabilities and competences over

time, so as to build a sustainable competitive advantage. Lastly, firm managers in emerging markets should form a strategy how they connect to foreign networks, for example by actively upgrading their human resources and managerial capabilities to create international social networks which later can be tapped for international expansion.

IV. THE EFFECTS OF MANAGERIAL CAPABILITIES ON INTERNATIONALIZATION: EVIDENCE FROM INDIAN FIRMS [21]

1. Introduction

Following the rise of multinationals from emerging markets in world trade and investment, there is now a burgeoning empirical literature that aims to uncover both the factors of success of these firms and their pattern of internationalization over time (Amighini et al., 2010). The large majority of these papers investigates the traditional ownership, locational, and internalization (OLI) advantages of outward foreign direct investment (FDI), focusing predominately on firms from the Asia-Pacific region (Aulakh, 2007; Buckley et al., 2007; Dunning & Lundan, 2008; Meyer et al., 2009b; Peng et al., 2008). These studies shed light on host and home country characteristics of bilateral FDI flows at the macro level, which uncover ownership advantages and strategic motives of a representative firm (Dunning, 2000).

A more recent, smaller strand of theoretical papers building on case studies argues that firms from emerging markets do not possess traditional ownership advantages and therefore internationalize to *acquire* them through the process of linkage, leverage, and learning (LLL), mostly associated with the work of Mathews (e.g. 2002, 2006).[22] This approach has its origin in the resource-based view (RBV), for it can be argued that managerial capabilities to absorb new knowledge and leverage acquired competences play a key role in successful internationalization (Barney & Wright, 1998; Carpenter et al., 2004; Li, 2007; Yamakawa et al., 2008). Notwithstanding the theoretical underpinning, the very few empirical studies on the impact of managerial capabilities as drivers of the internationalization of firms in emerging economies find little conclusive evidence for their importance (Javalgi &

[21] This Chapter is co-authored with my supervisor Hein Roelfsema.
[22] The general LLL framework is also gaining empirical support (Chittoor et al., 2009; Sun et al., 2012). However, these papers do not focus on managerial capabilities.

Todd, 2011; Meyer et al., 2009a; Shii & Wickramasekera, 2011; Tan & Meyer, 2010; Yiu et al., 2007).

This paper takes up the challenge. Our research question is: do managerial capabilities matter for the internationalization of firms from emerging markets? After a brief review of the research context and literature, we present a conceptual model that serves to derive specific hypotheses by connecting managerial capabilities to export and FDI. In this framework, we combine insights from Johanson and Vahlne (1977, 2009) and the born global literature (e.g. Jones & Coviello, 2005; Oviatt & McDougall, 2005) in the context of the LLL perspective. After that, we explore these relations empirically using data from Indian firms. Our contribution is that in general, management resources in terms of international knowledge, absorptive capacity, and international networks are important drivers of internationalization. More specifically, with regard to different commitment modes we find that exporting activities are connected to foreign market knowledge, whereas FDI is related to managerial capabilities embedded in networks and absorptive capacity.

2. Theoretical background

Over the last decade there has been a strong surge in theoretical papers that investigate the drivers of internationalization of firms originating from emerging markets (Amighini et al., 2010; Meyer et al., 2009b; Luo & Tung, 2007; Peng et al., 2008; Yamakawa et al., 2008). The early literature on this topic was taking shape in the shadow of the ownership-location-internalization (OLI) literature and the evolutionary RBV approach. The OLI approach stresses that the key driver of internationalization is the desire to leverage core competencies that are 'owned' by the firm, which predict the 'locations' where the multinational is active, and the modes by which it enters foreign markets (internalization). In this early literature, for firms from emerging markets such ownership advantages include the ability of rapid imitation and 'frugal' innovation, the superior management of low skilled-labor intensive processes, a flexible cost structure, and the leverage of ethnic social and business networks.

However, after this phase the dominant view has become that the *lack* of ownership advantages explains the motives for internationalization of firms from emerging markets. Internationalization is a *means* through which the firm creates

ownership advantages. Although strategic asset seeking is already an important motive in the early OLI literature, as a prime motive for internationalization in emerging markets it is closely associated with the recent work of Mathews (2002, 2006), who argues that ownership advantages of emerging market firms are shaped by the interaction with foreign partners and investors through a resource linkage, leverage and learning (LLL) process.[23] As Mathews (2006, p.18) explains, emerging market firms internationalize to explore and expand "in the pursuit of resources not otherwise available" rather than from a motive of exploitation of existing resources (Peng, 2001). This more evolutionary view is also related to the Uppsala stage-model, in which the build-up of managerial capabilities in terms of foreign market experience and internationalization knowledge creates ownership advantages, which influence the firm's international commitment (Johanson & Vahlne, 1977). As with small and medium enterprises (SMEs), if firms from emerging markets lack firm specific ownership advantages at the start of the internationalization process, the build-up of managerial capabilities then explains the difference in the level of foreign market commitments of these firms over time. These insights are strengthened by the emergence of the RBV perspective in International Business (IB), which also investigates how evolutionary processes result in deeper levels of internationalization (Augier & Teece, 2009; Teece et al., 1997; Peng 2001). For firms from emerging markets, the LLL process starts with strategic alliances (link) that augment the firm's resource base (leverage), which over time sets in motion the evolutionary process of *creating* new ownership advantages (learn). Hence, instead of simply adding capabilities acquired abroad, international alliances and acquisitions provide a strong evolutionary dynamic for the expansion of managerial capabilities (Zoogah et al., 2011).[24]

[23] In Mathews (2006, p.18-20), the resource LLL process is understood as follows. Linkage refers to resource access through networks. Firms from emerging markets are latecomers who cannot rely on their own resource base, but need to acquire such competitive advantages abroad, so that an international orientation itself "becomes a source of advantage – since the opportunities through which it can expand are likely to be found in the global market, rather than in its domestic environment." Leverage refers to leverage potential of resources in terms of "how accessible such resources are – with their imitability, or transferability, or substitutability. So leverage concerns the extent that links with foreign partners provide "resources that can be leveraged." Learning relates to the organizational learning from linkage and leverage in order to become a more efficient firm through repeated exposure to new applications and processes.

[24] From a conceptual angle, some models stress that managerial capabilities related to foreign market knowledge, learning and networks are a prerequisite to international expansion (e.g. Coviello & Munro, 1997; Johanson & Vahlne, 1977, 2009; Luo, 2000) but have not so far focused on emerging market firms (e.g. Child & Rodrigues, 2005; Mathews, 2006).

From a resource-based view, over time, dynamic organizational learning creates new bundles of resources, which combine unique sets of knowledge and experience with respect to internationalization that are hard to imitate (Cohen & Levinthal, 1990; Luo, 2000, Mathews, 2006). Strategic asset seeking of firms from emerging markets is strongly influenced by the "sensing" abilities of top managers to "identify and shape opportunities" using organizational search and exploration processes (Kor et al., 2007; Malik, 2008, p. 221). Such sensing capabilities of managers arise from personal knowledge and experience. The ability to 'sense' entrepreneurial opportunities can also be attributed to the degree to which senior management is embedded in international networks. This insight is at the heart of the born global approach to SME internationalization (Jones & Coviello, 2005; Knight & Cavusgil, 2004; Oviatt & McDougall, 2005) and recently incorporated in the Uppsala model (Johanson & Vahlne, 2003). Initial managerial resource endowments in terms of networks also play a crucial role in the LLL framework, because they allow managers to connect to partners from the West, which sets in motion the dynamics of internationalization and the upgrading of managerial capabilities. The crucial mediating role that international networks and entrepreneurial skills play for firms from emerging markets is highlighted in recent studies (Filatotchev et al., 2009; Luo & Tung, 2007).

A limited number of studies empirically analyzes the effects of managerial capabilities on exports and FDI in emerging markets, and are therefore close to our research.[25] Tan and Meyer (2010) investigate how management characteristics shape FDI patterns. Based on a sample of Taiwanese firms, they find no effect of foreign education, whereas foreign experience of managers is associated with more FDI. Shih and Wickramasekera (2011) show that management commitment and experience explain the export decisions of Taiwanese firms. Yiu and others (2007) focus on the role of firm-specific ownership advantages including managerial capabilities in explaining patterns of outward FDI. They show that the networks of managers are an important driver of internationalization, but for Chinese firms they find no effects of managerial capabilities on FDI.

[25] There is ample empirical support for managerial capabilities as driver of internationalization in developed countries. To highlight a few, Reuber and Fischer (1997) find that international experience of managers allows small firms to reel in more foreign partners and internationalize quicker. In related work, Tihanyi et al. (2000) show that international experience and education of senior management results in greater international diversification of the firm. More in general, the importance of managerial capabilities was already all in Dunning.

The Indian institutional context

Export and FDI flows to and from India can be captured in three waves (Aulakh, 2007; Kumar, 2007; Pradhan, 2008). Before 1991, the Indian government engaged in promoting exports to and imports from other developing countries, so called south-south trade, often with the aim to build political alliances. Trade and investment flows were for the large part restricted to neighboring Asian countries and the Soviet Union. Early FDI was concentrated in East Africa, where inhabitants of Indian descent came to hold strong economic positions. At that time, this early outward FDI was restricted to minority stakes and greenfield investments which needed burdensome national bureaucratic approval, leading to domination of the "License Raj" (Elango & Pattnaik, 2007). During this period, the total volume of outward FDI was negligible. In the 1970s and 1980s, as a result of the Nehruvian policies of promoting tertiary education, Indian manufacturing was relatively technically advanced when compared to other developing countries. For this reason, there were limited incentives to become engaged in knowledge sharing activities through joint ventures and majority stakes. In contrast, exporting activities accelerated, especially towards newly industrializing countries in the region (Elango & Pattnaik, 2007; Kumar, 2007).

The sweeping liberalization of the Indian economy since 1991 led to a large increase in overall outward FDI (the second wave). Initially, liberalization resulted in an increase in FDI outflow towards transition economies and developing countries, although overall levels remained low.[26] During the 1990s, merchandise exports more than doubled, mainly driven by a rise in trade flows with developed markets. Also for FDI the nature and geographical orientation shifted. The lifting of restrictions made it possible to build minority stakes in Western firms, which is at the root of the LLL process. Further, the rise of the IT outsourcing sector in the beginning of the 1990s sowed the seeds for a new wave of outward FDI, in which the diaspora of Indian entrepreneurs in Silicon Valley played an important role (Hill & Mudambi, 2010; Prashantham, 2011).

The third wave is characterized by a massive rise in outward FDI from India (Aulakh, 2007; Dunning & Narula, 1996; Gaur & Kumar, 2009; Gubbi et al., 2009).

[26] Buckley et al. (2007) and Balasubramanyam and Forsans (2010) show that this is because of low effective labor costs of Indian manufacturing firms, for they combine moderate wage rates with a high level of technical skills.

The inflow of FDI in the 1990s resulted in a sharp increase in productivity, first in the IT sector and later in other areas. In addition, the presence of multinational firms resulted in knowledge spillovers so that the resource base of domestic firms expanded. Moreover, initial FDI inflows were later converted into internationally competitive stand-alone companies. Prominent examples are Honda's involvement in Hero Motors and Kansai's management of Goodlass Nerolac Paints in the manufacturing sector. In addition, traditional Indian manufacturing firms embarked on a course to seek strategic assets through outward FDI, so as to strengthen their resource base (Kumar & Chadra, 2009). Here the many examples include Aditya Birla Group, Essar Group, ITC, HCL, Marico Industries, Tata Group, and Wockhardt. During the third wave, exports continued to grow, as Indian firms secured stronger positions in international supply chains (IT services) and strengthened their competitive advantage in trade with other developing countries (chemicals, machinery, plastics, and textiles). Geographically, most FDI went towards industrialized markets like the US and Europe.[27]

Empirical studies on internationalization in India

There is a growing literature that analyzes the role of the resource base of Indian firms for internationalization. The majority of papers stresses the importance of knowledge intensive production and the absorptive capacities of a skilled workforce over home country advantages, such as factor costs and leveraged monopoly power (Chittoor & Ray, 2007).[28] Balasubramanyam and Forsans (2010) dig into the origin of competitive advantages and argue that many have their origins in the high level of education of the Indian workforce in technology intensive sectors (low effective wage rates and high absorptive capacity) and in strong international diaspora networks. In addition, there is evidence that competitive advantages can be attributed to strategic linkages (Bruton et al., 2003; Elango & Pattnaik, 2007; Pradhan, 2008; Prashantham, 2011). Bloom and Van Reenen (2010) provide an overview of management practices across 16 countries. The results show that Indian firms are on

[27] As we argue below, the internationalization of India firms is not merely driven by the fact that although the domestic market is rapidly growing and is relatively large, the local market for higher end products remain in its infancy (Gaur & Kumar, 2009). It is mainly the drive to acquire unique resources and gain ownership advantages through a process of linking, leveraging and learning. Therefore, for India firms international markets are a powerful complementary to the local market to enable scale economies and learning.

[28] In the more general literature, it is stressed that the internationalization of firms (for developed markets) is strongly driving the skills, knowledge and competencies of management (e.g. Dunning, 2000).

average not well-managed and rank at the bottom, just before China and Greece. Indian firms receive the lowest management score for monitoring activities, although simple interventions can increase management practices and performance (Bloom et al., 2011).

There are only a few studies that investigate the role of managerial capabilities for the internationalization of Indian firms. Kumar (2007) argues that firm age captures accumulated production experience which is a source of learning and absorption of know-how. He finds that such learning capabilities have a positive effect on outward FDI. Nadkarni and Herrmann (2010) investigate the role of the CEO personality and show that it affects the strategic flexibility that is required for internationalization and the ability to adapt quickly to environmental changes. Javalgi and Todd (2011) look at the characteristics of SMEs that earn more than 25 percent of sales abroad. They find a positive relationship between foreign sales and the CEO's level of education, international experience as well as the attitude towards internationalization. Prashantham (2011) looks at India software SMEs and explores the effects of management's international networks ties on export and FDI. He finds that cross-border relationships have a positive effect on the choice of higher commitment strategies, however he does not include other capabilities of the senior management to explain internationalization.

Close to the empirical strategy of our study are Pradhan (2004) and Elango and Pattnaik (2007). The latter show that international contacts and foreign partner ownership increase the share of sales for Indian firms earned in foreign markets. Pradhan (2004) uses a derived proxy for managerial capabilities constructed as the residual of a profit function estimation. He explicitly recognizes that the residual is likely to be influenced by omitted factors and measurement errors, so that it should be used with caution. He finds a significant positive effect of managerial skills on FDI.

Because we only focus on internationalization drivers, to wrap up this section we like to highlight a few studies that find that internationalization has a positive effect on firm performance. For example, Gaur and Kumar (2009) stress the role of business group affiliation on the performance of Indian firms. They suggest that the degree of internationalization explains firm performance, but they do not investigate a structural model to analyze the determinants of internationalization. Gubbi and colleagues (2009) analyze the effects of the rapid rise in outward FDI from Indian

firms. They find that especially those acquisitions targeted to 'The West' create most shareholder value. Chittoor and others (2009) look at the Indian pharmaceutical industry and find an indirect effect of internationalization on performance through networks formation.[29]

3. Conceptual model and hypothesis development

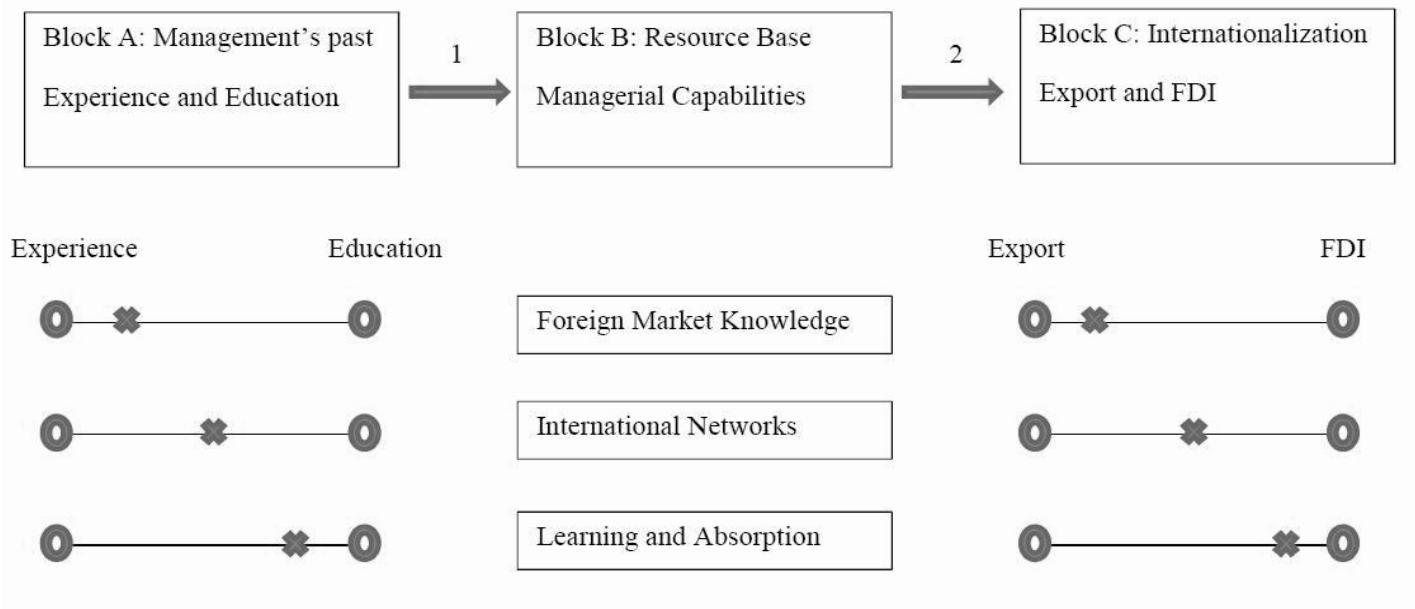
In the previous section we argued that managerial capabilities are a key factor in driving internationalization of manufacturing firms from emerging markets. Since such firms lack clear ownership advantages in terms of strategic assets, international success relies on the capabilities of senior management.[30] Before we move to the empirical results, we build a simple conceptual model to systematically dig deeper into the relationships between managerial capabilities and internationalization, so as to construct hypotheses. Figure 1 depicts the conceptual model.

The origin of the capabilities of the firm's managers (Block A, Figure 1)

Internationalization provides the firm with organizational challenges in terms of scale, complexity, and diversity. In our model, firms from emerging markets do not start-off with the same level of managerial resources to confront these challenges. The initial capabilities of senior management differ with respect to their experience and educational background. The most studied characteristics of senior management with respect to internationalization is prior work experience of managers in multinational enterprises. Early work on the upper echelon theory (Hambrick & Mason, 1984) shifted the attention from CEO characteristics to the importance of attributes of top managers. Especially with respect to exporting, as increases in scale of production require more efficient planning, prior experience in managerial positions in multinational firms are helpful to confront such challenges.

[29] Bloom and others (2011) show that management practices have a significant impact on the performance of Indian establishments in the textile industry, but do not focus on internationalization.
[30] Not only do managers make the final decisions on entry mode strategies, but their capabilities will affect the optimal choices (Kedia & Mukherji, 1999; Zahra et al., 2000). There is a limited number of studies that analyzes how managerial capabilities affect entry mode choices (see Herman & Datta, 2002; Ellis, 2008; Meyer et al., 2009a, 2009b; Westhead et al., 2001).

Figure 1: Conceptual model



Note: In the lower left and right panels, the crosses on the two dimensional axes for "Experience-Education" and "Export-FDI" indicate the relative importance of one dimension relative to the other, ceteris paribus. That is, there are obviously other dimensions important such as age, risk attitude or locational variables, but these are not discussed here.

In addition, contacts with foreigners through overseas education give managers an advantage in dealing with partners abroad (Barney & Wright, 1998). Such education trains managers to deal with complex problems that are not experienced in daily business activities and gives them a sense of how to deal with foreign partners and cultures. This helps when firms become engaged in FDI, in that the new diversity of the business environment requires managers to be able to adjust to these changes and react with innovative practices. All in all, prior experience gives managers an operational and tactical edge, whereas foreign business education creates 'types' that can excel in strategic positioning of the firm and effectively work with foreign partners (Christmann, 2000).

Bloom and others (2011) show that managers who can build on inherited administrative excellence and superior past organizational routines can improve the performance of the firm. They argue that good management is a resource that diffuses slowly across firms, and is therefore difficult to imitate (Luo, 2000). For this reason, experience and education of the firm's management capture a significant part of present managerial capabilities.

Experience and education and managerial capabilities (Block B, Figure 1)

This block describes more precisely how prior experience and education create unique resource bundles that are instrumental for internationalization. Based on the literature review in the previous section, we highlight two core classes[31] of capabilities that drive export and FDI.

Superior foreign market knowledge and operational excellence

A large literature argues that patterns of internationalization are a sequence of gradual commitments towards foreign markets. These commitments are the result of the interplay between psychic distance, increases in foreign market knowledge, and experimental operational learning. When senior management has a foreign education or prior experience in an international managerial setting ("a global mindset"), it can be argued that their psychic distance towards foreign markets in their present role is lower (e.g. Ellis, 2008; Kedia & Mukherji, 1999; Kogut & Singh, 1988; Luo, 2000;

[31] There are other subdivisions of managerial capabilities to be found in the management literature, however, the division we use is rather standard in the field of international business, see e.g. Bloom and others (2011), Hambrick and Mason (1984), Tan and Meyer, (2010), and Yiu and colleagues (2007).

Westhead et al., 2001). To the left of the block showing foreign market knowledge, we show a scalar that indicates which of the two elements contribute most to this item. A common finding is that foreign market knowledge and operational excellence are connected to (practical) experience more than to (theoretical) business education (e.g. Johanson & Vahlne, 1977; Sapienza et al., 2006).

Access to international social and business networks and learning

Following the well-established literature on the "born global" phenomenon, it is argued that social and business networks facilitate internationalization of firms from emerging markets. This literature shows that firms of which the management has no prior experience can still quickly internationalize through the network of the founders (Coviello & Munro, 1997). There are several reasons for this, which include the ability to share complementary resources with firms from developed countries, as well as to leverage foreign contacts when selling and investing abroad. In terms of the scalar to the left, networks in foreign markets originate from both education abroad as well as from prior managerial experience in an international setting (see in general Johanson & Vahlne, 2009).

As manufacturing firms in emerging markets do not start-off with strong ownership advantages, they rely on the ability to learn from foreign partners, customers, and investors. Hence, the absorptive capacity of the firm – the ability to take up new knowledge and put it to use – is a crucial capability for internationalization (e.g. Cohen & Levinthal, 1990; Meyer et al., 2009a; Teece et al., 1997). Managers with more experience and higher levels of education are more effective learners in an international context – not in the least owing to better vocational skills – so that they are able to absorb new insights and transform them into improved business practices (e.g. Barkema & Vermeulen, 1998; Luo, 2000; Sun et al., 2012). Especially when firms have to integrate external strategic assets, such learning and absorption by senior management is vital. In terms of the scalar to the left, the ability of learning is indicated mostly by the manager's educational level and orientation, for this is often a reflecting practice on issues of increased complexity and diversity that surpass prior experience (Christmann, 2000; Szulanski, 1996).[32]

[32] In a Western firm's context, a good example of such process comes from Colgate, which recruits graduates students who obtained a MBA from the US, but additionally master at least one foreign language, have lived abroad, and preferable have some business experience. Colgate sends these new hirers to intensive international traineeships lasting two years. The company does not send foreign-

Internationalization (export and FDI)

The level of internationalization of the firm is commonly expressed in terms of whether and how much the firm exports and whether it is engaged in FDI. Higher levels of internationalization are characterized in two ways. First, firms that earn a larger share of revenues through exports or have a higher number of foreign affiliates are considered to be more internationally orientated. Second, FDI is a higher commitment of the firm's resources when compared to exporting, so that it informs us on the extent of internationalization of the firm.

To shed light on the relative importance of the three identified classes of managerial capabilities for the level of foreign market commitment (see Figure 1), we are helped by the fact that foreign business education and managerial experience in theory have a rather different effect on these capabilities. In Figure 1, as can be seen through the scalars in Block C, experience in dealing with foreign markets has a stronger effect on (practical) knowledge about foreign market conditions and administrative issues with regard to internationalization of the firm (e.g. Javalgi & Todd, 2011; Johanson & Vahlne, 2009; Westhead et al., 2001). In addition, prior experience in multinational firms fosters a global mindset of senior management, which translates into lower psychic distance to enter foreign markets. By contrast, foreign business education is less practical than experience in the day to day dealing with exporting to foreign markets, but does create a capacity for learning and absorption when on the job challenges can be connected to general academic managerial concepts (Ellis, 2008; Kedia & Mukherji, 1999; Li, 2007; Zahra et al., 2000).

Hypothesis building

In our model a stronger resource base of international managerial capabilities results in higher levels of exports and more foreign subsidiaries. However, we are also interested to explain *in what way* the various managerial capabilities are associated with export and FDI. Specifically, as presented in Figure 1, we expect that each of the managerial capabilities load differently into the internationalization strategies, see the scalars to the right. As can be readily observed, there is a pattern in the scalars

born trainees to their home countries, but to third countries to help building "a large international cadre of managers with multinational experience" (Luo, 2000: 362).

that connect prior experience and education to internationalization. Prior experience is connected to exports, whereas foreign education is associated with FDI.

To start, foreign market knowledge and psychic distance primarily facilitate exporting. Prior work experience in junior positions in MNEs exposes managers to the complexities of international trade and provides them with practical knowledge of internationalization. Therefore, such 'learning by doing' in past positions makes Indian managers more effective in low international commitment modes, but does not necessarily provides them with capabilities to set up and manage establishments abroad (see for evidence Filatotchev et al., 2009; Nadkarni & Herrmann, 2010; Reuber & Fischer, 1997; Tihanyi et al., 2000).

Hypothesis 1: Prior international business experience is positively related to internationalization, and is mostly connected to lower commitment modes (export).

In emerging markets, the trajectory of outward FDI is of a different nature when compared to firms from developed economies (e.g. Child & Rodrigues, 2005; Gaur & Kumar, 2009). In our model, internationalizers are firms that have high learning capabilities and of which senior management has ample 'weak ties' abroad to link and leverage. The reason is that deeper commitment modes often involve the reconfiguration of strategic knowledge-intensive assets acquired through the FDI process. In terms of the scalars, we argue that experience in MNEs as well as foreign business education equally contributes to the ability of firms to leverage foreign business networks. Foreign business education contributes predominantly to stronger absorptive capacities at the senior managerial level and facilitates quicker learning at the organizational level (Amighini et al., 2010; Balasubramanyam & Forsans, 2010; Brouthers et al., 2008; Bruton et al., 2003; Javalgi & Todd, 2011; Prashantham, 2011; Yiu et al., 2007).

A foreign business education not only gives managers broad academic knowledge but implies that the managers have exposure to living in a foreign country (see Tan & Meyer, 2010). The upper echelon theory (e.g. Hambrick & Mason, 1984) explains that managers with foreign business education have entrepreneurial global mindsets (Kedia & Mukherji, 1999) and therefore are more inclined to internationalize. A foreign education also facilitates the build-up of business links

abroad, which may proof to be a precondition for deeper foreign commitment (Carpenter et al., 2004; Herrmann & Datta, 2002; Weerawardena et al., 2007) for emerging market firms. Such foreign ties make it easier for managers to find foreign partners, while deeper absorptive capacities of senior management result in faster learning from such cooperation. Therefore, we expect that foreign business education will explain the variation in deeper commitment modes, because these require greater absorptive capacity to take advantage of international cooperation and consequent learning.

Hypothesis 2: Foreign business education is positively related to internationalization, and is mostly connected to higher commitment modes (FDI).

4. Methodology

Sample

The data are from the 2009 EBRD-World Bank Management, Organisation and Innovation (MOI) survey. As the primary focus is on the relation between managerial capabilities and internationalization of Indian establishments, the major advantage of this dataset is that it includes detailed information on characteristics of the firm's management as well as export, and FDI. Out of 200 observations in the MOI dataset, we are able to construct a dataset consisting of 129 manufacturing firms for which we can link managerial capabilities to internationalization.[33]

The firms employ on average 1,077 permanent employees, with a median of 380 workers. More than 95 percent of the firms are older than five years, are privately owned, and the majority is located in the Western part of India. Most firms are in the textile industry (about one-third); the chemical, machinery, and metal industries each have a share of around ten percent.

Dependent variables

[33] At each establishment, two managers with different responsibilities are interviewed. The total sample in the MOI survey consists of 200 manufacturing firms from India. Due to missing values, in our study 71 observations are dropped; missing values analysis shows no difference between the total MOI sample and our subsample. The result is a collective of observations is a stratified sample based on firm size, industry and regional characteristics.

Exports: In the survey the managers are asked the following: "In the fiscal year 2008, which of the following was the main market in which this establishment sold its main product?" The answer categories are: 1 = Local (main product is sold mostly in the same municipality where establishment is located); 2 = National (main product sold mostly across [the] "country" where establishment is located); 3 = International (main product sold mostly to nations outside country where establishment is located). We construct a dummy variable that takes the value "1" if the firm indicates that its main market is 'International' (main product sold mostly to nations outside India). Since we assign a value of "1" to our export dummy when firms are in category '3', we classify firms as exporters when they sell a major share of their production abroad. This means that some firms that in our classification are grouped as "not exporting" may sell a part of their production abroad and may potentially be large exporters in volume. Qualitatively, our dummy indicates whether domestic production of the firm is focused on exporting the product. In our sample, 14 percent of the firms report that their sales are mainly international and are thus counted as 'exporters'. Clearly, to have more variation in the dependent variable, we would have liked to have more detailed information on the volume of sales so as to construct a continuous measure for exports.

Foreign Direct Investment (FDI): We construct a dummy variable which shows whether the firm has establishments abroad. In the survey the managers are asked: "What is the total number of establishments that the firm has abroad?" In our sample, 23 percent of the firms indicate that they have one or more than one establishments abroad and are classified as engaged in FDI. The data allow us to make a numerical dependent variable for FDI. However, because it is a crude count variable in the MOI sample, we cannot say much about the importance of the number of foreign establishments for the individual firm.[34] We recognize that the bar we place in classifying exporters is very high, whereas the bar on being included in the FDI group is low and that we measure them differently. Hence, when we analyze the effects of managerial capabilities on exports and FDI, we have to keep in mind that in our setup we can only qualitatively compare firms whose main activity is exporting with those who are (also) engaged in FDI. To justify why we place a low hurdle on classifying firms as foreign investors, note that in the theoretical literature FDI is

[34] In Appendix 2 we use the count variable "FDI intensity" as the dependent.

seen as a deeper commitment mode than exports, so that placing high thresholds on FDI would substantially reduce the variation of the sample as the number of firms classified as engaged in FDI shrinks rapidly.

Explanatory variables

A contribution of the paper is to provide a foundation for the proxies of the various managerial capabilities. Following the theoretical framework, we argue that managerial capabilities are determined by a combination of experience and education. With respect to internationalization, these capabilities come through international experience and (foreign) business education.[35] The MOI dataset provides information on the educational background of senior management and their prior experience in multinational firms (gained outside the firm). Certainly, at the firm level there is overlap between experience and education, see the descriptive statistics and correlations in Table 1.

Multinational experience: International work experience is an important learning by doing channel in which managers gain practical know-how of dealing with foreign markets and international transactions. In the conceptual model we argue that prior multinational experience in other firms creates a more practical knowledge base about foreign markets. In order to capture managerial capabilities related to such experience, we obtain a variable *Multinational Experience (MNX)* that measures the share of managers with prior work experience in a multinational enterprise (e.g. Reuber & Fischer, 1997; Tan & Meyer, 2010). This variable proxies for recent international experience of the senior management. Specifically, managers indicate the share of managers in their firm who "worked in a multinational firm prior to joining". On average, this share is 32 percent (SD = 0.31).

Domestic Business Education (DBE): To capture managerial coordination and learning capabilities, we have data on the share of senior management with a MBA from

[35] A common method to differentiate managerial capabilities across firms is to let senior managers self report on psychic distance, overseas business ties and learning capabilities. A more neutral way is to measure directly observable characteristics of senior management of which – on the basis of a theoretical model – we can make plausible that they affect the level of the managerial capabilities in a systematic way. A disadvantage of this approach is that in practice experience and the level of education are imperfectly mapped into a level of managerial capabilities of the firm. It is widely recognized that finding proxies for the resource based view items is notoriously difficult (e.g. Peng, 2001).

India. Although such MBAs may not have a specific focus on international business, they do provide managers with capabilities to run firms more efficiently and the ability to absorb new information (Bloom et al., 2011). As we know from the literature that higher productivity within the industry is correlated with a deeper commitment to internationalization, we propose that higher degrees in business education of senior management enable coordination and facilitate more efficient production, which result in the firm's ability to handle a higher level of foreign market activity. On average, the ratio of managers with an Indian MBA is 26 percent (SD = 0.26).

Foreign Business Education (FBE): In the conceptual model a foreign business education provides managers with academic knowledge as well as mental exposure to living in a foreign country, which facilitate internationalization (see Tan & Meyer, 2010). There are two potential mechanisms through which a foreign business education may spur international activities in working life. First, managers with foreign MBAs have an entrepreneurial global mindset and therefore tilt towards an international strategic orientation of the firm. Second, a foreign education gives managers access to business networks abroad. We deploy the dummy variable *FBE*, which indicates the presence of managers with a foreign MBA in the senior management. On average, 14 percent of the firms has at least one manager who obtained a MBA from abroad.

Table 1: Summary statistics and correlations

	mean	s.d.	1	2	3	4	5	6	7	8	9	10	11
Dependent variables													
1. EXPORT	0.14	0.35											
2. FDI	0.23	0.42	0.36***										
Managerial capabilities													
3. Multinational Experience	0.32	0.32	0.07	0.18*									
4. Domestic Business Experience	0.26	0.25	0.02	0.12	0.29**								
5. Foreign Business Experience	0.13	0.34	0.04	0.22**	0.10	-0.02							
Control variables													
6. Best Practices	3.82	0.68	0.29***	0.12	-0.08	0.13	0.00						
7. TECH	1.18	1.16	0.23**	0.28***	0.08	0.16*	0.22*	0.34**					
8. UNI	32.67	25.18	-0.02	0.12	0.20**	0.09	-0.11	-0.06	0.08				
9. ASSET	3.15	0.98	0.26***	0.01	-0.03	0.03	-0.06	0.11	-0.00	-0.03			
10. MONOP	0.48	0.50	0.02	0.06	-0.09	-0.00	0.04	-0.05	0.11	-0.21**	0.14		
11. SIZE	6.03	1.24	0.21**	0.32**	0.03	0.14	0.04	0.29**	0.31**	0.21**	0.06	-0.01	
12. GROWTH	0.19	0.15	0.04	0.13	-0.08	-0.14	-0.00	0.11	0.12	-0.15	-0.09	0.05	-0.10

Note: *** p<0.01, ** p<0.05, * p<0.10. Not presented here are several control variables. For example, family is not significantly correlated with any of the above variables. At a ten percent significance level the dummy 'urban' is positively correlated with FDI, and technology, and negatively correlated with monopoly power. At a five percent significance level the dummy for the Western region is positively correlated with asset specificity, and university intensity, and negatively correlated with MBA, MBA abroad, and firm size.

Controls: All regressions use a standard line-up of control variables that are, according to theory, potentially associated with internationalization (e.g. Chittoor et al., 2009; Elango & Pattnaik, 2007; Yiu et al., 2007). We control for firm size, firm growth, family ownership, skill intensity of lower level workers, technological capabilities, asset specificity and competitive environment (see Appendix 1 for details). Also, a measure of best managerial practices is included as control. In addition, we have sector dummies for textiles, machinery, and metals. Further, we use an indicator that shows whether firms operate in a large urban area and use regional dummies, where firms from the Western part of India are treated as baseline because this is the biggest reference group.[36]

Estimation Strategy

Because the dependent variables are measured as dummy variables, we apply logistic regression techniques with robust standard errors.[37] The following models in equation (1) and (2) are estimated, where the managerial capability variables are included separately and combined, where *DBE*, *FBE* and *MNX* refer to the individual managerial capability items.

(1) $\text{EXPORT} = \beta_0 + \beta_1 DBE + \beta_2 FBE + \beta_3 MNX + \beta_k Controls + \varepsilon$

(2) $\text{FDI} = \gamma_0 + \gamma_1 DBE + \gamma_2 FBE + \gamma_3 MNX + \gamma_k Controls + \nu$

5. Results

Table 2 shows how managerial capabilities are associated with exports. The results in Columns 1 to 6 show that prior multinational work experience (*MNX*) is positively related to exporting. The results further suggest that there is no relationship between business education (*DBE* and *FBE*) and exports - although all managerial education items have positive coefficients. There is also no significant association between best practices and exports. For each managerial capability we calculate the odds ratio

[36] To check robustness, other control variables are used in unreported estimations. These include the age of the firm (which correlates with firm size), age of employees, indicators of CEO ownership (correlates with family business), multiple owners and share listed (which correlates with firm size and firm age). The main findings are not affected by the inclusion of these variables and most enter insignificantly in the logistic regressions.

[37] The linear versions as presented in the equations are obtained by taking a logit transformation. Using log properties, the estimations for internationalization are confined between zero and one. In this way the coefficients can be interpreted in terms of log odds.

based on the average odds ratio across each specification. The odds ratio is a measure of effect size and can be interpreted as the economic significance of the coefficients. As a rule of thumb, odds ratios above unity suggest a substantial impact. The odds ratios for *DBE*, *FBE*, and *MNX* are 0.64, 0.18 and 1.73 respectively. These findings also show that indeed only managers' prior multinational experience matters for exports. Based on the Wald statistic, the findings in Columns 5 and 6 show that managerial capabilities combined are positively related to exports, clearly driven by multinational experience. In conclusion, these findings support Hypothesis 1.

Table 3 shows how managerial capabilities are associated with FDI. The results show that foreign business education explains FDI. From Column 1 we conclude that there is no significant relationship between *DBE* and FDI ($p = 0.16$), as is mirrored in Columns 5 and 6. In Column 7 there is a significant association between *DBE* and FDI. In Column 2 we find a significant and positive relationship between *FBE* and FDI ($p < 0.05$). Even when controlling for other managerial capabilities, foreign business education stands out in relationship to FDI. The outcomes in Columns 5 to 7 demonstrate the importance of *FBE* in connection to FDI, even after taking best practices and export into account. Column 3 shows that *MNX* is positively related to FDI ($p < 0.10$), but is insignificant the other specifications which include additional managerial capabilities. Furthermore, there is no significant association between best practices and FDI. We find that in the full model specification the foreign business education is associated with FDI, whereas there is no marginal effect of the other variables. Nonetheless, the odds ratios for *DBE*, *FBE*, and *MNX* are 1.65, 1.51 and 1.82 respectively, thus suggesting an economically meaningful impact of each managerial capability on FDI. In the robustness checks based on count data of the total number of foreign subsidiaries, these outcomes do not change when we use FDI intensity as dependent variable (see Appendix 2). We conclude that the results support Hypothesis 2.

Table 2: The relationship between managerial capabilities and exports

	1	2	3	4	5	6
Managerial capabilities						
Domestic Business Education	0.64				0.08	-0.02
	[1.29]				[1.48]	[1.48]
Foreign Business Education		0.18			-0.14	-0.02
		[0.83]			[1.01]	[1.05]
Multinational Experience			1.73*		1.76*	1.99*
			[1.01]		[1.07]	[1.11]
Control variables						
SIZE	0.62**	0.60***	0.54**	0.49**	0.53**	0.41
	[0.25]	[0.23]	[0.26]	[0.25]	[0.26]	[0.28]
TECH	0.37	0.39	0.39	0.32	0.40*	0.30
	[0.30]	[0.30]	[0.29]	[0.33]	[0.27]	[0.34]
UNI	-0.01	-0.01	-0.00	-0.01	-0.00	-0.00
	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]	[0.02]
ASSET	0.91***	0.91***	1.01***	0.79***	1.01***	0.88***
	[0.33]	[0.33]	[0.32]	[0.30]	[0.32]	[0.30]
MONOP	0.16	0.15	0.29	0.19	0.30	0.39
	[0.61]	[0.60]	[0.63]	[0.65]	[0.64]	[0.69]
GROWTH	0.62	0.51	1.23	0.30	1.23	1.08
	[1.69]	[1.57]	[1.84]	[1.63]	[1.88]	[1.90]
FAMILY	-0.58	-0.59	-0.58	-0.42	-0.58	-0.40
	[0.61]	[0.61]	[0.59]	[0.73]	[0.59]	[0.72]
Best Practices				0.52		0.64
				[0.51]		[0.49]
Summary statistics						
McFadden R^2	0.24	0.23	0.25	0.24	0.26	0.28
LR Test	24	24	26	30	26	32
Ramsey RESET	0.02	0.02	0.06	0.02	0.06	0.06
F-test joint sig. *man. cap.*					3.11*	4.33*

Note: n=129. Logistic regression results with robust standard errors in brackets, *** p<0.01, ** p<0.05, * p<0.10. Several model diagnostics are reported. The McFadden R^2 or better known as the Pseudo R^2 provides a measure of the goodness of the fit of the model, comparable to the (adjusted) R^2 in OLS regressions. The deviance likelihood-ratio (LR) statistic compares the estimated model with an intercept model based on the simple proportions of the included variables. There can be additional specification error if there are non-linear effects of the explanatory variables such as quadratic terms or interactions. A replication of the Ramsey RESET test for misspecification (e.g. omitted variable or non-linearity) is completed since this test is not available for logit specifications. To detect possible misspecification a regression is performed on the (predicted) residuals (uhat) and their squared terms ($uhat^2$). The significance of the squared residual terms suggests that there may be misspecification present in the model, as such the *p*-value of this coefficient is given as "Ramsey RESET" (in Stata: "linktest"). The Wald statistic tests whether the managerial capability items are jointly significant. We also estimated a standard OLS model which yields comparable results with respect to the significance of our key variables. All VIF scores are lower than 2.75 suggesting there are no multicollinearity problems (mean VIF = 1.48; tolerance values are between 0.36 and 0.86).

Table 3: The relationship between managerial capabilities and FDI

	1	2	3	4	5	6	7
Managerial capabilities							
Domestic Business Education	1.65				1.66	1.67	2.10*
	[1.23]				[1.13]	[1.13]	[1.21]
Foreign Business Education		1.51**			1.51**	1.48**	1.92***
		[0.76]			[0.77]	[0.75]	[0.72]
Multinational Experience			1.82*		1.31	1.27	0.89
			[0.94]		[1.02]	[1.01]	[1.13]
Control variables							
SIZE	0.82***	0.86***	0.76***	0.84***	0.87***	0.89***	0.90***
	[0.26]	[0.26]	[0.25]	[0.25]	[0.28]	[0.28]	[0.28]
TECH	0.38*	0.37*	0.40*	0.47**	0.31	0.34*	0.31
	[0.21]	[0.22]	[0.21]	[0.21]	[0.20]	[0.20]	[0.23]
UNI	0.01	0.01	0.02	0.01	0.02	0.01	0.02
	[0.01]	[0.02]	[0.02]	[0.01]	[0.02]	[0.02]	[0.02]
ASSET	-0.11	-0.06	-0.05	-0.02	-0.06	-0.03	-0.29
	[0.24]	[0.24]	[0.23]	[0.22]	[0.24]	[0.24]	[0.27]
MONOP	0.79	0.65	0.92*	0.70	0.89*	0.86	1.03*
	[0.54]	[0.53]	[0.57]	[0.53]	[0.55]	[0.57]	[0.61]
GROWTH	2.36	1.24	2.89*	1.92	2.25	2.31	2.11
	[1.73]	[1.60]	[1.81]	[1.66]	[1.77]	[1.79]	[2.16]
FAMILY	0.05	0.06	-0.09	-0.06	0.06	0.05	0.36
	[0.61]	[0.59]	[0.57]	[0.58]	[0.60]	[0.60]	[0.73]
Best Practices				-0.33		-0.21	-0.53
				[0.37]		[0.39]	[0.42]
EXPORT							2.49***
							[0.66]
Summary statistics							
McFadden R^2	0.25	0.27	0.27	0.24	0.30	0.30	0.38
LR Test	35**	37***	37***	33**	42***	43***	53***
Ramsey RESET	0.13	0.27	0.42	0.13	0.49	0.55	0.58
F-test joint sig. *man. cap.*					6.74**	7.95**	8.06**

See notes table 2. All replicated VIF scores are lower than 2.75 suggesting there are no multicollinearity problems.

So far the literature on internationalization of emerging market firms is dominated by the strategic OLI approach. Certainly, for large multinational firms this rational choice framework captures most of the arguments associated with internationalization in emerging economies. However, with the emergence of new, often mid-sized firms, an evolutionary approach that makes use of insights from the resource-based view of the firm adds new understanding to the process of internationalization. For these firms, foreign expansion can best be explained as a logical consequence of the (dynamic) capabilities of senior management, and not in the first place as a strategic decision by its management.

6. Conclusion

This paper is one of the first empirical studies in the context of emerging markets that tests the impact of the firm's resource base on internationalization. More specific, we find that managerial capabilities are a key determinant of differences in internationalization in India. In the conceptual model, we argue that experience in multinational firms prior to the current job proxies for foreign market knowledge needed for low commitment modes of internationalization. Our empirical results confirm that international experience is indeed associated with exports. Foreign business education points to learning capabilities of senior management and the absorptive capacity of the organization, which are especially important for the osmosis of strategic assets acquired abroad. In addition, foreign education of senior management captures the ability to leverage international networks which are a prerequisite for deeper commitment modes. We find that managers with foreign MBAs choose deeper commitment modes such as FDI, and not low commitment modes such as exports.

Unquestionably, there are things to be desired for. Two common methodological issues that arise in survey data are potential reverse causality (in our case international firms attract managers with foreign education and experience) and self-selection (managers with experience and foreign education look for jobs in international firms), which are notoriously difficult to filter out in cross-sectional data – although our careful inclusion of controls mitigates these problems. A second limitation is that we only have indicator variables of internationalization and therefore limited variation in the dependent variables. Clearly, continuous measures

of export and FDI would improve the estimation results (see Appendix 2). Further, considering a larger set of entry modes such as minority acquisitions and joint ventures would provide more details on how managerial capabilities affect internationalization.

A slightly augmented punch line of the paper is that managerial capabilities are becoming more important when firms in emerging markets transcend locational advantages to dynamically constructed firm-specific advantages. Since firms from emerging markets often lack knowledge resources at the start of their internationalization process, key to understanding their success is the tapping of dynamic managerial capabilities. Our study suggests that experience and foreign education are required as complements to improve managerial practices that increase firm performance. Whereas firms from developed markets rely on knowledge that creates technical, creative, and research-based competitive advantages, in emerging economies managerial and organizational capabilities are key to understanding the success of internationalization at the level of the firm.

Appendix 1

SIZE: The log of the number of permanent employees is used (e.g. Yiu et al., 2007).

TECH: To account for the firm's overall technological and innovative capabilities (e.g. Chittoor et al., 2009; Pradhan, 2004; Tan & Meyer, 2010; Yiu, et al., 2007) we construct a technology scale based on four measures. A firm has greater technological capabilities if the firm (i) recently launched new products, (ii) invests in research and development (R&D) defined as creative work undertaken systematically to increase firm knowledge, (iii) holds any nationally registered patents, and, (iv) has patents abroad. In total, 41 percent launched new products, 42 percent is engaged in R&D, 27 and 8 percent have patents in India and abroad respectively. These four indicators are summated (Cronbach's alpha = 0.57). Notice that a factor analysis also confirms the unidimensionality of the technological capabilities scale and suggests similar rotated factor loadings to each item, which justifies the use of a summated scale with equal item weights.

UNI: A measure of university intensity is incorporated which measures the ratio of non-management employees with a university degree. This variable is also of interest because of the relatively highly educated workforce in Indian manufacturing firms (Jalgavi & Todd, 2011).

ASSET: At the product level we aim to control for asset specificity. The following question was addressed to the managers: "if you closed, how long would your main customers take to find a new supplier?" The answers are scored as follows: 1 = a day or less, 2 = more than a day, less than a week, 3 = more than a week, less than a month, 4 = a month or more, and 5 = never (it would be impossible to replace). As such, our asset specificity variable refers to the ease at which the firm can be replaced.

MONOP: An indicator represents the lack of fierce competition if the firm faces less than five direct competitors in the product market (e.g. Elango & Pattnaik, 2007).

GROWTH: The firm's growth rate is measured by the percentage change in permanent employees over last the three years (e.g. Chittoor et al., 2009; Yiu et al., 2007).

FAMILY: Family owned businesses are an integral part of the Indian economy. An indicator for family ownership is obtained not only because of the high frequency

but also because other studies argue that it may be related to internationalization (e.g. Peng et al., 2008).

BP: The characteristics of managers influence organizational decision making. Top capture best practices, senior employees rated the management practices of the firm on a five-point Likert scale (see Bloom & Van Reenen, 2010). Using three items in terms of "worst practices" to "best practices" for people management, operations management, and overall organizational management, a best practices scale is constructed (Cronbach's alpha = 0.88). On average, firm's managerial practices are scored a 3.87. 15 percent has "best practices" and 30 percent scores below a 3, suggesting bad managerial practices among these firms.

Appendix 2

Table A1: Relationship between managerial capabilities and FDI 'intensity'

	(1)	(2)	(3)	(4)	(5)	(6)
Managerial capabilities						
Domestic Business Exp.	3.96				3.90*	3.92
	[2.50]				[2.40]	[2.52]
		2.93**			2.80*	2.78**
Foreign Business Exp.		[1.50]			[1.52]	[1.44]
Multinational Exp.			3.93*		2.74	2.71
			[2.19]		[2.14]	[2.15]
Best Practices				-0.53		-0.12
				[0.99]		[0.96]
Control variables						
SIZE	1.53***	1.55***	1.43**	1.85***	1.53***	1.55***
	[0.55]	[0.55]	[0.55]	[0.59]	[0.54]	[0.57]
TECH	0.96*	0.92*	0.97*	1.13**	0.76	0.77
	[0.52]	[0.52]	[0.52]	[0.56]	[0.51]	[0.53]
UNI	0.04	0.04	0.054*	0.04	0.05*	0.05*
	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]
ASSET	-0.13	-0.13	0.02	-0.04	-0.05	-0.03
	[0.56]	[0.56]	[0.57]	[0.60]	[0.55]	[0.58]
MONOP	1.76	1.66	2.09	1.70	1.97	1.96
	[1.28]	[1.26]	[1.32]	[1.30]	[1.27]	[1.27]
GROWTH	3.72	2.48	4.72	2.77	4.83	4.84
	[3.79]	[3.59]	[3.90]	[3.74]	[3.84]	[3.84]
FAMILY	-0.69	-0.45	-0.97	-0.88	-0.40	-0.42
	[1.29]	[1.29]	[1.29]	[1.31]	[1.29]	[1.29]
Summary statistics						
McFadden R^2	0.15	0.15	0.16	0.14	0.17	0.17
χ^2	39.64	40.83	40.50	37.26	45.72	45.74

Note: n=129. Tobit regressions left-censored at FDI is zero. The specification here is similar to Table 3 but makes us of the heterogeneity in number of foreign affiliates where the data are censored around 0, implying that most firms do not own foreign affiliates.

Part 2

International entrepreneurship and small and medium enterprises

V. FINANCIAL CONSTRAINTS, RISK TAKING AND FIRM PERFORMANCE: RECENT EVIDENCE FROM MICROFINANCE CLIENTS IN TANZANIA [38]

1. Introduction

Microenterprises represent a large part of the economy in developing countries (De Mel et al., 2009; Masakure et al., 2008; McKenzie & Woodruff, 2008; Nichter & Goldmark, 2009). The abundance of microenterprises is often attributed to the existence of financial constraints as they hamper firm growth. Financial constraints refer to the inability of firms to obtain funds for profitable investment projects, which results in inefficient allocation of resources and decreased firm performance (Banerjee et al., 2009; Claessens & Tzioumis, 2006). Not surprisingly, many entrepreneurs from developing countries report financial constraints as a key obstacle to their daily business operations (Ayyagari et al., 2008; Beck & Demirgüc-Kunt, 2008; Dethier et al., 2011; Sleuwaegen & Goedhuys, 2002; Rijkers et al., 2010). Typically, firms that are financially constrained cannot obtain loans from banks, hold little savings, underinvest, and show poor performance. One of the reasons why many firms in developing areas face such severe financial constraints is the high risk environment in which these firms operate. Banks are unwilling to operate in these areas because their traditional loan products cannot fill the institutional voids.

To overcome this problem, microfinance has been highly popularized as an instrument to tackle financial constraints in risky environments over the past decades. The notion of giving micro-credit to the poor as development strategy was brought under public attention by Mohammed Yunus who in the late 1970s launched the successful non-profit Grameen Bank in Bangladesh (e.g. Hermes & Lensink, 2007, 2011; Karlan & Morduch, 2010; Khandker, 2005). Recently studies have attempted to analyze the effect of microfinance on firm performance (e.g. Banerjee et al., 2009; Coleman, 2006; Kaboski & Townsend, 2012; Karlan & Zinman, 2009).

[38] This Chapter is co-authored with Daan Willebrands.

In this paper we study the effects of access to finance on firm performance. By using information from a microfinance institution (MFI) we obtain a new estimate for financial constraints based on loan cycle data. We take up a suggestion by Banerjee and Duflo (2008) and argue that financially constrained entrepreneurs borrow as much as possible at the MFI in order to overcome their liquidity needs. Our focus lies on the performance of microenterprises from Tanzania with access to credit through a MFI.

Access to finance is, however, not only relevant for investment but also for coping with shocks Entrepreneurs who are financially constrained are less able to mitigate the adverse effects of a negative shock (Castro et al., 2009; Dercon, 2008; Vereshchagina & Hopenhayn, 2009). This reduces the performance of their microenterprise. The likelihood of experiencing a negative shock has to do with the external environment, but also with the degree of risk taking by the entrepreneur. Taking risks allows the entrepreneur to exploit profitable new investments, and is therefore often seen as an essential part of entrepreneurship (Begley & Boyd, 1987). But taking risks also leads to a larger probability of facing an unfavourable outcome. The willingness to take risk depends to a large extent on the attitude towards risk by the entrepreneur. The performance of microenterprises is thus influenced by the (lack of) available coping mechanisms and the risk attitude of the entrepreneur.

So far there has been little research on the relationship between financial constraints, risk taking and firm performance. We introduce two opposing views on how the presence of financial constraints affects the impact of risk taking on firm performance. First, greater risk taking is associated with a higher probability of a large negative outcome, given that the variance in the portfolio increases with greater risk taking. Entrepreneurs who are financially constrained cannot mitigate the effect of a negative shock. Therefore, the adverse effect of risk taking on firm performance is amplified by being financially constrained. The second view holds that financial constraints inhibit entrepreneurs to take on risk in the first place, as they are unable to invest in their business. The effect of risk taking on firm performance will therefore be less pronounced. The impact of the interaction with financial constraints depends on the whether the direct effect of risk taking on firm performance is positive or negative. If the direct effect is positive, financial constraints inhibit the entrepreneur from making profitable investments. On the

other hand if the direct effect is negative, financial constraints will reduce the exposure of the entrepreneur by limiting its ability to invest in risky projects.

It is often assumed that risk taking has a positive impact on performance, as risk is rewarded in the form of a risk premium. Given that most individuals are risk averse, they need to be compensated in order to induce them to take on risk. Other explanations for risk taking by entrepreneurs have been suggested. Entrepreneurs may be overconfident about their abilities (Koellinger et al., 2007), they may have a flawed understanding of the uncertainties in the market (Kraus et al., 2012) or they may try their luck when they have an outside option available to fall back on (Vereshchagina & Hopenhayn, 2009). In such cases risk taking does not yield a risk premium and does not lead to better performance. The empirical literature finds mixed results for the effect of risk taking on firm performance (e.g. Rauch et al., 2009; Zhao et al., 2010). A small number of empirical studies suggest that the impact of risk taking on performance is negative in risky environments (Kraus et al., 2012; Tang & Tang, 2007; Willebrands et al., 2012). The risky environment of developing countries is marked by greater uncertainty as the market place is less well institutionalized, leading to investment decisions based on imperfect information and the absence of a risk premium.

Using a sample of 615 entrepreneurs who are clients of a MFI in Tanzania, we analyze the effects of financial constraints and risk taking on firm performance. The results show that financial constraints and risk taking have a negative impact on firm performance. Our empirical outcomes suggest there may be a positive interaction effect between financial constraints and risk taking on firm performance, although the effect is not significant at the standard levels. This preliminary evidence implies that in presence of financial constraints, the negative impact of risk taking is reduced. Financial constraints in general hamper firm performance, but they also mediate the negative effect of risk taking. Our analysis suggests that increasing access to finance may create larger performance heterogeneity among entrepreneurs with different risk attitudes. The results imply that increasing overall access to finance may have unintended consequences, because some entrepreneurs that are empowered by micro-credits may misuse such funding.

The remainder of the paper is organized as follows. Section 2 provides background literature on the relationship between financial constraints, risk taking and firm performance. In particular, a theoretical outline stipulates how financial

constraints and risk taking interact and affect microenterprises in risky environments. Section 3 describes our dataset and presents the estimation strategies. Section 4 gives the results and Section 5 provides findings based on matching techniques. Section 6 concludes.

2. Theoretical background

Financial constraints, microfinance and firm performance

Firms that are financially constrained have insufficient or no access to finance. Financial constraints are a significant problem for microenterprises and their business operations. Using firm surveys across 51 countries, Love and Mylenko (2003) show that countries with greater financial development have fewer financially constrained firms, suggesting that this topic is particularly pertinent in the context of developing countries (Carreira & Silva, 2010). Not surprisingly, in developing areas given the limited number of registered firms and low banking outreach, microenterprises rank financial constraints as the most important obstacle for their operations (e.g. Ayyagari et al., 2008; Cull et al., 2009; Dethier et al., 2011; De Mel et al., 2011; Rijkers et al., 2011).

Evans and Jovanovic (1989) provide a simple model to explain why financial constraints hinder entrepreneurial start-up and reduce firm performance (see also Ahlin & Jiang, 2008; Banerjee et al., 2009). In this framework, financial constraints give rise to two inefficiencies. First, entrepreneurs with high entrepreneurial abilities cannot set-up their own firm because they have too little assets and instead opt for wage labor. This mechanism has received wide empirical support (e.g. Black & Strahan, 2002; Paulson & Townsend, 2004). A second inefficiency that arises from financial constraints in the Evans and Jovanovic model is that there are firms that are willing to invest more in capital, but cannot, and underinvest which reduces the performance. Empirically this also has been confirmed (Bigsten et al., 2003; Fafchamps, 2000). Hence, financial constraints prevent firms from investing the optimal amount in their enterprises, and depress growth, productivity and firm survival (see Carreira & Silva 2010; Musso & Schiavo 2008; Parker & Van Praag, 2006). Indeed, several studies highlight that microenterprises from developing countries can potentially earn high returns (Banerjee & Duflo, 2008, 2010; De Mel et al., 2008, 2009, 2011; Grimm et al., 2011; Kremer et al., 2010; McKenzie et al., 2006,

2008; Udry & Anagol, 2006). For example, using firm-level data from 18 OECD countries, Buera and colleagues (2011) show that financial constraints have a negative effect on labor productivity. Rijkers and others (2010) find that better access to credits enhances productivity among manufacturing firms in Ethiopia. Combined, evidence suggests that entrepreneurs who can overcome financial constraints are able to improve their firm performance (Beck et al., 2006; Masakure et al., 2008; Sleuwaegen & Goedhuys, 2002).

One of the reasons why many microenterprises in developing areas face severe financial constraints is the high risk environment in which these microenterprises operate (Collier & Gunning, 1999). Substantial idiosyncratic and common risk, and, a lack of coping mechanisms lead to large fluctuations in income (e.g. Dercon, 2002; Dercon & Krishnan, 2000). Microenterprises that require insurance cannot obtain such protection because traditional banks are unwilling to operate under these conditions. The poor are often trapped in a vicious circle: generating income at a subsistence level makes it difficult to accumulate savings or other assets, which disables them either to invest in productive resources or to gain access to credit in formal capital markets (Coleman, 1999; De Weerdt, 2010). In theory, lending institutions can ask for collateral to reduce this issue, but loan collateralization is problematic in many developing areas, and especially difficult for microenterprises (Ghatak & Guinnane, 1999). When capital markets function poorly because credit contracts are not easily enforced, capital fails to reach the most productive investment opportunities, leading to lower returns for financially constrained microenterprises (Banerjee & Duflo, 2008; Dercon, 1996). The high risk environment also leads to high interest rates, due to the cost of getting loans repaid (Banerjee & Duflo, 2010; Dehejia et al., 2012). This further gives rise to financially constrained microenterprises, since investment projects with good returns are restricted by high discount rates.

Using novel lending products, microfinance institutions (MFIs) are able to overcome the problems related to the risky environment and make money available to those that are traditionally "unbankable" (no collateral, no credit history) (Armendáriz de Aghion & Morduch, 2005). Typically MFIs are designed similar to the Grameen Bank model. After entrepreneurs voluntarily form a group, the MFI grants a loan to each entrepreneur. Under joint liability, other group members co-guarantee each others' loan and are expected to meet regularly for partial instalments

of the group loan. Loans are generally due in about six months. If the group does not meet its collective responsibility to repay all of its members' loans, then each group member is denied future credit. Typically, in such a sequential lending structure the first loan has the same (small) amount for all members, and for each subsequent loan cycle, the entrepreneur is entitled to borrow a larger amount. Making groups liable for the losses of their members reduces the cost of monitoring for the lender, as entrepreneurs are supposed to be better informed and able to exert social pressure on other group members. Members are well placed to judge the creditworthiness and to observe the actions of their peers, thus mitigating the problems of adverse selection and moral hazard (Coleman, 1999, 2006; Ghatak & Guinnane, 1999; Hermes & Lensink, 2007; Morduch, 1999). In addition, entrepreneurs have an incentive to repay because in the next loan cycle they can obtain more financing (Armendáriz de Aghion & Morduch, 2005; Cull et al., 2009; Karlan & Morduch, 2010).

Microfinance may contribute to income growth by increasing investments in income generating activities and possible diversification of sources of income, which reduces the entrepreneurs' vulnerability. As argued, without access to credit, entrepreneurs can undertake only a limited number of opportunities, and as a result their firms stay smaller, grow slower and cannot improve productivity.[39] Interestingly, most empirical studies analyze the impact of microfinance on social outcomes and consumption, and, only recently, studies attempt to demonstrate its impact on firm performance (c.f. Banerjee et al., 2009; Coleman, 2006; Dupas & Robinson, 2009; Fafchamps et al., 2011; Kaboski & Townsend, 2012; Karlan & Zinman, 2009). For India, Banerjee and colleagues (2009) find no effect of microcredit on the profits of the microenterprise, but show increased investments in durable goods. For Thailand, Coleman (2006) shows that microfinance raises the number of assets held by the entrepreneur and increases sales. Kaboski and Townsend (2012) show that Thai entrepreneurs that receive microfinance increase profits and income but have lower

[39] In a framework related to the Evans and Jovanovich model, Ahlin and Jiang (2008) also apply an occupational choice model where microfinance augments the credit market to foster entrepreneurship by expanding the choice of workers who could otherwise only have subsistence wage jobs. Before the introduction of microfinance, workers are financially constrained and cannot opt out of subsistence wages to start-up their own business. The introduction of microfinance turns high ability workers into entrepreneurs, which improves their income. The reduced supply of wage labor also increases the wages of the remaining workers and hence microfinance reduces inequality. The general increase in wages lowers entrepreneurial profits and consequently may raise the attrition of unsuccessful entrepreneurs from running a "full-scale" firm with modern technologies. Microfinance can also lower long run growth, because some of the new entrepreneurs switch away from modern technologies.

asset growth rates. For Kenya, Dupas and Robinson (2009) find that access to financial services increases the level of productive investments by entrepreneurs. For Ghana, Fafchamps and colleagues (2011) show that cash grants have no effect on profits, although in-kind transfers raise profitability of microenterprises. For South-Africa, Karlan and Zinman (2009) estimate that consumer credit raises income. Given the early literature on financial constraints and the fact that microfinance is a means to reduce the entrepreneurs' financial constraints as shown in more recent research, we posit the following hypothesis:

Hypothesis 1: Reducing financial constraints has a positive effect on firm performance.

Risk taking and firm performance

Entrepreneurship and risk are two inseparable concepts in the business literature. Entrepreneurship itself is often defined by the bearing of or exposure to risk, separating entrepreneurs from employees and managers (e.g. Begley & Boyd, 1987). As a result, how entrepreneurs deal with risk and their attitude towards risk will influence the performance of their business. The theoretical economic literature often assumes that risk taking behavior of entrepreneurs has a positive effect on performance, even though the mitigation of risk by reducing the exposure to income shocks is regarded as beneficial. In the standard model, in a market where all risks are priced, and investors are generally risk averse, a portfolio with a higher risk level will lead to a higher expected return by earning a risk premium (Pratt, 1964). As such, the level of risk taking by the entrepreneur is expected to have a positive impact on performance (Cressy, 2006).

The business literature on this issue is more nuanced and suggests that risk taking is not always rewarded by a premium. Early work of Knight (1921), '*Risk, Uncertainty and Profits*', introduces a model in which the people who are willing to bear risk decide to become entrepreneur. Knight makes an important distinction between risk and uncertainty, suggesting risk can be captured by probabilities, while uncertainty remains elusive. Under uncertainty it is impossible to gain a correct understanding of the probabilities involved and to make calculated decisions on risk. This points to the presence of market failure due to uncertainty. Compensation for risk taking is therefore not priced in the market, leading to the absence of a risk

premium. Other explanations for the absence of a risk premium come from the literature on entrepreneurship personality and suggests entrepreneurs may be overconfident about their own abilities (Koellinger et al., 2007), frame the situation more positively (Palich & Bagby, 1995) or engage in less counterfactual thinking (Baron, 2000). In such cases there is no need for the existence of a risk premium.

Similarly, the empirical studies are divided over the effect of risk taking on firm performance. The entrepreneurial orientation literature stresses that risk taking is one of the most relevant factors determining firm performance (e.g. Lumpkin & Dess, 1996; Wiklund & Shepherd, 2003). In a meta-analysis of the entrepreneurial orientation framework among 51 studies, Rauch and others (2009) finds a weak positive effect of risk taking on firm performance. Zhao and colleagues (2010), however, find no significant effect of risk taking in their meta-analysis of 60 articles. The studies included in the meta-analyses show no consensus on the size, significance or even the sign of the effect of risk taking on performance. The ambiguous results may be due to the fact that different external situations influence whether the effect of risk taking is positive or negative (Baum et al., 2001). In a non-hostile environment risk taking will be associated with better firm performance, because there will be less need for uncertainty reduction (Lumpkin & Dess, 2001). In contrast risk taking has a negative effect when the environment is turbulent (Kraus et al., 2012) or when the environment is unsupportive of business (Tang & Tang, 2007). Kraus and colleagues (2012) argue that increased levels of unpredictability and dynamism lead to flawed understanding of uncertainty in the market place. This makes risk taking lower firm performance. In similar vein, Tang and Tang (2007) suggest that under uncertainty higher levels of risk taking result in lower firm performance.

The relevance of the environment may also explain the negative effect of risk taking found among entrepreneurs in developing countries. The early study by Singh (1989) shows a negative effect of risk taking on growth among small scale industrial entrepreneurs in Punjab, India. More recently, Willebrands et al. (2012) confirm this result for entrepreneurs on the markets of Lagos, Nigeria. They suggest that it is not just about taking risks or not, but confirm the idea that good entrepreneurship is associated with taking calculated risk and with reducing the exposure to risk. In developing countries, imperfect credit markets and a lack of bookkeeping, lead to decision making under incomplete information. In such cases there is no longer

necessarily a risk premium for investment projects that carry more risk. From the results of the empirical studies on the impact of risk taking on the performance of microenterprises in developing countries we derive our second hypothesis.

Hypothesis 2: Risk taking has a negative effect on firm performance.

Interaction effect between financial constraints and risk taking

In risky environments, risk taking not only has a direct negative impact on firm performance, but may also change the way in which financial constraints reduce the performance of microenterprises. We posit two key perspectives that explain this interaction between financial constraints and risk taking on firm performance.

First, entrepreneurs who are more willing to take risks have a higher chance of experiencing a large negative outcome. When entrepreneurs are also financially constrained, it is difficult for them to mitigate the negative effect of such a shock. Under this condition, the negative effect of risk taking on performance will be more severe. It is therefore expected that risk taking and being financially constrained reinforce each other's negative impact on performance. The impact of the negative interaction between financial constraints and risk taking can be especially large in developing countries, because of the highly uncertain environment where entrepreneurs may experience many and relatively substantial negative shocks. Since there are no insurance markets entrepreneurs have to rely on other means to mitigate the negative impact, but those who are financially constrained do not have excess financial capital or savings to fall back on (Dercon, 1996, 2008; De Weerdt, 2010; Rosenzweig & Binswanger, 1993). Castro and others (2009) show that with sector specific shocks which drive differences in idiosyncratic volatility, in high risk environments with poor coping mechanisms, firms are unproductive and perform worse because differences in risk translate into suboptimal investment rates.

Second, in theory being financially constrained may on the other hand also reduce the negative effect of risk taking on performance. Entrepreneurs who are unable to expand their business by making new investments, will also have to forego seemingly good, but actually unprofitable investments. As risk taking is deemed to have a negative effect on firm performance, risk takers who are unable to invest will be prevented from undertaking projects with poor returns. Hence, financial constraints throw sand in the wheels of risk taking, reducing its negative effect.

To the authors best knowledge these two opposite theoretical predictions have not yet been empirically investigated. It is difficult to quantify the non-linear effects of financial constraints and risk taking on performance, and most studies investigate these topics separately.[40] However, close in spirit is work by Masakure and others (2008) who study the determinants of firm performance in Ghana. Among the explanatory variables included is a measure of financial constraints. They estimate a deciles (quantile) regression model and show that access to finance has a negative (insignificant) impact on performance of microenterprises at the lower performance deciles, while it has a positive (insignificant) effect on the firm in the higher deciles. According to Masakure and others (2008, p. 2750) "bank credit may actually be a hindrance to improved performance for enterprises that are performing badly". They do not explain why this may be so, but we suggest that this may be because those who perform badly are also the ones who take on the most, or too much, risk. If unobserved risk taking explains the lower firm performance, then these results may suggest that risk taking entrepreneurs are protected by financial constraints. This argument would support our second line of thought, that there is a negative interaction effect between financial constraints and risk taking. Still, from a theoretical point of view there can thus both be a negative or a positive interaction effect between financial constraints and risk taking. Empirical analysis could show which effect is dominant.

Hypothesis 3: The interaction of financial constraints and risk taking has an ambiguous effect on firm performance.

3. Methodology

Context

Tanzania is among the world's poorest countries with a gross domestic product per capita (in PPP) of $1.423. In 2007, the poverty headcount ratio at $2 (in PPP) a day included 88% of the population and life expectancy was only 55 years (World Bank, 2011b). Over the past decade economic performance has improved considerably.

[40] Although from different standpoints financial constraints and risk behavior have been linked (see Cressy, 2000; Dercon, 1996; Fischer 2011; Gunning, 2010), unfortunately, prior theoretical research has not analyzed the connection between risk taking and financial constraints in relation to firm performance.

GDP growth increased from 3% in the mid-1990s to 6% in 2007. Inflation fell from 27% in 1995 to 6% in 2007. On the World Bank (2011a) Doing Business Indicators 2012, Tanzania ranks 127 out of 183 countries and scores poorly in terms of red tape. Although the economic conditions are improving somewhat, access to credit is currently difficult as there are not many entrepreneurs with official bank accounts and there are still relatively few microfinance institutions (World Bank, 2007; Kinda & Loening, 2010).

Sample

From March to May 2010 data was collected among entrepreneurs who registered with a specific microfinance institution (MFI) in Dar es Salaam, Tanzania. In order to get access to a micro-loan, entrepreneurs voluntarily formed an "Enterprise group" (EG) which consists of four to five members. Entrepreneurs join these groups with other entrepreneurs, who are not relatives. Enterprise groups are united in higher entities, the so-called "Market Enterprise Committees" (MECs) that provide the loans and collect payments at weekly meetings. As is common practice in microfinance, borrowers generally start with a small group loan and can apply for larger loans only after they have repaid their first loan.

The surveys were conducted in Swahili by 15 interview teams who were recruited by a local organization. Interviews took place at the household of the entrepreneur. The target sample consisted of a random draw of 1,660 members from two of the six branches of the MFI. The total number of clients at those two branches was 4,438. The draw was stratified on loan cycle in order to get a decent number of respondents in each category. The sample also only included members who were part of a loan group and who had repaid their first loan. From this sample 674 entrepreneurs were interviewed, leaving 55% of the sampling list not surveyed. The main reason was that it was not possible to reach or trace the members, and six percent refused to participate. Post hoc analysis shows no systematic differences between in the interviewed and the non-interviewed entrepreneurs on the sampling list in terms of age, gender and loan size. Of the 674 entrepreneurs, 21 members of the MFI did not own a business at the time of the interview and were dropped from the analysis. Due to some missing values on the variables used in this study, the final sample consists of 615 observations (see AIID, 2010).

Operationalization

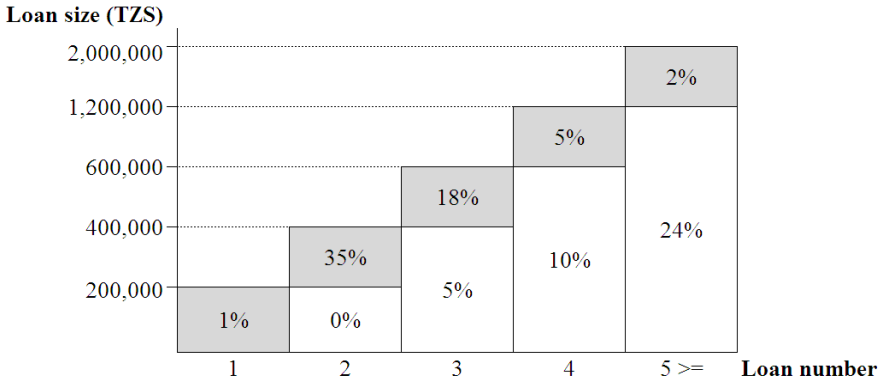
Financial constraints: For any empirical analysis using data from microenterprises, particularly from developing countries, finding an appropriate measure of financial constraints is difficult (Carreira & Silva, 2010; Claessens & Tzioumis, 2006; Love & Mylenko, 2003). Relevant indicators do not vary sufficiently (e.g. all firms are small) and data is often missing or unreliable (e.g. no auditing requirements or informal business). To overcome this problem we use unique information from the MFI to disentangle which microenterprises are financially constrained and which are not. Specifically, we have data on the number of times entrepreneurs received a loan and the size of the last or current loan. When combined, we can derive a measure of financial constraints because microfinance relies on a specific sequential lending structure, or *loan cycle.*

Following the insight from Banerjee and Duflo (2008) who suggest that financial constraints imply that microenterprises will continuously use extra loans for expansion while unconstrained entrepreneurs do not need this borrowing, we assume that entrepreneurs who are financially constrained will borrow the maximum amount at the MFI given their loan cycle. In other words, financially constrained entrepreneurs need access to finance to improve the performance of their microenterprise and will seek as much credit as possible at the MFI. In contrast, there are some entrepreneurs who do not face financial constraints and therefore choose not to borrow (or less than they possible could given their loan cycle).

To construct this novel financial constraints measure, we first use information about the observed number of loans an entrepreneur has received and derive the maximum amount the entrepreneurs are able to borrow within the loan cycle and contrast this to the size of the most recent loan. As depicted in Figure 1, there are five loan cycles and each corresponds to a fixed maximum loan size. The cycle in which entrepreneurs are situated depends on the total number of loans he/she has received. As entrepreneurs build up a sound credit history by fulfilling previous loans, they move up the loan cycles and become eligible for higher loans. We assume that entrepreneurs who are not financially constrained will not always opt for the highest possible loan amount, or choose not to borrow at all, whereas financially constrained entrepreneurs borrow the maximum amount given the loan cycle and continue to ask for new loans when possible.

Given our stratification all entrepreneurs have received two or more loans, except for two individuals (< 1%) who were new applicants. In Figure 1 the grey areas depict the entrepreneurs that borrow the maximum amount possible given their loan cycle. These groups are marked as being financially constrained. The white areas, below the grey, show entrepreneurs that do not borrow (or less than possible), indicating the absence of financial constraints. The first cycle contains entrepreneurs who are new and receive a starting loan of TZS 200,000. In total only two entrepreneurs in our sample fall into this category. In the second cycle (35%), all entrepreneurs receive a second loan equal to the maximum possible amount. In the third cycle (23%), a majority borrows the maximum amount, while some choose not to borrow or take a smaller loan. In the fourth cycle (15%), only a minority borrows the maximum amount. Finally, in cycle five (26%), even fewer entrepreneurs continue borrowing the maximum amount after having received four or more prior loans, suggesting that the access to finance through the MFI eliminates the financial constraints only after several loan injections of increasing amounts. Based on this loan cycle measure 59% of the entrepreneurs is classified as financially constrained since they ask for a loan that is equal to the highest possible loan amount they can obtain at the MFI given the number of prior received loans.

Figure 1: Loan cycle cohorts



Note: Percentages relate to the share in the total sample. On April 1, 2010 the exchange rate for $1 was 1,355 TZS.

Because we use a novel indicator of financial constraints, we also use the amount of savings as a measure of financial constraints for control purposes. Typically, financially constrained firms hold little savings (Buera et al., 2011; Carreira & Silva, 2010; Nichter & Goldmark, 2009; Schiantarelli, 1996). Firms with a large amount of savings can utilize this source for investment. Within a realistic time period, entrepreneurs can self-finance business activities by saving or internal funding, thereby overcoming the financial constraints. In order to obtain a measure of the amount of savings, the survey contains the following two questions: "what is your current balance on a formal savings account?" And, "what do you currently have in total in informal savings?" The latter question is essential because many entrepreneurs do not have any official savings and because holding informal savings is very common in developing areas (Grimm *et al.*, 2011). Based on these items we construct a total savings variable. For this measure of financial constraints a lower score indicates that the entrepreneur is more financially constrained.

Risk attitudes: Risk attitude is measured in different ways in the literature. We follow Blais & Weber (2006) because their psychometric scales are easy to understand and do not require high levels of financial literacy. They distinguish between different domains, allowing us to focus on the financial domain that is most relevant to investment decision making. A similar psychometric scale has been applied in a household survey among Nigerian market entrepreneurs (Willebrands et al., 2012). For six different risky actions respondents are asked to indicate how likely they are to take that action on a seven point Likert scale that ranges from 'Extremely unlikely' to 'Extremely likely'.

Table 1: Description of the individual risk taking items

	Mean	**S.d.**
1. Betting a day's income at a high-stake card game, such as poker	1.38	1.12
2. Investing (Y) in a new business venture	4.52	2.22
3. Betting a day's income on the outcome of a sporting event, such as soccer	1.61	1.44
4. Investing (Y) in shares	3.88	2.01
5. Investing (Y) in a wonder-bank or other scheme that promises you a very high return on savings	4.95	2.07
6. Investing (Y) in a new farming technology	3.81	2.23

Note: Y denotes 10 percent of annual income. The interviewer looked up the reported total annual income from the respondent's main job over the past twelve months and reads out 10 percent of this figure to the respondent.

Two of the original items by Blais and Weber (2006) related to betting on 'horse races' and investing in a 'moderate growth mutual fund' have been replace by investing in a 'farming technology' and investing in a 'wonderbank' to make the items compatible to the local context in Tanzania. Two of the six items refer to betting and the other four refer to investment. The four investment items relate explicitly to an investment of 10% of the annual income of the respondent, which is calculated and pronounced by the interviewer. The two betting items relate to a 'day's income' without the reference to any specific amount. Table 1 lists the six individual risk taking items and shows that the entrepreneurs are highly unlikely to bet whereas they are somewhat likely to take risk by investing. This discrepancy was also recorded in other studies (e.g. Blais & Weber, 2006; Willebrands et al., 2012).

We construct the measure of the risk attitude of the entrepreneurs by combining and taking the means of the six items. The average value among the entrepreneurs in our sample is 3.36 meaning that on average they are "somewhat unlikely" to take risk. This average is similar to that found in several other studies that use the scales developed by Blais & Weber (2006). Table 2 summarizes the average risk attitude scores, variation and sample population among a number of those studies. The similarity of the results suggests that there is no selection bias in our sample with regards to the risk attitude of the entrepreneur, such that it seems unlikely that entrepreneurs with certain risk attitude profiles drop out after the first loan cycle or do not join the MFI.

Table 2: Overview of studies with risk taking scale

Country of study	Mean	S.d.	n	Sample
Tanzania	3.36	0.96	615	Entrepreneurs (non-farming), Dar es Salaam
Nigeria	3.23	1.12	759	Market vendors from Lagos
England	3.11	1.14	172	Random sample, age group 22-35
France	3.39	1.12	30	Farmers from three regions
Italy	2.94	1.15	119	Entrepreneurs and civil servants
United States[1]	3.21	N/A	336	Undergraduate students
United States[2]	3.29	0.80	605	Undergraduate students (psychology)
United States[3]	3.32	1.11	135	Undergraduate students (psychology)
United States[4]	3.43	1.41	203	Associates of local university
Canada[1]	3.44	1.42	187	Random sample, age group 22-35
Canada[2]	3.09	1.50	240	Undergraduate students (psychology)

Note: Similar to Blais and Weber (2006) most studies use a 7-point Likert scale for the investment and betting items as part of the financial domain for the risk taking scale, while those with a 5-point scale have been converted for sake of comparison. The respective statistics come - through personal contact - from Willebrands et al. 2011 (Nigeria), Blais and Weber 2006 (England and Canada[1]), Reynaud and Couture, 2010 (France[2]), Franco and D'Angelo, 2010 (Italy), Johnson, 2009 (United States[1]), Foster et al. 2009 (United States[2]), Christman et al. 2007 (United States[3]), Deck et al. 2010 (United States[4]) and Mishra et al. 2010 (Canada[2]).

Firm performance: Ideally, we like to measure firm productivity because it indicates if firms use and allocate resource inputs most efficiently for productive uses (Bartelsmans et al., 2009; Brandt et al., 2012; Dethier et al., 2011; Hsieh & Klenow, 2009). However, productivity differences across microenterprises in developing countries are difficult to measure because these firms do not provide financial accounts nor is there reliable data on capital inputs (Claessens & Tzioumis, 2006). In such settings it is therefore common to focus on labor productivity instead of firm productivity, which indicates how efficiently labor is used in the production of output, the key input in non-farming, microenterprises in developing countries. This is suitable measure as—many microenterprises use little capital, reducing the discrepancy between firm productivity and labor productivity (Buera et al., 2011; Rijkers et al., 2010). To derive the labor productivity, first, sales are calculated based on self-reported sales of the microenterprises. For each month entrepreneurs indicate whether it was a month with high, average or low sales. Then they are asked to indicate the value of sales in a typical month with high, average and low sales. From these questions the total amount of sales for a year is calculated. By differentiating between high, average and low, the sales take into account the

seasonality which may be an important factor in the performance of many entrepreneurs. Next, output per worker is derived by dividing total sales by the number of employees. The labor productivity is obtained by adjusting the output per worker for the number of months that the microenterprise was opened. We take the natural logarithm to smooth labor productivity. The analysis uses labor productivity normalized by sector. Thus, for a given firm's labor productivity, we subtract the sector's mean labor productivity and then divide this by the sector's standard deviation. This way, our firm performance measure is unaffected by price variation across industries that may drive sales, technological differences across sectors, and other relevant sector differences such as capital intensity (see Buera et al., 2011; Dethier et al., 2011; Rajan & Zingales, 1998; Rijkers et al., 2010).[41]

Table 3: Summary statistics for firm performance and productivity

	LP		**Firm size**		**Sales**		**Months open**		
	mean	*s.d.*	*mean*	*s.d.*	*mean*	*s.d.*	*mean*	*s.d.*	*obs*
Capital intensive	15.4	0.9	0.8	2.1	15.3	12.8	11.6	1.4	77
Clothing	15.2	0.9	0.6	1.7	8.1	11.8	11.5	1.2	98
Food	15.3	1.2	0.3	0.6	10.4	16.5	11.8	0.7	101
Restaurants	15.0	0.9	1.3	1.5	9.2	10.8	11.5	1.3	88
Retail	15.3	1.0	0.3	0.6	9.5	12.9	11.5	1.6	81
Services	14.5	1.1	0.7	1.1	4.9	5.9	11.6	1.3	93
Snacks & drinks	14.9	1.2	0.9	1.5	7.8	8	11.4	1.8	77
Total (average)	15.1	1.1	0.7	1.4	9.2	19.9	11.6	1.4	615

Note: sales is measured in millions TZS.

Table 3 shows that there is a wide variation across sectors in labor productivity, employment, sales and months open. The within sector variation of these measures is in general much lower than in the overall sample. This indicates that the microenterprises within the same sector are relatively homogenous. Furthermore, as expected, the capital intensive sector has by far the highest average sales and labor productivity and includes a range of activities such as ICT shops, music stores, pharmacies, supermarket chains and transport. What these firms have in common is that selling requires a relatively large investment in assets or that they generally have

[41] Normalization by sector is becoming more commonly applied in firm-level studies, see for instance Bartel and Harrison (2005), Bartelsman et al. (2009), Brandt et al. (2012) and Van Biesebroeck (2008).

high margins. The lowest average revenue and labor productivity are found in the service sector, which is the least capital intensive and includes barbers, beauty salons and tailoring.

Controls: Previous studies which analyzed the determinants of the performance of microenterprises in developing countries have found a number of recurring significant factors (e.g. Daniels, 2001; Fajnzylber et al., 2006; Masakure et al., 2008; Sleuwaegen & Goedhuys, 2002; Vijverberg, 1991). In order to mitigate omitted variable issues the age of the firm (younger than 2 years), and the entrepreneur's age, gender and education level are included as controls. At the household level we also control for asset wealth based on an *asset wealth* factor of 27 household items (Cronbach's alpha = 0.82; see Appendix A) (Filmer & Pritchett, 2001; Sahn & Stifel, 2000). Note that because we have normalized the firm performance measure we also take the size of the firm measured by the number of employees, number of months the business was opened during the past year and the sector in which the firm operates into account. Because these variables (sales, months open and sectors) are important determinants of performance, the total explained variance in our regressions will generally be lower since they do not feature as independent variables (see Hsieh & Klenow, 2009).

Descriptive statistics

To give a better understanding of the microenterprises we delineate some core features of our data. Table 4 provides the summary statistics of the variables employed in this study, and shows a standard correlation matrix. The average age of the entrepreneurs is 38 years. Two-thirds of the entrepreneurs is female. Two-thirds has completed primary education, and only 7% finished secondary schooling or more. The majority of the microenterprises has no employees (62%), and only 6% has two or more workers. On average, the firms operate 6.8 years and 18% started less than 24 months ago; the latter we classify as young firms. 85% is opened for the full 12 months, and 97% is opened 9 months or more. The median annual sales are TZS 5 million. The average savings are about TZS 350,000 for entrepreneurs who accumulated saving, where 34% holds no savings.

Table 4: Summary statistics and correlations

		Mean	S.d.	Min	Max	1	2	3	4	5	6	7	8
1	Labor productivity	0	1.00	-3.63	2.71								
2	Loan cycle (*FC*)	59%		0	1	**-0.10**							
3	Savings (in millions)	0.23	0.43	0	3.70	**0.09**	-0.06						
4	Risk taking	3.36	0.96	1	7	**-0.15**	0.04	**0.12**					
5	Young firm	18%		0	1	**-0.12**	**0.15**	-0.01	0.06				
6	Male	34%		0	1	**0.12**	0.06	0.06	0.06	-0.05			
7	Age	37.90	8.58	18.00	75.00	0.01	**-0.15**	0.02	-0.02	**-0.17**	-0.02		
8	Secondary education	7%		0	1	0.03	-0.02	**0.33**	0.06	-0.03	0.04	**-0.11**	
9	Asset wealth	0	0.94	-1.80	4.21	0.05	**-0.14**	0.2	-0.01	**-0.12**	**-0.13**	**0.24**	0.23

n=615. The correlation coefficients that are significant ($p<0.05$) are highlighted in **bold**.

Estimation strategy

In order to test for the effect of financial constraints and risk taking on firm performance we estimate a standard OLS regression model with Huber-White robust standard errors.

$$(1) \qquad ln\ LP = \beta_0 + \beta_1 FC_i + \beta_2 RISK_i + \beta_3 FC_i{*}RISK_i + \beta_4 CONTROLS_i + \varepsilon_i$$

where *LP* stands for normalized within-sector labor productivity, the β_1 measures the direct impact of financial constraints (*FC*), β_2 represents the direct effect of risk taking (*RISK*), β_3 measures the interaction effect of financial constraints and risk taking, and β_4 includes the set of control variables and ε_i is the error term.

4. Results

Table 5 provides the results from the OLS regressions related to the direct effect of financial constraints and risk taking on normalized within-sector labor productivity (*LP*). The findings in Column (2) and (5) show that financial constraints (FC), as measured by the loan cycle variable, have a significant negative effect on *LP*. Keeping other things constant, the magnitude of the effect of financial constraints on *LP* is relatively large. On average, an entrepreneur who is financially constrained has 18% to 19% lower labor productivity compared to microenterprises that are not financially constrained. Similarly, using savings, Columns (3) and (6) present a significant negative effect of financial constraints on performance. That is, a one standard deviation decrease in savings is associated with a drop in *LP* by around 21% to 26%. These outcomes are robust after the inclusion of risk taking. The coefficient of determination in all models is quite low compared to other studies on firm performance, but this is due to the fact that especially firm size has a large explanatory power and in our setting is part of the dependent variable. Other studies that analyse labor productivity also find a low r-squared (Hsieh & Klenow, 2009). The results in Table 2 support Hypothesis 1 that financial constraints reduce firm performance.

Table 5 also shows the direct effect of risk taking on the normalized within sector labor productivity. In Columns (3), (5) and (6) we find a robust and significant negative coefficient for risk taking. A one standard deviation increase in the

entrepreneurs' risk taking decreases *LP* by 16% to 17%, ceteris paribus. The results demonstrate that successful entrepreneurship is not characterized by high risk taking, but rather by aversion to risk. The findings support Hypothesis 2.

Table 5 further presents the interaction effect for financial constraints and risk taking on the normalized within sector labor productivity. In Column (7) the direct effects of the loan cycle (FC) and risk taking are negative and significant, while the interaction term is positive, but insignificant ($p=0.16$). Although the interaction is clearly insignificant, the interpretation of the sign of the coefficient is that the direct, negative effect of risk taking is reduced by the presence of financial constraints.[42] The findings in Column (8) with respect to savings as a measure of financial constraints point in the same direction. The direct effects of savings (FC) and risk taking are significant, and, the interaction effect is negative and significant ($p<0.05$). In line with the results of the loan cycle interaction term, it shows that the negative impact of risk taking on firm performance is larger once the entrepreneur holds greater savings. Therefore we find preliminary evidence that there is a negative interaction effect between financial constraints and risk taking (Hypothesis 3). Note this effect is not found with the loan cycle variable.

Figure 2 depicts the marginal effect of risk taking on *LP*, taking into account both the direct effect of risk taking and the interaction with financial constraints. The lines are based on the model in Table 2, Column (6) for the loan cycle measure with one line representing the situation with financial constraints and the other without financial constraints. Because both slopes are negative, higher risk taking is associated with lower firm performance, ceteris paribus. Although the cross-term is insignificant ($p=0.16$), visually, the slope of the line is flatter for those entrepreneurs who are financially constrained, so that this may suggest that financial constraints mitigate the negative effect of risk taking. In addition, at around $RT = 5.5$ the two lines cross, but the place of the intersection is sensitive to the size of the estimated coefficient of the not significant interaction term. A crossing point would suggest that entrepreneurs who are risk averse or moderate risk takers have higher labor productivity when they are not financially constraint. In contrast, high risk takers who are financially constrained would have higher labor productivity than high risk takers who are not financially constrained. Overall this may suggest that entrepreneurs who are financially constrained are protected against making unprofitable investment; this

[42] However, this meaning is unwarranted as the estimated coefficient for the interaction is not different from zero.

effect is so large for those who take most risk that it dominates the direct negative effect that financial constraints have on firm performance.

Using savings as the measure of financial constraints, Figure 3 shows the same pattern as in Figure 2 but here the interaction effect is significant ($p<0.05$). The slope of the lines increases with the level of savings, that is, lower financial constraints. Having fewer saving reduces the negative effect of risk taking on within sector labor productivity. As in Figure 2, the lines intersect around $RT = 5.9$. This means that the entrepreneurs who take little risk benefit most from having higher savings. Although the interaction effects depicted in Figure 2 and Figure 3 is only significant for savings, our findings are consistent with the view that financial constraints throw sand in the wheels of risk taking entrepreneurs, hence reducing the negative effect of risk taking on performance.

Table 5: Effects of financial constraints and risk taking on labor productivity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Loan cycle (*FC*)		-0.19**			-0.18**		-0.54**	
		[0.0806]			[0.0796]		[0.251]	
Savings			0.21**			0.26***		0.76***
			[0.099]			[0.094]		[0.273]
Risk taking				-0.16***	-0.16***	-0.17***	-0.22***	-0.14***
				[0.039]	[0.039]	[0.038]	[0.055]	[0.042]
FC*RT							0.11	
							[0.076]	
Savings*RT								-0.14**
								[0.069]
Young firm	-0.29**	-0.26**	-0.30***	-0.26**	-0.24**	-0.27**	-0.25**	-0.28**
	[0.113]	[0.112]	[0.113]	[0.110]	[0.110]	[0.110]	[0.110]	[0.110]
Male	0.26***	0.27***	0.25***	0.28***	0.29***	0.27***	0.29***	0.26***
	[0.084]	[0.084]	[0.084]	[0.082]	[0.082]	[0.083]	[0.083]	[0.083]
Age	0.025	0.021	0.023	0.029	0.025	0.026	0.028	0.023
	[0.031]	[0.030]	[0.030]	[0.029]	[0.029]	[0.029]	[0.029]	[0.029]
Age2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Sec. education	0.034	0.028	-0.074	0.076	0.069	-0.050	0.083	-0.049
	[0.122]	[0.122]	[0.129]	[0.123]	[0.123]	[0.130]	[0.123]	[0.128]
Asset wealth	0.059	0.050	0.046	0.057	0.049	0.042	0.046	0.043
	[0.049]	[0.048]	[0.048]	[0.047]	[0.047]	[0.046]	[0.046]	[0.047]
Constant	-0.48	-0.28	-0.47	-0.03	0.15	0.02	0.30	-0.03
R^2	0.034	0.043	0.041	0.058	0.065	0.068	0.068	0.072

Note: n=615. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.10.

Figure 2: The interaction between the loan cycle (FC) and risk taking

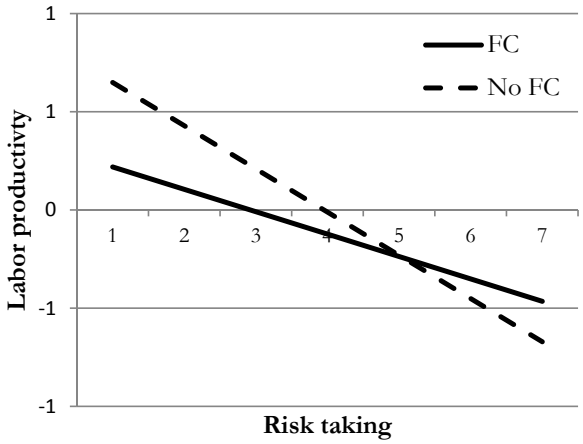
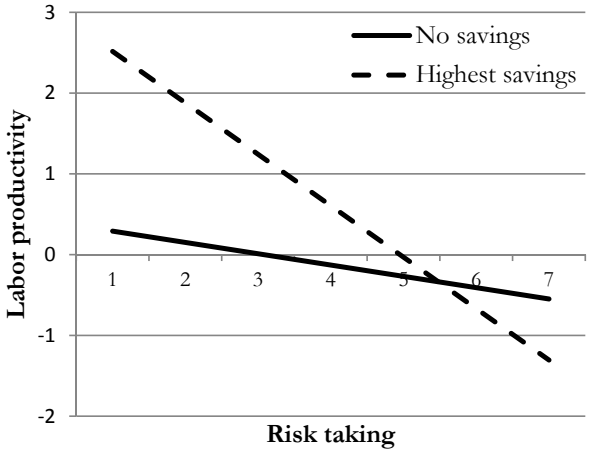


Figure 3: The interaction between the savings (FC) and risk taking



5. Reversed causality

From a methodological point of view we have not taken into account that better performing microenterprises may face lower financial constraints, because more successful entrepreneurs find it easier to access finance either externally or through internal funding. Therefore, financial constraints may lack randomization and there may be biases from simultaneity (e.g. reverse causality, selection bias and measurement error, see Persson & Tabellini, 2005). We would like to rule out any difference in performance that arises because some entrepreneurs will be more likely to have financial constraints than others, something that leads to biased ordinary least square regression estimates (Caliendo & Kopeinig, 2008). In order to mitigate this potential selection bias problem where microenterprises with high performance are less likely to be financially constrained, we apply propensity score matching (PSM) techniques. In this manner we are able to better compare financially constrained entrepreneurs with non-constrained peers that share similar *observable* characteristics (Rosenbaum & Rubin, 1983). If OLS is correctly specified, it is a more efficient method than PSM, however, PSM allows for more direct comparison between individuals and may avoid misspecification issues because it allows for arbitrary heterogeneous effects of the independent variable (non-parametric).

Under the assumption that all relevant differences between those that are and are not financially constrained can be captured by a set of observable variables (selection on observables), we can isolate the 'impact' of financial constraints on firm performance, and obtain reliable and relevant estimates of the size of this effect. One advantage of the data is that we have a relative homogenous group of entrepreneurs since they are all clients at the same MFI in an urban area for at least one year and have repaid their first loan. This means we may already account for certain unobservables, e.g. those with certain entrepreneurial ability may self-select into microfinance borrowing schemes. In addition, we must observe entrepreneurs who are financially constrained and those that are not, that share similar characteristics (common support), otherwise PSM fails (see Heckman et al., 1998; Leuven & Sianesi, 2003). Methodologically speaking, with PSM we compare microenterprises that have the same probability of being financially constrained based on a set of relevant controls, where one group is observed to be financially constrained (treatment group) and the other group is not (control group). Hence, PSM derives the conditional probability of treatment given covariates (see also Appendix B). Next PSM estimates

the 'impact' of financial constraints on firm performance by looking at the average treatment effect on the treated. There are currently no econometric techniques that allow for the inclusion of an interaction term with PSM so we cannot test Hypothesis 3 in this manner. However, if the main effects of financial constraints and risk taking are not driven by selection, then this at least makes it less likely that such bias is present in the estimations with the interaction effect.

Table 6: Impact of FC and RT on labor productivity (ATT)

	(1)	(2)
Financial constraints		
Loan cycle	-0.28***	-0.22**
No savings	-0.29**	-0.34***
Mean savings	0.17*	0.17**
Risk taking		
Risk averse	0.14*	0.22***
Risk taking	-0.34***	-0.32***

Note: Note: n=615. *** p<0.01, ** p<0.05, * p<0.10 based on bootstrapped standard errors (500 replications) using psmatch2 in Stata (see Leuven & Sianesi. 2003). In Column 1 kernel density propensity scores are applied for the matching of the treated and controls. Column 2 is based on nearest neighbour matching (n = 5) with caliper 0.10. The matching is done on a limited set of control variables: male. young firm. secondary education. entrepreneur's age. age squared and asset wealth. Only in Column (2) two treated firms dropped because they are off the common support. See further Appendix B for first stage probit estimations.

The PSM average treatment effects in Table 6 accommodate on our main findings from Table 5. As presented, in the first rows of Columns (1) and (2), measured by the loan cycle, financial constraints have a significant 'impact' on normalized within sector labor productivity. This effect is robust across specifications. The presence of financial constraints reduces *LP* by 22% to 28%, which is comparable to the 18% to 19% lower labor productivity we find for the OLS estimations in Table 5. Table 6 further uses two savings dummies to estimate the impact of savings on performance. Specifically, first we look at a group of entrepreneurs that has no savings (34% has no savings). The results show that not having any savings has a significant negative 'impact' on *LP*. Entrepreneurs without savings have 29% to 34% lower labor productivity compared to peers with similar characteristics, apart from savings. Second, we make a dummy for entrepreneurs who have above average saving (35%). Although the results are weaker, the estimates show that this high saving group has 17% higher labor productivity relative to those with below average saving levels.

These results from PSM reconfirm Hypothesis 1 and indicate that the size of the effects found in Table 5 are robust.

In potential, risk taking for its part may increase or decrease with firm performance. It could increase as better performing entrepreneurs have the financial capacity to absorb a large loss (Banerjee & Newman, 1993) or less capitalized entrepreneurs may want to take more risk as they have not much to lose and can fall back on wage employment (Vereshchagina & Hopenhayn, 2009). Risk taking could also decrease as more wealthy entrepreneurs have relatively more to lose and less to gain. Most of the studies which look at risk taking and firm performance do not empirically analyze the issue of causality. For example, Rauch and others (2009) concludes that their results are only about correlation and not causality. To this end we make a first attempt to empirically examine this issue. Because matching requires the use of indicator variables we classify risk averse and high risk taking entrepreneurs as follows: those with a score of three or lower on risk taking are considered risk averse (36.9%); and those with a score of four or higher are grouped as high risk taking (29.4%). The results in Table 6 show that among each specification risk aversion has a significant 'impact' on firm performance. We find that risk aversion leads to an increase in *LP* of 14% to 22%. In reverse, the findings also indicate that risk taking has a significant negative 'impact' on firm performance. Risk taking reduces *LP* by 32% to 34%. These results from PSM reconfirm Hypothesis 2. To our interpretation, it is not greater risk taking per se that is detrimental to performance, but more risk averse entrepreneurs are more successful in risky environments.

6. Conclusion

Access to finance and entrepreneurial behavior are an integral part of economic development. In this paper we formulate two new views on the relationship between financial constraints, risk taking behavior and firm performance in a high risk environment. According to the first view increased risk taking will lead to greater uncertainty, i.e. a higher variance in the outcome. As a result, the chance of experiencing a large negative shock will be higher than under low risk taking. Entrepreneurs that are financially constrained are unable to mitigate the impact of such a negative shock. Financial constraints in this sense reinforce the adverse effect

of risk taking on firm performance. The second view holds that financial constraints inhibit entrepreneurs to take on greater risks in the first place. This reduces the effect of risk taking on firm performance. We argue that, although risk taking lies at the basis of entrepreneurship, in risky environments risk taking may lower firm performance. If so, financial constraints reduce the exposure to risks and can prevent entrepreneurs from making investments and therefore also from making low-return investments.

We also present an empirical analysis on the effect of financial constraints and risk taking on firm performance using data on clients from a microfinance institution (MFI) in Tanzania. The results give preliminary evidence that financial constraints have a *positive* effect on firm performance by reducing the adverse effect of risk taking, in line with the second purported view. As risk taking is found to exhibit a direct negative effect on firm performance, financial constraints withhold risk taking entrepreneurs from undertaking unprofitable investments. In this way, financial constraints "throw sand in the wheels" of those willing to take risk and protect entrepreneurs from making low-return investments.

We use a novel measure of financial constraints based on the lending structure of the MFI and also apply savings as an additional measure of financial constraints for robustness. The empirical analysis shows the primacy of access to finance in facilitating the development of the private sector and successful entrepreneurship. We measure the performance of microenterprises using normalized within sector labor productivity. The estimation results show that entrepreneurs with financial constraints have around 20% lower labor productivity. We conclude that in general financial constraints have an adverse impact on the firm performance, suggesting there is an important role for microfinance institutions to provide credit in developing countries.

This research stipulates the importance of entrepreneurial characteristics. More attention to risk attitudes is called for when optimizing the flows of finance in high risk environments. Contrary to conventional wisdom, based on a psychometric risk taking scale, we find that higher risk taking propensity has a *negative* impact on performance and leads to a decline in labor productivity of more than 30%. Still, risk taking is an essential part of entrepreneurship and is often required to make profitable investments. We contribute to the debate on the role of risk taking in

successful entrepreneurship by suggesting that more risk taking may not be beneficial under situations of high uncertainty, or in a high risk environment.

The benefit of our financial constraints measure is that it can easily be replicated by other researchers working with data on MFI clients. Using loan cycle information, financially constrained entrepreneurs will fully use the credit facilities at the MFI by borrowing the maximum amount possible. A potential weakness of the financial constraints measure is that entrepreneurs with high returns are more willing to expand their firm. As such, better performance induces entrepreneurs to borrow more. If that is the case, then microenterprises with high growth opportunities will be marked as financially constrained, because they continue to borrow the maximum possible. This would lead to the counter-intuitive result of a positive association between financial constraints and performance. Such concern is contradicted by the empirical estimates which show that entrepreneurs who take up the maximum possible loan amount actually perform worse.

The sample consists of entrepreneurs who are a member of a MFI and received more than one loan. It is well-known that many microenterprises are financially constrained. We do not imply that those who are not affiliated with a MFI are financially sound. This study cannot unravel what would have happened to the business if the entrepreneurs had not received any loans (Armendariz de Aghion & Morduch, 2005). The entrepreneurs in the sample may have different attributes than those who do not to enrol to the MFI. The sample is therefore not random as many "potential" clients will not join and others with specific attributes may drop out (Coleman, 1999, 2006). Entrepreneurs who are more willing to take risk and face poor business outcomes exit the MFI. Theoretically, under a homogeneous distribution of performance among risk averse entrepreneurs, this survival bias would lead to a positive correlation between performance and risk taking. Given that we find a negative effect of risk taking on performance, it is unlikely that our sample is much influenced by a survival bias of this kind. It would also mean that we underestimate of the negative effect of risk taking on performance.

The two proposed views on the relationship between financial constraints, risk taking and firm performance, are opposing but not mutually exclusive. We show that the *positive effect of financial constraints* on reducing the adverse impact of risk taking on firm performance dominates, but we cannot say anything on the absolute size of this effect, only on the difference between the two effects. The *negative effect of financial*

constraints of increasing the impact of a negative shock may still be present. Future research may disentangle the absolute size of these two effects for policy purposes.

Our study implies that expanding access to credit can have unintended consequences, as some entrepreneurs that are empowered by microfinance may not benefit from such funding. New loans leading to increased investment in potentially risky projects may not result in positive returns in a high risk environment. The provision of micro credit could be supplemented with microinsurance schemes that mitigate the high risks (Churchill & Roth, 2006) or be further supported by business educational programs (Karlan & Valdivia, 2011) which make business owners aware of risks (Berge, 2011). Financial constraints are not to be stimulated, but the risks faced by the entrepreneur should be mitigated.

Appendix 1

In order to better appreciate the living situation of the Tanzanian entrepreneurs we include a detailed overview of their household's asset wealth (see Table A1). This is important because the microenterprises are often inseparable from the household. We list summary measures of 27 wealth items and their respective (Varimax-rotated) factor loadings. The average household size is 3.3. Using principal components we force each of the 27 asset items into a single asset wealth factor, which explains 51% of the underlying variation in assets holdings. The internal reliability coefficient for the factor is 0.82 (corrected Cronbach's alpha, see Boermans & Kattenberg, 2011) and the Kaiser-Meyer-Olkin (KMO) measure the sampling adequacy is 0.80; both statistics suggest that the derived latent factor is reliable and consistent. Looking at the asset holdings in Table A1, the entrepreneurs cannot be classified as the poorest of the poor (see Sahn & Stifel, 2000). Also, since the survey was undertaken in the capital, we note that the entrepreneurs hold relatively few livestock.

Table A1: Asset wealth factor of the entrepreneur's household

Item	Median	Mean	S.d.	Min.	Max.	Loadings
Sewing machine	0	0.35	0.83	0	9	0.36
Cloth ironer	1	0.91	0.51	0	3	0.50
Table	1	1.55	0.88	0	6	0.53
Soda	1	1.46	1.28	0	10	0.48
Mosquito net	2	2.10	1.25	0	8	0.66
Paraffin lamp	1	1.22	0.91	0	6	0.22
Bed	2	2.28	1.30	1	8	0.69
Refrigerator/freezer	0	0.49	0.61	0	4	0.59
Electrics/gas/other stove	0	0.84	0.97	0	4	0.35
Radio/cassette	1	0.78	0.56	0	3	0.55
Video/dvd player	1	0.55	0.59	0	3	0.60
PC	0	0.08	0.30	0	2	0.43
Television	1	0.66	0.57	0	4	0.46
HiFi	0	0.04	0.21	0	2	0.28
Watch	1	0.76	0.78	0	5	0.56
Mobile/phone	2	1.84	0.88	0	7	0.59
Motorcycle	0	0.05	0.24	0	2	0.26
Bicycle	0	0.20	0.46	0	4	0.29
Car/truck	0	0.05	0.26	0	3	0.33
Wheelbarrow	0	0.05	0.22	0	2	0.25
Cart	0	0.06	0.27	0	2	0.21
Fan	1	0.83	0.86	0	6	0.67
Cattle	0	0.09	0.85	0	15	0.01
Goats	0	0.07	0.58	0	6	0.18
Sheep	0	0.04	0.57	0	10	0.03
Acres of land	0	0.77	3.56	0	50	0.03
Acres of land (12 months ago)	0	0.80	3.60	0	40	0.03

Appendix 2

In this Appendix we provide more information about matching procedure to show there are indeed ex ante differences in observable characteristics. That is, we show that in general, financially constrained entrepreneurs run smaller enterprises, have younger firms, are themselves younger, less-educated, and have a lower asset wealth (see also correlation matrix, Table 1). Most significantly, after matching these differences disappear, meaning that we evaluate the effect of financial constraints among microenterprises that have a comparable likelihood for being constrained.

In Table B1 the first stage probit estimates are presented for the matching procedures. For each specification, the F-values of the first stage regressions are above 10 (Rosenbaum & Rubin, 1983). To show that matching is relevant due to ex ante differences in entrepreneurs who are or are not financially constrained, in Table B2 Panel A we show that there are indeed important ex ante differences in the covariates. Table B2 Panel B further explains how after the first stage probit regressions such differences disappear with the matching procedures. Table B3 gives similar results for risk taking and risk averse entrepreneurs. Still, there may be unobservables that differ across the two groups, however, note that the entrepreneurs who are long-term clients at the MFI form a relatively homogeneous group in terms of entrepreneurial attitude.

Table B1: First stage probit regression results

Explanatory variables	Dependent variables used for matching				
	Loan cycle (FC)	**Savings (mean)**	**No savings**	**Risk averse**	**Risk taking**
Firm size	-0.030	0.089*	-0.122*	-0.0719	0.093**
	[0.039]	[0.048]	[0.074]	[0.053]	[0.044]
Months open	-0.036	0.022	-0.019	0.064	-0.073*
	[0.039]	[0.040]	[0.040]	[0.043]	[0.038]
Young firm	0.391***	0.020	-0.154	-0.188	0.093
	[0.145]	[0.144]	[0.144]	[0.142]	[0.142]
Male	0.157	0.141	0.0274	-0.026	0.256**
	[0.113]	[0.115]	[0.114]	[0.113]	[0.116]
Age	-0.057	0.065	-0.045	-0.003	-0.033
	[0.040]	[0.043]	[0.040]	[0.0395]	[0.0407]
Age^2	0.000	0.000	0.001	0.000	0.000
	[0.000]	[0.001]	[0.000]	[0.000]	[0.000]
Second educ.	-0.095	0.882***	-0.599**	-0.202	0.441**
	[0.218]	[0.226]	[0.253]	[0.224]	[0.214]
Asset wealth	-0.108*	0.199***	-0.0493	0.084	0.048
	[0.061]	[0.062]	[0.063]	[0.061]	[0.0628]
Constant	1.990	-2.057	0.853	-1.009	0.732
Wald χ^2	31.94***	44.18***	13.23*	10.75	18.57**
Pseudo R^2	0.041	0.061	0.025	0.015	0.027

Table B2: Mean differences (ex ante, ex post) in covariates for financial constraints

Panel A: Before matching

	loan cycle (FC)	no FC	t-value	sig	Savings (above mean)	Savings (below mean)	t-value	sig	No savings	Savings	t-value	sig
Firm size	0.63	0.8	-1.54		0.93	0.57	3.03	***	0.47	0.82	-2.93	***
Young firm	0.23	0.12	3.7	***	0.17	0.19	-0.88		0.17	0.19	-0.53	
Months open	11.51	11.65	-1.24		11.66	11.52	1.23		11.52	11.59	-0.59	
Male	0.36	0.31	1.5		0.36	0.33	0.87		0.35	0.33	0.35	
Age	36.83	39.4	-3.7	***	37.94	37.85	0.12		37.8	37.92	-0.16	
Sec. educ.	0.06	0.08	-0.58		0.14	0.03	5.15	***	0.03	0.09	-2.46	**
Asset wealth	-.11	0.16	-3.52	***	0.24	-0.13	4.82	***	-.10	0.05	-1.93	*

Panel B: After matching

	loan cycle (FC)	no FC	t-value	sig	Savings (above mean)	Savings (below mean)	t-value	sig	No savings	Savings	t-val.	sig
Firm size	0.63	0.66	-0.32		0.93	1.03	-0.59		0.47	0.53	-0.53	
Young firm	0.23	0.22	0.07		0.17	0.18	-0.38		0.17	0.21	-1.11	
Months open	11.51	11.57	-0.21		11.66	11.79	-1.3		11.52	11.38	0.89	
Male	0.36	0.39	-0.89		0.36	0.32	1.01		0.35	0.39	-1.01	
Age	36.83	37.19	-0.4		37.94	38.08	-0.17		37.8	38.38	-0.67	
Sec. educ.	0.06	0.07	-0.47		0.14	0.13	0.14		0.03	0.02	0.58	
Asset wealth	-.11	-0.11	0.18		0.24	0.29	-0.58		-.10	-0.12	0.3	

Table B3. Mean differences (ex ante, ex post) in covariates for risk attitudes

Panel A: Before matching								
	Mean	**Mean**			**Mean**	**Mean**		
	Risk averse	Not risk averse	t-value	sig	Risk taking	Not risk taking	t-value	
Firm size	0.58	0.77	-1.58		0.92	0.61	2.52	***
Young firm	0.15	0.20	-1.66	*	0.20	0.18	0.63	
Months open	11.68	11.50	1.59		11.45	11.61	-1.41	
Male	0.33	0.34	-0.20		0.40	0.32	1.96	**
Age	38.52	37.50	1.42		37.78	37.92	-0.20	
Secondary education	0.06	0.07	-0.50		0.10	0.05	2.34	**
Asset wealth	0.07	0.04	1.46		0.72	-0.03	1.22	

Panel B: After matching							
	Mean	**Mean**			**Mean**	**Mean**	
	Risk averse	Not risk averse	t-value	sig	Risk taking	Not risk taking	t-value
Firm size	0.58	0.67	-0.78		0.92	0.89	0.19
Young firm	0.15	0.12	-1.60		0.20	0.23	-0.77
Months open	11.68	11.78	-1.12		11.45	11.50	-0.34
Male	0.34	0.41	-1.64		0.40	0.38	0.32
Age	38.52	39.15	1.42		37.78	37.10	0.74
Secondary education	0.06	0.07	0.50		0.10	0.13	-0.81
Asset wealth	0.07	0.08	-0.12		0.72	-0.03	1.04

VI. DOES VENTURING ABROAD DRIVE THE PERFORMANCE OF DUTCH MICROENTERPRISES?[43]

1. Introduction

The literature on small firm internationalization in developed economies in general provides two stylized facts. First, SMEs that export are more productive than firms that do not. Second, innovative SMEs are more likely to venture abroad. However, although there are many papers showing that innovative SMEs become internationally active, there are only a few that have addressed the reverse question: do SMEs that export become more innovative by doing so? Public programs to support SME internationalization often claim that this indeed is the case, pointing to, for example, demonstration effects of foreign technologies abroad and access to new network partners, through which managers and employees of SMEs can share knowledge so as to enhance their innovative competences. However, there is little systematic evidence that SMEs indeed improve their innovative capability when they have ventured abroad. Further, if indeed internationalization has a positive effect on innovation so that they are complements in explaining firm performance, then it is difficult to assess the unbiased 'clean' effect of venturing abroad on SME productivity and profitability.

This paper takes on both these points. We use data from a survey of 150 innovative Dutch firms which have recently enrolled in a public program that supports SME internationalization. Some of the firms succeeded where others did not. We have asked all these 150 firms about the effect of the program on internationalization, innovation and on their performance in terms of sales growth and employment growth. To account for potential reverse causality (the more innovative firms within the sample also are the successful internationalizers), we included questions on the origin of their successful internationalization which a priori have no theoretical connection and ex post no statistical correlation with innovation, so that these may serve as instrumental variables. Furthermore, we use a structural

[43] This Chapter is co-authored with Hein Roelfsema. A part of this Chapter was published under the title "International Innovation" in Kettunen, J., Hyrkknen, U. Lehto, A. (Eds.), *Applied Research and Professional Education*, Turku University, 2011.

equation model to assess the direct and indirect effect of internationalization on performance, so as to take account of the complementarity of internationalization and innovation. The two main results of the study are, first, that internationally active SMEs become more innovative. Second, as we are able to isolate a direct and indirect effect of internationalization, we are able to show that activities in foreign markets raise firm performance.

Before expanding on the way this paper fills some gaps in the existing literature in the next section, we highlight our contributions. First, where others have mainly focused on the traditional (reverse) channel where innovation leads to internationalization (see e.g. Caldera, 2010; Lachenmaier & Wößmann, 2006), for SMEs in a developed economy this study shows that internationalization has a positive causal effect on innovation. Second, although there are many papers that show a positive effect of internationalization on firm performance (e.g. Lu and Beamish 2006; O'Cass & Weerawardena, 2009), we take account of the non-linear effects of internationalization through its effect on innovation. Third, our result are important in light of the discussion on the validity of the Melitz' (2003) standard workhorse model, which is founded on the assumption that productivity and innovative capabilities are exogenous to the firm and are thus not influenced by internationalization itself. Fourth, on the methodological front, we introduce build-in questions that serve as instruments as a research strategy in small business self-reported survey studies. Fifth, for social relevance, our findings give some ammunition to policy makers who claim that programs to support SME internationalization are not a waste of money.

Hence, the main pitch of this paper is that it fills a gap in the empirical literature on trade and productivity: what are the effects of internationalization on innovation and firm performance for small firms in developed economies? We present our results in the following order. Section II reviews the related literature. Section III discusses the theoretical model, the empirical strategy to test it, and the data we use in detail. Section IV presents the main results showing the impact of internationalization on innovation, as well as the effects of these variables on firm performance. The concluding Section V places the results in the perspective of the central questions in this field of research.

2. Theoretical background

It is well documented that within industry differences explain which firms are internationally active and which are not. In general, for developed economies it is found that the more productive and innovative firms export more and are engaged in FDI. This finding underlies the Melitz (2003) model, which serves as the cornerstone of most recent innovations in theoretical modeling in international economics. In the standard model, it is assumed that firms that have high productivity can overcome the fixed costs associated with exporting and FDI. The empirical literature that investigates the validity of this assumption for advanced economies - and which uses large secondary datasets - finds that indeed productive firms are internationally active (Bernard & Jensen, 2004; Bernard et al., 2012; Helpman et al., 2008). Also, it is considered a stylized fact that the large majority of unproductive small firms do not export.

However, the empirical literature that aims to test the propositions of the Melitz model and its offspring struggles to find good proxies for the productivity of firms (De Loecker, 2010). Often, firm size is used as a proxy, so that the modeling assumption becomes that large firms are internationally active, which may seem rather trivial. In fact, this simplification is highly problematic for developed economies, as from the international business literature the insight emerges that many innovative SMEs and microenterprises in high-tech sectors are internationally active and start exporting right from their inception (Oviatt & McDougal 1994, 2005). As in the Melitz model, these so called 'born globals' start with a small but rich knowledge-intensive set of resources and rely on previous entrepreneurial experience and networks of its management (Weerawardeba et al., 2007). This strand of IB builds on the Uppsala internationalization model, that follows from the seminal work of Johanson and Vahlne (1977). In this approach exporting is analyzed as an evolutionary process in which small firms start small and in nearby markets where there is low 'psychic distance'. Learning from their experiences these SMEs gain more knowledge about international business, deepen their foreign market resource 'commitments' over time, and expand to more markets further away. The mechanism is that firms learn experimentally from foreign market entry, not only about the market potential and foreign institutional characteristics, but also how to adapt its offering to foreign tastes and how to change the internal organization of the firm to take account of the higher complexity involved in foreign venturing (Johanson &

Vahlne, 2009; Zahra et al., 2000). Even stronger, in the anecdotal management literature it is sometimes stressed that the main reason for going abroad is to expose the firm's employees to new ways of doing business, so as to spur innovation (Ghoshal 1987; Teece et al., 1997; Zahra et al., 2009).

For the class of small internationally active firms, the effects of trade liberalization and internationalization have been mostly neglected. Instead, evidence of learning-by-exporting effect and gains from trade liberalization stem from middle-income countries and developing economies. Firms from these region that start international activities are able to adapt and incorporate new technologies to raise innovation investments and productivity. As such, we expect that like for (large) firms from emerging markets, SMEs from developed economies learn from international activities and improve their innovative capacity and firm performance (Golovko & Valentini, 2011; O'Cass & Weerawardena, 2009; Wolf & Pett, 2006). For these groups of firms we expect that in contrast to the well-established fact that (large) firms from developed countries merely self-select into international activities, innovative small businesses in high-income countries can reap gains from internationalization.

The fact that the causality in the data may run from internationalization to productivity and not exclusively the other way around widely recognized (Wagner, 2007). There is a long line of research which documents that innovation is a key determinant of internationalization (Van Beveren & Vandenbuscche, 2010). What these studies imply is that in order to isolate the effect of internationalization on performance, indirect effects of innovation need to be taken into account. Among others, Aw et al. (2008), Golovko and Valentini (2011), Kafouros et al. (2008), Melitz and Constantini (2008) and Yiu et al. (2007) provide several theoretical mechanisms in which firms invest in R&D before foreign market entry. The main driver in these models is the complementarily between foreign market profitability and productivity. This 'anticipation effect' explains why expected trade liberalizations result in higher productivity: firms invest in productivity to take advantage of future trade liberalization. A more direct ex post link from internationalization to productivity is found for firms from middle income countries that learn from dealing with foreign firms (Bustos 2011; Clerides et al., 1998; Damijan et al., 2010; De Loecker 2007). This 'exposition effect' suggests that firms learn from exporting which results in product innovation and organizational learning. Three centerpieces of empirical

evidence for this effect are, first, that the middle segment of firms improves productivity following internationalization (Bustos, 2011). This contrasts to the high end of the productivity distribution where firms are already active internationally before trade liberalization. Second, De Loecker (2007) and Damijan and others (2010) show that productivity gains are larger for firms that start exporting to high income countries. Last, Van Biesebroeck (2007) finds that labor productivity increases following internationalization for firms from developing economies that export to mature markets.

There are several other lines of research that are somewhat connected to our paper. First, there are the aforementioned papers that investigate firms that learn about the internationalization process by exporting. In these papers it is argued that exporting increases knowledge about the practice of exporting, which results in a wider scope of exporting across countries (see Albornoz-Crespo et al., 2010). Second, there is a specialized literature that investigates the effect of export subsidy programs (Volpe Marticus & Cabrallo 2008, 2010; Chen et al., 2011; Freixanet, 2011; Wilkinson & Brouthers, 2006). Typically these papers study the effects of these programs on exporting, but do not investigate the pass-through effect on performance and innovation (Belloc & Maio, 2011). Closest to our work are papers that investigate the effects of internationalization on a wide set of firm performance indicators including innovation (Dhanaraj & Beamish, 2003; Castellani & Zanfei 2007; Filatotchev & Piesse 2009; Cassiman et al., 2010). This literature so far has concentrated on the connection between exporting and firm performance ex post in large datasets that implicitly focus on multinational corporations.

3. Methodology

Data

We use data from a consultancy project to evaluate the effects of a public internationalization support program for Dutch SMEs. To obtain data for this study, we used an adjusted version of a well-validated questionnaire developed by Wilkinson and Brouthers (2006). The questionnaire covers various aspects of the firm including international sales, innovation efforts, and the effects of the state-sponsored export promotion program. A government agency provided the names and addresses of 684 firms that were enrolled to an export program between 2006

and 2011. Data were collected between April 13 and May 13, 2011 - which has the advantage that firms in the Netherlands submit financial reports to tax authorities on the first of April, so presumably the interviewed entrepreneurs are knowledgeable about the firm's recent performance and figures. Unique to our sample - and in contrast to many large datasets - is that each firm has less than twenty employees, so that we can assess the effects of internationalization of microenterprises. The response rate was high (25.3%). After dropping 23 firms for incomplete questionnaires (missing values), the final sample consists of 150 Dutch microenterprises.

To measure internationalization, in this study we construct a standardized *Internationalization* scale of four correlated variables (Cronbach's alpha = 0.72). We use the share of international sales to total sales, export volume growth, satisfaction with the current level of international involvement, and a dummy for export start within the first years after inception; the so-called 'born globals'. One disadvantage of such a composite measure is that we cannot interpret the size of the coefficient, but only the sign.

We use two measures of innovation (Cassiman et al., 2010; Ganotakis & Love, 2011). First, innovation output is a dummy that measures if the firm has launched three or more new products or services in the past three years (*New Products*). Second, we have asked the firms about their recent experiences under the program in terms of i) product innovation, ii) organizational improvements and process innovation, and iii) marketing innovation and new concepts. These variables deliver us a standardized *Innovation* scale (Cronbach's alpha = 0.69) which is correlated with *New Products* ($r = 0.16$; $p < 0.05$). Furthermore, we measure the moderating *Resources* of the firm using six items related to human capital, entrepreneurial attitude, technological and market knowledge, organizational capabilities, and access to business networks (Cronbach's alpha = 0.71). We do so because it is often assumed that firms with a broader resource base find it easier to venture abroad. As performance indicators we use the change in employment and the change in sales over the past three years (for summary statistics of these measures, see Appendix 1).[44] The advantage of these measures is that they relate to changes and not levels.

[44] Because we rely on self-reported data we have implemented some verification methods to check the accuracy of the items reported by the entrepreneurs (see Zahra et al., 2009; Chang et al., 2010). Of the completed surveys, 99 of the 150 companies agreed to supply their names for further research, while

Table 1 presents the correlations among the main variables employed in the analysis. Three observations stand out. First, the more internationally active firms have higher levels of innovation and better sales performance. These firms also on average have higher levels of new product launches and employment growth, although these correlations are not highly significant. By contrast, a second observation is that innovation is not associated with better firm performance in terms of employment and sales growth. Thirdly, resources seem to be a potentially important moderator in the study, as they are highly correlated with both internationalization and the performance measures in terms of employment and sales growth. Firm resources are associated with higher levels of innovation, but the variance is much higher – a property that we will later explore when choosing instruments to find the causal effect of internationalization on innovation.

Table 1: Correlation matrix

		1	2	3	4	5
1	Internationalization					
2	New Products	0.12				
3	Innovation	0.18**	0.16**			
4	Resources	0.27**	0.10	0.16*		
5	Employment Growth	0.11	0.10	0.03	0.21**	
6	Sales Growth	0.32**	0.00	0.06	0.21**	0.43**

Note: n=150; ** p<0.05, * p<0.10.

Estimation method

The empirical literature investigating the effects of internationalization on innovation has to deal with some well-known problems. First, within sectors, both internationalization and innovation are concentrated in large firms. Hence, studies with large datasets that use matching techniques and time dimensions do not overcome the fact that they essentially investigate the effects of internationalization on innovation for this small subset of large firms. This is also the reason why controlling for firm size, for industrialized Western economies these studies have not

keeping their responses anonymous. With this list of data, two independent researchers who had no access to our data contacted the Chamber of Commerce and try to looked up 'hard' figures about the firm, although enterprises with fewer than twenty employees are not liable to provide detailed information. Nonetheless, of 47 firms we retraced the number of employees, and, the total assets of the balance sheet total over the period 2008 to 2011 (if applicable). The self-reported employment growth is highly correlated with the officially reported change in the number of employees over the past three years ($r = 0.69$; $p < 0.01$). Also the self-reported growth in sales is correlated to the change in total assets over the past three years ($r = 0.31$; $p = 0.06$). Because of the relatively small number of firms we do not report any other results based on these 'hard' measurements. Nonetheless, these findings strengthen the confidence in the accuracy of our data.

found effects of internationalization on innovation (Bernard et al., 2012). We may propose that for Western economies the effects of internationalization on innovation are largest for small firms, for the same reasons that other studies find effects for emerging markets (Aw et al., 2008; Damijan et al., 2010; De Loecker 2007). For small firms in niche markets internationalization exposes their managers to international best practices, which sets in motion the creative process that ultimately results in innovation. Since we use a sample of microenterprises in a highly open Western economy, we are able to isolate the effects for this group of small firms, which contributes to the theory of early internationalizers and is important from a policy perspective as the majority of the workforce is employed in small business.

Second, in the studies that investigate the effects of internationalization on innovation and firm performance, the problem is that innovation and financial constraints also drive the ability for firms to internationalize. Reverse causality leads to endogeneity problems when innovative firm have strong incentives to go international, of which there is ample evidence (e.g. Cassiman et al., 2010; Van Beveren & Vandenbussche, 2010; Harris & Moffat, 2011; Ganotakis & Love, 2011). In addition, firms may select into exporting and innovation based on (unobservable) firm characteristics, which may be difficult to filter out. Although firms in our sample are quite similar in size (a parameter often used in matching), the biases caused by self-selection into exporting are still an issue. In large datasets, this can be countered by using matching techniques. However, this often is not an option in smaller samples but richer datasets on SMEs. In addition, it is very difficult to obtain longitudinal data for SMEs, for most time-pressed entrepreneurs are unwilling to cooperate with questionnaires on an ongoing basis.

For these reasons we use an instrumental variable approach which takes into account the potential simultaneous relationships between internationalization and innovation. To start on the technical side, we need a set of variables that are related only to internationalization and not to innovation. Such instruments are valid only when they are correlated with the endogenous variable and are unrelated to the outcome variable.[45] It is common to have a clear theoretical framework to identify potential instruments, although this is not a technical requirement for their validity. However, when using a questionnaire one can use theoretical frameworks to include

[45] Technically speaking, instruments Z must be *relevant* such that $Cov(X,Z)\neq 0$ where Z predicts X (the endogenous regressor) while controlling for a subset of controls C that may influence both X and Y (the dependent variable). Furthermore, instruments Z are valid only if they are *exogenous* and therefore uncorrelated with the error term u of the outcome model for Y, such that $Cov(Z,u)=0$.

questions of which the answers later serve as instruments in the econometric stage of the research project.

There is a large business literature that identifies multiple factors associated with successful internationalization of SMEs. As a summary, foreign market knowledge, experience, and access to business networks are seen a prerequisites for SMEs to enter foreign markets. We may call this the internal knowledge base of the firm, see for instance the born global literature (Knight & Cavusgil, 2004; Weerawardena et al., 2007; Zahra et al., 2009). In addition, new institutionalists argue that resources external to the firm such as those embedded in the local business cluster and supplied through public content based internationalization support are also important. These external resources provide the firm's management with insights with respect to institutional barriers (subsidized entry research) and potential trade partners (fairs), which lower transaction costs in foreign markets and reduce risk (Belloc & Di Maio, 2011; Eaton et al., 2012).

As a first instrument we use the *Resources* variable which measures the internal resource base of the firm associated with internationalization. We have asked senior management whether a specific resource is perceived as a competitive advantage of their firm and whether it contributes to internationalization. Clearly, it is our hope that resources which are important for internationalization are not correlated to the firm's innovation record. By sticking to resources directly connected to internationalization (e.g. foreign market knowledge and business networks), we hope to stay clear of crossing the border to include variables that also explain the variation in innovation across the SMEs in our sample.

With respect to external resources, we have asked the firm's management whether they are satisfied with the services of the public agency in supporting their internationalization. This should tell us something about the quality of the external resources as perceived by the firm. Second, whether the firm has finished the complete program indicates the use of external resources by the firm, which in turn should be correlated with successful internationalization.

As we know that access to foreign business networks are vital for SME internationalization, we have included a question whether subsidized use of trade fairs and international exhibitions have contributed to internationalization. As these fairs often focus on finding trade partners and selling products, its low potentially low correlation with innovation may provide for valid instruments (Eaton et al.,

2012). Such information often also comes from local 'cooperative competitors', so that location in an urban industrial cluster may aid internationalization.[46]

If we move to explaining firm performance, we have to take account that it is affected by both internationalization and innovation, which in turn potentially influence each other in the complex interaction described above. To do so, we specify a system of equations that allows for an indirect relationship between internationalization and innovation and relates it to the performance of the firm. Several other studies in this field have applied related, but different structural equation modeling setups (see Dhanaraj & Beamish, 2003).

Figure 1: Conceptual framework

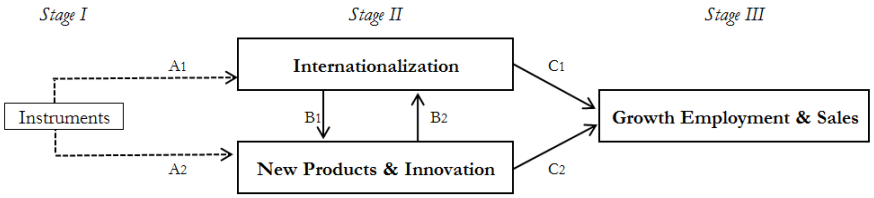


Figure 1 shows the conceptual framework that we use for the 3SLS structural equation modeling (SEM). The technique of path analysis (Kline, 2005) involves the estimation of the presumed causal relationships among internationalization, innovation and firm performance. In Figure 1, *Stage I* follows the same logic as the aforementioned instrumental variable which estimate the 'causal' effect of internationalization on innovation, which we have highlighted with process *A*. Obviously, we use separate instrumental variables for internationalization and new products and innovation.[47] *Stage II* underlines the mutual dependence between

[46] At first sight the suggested instruments seem valid (see Appendix 2 for more details on the first stage regression results). First, EPP plan completed is highly correlated with *Internationalization* (r = 0.42; $p < 0.01$) and not strongly related to *New Product* (r = 0.11; p = 0.17) nor *Innovation* (r = 0.14; p = 0.08). Second, other government support is highly correlated with *Internationalization* (r = 0.28; $p < 0.01$) and not strongly related to *New Product* (r = 0.11; p = 0.18) nor *Innovation* (r = 0.12; p = 0.12). Third, the *Resources* of the firm are highly correlated with *Internationalization* (r = 0.28; $p < 0.01$) and not related to *New Product* (r = 0.10; p = 0.21) nor *Innovation* (r = 0.15; p = 0.06). Fourth, urban location is correlated with *Internationalization* (r = 0.17; $p < 0.05$) and not related to *New Product* (r = 0.08; p = 0.32) nor *Innovation* (r = 0.13; p = 0.10).

[47] The subsystem that explains innovation uses the same theory driven approach as above. The first variable *Support Innovation*, is a standardized scale of six items (Cronbach's alpha = 0.86). The items of this scale inform us about to what extend the government support influenced the innovative capacity of the firm, which is highly correlated with both innovation measures, but unrelated to internationalization. Second, sufficient *Liquidity* is necessary for innovation. Lastly, for SMEs global

internationalization and innovation. As pictured, there are indirect feedback loops between two variables as they respond to each other in a process that influences firm performance. The feedback loops represent the mutual influence among internationalization and innovation through the interaction of processes B_1 and B_2.[48] The combination of the IV estimation in *Stage I* together with the nonrecursive processes with feedback effects in *Stage II* recursively affect firm performance in *Stage III* as presented by the processes C_1 and C_2. By so doing we are able to capture the direct and indirect effects of internationalization and innovation on firm performance. For example, the combination of B_1 and C_2 shows the nonrecursive, indirect effect of internationalization on performance through its effects on the firm's innovation. It is our ambition to present a "horse race" between internationalization and innovation on firm performance to investigate which of the two impacts dominates, while taking endogeneity and mutual dependence into account.[49]

niche markets, innovation often is embedded in inputs from abroad, so that we use foreign inputs as a variable in the subsystem.

[48] Note that the structural model estimated here fundamentally differs from a simple OLS estimation with performance as outcome and, internationalization and innovation as explanatory variables, including an interaction term among the latter. Such interaction effect only implies that e.g. given a greater level of innovation, the effect of internationalization on performance will be magnified. In our setup, we take into account that because of a greater level of innovation, the observed level of internationalization may differ, such that a greater level of innovation not only can have a direct effect on performance, but also an indirect effect through the subsequent change of internationalization.

[49] One issue is that AMOS (an add-on in SPSS that we use for the 3SLS estimation) assumes that in the structural equation model the endogenous variables are continuously distributed, with normally distributed residuals. Although in practice failure of this assumption usually increases the standard errors of the estimated coefficients, meaning that it increases the chance of a Type II error (a failure to reject the null hypothesis of no effect), it does not pose severe problems as long as the underlying concepts (here: internationalization and innovation) are continuous in nature (Hoyle, 1995).

3. Results

The effects of internationalization on innovation

Table 2 shows the main results for the effect of *Internationalization* on the two innovation measures *New Products* and the *Innovation* scale. We present both the potentially biased OLS and simple probit regressions as well as the IV estimations. We control for firm size, age and the sector.[50] Overall we find a positive effect of internationalization on innovation. The economic significance is high: the elasticity is 0.4 and 0.5 for the instrumented values. In addition, the size of the effect increases significantly when we control for endogeneity, which points to substantial reverse causality. On the technical side, the Sargent *J* over-identifying restrictions tests cannot reject the null hypothesis, suggesting the instruments are valid. Furthermore, the Hausman-Wu tests indicate that *Internationalization* is an endogenous regressor since we reject the null that the variable is exogenous. We can also see that innovation is spread evenly over firm size (although all the firms in our sample are small) and sectors. We find some evidence that older firms innovate more, which in our sample of small firms may be attributed to liquidity constraints in the start up stage.[51] In Appendix 3 we show the robustness of the results for the individual items of the internationalization scale. In general, the indicators for higher levels of internationalization are positively correlated with innovation of the firm. Hence, our finding that internationalization has a positive causal effect on innovation is robust for various measures of internationalization and innovation.

[50] The firm size groups are evenly distributed as follows: no employees (4.67%), one employee (14.67%), two to four employees (27.33%), five to nine employees (26.67%), and ten to nineteen employees (26.67%). Firm age is measured as the log of the number of years that have passed since the date of incorporation. The age of the firms is also evenly distributed as follows: 32.0 percent is younger than five years, 20.7 percent is between five to ten years, 21.3 percent is between ten to twenty years, and, 26.0 percent is older than twenty years. Finally, the main sectors are industry (24.67%), business services (22.00%), trade (16.00%) and, construction (6.00%), while the other 31.1 percent falls in another category such as transport, retail and agriculture.

[51] To further test for the effect of internationalization on innovation we applied propensity score matching techniques using the resource-base of the firm and knowledge intensive production as matching parameters. The findings (not reported here) show no significant effect of internationalization on the two innovation measures, which may be attributed to the small sample (treatment group consists of 65 firms) since matching methods are data intensive (Caliendo & Kopeinig, 2008). Albeit insignificant, based on nearest neighbour procedure with a caliper of 0.05, the economic interpretation of the matching procedure still shows that treated firms (internationalizers) have a 12 percent higher likelihood to launch new products, and, score 0.28 standard deviations higher on the standardized innovation scale than their matched counterparts (not-internationalizers).

Table 2: Main results for the effect of internationalization on innovation

	(1)	(2)	(3)	(4)
	New Products		**Innovation**	
	probit	IV probit	OLS	2SLS
Internationalization	0.153	0.408**	0.203**	0.502**
	[0.108]	[0.178]	[0.089]	[0.163]
Firm size	0.097	0.101	-0.071	-0.063
	[0.099]	[0.099]	[0.068]	[0.071]
Firm age	-0.044	-0.0047	0.288**	0.333**
	[0.137]	[0.139]	[0.094]	[0.098]
Sector industry	0.150	0.076	-0.062	-0.139
	[0.289]	[0.290]	[0.216]	[0.233]
Sector trade	0.547	0.478	-0.050	-0.101
	[0.345]	[0.351]	[0.224]	[0.222]
Sector business services	0.269	0.283	0.013	0.037
	[0.292]	[0.274]	[0.237]	[0.230]
Sector construction	0.051	0.137	-0.492	-0.388
	[0.463]	[0.446]	[0.362]	[0.376]

Note: n=150. Estimated with Stata 11. Robust standard errors in brackets, ** p<0.05, * p<0.10. Each specification includes sector dummies. Instruments for internationalization include resources, EPP plan completed, fairs*, other government support and urban, each of which enters significantly as explanatory variable for internationalization, first stage F-test confirms that instruments are relevant (F>10) – see Appendix 2, the test for overriding restrictions show no problems and, the Wald test for exogeneity are significant, suggesting that internationalization is an endogenous regressor.

The effects of internationalization and innovation on performance

Following the conceptual framework we estimate a structural equation model and analyze the effects of two endogenous variables, *Internationalization* and one innovation measure on the performance of the firm. The results in Table 3 are based on a 3SLS setup using a maximum likelihood estimator to derive the direct and indirect effects of the explanatory variables on employment growth and sales growth, which combined in a nonrecursive model express the total effect of each measure on performance (see Figure 1).

In general, the results show that internationalization has a very strong and positive 'causal' effect on performance. Table 3, Panel A indicates that the standardized direct (unmediated) effect of internationalization on employment growth is 0.11 which means that when the level of internationalization raises by one standard deviation, employment growth goes up by 0.11 standard deviations, apart from the indirect (mediated) effect of internationalization. A similar coefficient is given in Table 3, Panel B. Combined with the indirect effect, the total effect of internationalization on employment growth is comparable as an increase on the internationalization scale by one standard deviation is associated with a rise in employment growth by 0.12 standard deviations. In comparison to employment growth, internationalization has a much larger effect on the sales growth. We also find very robust direct and total effects of internationalization on sales growth between 0.30 and 0.31 suggesting that an expansion of international activities translate into higher growth rates.

Our findings further imply that innovation has a much smaller effect on firm performance than internationalization. The analysis in Table 3 shows that there is no effect of *New Products* on employment growth nor on sales growth. In addition, *Innovation* has no effect on sales growth, although its impact on employment growth is significant at a ten percent significance level with a standardized estimated coefficient around 0.12.

Apart for the importance of internationalization, we like to highlight the effects of firm size and firm age because they are intricately connected to the SME literature on internationalization and the born global literature. First, we find that among the microenterprises in our sample, the larger firms tend to have a *relatively* higher growth in employment than the smallest firms. Second, the size of the firm is unrelated to the relative sales growth. In addition to this we show that younger firms

tend to be more reluctant to hire new personnel. These new internationalizing ventures grow relatively slower in employment but there is no significant difference in terms of sales growth compared to older firms, although the data suggest that younger firms also increase sales relatively slower.

Table 3: 3SLS estimation results for the effects on firm performance

Panel A	(1)	(2)	(3)	(4)
	Employment growth		**Sales growth**	
	direct effect	total effect	direct effect	total effect
Internationalization	0.114*	0.122*	0.310**	0.304**
New Products	0.082	0.071	-0.047	-0.074
Size	0.309**	0.307**	-0.053	-0.086
Firm age	-0.253**	-0.262**	-0.096	-0.118*

n=150. Estimated by maximum likelihood using SPSS AMOS20. Standardized coefficients and standard errors in brackets, ** p<0.05, * p<0.10. For the two estimation model (1-2) and (3-4) respectively the diagnostic test statistics for absolute model fit are χ^2 = 352.01**, χ^2 = 361.83**; RMR = 0.038, RMR = 0.037; GFI = 0.816, GFI = 0.813; RSMEA = 0.093, RSMEA = 0.096; AIC = 466.012, AIC = 475.834 which together suggest a reasonably good fit. Other control variables are insignificant and not presented here.

Panel B	(1)	(2)	(3)	(4)
	Employment growth		**Sales growth**	
	direct effect	total effect	direct effect	total effect
Internationalization	0.109*	0.117*	0.311**	0.310**
Innovation	0.126*	0.117*	0.010	-0.013
Size	0.324**	0.309**	-0.056	-0.085
Firm age	-0.285**	-0.282**	-0.098	-0.115

n=150. Estimated by maximum likelihood using SPSS AMOS20. Standardized coefficients and standard errors in brackets, ** p<0.05, * p<0.10. For the two estimation model (1-2) and (3-4) respectively the diagnostic test statistics for absolute model fit are χ^2 = 356.24**, χ^2 = 367.274**; RMR = 0.049, RMR = 0.048; GFI = 0.815, GFI = 0.810; RSMEA = 0.094, RSMEA = 0.097; AIC = 470.240, AIC = 481.274 which together suggest a reasonably good fit. Other control variables are insignificant and not presented here.

4. Conclusion

The recent trade literature in economics posits that in Western countries only the most productive firms internationalize and, these firms reap no additional gains from this experience in terms of innovativeness and productivity. The traditional argument is that these productive firms are also highly innovative and large in size, which drive the expansion to foreign markets. This paper highlights that small businesses from developed regions often internationalize to gain knowledge and improve firm performance. Using insights from the Uppsala Internationalization model and the born global literature we find that although these firms face a liability of smallness, they learn from international activities, become more innovative and expand their enterprises. In particular, by employing data from Dutch microenterprises that are

enrolled to an export promotion program we find positive effects of internationalization on innovation and sales growth while taking into account the indirect linkages between internationalization and innovation.

From a policy perspective we contribute to the debate on the role of export promotion programs. Within this field, there is a discussion about the effects of such programs (Chen et al., 2011; Volpe Marticus & Cabrallo 2008, 2010; Wilkinson & Brouthers, 2006; Freixanet, 2011). We complement this literature in four ways. First, we move beyond the simple correlations and OLS estimates and use a structural model with instrumental variables to account for endogeneity. Second, these studies rely predominantly on medium and large firms, where we focus on small firms with less than twenty employees. Third, studies that evaluate the EPPs impact focus on export volume growth while we are interested in the effects of internationalization on innovation, sales and employment. Finally, there are only a few studies that also look at innovation, however, these selected papers do not present a full model which further analyzes the effects of internationalization (and innovation) on firm performance.

Given the results, it seems that export promotion programs are associated not only with increased international activities but also that small firms become more innovative. In this way, these programs kill two birds with one stone. First, the program induces firms to venture abroad. Second, internationalization is associated with greater innovation. Third, a higher degree of internationalization is related to increased sales growth. In addition, we find preliminary evidence that venturing abroad and innovation contribute to employment growth, although these effects are much smaller compared to sales growth. Overall, in a horse race setting, the positive contributions of internationalization on performance appear to be greater than those of innovation for the firms in our sample (see Aw et al., 2011; Harris & Moffat, 2010). Because intrinsically the two measures are qualitatively difficult to compare, further research with different measures of internationalization and innovation is warranted. Also, the recorded effects on changes in sales and employment do not reflect profitability (Lu & Beamish, 2006; Wolff & Pett, 2006) nor productivity (O'Cass & Weerawardena, 2009).

This study is based on cross-sectional data. Since we have no time dimension and a relatively small sample, we rely on a structural model to test for the effects of internationalization and innovation on performance. As such, this study is not an

impact assessment of export promotion programs. Our sample has no pure control group, in the sense that all firms are trying to move abroad. In this manner our results may not represent a full picture of the field as those that are not successfully internationalizing are the low productive firms, whereas those that succeed are of the high productive type. Future research analyzing data from EPPs may benefit from inclusion of two other groups of firms: those that are only domestically active, and, those that are already internationally active. Given this context, we argue that the data is still suited to study the effects of internationalization. Two major advantages of the data are that first, we only look at new international ventures, a rather under-studied group of firms. This means that all firms in the dataset are on the fringe of internationalizing, precisely the group to look at to test for the effect of this process. Secondly, another major advantage of the survey is that it includes ex ante build-in questions that in theory should be valid instruments. Using 3SLS and instruments allows us at least to take away much concern about endogeneity, such that we can disentangle the direct and indirect effects of internationalization and innovation on firm performance. The results are comparable to those of Dhanaraj and Beamish (2003) who also estimate a structural model with firm resources, internationalization and innovation. In line with our results, they find for firms from Canada and the United States strong effects of internationalization on innovation (see Zahra et al., 2000, 2009).

Overall, in line with recent studies (e.g. De Loecker, 2007) we show that international expansion may induce SMEs to invest in R&D efforts in order to launch new products and services. We argue that such effects of internationalization on innovation will enhance firm productivity so as to increase firm performance. In line with Melitz (2003) we find that firms that venture abroad increase sales, but for Dutch SMEs the employment generation effects appear to be weak. A key contribution of this paper is that when analyzing the effects of internationalization, innovation and performance, there are important interlinkages among the variables that need to be taken into account in a structural model with instrumental variables. Using survey data with ex ante build-in candidate instrument variable we are able to estimate the direct and indirect effects of internationalization on innovation, while also taking into account that more innovative firms are more likely to internationalize. With this background, we find that a higher degree of internationalization has *in itself* a positive contribution on firm performance, which

would undermine a key assumption of the Melitz (2003) model that productivity is exogenous to international activities. We like to stress that the results arise using a sample of microenterprises which have not been included by previous studies. For example, the widely-celebrated papers by Bernard and Jensen, which were key inputs for Melitz, only look at firms with more than 500 employees. Similarly, more recent studies using CIS data are mostly limited to medium and large sized firms, although there are some observations of small firms with more than 20 employees (while we look at those with at most 20 employees). In this way, this study is able to explain two general patterns that are in conflict with Melitz: first, that there are many SMEs engaged in international activities while the model predicts there is a monotonic relationship between size and internationalization strategies where at a certain productivity (and size!) threshold firms start exporting. Second, many small business managers venture abroad because they want to learn from foreign partners in order to grow. The Melitz framework has difficulties with explaining the expansion path of the firm, it merely shows that trade liberalization lowers the costs of foreign market entry, hence lowering the threshold for smaller, less productive firms to participate in international trade relations. We like to stress that for some SMEs from developed markets, venturing abroad could improve productivity levels and determine the performance of microenterprises.

Appendix 1

Table A1: Summary statistics of key items

Variable	Description	Mean	S.d.
Internationalization		0.00	1.00
int1	share international sales	0.47	0.28
int2	export volume growth	0.67	0.47
int3	satisfaction internationalization	0.65	0.17
int4	born global	0.43	0.50
New Products		0.61	0.48
Innovation			
innov1	product innovation	3.2	1.10
innov2	organizational improvements and process innovation	3.0	1.06
innov3	marketing innovation and new concepts	2.9	1.03
Resources			
resource1	technological know-how	4.3	0.71
resource2	market knowledge	4.5	0.72
resource3	organizational capabilities	3.9	0.84
resource4	human capital	3.8	0.82
resource5	entrepreneurial attitude management	4.1	0.81
resource6	business networks	3.8	0.86
Employment growth		3.5	0.83
Sales growth		3.9	0.96

Note: For the innovation scale and the resources variable the items were measured on a five point Likert scale, ranging from totally disagree to totally agree. For the innovation items the senior manager was ask: "In general, in my opinion the international activities of the firm have made a significant contribution to ["innov" item]". For the resources variable the question was: "Relative to my direct competitors within my sector the competitive advantage and key resource of the firm is/are ["resource" item]".

Appendix 2

Table A.2 presents the first-stage estimation results for *Internationalization*. As can be seen, all five instrumental variables load significantly as determinants of internationalization. Moreover, the coefficient of determination (r^2 = 0.353) is relatively large for a firm-level study explaining internationalization. This suggests for the first-stage a good model fit (F>10).

Table A2: First stage probit regression results

Resources	1.282**
	[0.345]
EPP completed	0.738**
	[0.147]
Fairs	0.173*
	[0.106]
Government support	0.416**
	[0.139]
Urban	0.255*
	[0.142]
Firm size	-0.069
	[0.071]
Firm age	-0.107
	[0.080]
Sector industry	0.114
	[0.192]
Sector trade	0.094
	[0.224]
Sector business services	-0.168
	[0.203]
Sector construction	-0.642**
	[0.251]
R^2	0.353

Note: n=150. Robust standard errors in brackets; ** p<0.05, * p<0.10. The variables, Resources, EPP completed, Fairs, Government support, and Urban are used as instrumental variables in the second stage. None of these IVs are correlated with the two innovation measure (r < 0.15; p > 0.05) nor are they individually significant in a full-regression model explaining *New Products* or *Innovation*.

Appendix 3

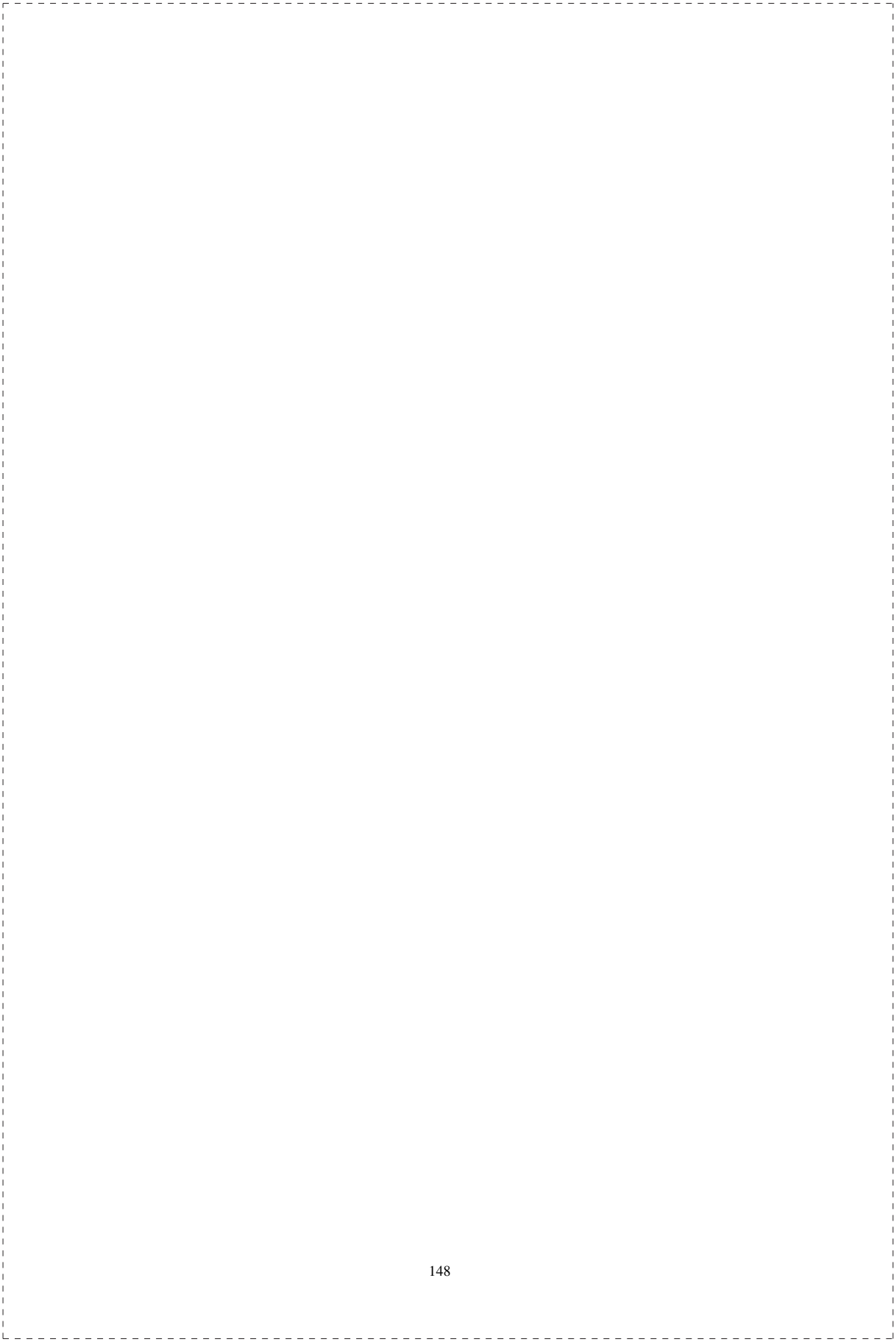
To verify whether the causal effect of internationalization on innovation is driven by a particular item in the scale we analyze the impact of each component on the two innovation measures individually. Table A.3 shows that each item of the *Internationalization* scale has a positive and significant effect on *New Products* and *Innovation*, suggesting our findings from Table 2 are robust and not sensitive to alterations of the scale.

In particular, the results from Table A.3 confirm that i) a larger share of international sales to total sales, ii) higher export volume growth, iii) greater satisfaction with the current level of internationalization, and iv) being a born global firm are all associated with greater innovation.

Table A3: Robustness tests

	New Products				Innovation			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share international sales	1.86** [0.80]				2.33** [0.81]			
Export volume growth		0.88** [0.43]				0.968** [0.39]		
Satisfaction internationalization			2.80** [1.12]				3.66** [1.28]	
Born global				1.247** [0.54]				1.50** [0.67]

Note: n=150. Robust standard errors in brackets; ** p<0.05, * p<0.10; Columns 1-4 are IV probit regressions and Columns 5-8 are standard 2SLS regressions. Instruments and included control variables are the same as in Table 2 but not reported here.



SUMMARY AND CONCLUSIONS

International entrepreneurship is an important vehicle for firms to reap benefits from their high productivity levels and from economies of scale by reaching new customers. International enterprises tend to be larger and more innovative, but a key question of causality remains disputed in the international trade and international business studies literature. That is, does innovation and productivity drive firms towards international markets or does internationalization influence firm innovation and productivity? At the traditional core it is assumed that only highly productive enterprises venture abroad. This follows as a logical consequence because large and productive firms have the resources, capabilities and competitive advantages to incur significant fixed costs for such expansion towards world markets. One corrollary from this stance is that if firms move abroad they already make use of the latest technologies and will not learn and improve their productivity levels (Bernard et al., 2012; Dunning, 2000; Helpman et al., 2004; Melitz, 2003; Wagner, 2007, 2011).

In this thesis the aforementioned reasoning is not disputed. However, the claim is put forward that these conclusions arise only if one studies (already) large Western firms. Two recent phenomena challenge the aformentioned "exogeneity" of productivity assumption which implies that only productive (large) firms expand to foreign markets. There is a new research strand, both in international economics (see i.a. Aw et al., 2009, 2011; Bustos, 2011; De Loecker, 2007, 2010, 2011; Damijan et al., 2010; Eaton et al., 2011; Greenaway & Kneller, 2007; Van Biesebroack, 2005; Verhoogen, 2008) and in international business studies (see i.a. Child & Rodrigues, 2005; Elango & Pattnaik, 2007; Garciá et al., 2011; Golovko & Valentini, 2011; Luo & Tung, 2007; Mathews, 2006; Salomon & Yin, 2010; Yiu et al., 2007) emerging, which questions to what extent firms upgrade their technological competences and productivity levels *through* internationalization.

First, small businesses are increasingly active in international trade relationships. Some small firms even become internationally active from their inception; a spectacle referred to as the "born global" firm. Often these SMEs concentrate their business activities in nearby markets and specialize to particular niches. What stands out is that these firms use international markets to gain access to the latest technologies, learn from interaction with foreign partners and obtain

experimental knowledge to become more innovative. Thus, such learning by SMEs poses some difficulties for the standard models' hypothesis that only large, productive firms venture abroad. Moreover, the standard model predicts that immediately after productivity levels are revealed, firms make the internationalization decision. However, the majority of the SMES cannot be labelled born global but becomes active in foreign markets sequentially.

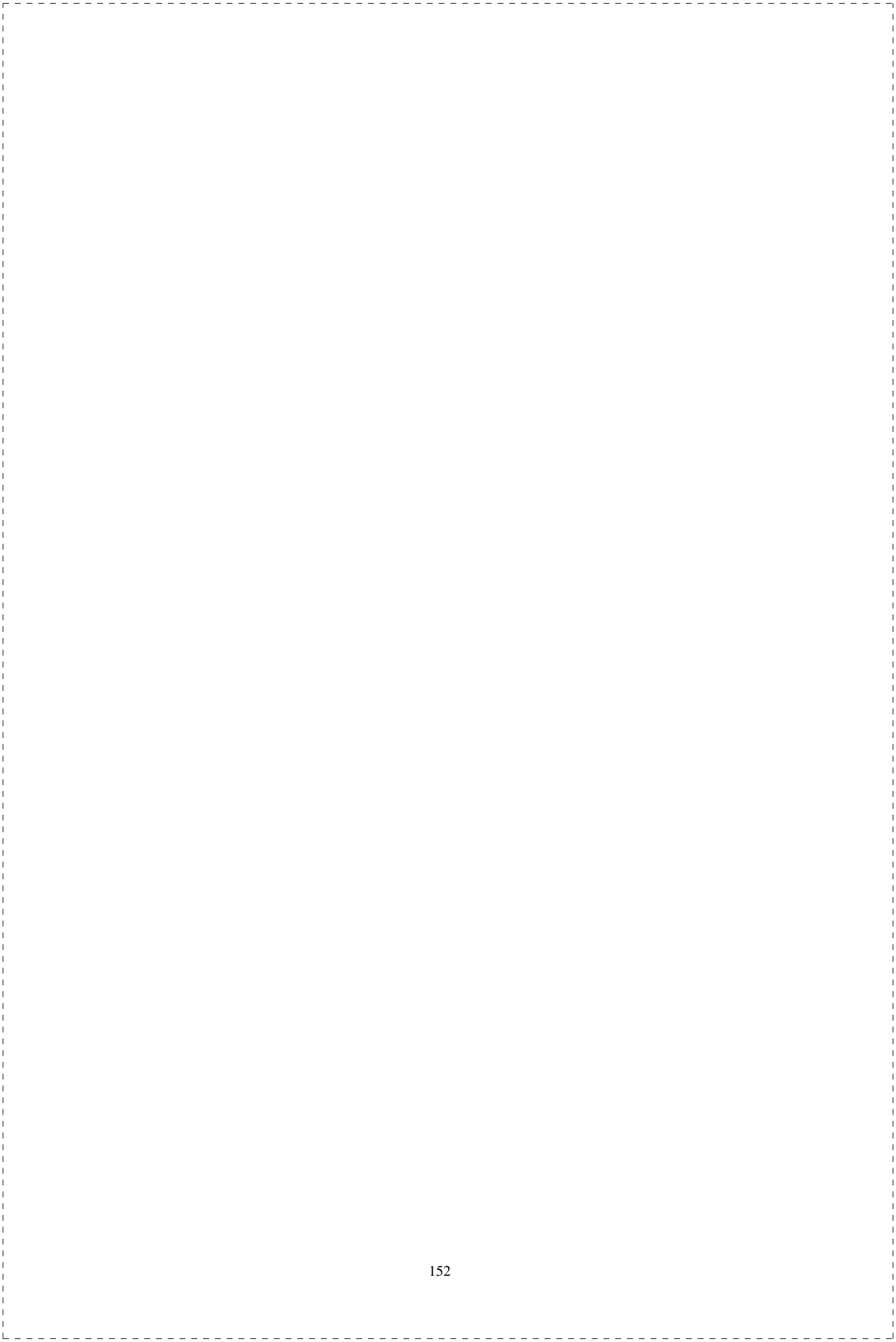
Second, just as small enterprises may not have direct access to recent innovations, many firms from developing countries want to internationalize in order to obtain foreign inputs and close the knowledge gap with large Western multinationals. For firms from transition economies and emerging markets that have a high learning potential, joint ventures and foreign direct investment facilitate the access to strategic assets. Moreover, international activities allow for economies of scale, induce learning-by-doing effects and give rise to new competitive pressures to enhance firm-level productivity. Taking stock, this suggests that relatively unproductive non-Western firms and SMEs purposely attempt to influence their innovative capacity and productivity by the internationalization of their enterprises. Therefore, if we consider the internationalization process as a strategy to increase productivity, the assumption of exogeneity is no longer valid.

As laid out in the preceding chapters, primarily SMEs and firms from transition and emerging markets are expected to experience the most efficiency gains from international activities as their learning potential is the highest. These firms also have sufficient absorptive capacities. Part I focused on the internationalization of firms from transition economies and emerging markets. As shown in Chapter II, firms from former Soviet states are able to become more innovative through exporting, foreign direct investments and to some extent by international outsourcing activities. Chapters III and IV stress that for emerging economies the initial conditions of the firm to allow for positive spillovers and knowledge sharing from international activities require certain organizational capacity and managerial capabilities. In particular, Chapter III provides a theoretical account to elucidate how firms build-up their resources and innovative capacity through internationalization. In this way, this paper aims to explain the rapid rise of international ventures from emerging markets as they are in a good position to acquire strategic assets abroad. Following this logic, Chapter IV further builds a conceptual model to analyze specifically how different types of managerial capabilities are important for different

internationalization strategies of Indian manufacturers. The empirical results of Chapter IV imply that for Indian firms, greater foreign market knowledge, better access to international business and social networks as well as learning and absorptive capacity shape the tendency to venture abroad. Certain managerial capabilities tilt firms into exporting or FDI.

Part II of this thesis examined the role of internationalization for small businesses. In a development economics context, Chapter V highlights that the internationalization of the firm is a costly and risky activity, especially for small firms in developing countries. To better understand the problems in the local economy Chapter V focuses on Tanzanian entrepreneurs and shows that firm characteristics like financial capital and the entrepreneur's risk attitude are also important drivers of firm productivity. Therefore, these findings from developing countries underscore the key role of initial conditions, resources and managerial capabilities that have different effects in various contexts in shaping the internationalization decision and their subsequent effects on firm productivity and performance. In particular, the impact of international entrepreneurship is moderated by human and managerial capital, access to finance and institutional restrictions. Finally, Chapter VI takes up the challenge to test if internationalization also has a positive effect in advanced economies. In particular, the paper shows that Dutch SMEs who internationalize become more innovative and increase firm performance. It highlights the role of external resources and export promotion programs to boost international enterprise and innovation.

These five papers make an important contribution to understanding the mechanisms and consequences of the internationalization of the firm. Based on micro-econometric evidence the Chapters provide insights in a vibrant literature in international economics and business studies on international entrepreneurship and enterprise development. The papers show that entrepreneurship, internationalization and innovation play an important role for economic development. The papers stipulate that there is a fruitful interplay between economics and business studies as a multidisciplinary field of research to explain both the conditions for and the impact of internationalization strategies at the firm-level. The main thesis that internationalization has a positive effect on firm performance is confirmed for small businesses from advanced economies and for firms from less developed markets.



NEDERLANDSE SAMENVATTING

Internationaal ondernemerschap wordt steeds belangrijker door globalisering en vergaande economische integratie. Een belangrijk onderdeel van de internationalisering van bedrijven is dat de productie hierdoor op grotere schaal kan worden uitgevoerd door wereldwijd klanten te bedienen. Wat opvalt is dat internationale bedrijven doorgaans groter zijn en over een hoger innovatievermogen beschikken dan lokaal-georiënteerde ondernemingen. Binnen de economische wetenschap en internationale management literatuur speelt daarom de vraag of dit innovatievermogenbepalend is om te kunnen internationaliseren. De cruciale vraag is of meer productieve ondernemingen internationaliseren, of dat het betreden van buitenlandse markten een positief effect heeft op productiviteit. De standaard-theorie veronderstelt dat inderdaad enkel zeer competitieve ondernemingen de stap naar het buitenland maken, omdat deze kunnen beschikken over de beste middelen, waaronder financieel kapitaal, unieke organisatiekracht en hoogopgeleid personeel. Dit impliceert dat internationale ondernemingen ook gebruik maken van de laatste technologische mogelijkheden en beste management-principes om de wereldwijde concurrentie aan te kunnen op basis van hun hoge productiviteit. Gevolg is dat grote Westerse multinationals weinig "extra" kunnen leren van internationaliseren (Bernard et al., 2012; Dunning, 2000; Helpman et al., 2004; Melitz, 2003; Wagner, 2007, 2011).

In dit proefschrift worden de bovenstaande gevolgtrekkingen niet in twijfel getrokken, maar wordt betoogd dat dergelijke conclusies sterk afhankelijk zijn van de context. Deze bovengenoemde observaties zijn namelijk gebaseerd op studie-materiaal afkomstig van grote, Westerse ondernemingen. In de redenatie ligt verankerd dat de productiviteit van bedrijven "exogeen" is, in de zin dat internationalisering geen mogelijke verbeteringen kan veroorzaken. Twee recente observaties maken deze assumptie problematisch.

Ten eerste, kleine ondernemingen zijn steeds vaker actief op internationale markten. Sommige ondernemers en managers kiezen er zelfs voor om direct bij de start van het bedrijf de buitenlandse markt te betreden; een fenomeen dat wordt aangeduid als de "born global". Vaak richten dergelijke kleine internationaal actieve

bedrijven zich op naburige landen en specialiseren ze zich in niche markten. Wat opvalt is dat voor deze groep ondernemingen, internationalisering wordt gezien als een middel om toegang te hebben tot de nieuwste technologieën, om te leren van internationale contacten en om zo experimentele kennis op te doen om tot innovaties te komen. Dergelijke observaties zijn moeilijk te verenigen met het standaard model dat voorspelt dat enkel grote, productieve bedrijven internationaal ondernemerschap vertonen.

Ten tweede, net als dat voor kleine ondernemers de frontier kennis en innovaties niet direct voor het oprapen liggen is het voor bedrijven uit ontwikkelingslanden en opkomende economieën zonder internationale handel niet mogelijk om over de nieuwste technologieën te beschikken. Er bestaat zodoende dus een kennis- en technologiekloof met Westerse multinationals. Ondernemers uit niet-Westerse landen zien internationale activiteiten dus ook als een middel om toegang te krijgen tot strategische kennis en technologie. Deze bedrijven hebben doorgaans een groot leervermogen om de nieuwe kennis hun eigen te maken om de productiviteit van de onderneming te vergroten. Het betreden van buitenlandse markten betekent dus dat de productie opgevoerd kan worden wat tot schaalvoordelen leidt, er leereffecten optreden die het productieproces efficiënter maken en dat de onderneming moet opgewassen zijn tegen buitenlandse concurrentie. Tezamengenomen zien we dat momenteel relatief niet-productieve en niet-Westerse ondernemingen en kleine bedrijven bewust proberen hun innovatiekracht en efficiëntie te verbeteren door de internationaliseringsstap te maken. Met andere woorden, internationaliseren is een strategie om de productiviteit te versterken, wat betekent dat de aanname dat productiviteit exogeen is aan internationaliseren niet langer geldig is.

Zoals blijkt uit de voorgaande hoofdstukken zijn het precies het midden- en kleinbedrijf en de ondernemers uit niet-Westerse landen die de meeste winsten kunnen verwachten door zich te richten op buitenlandse markten, omdat zij over het grootste leervermogen beschikken in relatie tot de grote Westerse multinationals. Het MKB en bedrijven uit opkomende markten en transitie economieën beschikken over voldoende "absorptie" capaciteiten om de wereldwijde technologische frontier-kennis om te zetten binnen het eigen bedrijf.

Deel 1 van dit proefschrift richt zich nadrukkelijk op internationaal ondernemerschap binnen bedrijven in transitie economieën en opkomende markten. In een empirische analyse toont Hoofdstuk II aan dat bedrijven uit voormalige Sovjet landen meer innovatief worden als gevolg van exportparticipatie, directe buitenlandse investeringen en outsourcing. Hoofdstuk III en IV richten zich op de initiële condities van bedrijven uit opkomende markten welke in belangrijke mate bepalen of er positieve feedback en kennisoverdracht van internationale activiteiten zal plaatsvinden. Hoofdstuk III schept een theoretisch raamwerk om te begrijpen hoe internationaliseren het proces van het opbouwen van capaciteiten en het vergroten van innovatievermogen vergroot. Hoofdstuk IV geeft een conceptueel model weer om de rol van managementcapaciteiten uit te lichten. Een empirische analyse van bedrijven uit India toont aan dat verschillen in managementcapaciteiten verschillende internationaliseringstrategieën als exporteren en overnames voorspellen. Bedrijven met top managers die over meer kennis van buitenlandse markten, betere zakelijke en sociale internationale netwerken en grotere leercapaciteit en kennis beschikken zullen eerder en 'dieper' internationaliseren. Ook bepalen managementcapaciteiten in grote mate de keuze voor export of buitenlandse investeringen en overnames.

Deel II van dit proefschrift kijkt specifiek naar het midden- en kleinbedrijf en internationaal ondernemerschap. Vanuit een ontwikkelingsperspectief geeft Hoofdstuk V aan dat internationaliseren kostbaar is en hoge risico's met zich meebrengt; des te meer voor het MKB en bedrijven uit ontwikkelingslanden. Daarom richt Hoofdstuk V zich op de interne eigenschappen die verband houden met productiviteit. Specifiek blijken financiële middelen door toegang tot microkrediet alsmede de risicohouding van de ondernemer belangrijke voorspellers te zijn van het succes van zelfstandigen. Deze uitkomsten tonen aan dat voor ontwikkelingslanden de initiële condities, interne middelen en managementcapaciteiten diverse effecten hebben in verschillende omgevingen en de internationaliseringbeslissing beïnvloeden. Ook zullen dergelijke restricties als menselijk kapitaal, financiële middelen en instituties de grote van het effect van internationale activiteiten op productiviteit vormen. Ter afsluiting richt Hoofdstuk VI zich op Nederlandse ondernemers met minder dan twintig werknemers om te onderzoeken of internationalisering voor deze groep ook een positief effect heeft. De empirische analyse toont aan dat ook voor kleine bedrijven uit Westerse landen door

het betreden van buitenlandse markten het innovatievermogen wordt vergroot zodat er meer nieuwe producten en diensten worden ontwikkeld en de verkopen stijgen.

Concluderend kan worden vastgesteld dat de bovengenoemde vijf artikelen een belangrijke bijdrage leveren aan het in kaart brengen van de mechanismen en gevolgen van internationaal ondernemerschap. Gebaseerd op micro-econometrische analyses bieden de hoofdstukken nieuwe inzichten voor een multidisciplinaire en levendige literatuur in de internationale economie en de internationale management en bedrijfskunde welke recentelijk de rol van bedrijven voor economische groei benadrukken. De thesis dat internationalisering een positief effect heeft op innovatie en productiviteit wordt bevestigd voor kleine bedrijven en ondernemingen uit niet-Westerse landen.

REFERENCES

Abadie, A., & Imbens, G.W. (2008). On the failure of the bootstrap for matching estimators. *Econometrica, 76*(6), 1537-1557.

Aghion, P., Fally, T., & Scarpetta, S. (2007). Credit constraints as a barrier to the entry and post-entry growth of firms. *Economic Policy, 22*(52), 731-779.

Ahlin, C., & Jiang, N. (2008). Can micro-credit bring development? *Journal of Development Economics, 86*(1), 1-21.

AIID (2010). Impact evaluation of HIF-supported health insurance projects in Tanzania: Micro credit clients: Baseline report. By Pradhan, M., Lange, J., Schultsz, C., Lammers, J., Heidenrijk, M., De Wit, F., Hendriks, M. Kramer, B., Rooijakkers, J., Te Pas, M., Boermans, M, Pap, D., Van der List, M., & Zwager A. *Amsterdam Institute for International Development*, University of Amsterdam.

Albornoz-Crespo, F., Calvo Pardo, H.F., Corcos, G., & Ornelas, E. (2010). Sequential exporting. *CEPR Discussion Papers 8103*.

Amighini, A., Rabellotti, R., & Sanfilippo, M. (2010). The outward FDI from developing country MNEs as a channel for technological catch-up. *Seoul Journal of Economics, 23*(2), 239-261.

Amit, R., & Schoemaker, P.J.H. (1993). Strategic assets and organizational rent. *Strategic Management Journal, 14*(1), 33-46.

Amiti, M., & Konings, J. (2007). Trade liberalization, intermediate inputs, and productivity: Evidence from Indonesia. *American Economic Review, 97*(5), 1611-1638.

Amstrong, C.E., & Shimizu, R. (2007). A review of approaches to empirical research on the resource-based view of the firm. *Journal of Management, 33*(6), 959-986.

Andersen, O., & Kheam, L.S. (1998). Resource-based theory and international growth strategies: An exploratory study. *International Business Review, 7*(2), 163-184.

Arkolakis, C. (2010). Market penetration costs and the new consumers margin in international trade. *Journal of Political Economy, 118*(6), 1151-1199.

Arkolakis, C. (2011). A unified theory of firm selection and growth. *NBER Working Paper No. 17553*.

Arkolakis, C., & Muendler, M.A. (2010). The extensive margin of exporting products: A firm-level analysis. *NBER Working Paper No. 16641*.

Armendáriz de Aghion, B., & Morduch, J. (2005). *The economics of microfinance*. Cambridge: MIT Press.

Arnold, J.M., & Hussinger, K. (2005). Export behavior and firm productivity in German manufacturing: A firm-level analysis. *Review of World Economics, 141*(2), 219-243.

Athanassiou, N., & Nigh, D. (2000). Internationalization, tacit knowledge and the top management teams of MNCs. *Journal of International Business Studies, 31*(3), 471-487.

Athreye, S., & Kapur, S. (2009). Introduction: The internationalization of Chinese and Indian firms - Trends, motivations and strategy. *Industrial and Corporate Change, 18*(2), 209-221.

Augier, M., & Teece, D.J. (2009). Dynamic capabilities and the role of managers in business strategy and economic performance. *Organization Science, 20*(2), 410-421.

Aulakh, P.S. (2007). Special issue on emerging multinationals from developing economies: motivations, paths and performance. *Journal of International Management, 13*(3), 235-402.

Aulakh, P.S. Kotabe, M., & Teegen, H. (2000). Export strategies and performance of firms from emerging economies: Evidence from Brazil, Chile and Mexico. *Academy of Management Journal, 43*(3), 342-361.

Aw, B.Y., & Hwang, A.R. (1995). Productivity in the export market: A firm level analysis. *Journal of Development Economics, 47*(2), 313-332.

Aw, B.Y., Roberts, M.J., & Winston, T. (2007). Export market participation, investments in R&D and worker training, and the evolution of firm productivity. *The World Economy, 30*(1), 83-104.

Aw, B.Y., Roberts M.J., & Xu, D.Y. (2008). R&D investments, exporting, and the evolution of firm productivity. *American Economic Review, 98*(2), 451-456.

Aw, B.Y, Roberts M.J., & Xu, D.Y. (2011). R&D investment, exporting, and productivity dynamics. *American Economic Review, 101*(4), 1312-1344.

Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2008). How important are financing constraints? The role of finance in the business environment. *World Bank Economic Review, 22*(3), 483-516.

Balasubramanyam, V.N., & Forsans, N. (2010). Internationalization drivers of Indian firms. *Asian Business & Management, 9*(3), 319-340.

Baldwin, R.E., & Robert-Nicoud, F (2008). Trade and growth with heterogeneous firms. *Journal of International Economics, 74*(1), 21-34.

Banerjee, A.V., & Duflo, E. (2008). Do firms want to borrow more: Testing credit constraints using a targeted lending program. *BREAD Working Paper*.

Banerjee, A.V., & Duflo, E. (2010). Giving credit where it is due. *Journal of Economic Perspectives, 24*(3), 61-79.
Banerjee, A.V., & Newman, A.F. (1993). Occupational choice and the process of development. *Journal of Political Economy, 101*(2), 274-298.
Banerjee, A.V., Duflo, E., Glennerster, R., & Kinnan, C. (2009). The miracle of microfinance? Evidence from a randomized evaluation. *MIT Working Paper.*
Barkema, H.G., & Vermeulen, F. (1998). International expansion through start up or acquisition: A learning perspective. *Academy of Management Journal, 41*(1), 7-26.
Barkema, H.G., Shenkar, O., Vermeulen, F., & Bell, J.H.J. (1997). Working abroad, working with others: How firms learn to operate international joint ventures. *Academy of Management Journal, 40*(2), 426-442.
Barney, J.B., & Arikan, A.M. (2001). The resource-based view: Origins and implications. In M.A. Hitt, R.E. Freeman & J.S. Harrison (Eds.), *The Blackwell Handbook of Strategic Management.* Oxford: Blackwell Publishers.
Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120.
Barney, J.B. (2001). Is the resource-based 'view' a useful perspective for strategic management research? Yes. *Academy of Management Review, 26*(1), 41-56.
Barney, J.B., & Wright, P.M. (1998). On becoming a strategic partner: The role of human resources in gaining competitive advantage. *Human Resource Management, 37*(1), 31-46.
Barney, J.B., Wright, M., & Ketchen Jr., D.J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management, 27*(6), 625-641.
Baron, R.A. (2000). Counterfactual thinking and venture formation: The potential effects of thinking about "what might have been." *Journal of Business Venturing, 15*(1), 79-91.
Bartel, A.P., & Harrison, A.E. (2005). Ownership versus environment: Disentangling the sources of public-sector inefficiency. *Review of Economics and Statistics, 87*(1), 135-147.
Bartelsman, E.J., Haltiwanger, J.C., & Scarpetta, S. (2009). Cross-country differences in productivity: The role of allocation and selection. *NBER Working Paper No. 15490.*
Bartlett, C.A., & Goshal, S. (1998). Managing across borders: The transnational solution. *American Foreign Policy Interests, 21*(1), 20-22.
Baum, J.R., Locke, E.A., & Smith, K.G. (2001). A multidimensional model of venture growth. *Academy of Management Journal, 44*(2), 292-303.
Beck, T.H.L., & Demirgüc-Kunt, A. (2008). Access to finance - An unfinished agenda. *World Bank Economic Review, 22*(3), 383-396.
Beck, T.H.L., Demirgüc-Kunt, A., Laeven, L., & Maksimovic, V. (2006). The determinants of financing obstacles. *Journal of International Money and Finance, 25*(6), 932-952.
Begley, T.M., & Boyd, D.P. (1987). Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses. *Journal of Business Venturing, 2*(1), 79-93.
Belloc, M., & Di Maio, M. (2011). Survey of the literature on successful strategies and practices for export promotion by developing countries. *International Growth Centre Working Paper 11/0248*, London School of Economics.
Berglöf, E., LBruynooghe, L., Harmgart, H., Sanfey, P., Schweiger, H., & and Zettelmeyer, J. (2010). European transition at twenty: Assessing progress in countries and sectors. *UNI-WIDER Working Paper No. 2010/91.*
Bernard, A.B., Eaton, J., Jensen, J.B., & Kortum, S. (2003). Plants and productivity in international trade. *American Economic Review, 93*(4), 1268-1290.
Bernard, A.B., & Jensen, J.B. (1995). Exporters, jobs, and wages in U.S. manufacturing: 1976-1987. *Brookings Papers on Economic Activity: Microeconomics, 1995*, 67-119.
Bernard, A.B., & Jensen, J.B. (1997). Exporters, skill upgrading, and the wage gap. *Journal of International Economics, 42*(1), 3-31.
Bernard, A.B., & Jensen, J.B. (1999). Exceptional exporter performance: Cause, effect, or both? *Journal of International Economics, 47*(1), 1-25.
Bernard, A.B., & Jensen, J.B. (2004). Why some firms export. *Review of Economic Studies, 86*(2), 561-569.
Bernard, A.B., Jensen, J.B., Redding, S.J., & Schott, P.K. (2012). The empirics of firm heterogeneity and international trade. *Annual Review of Economics, 1*(4), in press.
Black, J.A., & Boal, K.B. (1994). Strategic resources: Traits, configurations and paths to sustainable competitive advantage. *Strategic Management Journal 15*(1), 131-148.
Black, S.E., & Strahan, P.E. (2002). Entrepreneurship and bank credit availability. *Journal of Finance, 57*(6), 2807-2833.
Blais, A.R., & Weber, E.U. (2006). A domain-specific risk-taking (DOSPERT) scale for adult populations. *Judgment and Decision Making, 1*(1), 33-47.

Blalock, G., & Gertler, P.J. (2004). Learning from exporting revisited in a less developed setting. *Journal of Development Economics, 75*(2), 397-416.
Bloodgood, J.M., Sapienza, H.J., & Almeida, J.G. (1996). The internationalization of new high-potential US ventures: Antecedents and outcomes. *Entrepreneurship: Theory and Practice, 20*(1), 61-76.
Bloom, N., & Van Reenen, J. (2010). Why do management practices differ across firms and countries? *Journal of Economic Perspectives, 24*(1), 203-224.
Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., & Roberts, J. (2011). Does management matter? Evidence from India. *NBER Working Paper 16658*.
Bloom, N., Schweiger, H., & Van Reenen, J. (2011).The land that lean manufacturing forgot? Management practices in transition countries. *NBER Working Paper No. 17231*.
Boermans, M.A. (2010). Learning-by-exporting and destinations effect: Evidence from African SMEs. *MPRA Paper 22658*.
Boermans, M.A., & Kattenberg, M.A.C. (2011). Estimating reliability coefficients with heterogeneous item weightings using Stata: A factor based approach. *Tjalling C. Koopmans Research Institute Discussion Paper Series, 11-19*. Utrecht University, School of Economics.
Brandt, L., Van Biesebroeck, J., & Zhang, Y. (2012). Creative accounting or creative destruction? Firm-level productivity growth in Chinese manufacturing. *Journal of Development Economics, 97*(2), 339-351.
Brouthers, K.D., Brouthers, L.E., & Werner, S. (2008). Resource-based advantages in an international context? *Journal of Management, 34*(2), 189-217.
Bruton, G.D. Ahlstrom, D., & Wan, J.C.C. (2003). Turnaround in East Asian firms: Evidence from ethnic overseas Chinese communities. *Strategic Management Journal, 24*(6), 519-540.
Buckley, P.J., & Casson, M.C. (1976). *The future of the multinational enterprise*. London: McMillan.
Buckley, P.J., & Casson, M.C. (2009). The internalisation theory of the multinational enterprise: A review of the progress of a research agenda after 30 years. *Journal of International Business Studies, 40*(9), 1563-1580.
Buckley, P.J., Clegg, J., Cross, A.R., Liu, X., Voss, H., & Zheng, P. (2007). The determinants of Chinese outward foreign direct investment. *Journal of International Business Studies, 38*(4), 499-518.
Buera, F.J., Kaboski, J.P., & Shin, Y. (2011). Finance and development: A tale of two sectors. *American Economic Review, 101*(5), 1964-2002.
Bustos, P. (2011). Trade liberalization, exports, and technology upgrading: Evidence on the impact of MERCOSUR on Argentinean firms. *American Economic Review, 101*(1): 304-340.
Caldera, A. (2010). Innovation and exporting: evidence from Spanish manufacturing firms. *Review of World Economics, 146*(4), 657-689.
Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys, 22*(1), 31-72.
Carpenter, M.A., Geletkanycz, M.A., & Sanders, W.G. (2004). Upper echelons research revisited: Antecedents, elements, and consequences of top management team composition. *Journal of Management, 30*(6), 749-778.
Carreira, C., & Silva, F. (2010). No deep pockets: Some stylized empirical results on firms' financial constraints. *Journal of Economic Surveys, 24*(4), 731-753.
Cassiman, B., Golovko, E., & Martínez-Ros, E. (2010). Innovation, exports, and productivity. *International Journal of Industrial Organization, 28*(4), 372-376.
Castanias, R.P., & Helfat, C.E. (2001). The managerial rents model: Theory and empirical analysis. *Journal of Management, 27*(6), 661-678.
Castellani, D., & Zanfei, A. (2007). Internationalisation, innovation and productivity: How do firms differ in Italy? *The World Economy, 30*(1), 156-176.
Castro, R., Clementi, G.L., & MacDonald, G. (2009). Legal institutions, sectoral heterogeneity, and economic development. *Review of Economic Studies, 76*(2), 529-561.
Caves, R.E. 1982. *Multinational firms and economic analysis*. Cambridge: Cambridge University Press.
Chang, H.H., & Van Marrewijk, C. (2011). Firm heterogeneity and development: Evidence from Latin American countries. *Tjalling C. Koopmans Research Institute Discussion Paper Series, 11-14*. Utrecht University, School of Economics.
Chang, S., Van Witteloostuijn, A., & Eden, L. (2010). From the editors: Common method variance in international business research. *Journal of International Business Studies, 41*(2), 178-184.
Chen, S., Van Biesebroeck, J., & Yu, E. (2011). The impact of trade promotion services on Canadian exporter performance. *CEPR Discussion Paper No. 8597*.
Child, J., & Rodrigues, S.B. (2005). The internationalization of Chinese firms: A case for theoretical extension? *Management and Organization Review, 1*(3), 381-410.

Chittoor, E., Sarkar, M.B., Ray, S., & Aulakh, P.S. (2009). Third-world copycats to emerging multinations: Institutional changes and organizational transformation in the Indian pharmaceuticals industry. *Organization Science, 20*(1), 187-205.
Chittoor, R., & Ray, S. (2007). Internationalization paths of Indian pharmaceutical firms - A strategic group analysis. *Journal of International Management, 13*(3), 338-355.
Christman, S.D., Jasper, J.D., Sontam, V., & Cooil, B. (2007). Individual differences in risk perception versus risk taking: Handedness and interhemispheric interaction. *Brain and Cognition, 63*(1), 51-58.
Christmann, P. (2000). Effects of "best practices" of environmental management on cost advantage: The role of complementary assets. *Academy of Management Journal, 43*(4), 663-680.
Churchill, C., & Roth, J. (2006). Microinsurance: Opportunities and pitfalls for microfinance institutions. In Churchill, C. (Ed.). *Protecting the poor: A microinsurance compendium*. Geneva: International Labor Office.
Claessens, S., & Tzioumis, K. (2006). Measuring firm's access to finance. *The World Bank,* unpublished manuscript.
Clerides, S.K., Lach, S., & Tybout, J.R. (1998). Is learning by exporting important? Micro-dynamic evidence from Colombia, Mexico, and Morocco. *Quarterly Journal of Economics, 113*(3), 903-947.
Coase, R.H. (1937). The nature of the firm. *Economica, 4*(16), 386-405.
Cohen, W.M., & Levinthal, D.A. (1990). Absoptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35*(1), 128-152.
Coleman, B.E. (1999). The impact of group lending in Northeast Thailand. *Journal of Development Economics, 60*(1), 105-142.
Coleman, B.E. (2006). Microfinance in Northeast Thailand: Who benefits and how much? *World Development, 34*(9), 1612-1638.
Collier, P., & Gunning, J.W. (1999). Explaining African economic performance. *Journal of Economic Literature, 32*(1), 64-111.
Coviello, N.E., & Munro, H. (1997). Network relationships and the internationalization process of small software firms. *International Business Review, 6*(4), 361-386.
Cressy, R. (2000). Credit rationing or entrepreneurial risk aversion? An alternative explanation for the Evans and Jovanovic finding. *Economics Letters, 66*(2), 235-240.
Cressy, R. (2006). Why do most firms die young? *Small Business Economics, 26*(2), 103-116.
Criscuolo, C., Haskel, J.E., & Slaughter, M.J. (2010). Global engagement and the innovation activities of firms. *International Journal of Industrial Organization, 28*(2), 191-202.
Cull, R., Demirgüc, A., & Morduch, J. (2009). Microfinance meets the market. *Journal of Economic Perspectives, 23*(1), 167-192.
Damijan, J.P., & Kostevc, C. (2010). Learning from trade through innovation: Causal link between imports, exports and innovation in Spanish microdata. *LICOS Discussion Paper No. 264*.
Damijan, J.P., Kostevc, C., & Polanec, S. (2010). From innovation to exporting or vice versa? *The World Economy, 33*(3), 374-398.
Damijan, J.P., De Sousa, J., & Lamotte, O. (2009). Does international openness affect the productivity of local firms? *Economics of Transition, 17*(3), 559-586.
Damijan, J.P., Polanec, S., & Prašnikar, J. (2004). Self-selection, export market heterogeneity and productivity improvements: Firm level evidence from Slovenia. *LICOS Discussion Paper, 148*.
Daniels, L. (2001). Testing alternative measures of micro-enterprise profits and net worth. *Journal of International Development, 13*(5), 599-614.
Deck, C., Lee, J., Reyes, J., & Rosen, C. (2010). Measuring risk aversion on multiple tasks: Can domain specific risk attitudes explain apparently inconsistent behavior? *Mimeo*, University of Arkansas.
De Loecker, J. (2007). Do exports generate higher productivity? Evidence from Slovenia. *Journal of International Economics, 73*(1), 69-98.
De Loecker, J. (2010). A note on detecting learning by exporting. *NBER Working Paper No. 16548*.
De Loecker, J. (2011). Product differentiation, multi-product firms and estimating the impact of trade liberalization on productivity. *Econometrica, 79*(5), 1407-1451.
De Mel, S., McKenzie, D.J., & Woodruff, C. (2009). Measuring microenterprise profits: Must we ask how the sausage is made? *Journal of Development Economics, 88*(1), 19-31.
De Mel, S., McKenzie, D.J., & Woodruff, C. (2011). Getting credit to high return microentrepreneurs: The results of an information intervention. *World Bank Economic Review, 25*(3), 456-485.
De Weerdt, J. (2010). Moving out of poverty in Tanzania: Evidence from Kagera. *Journal of Development Studies, 46*(2), 331-349.
Dehejia, R., Montgomery, H., & Morduch, J. (2012). Do interest rates matter? Credit demand in the Dhaka slums. *Journal of Development Economics, 92*(2), 437-449.

Dehejia, R.H., & Wahba, S. (2002). Propensity score-matching methods for nonexperimental causal studies. *Review of Economics and Statistics, 84*(1), 151-161.
Dercon, S. (1996). Risk, crop choice and savings: Evidence from Tanzania. *Economic Development and Cultural Change, 44*(3), 484-513.
Dercon, S. (2002). Income risk, coping strategies and safety nets. *World Bank Research Observer, 17*(2), 141-166.
Dercon, S. (2008). Fate and fear: Risk and its consequences in Africa. *Journal of African Economies, 17*(2), 97-127.
Dercon, S., & Krishnan, P. (2000). Vulnerability, seasonality and poverty in Ethiopia. *Journal of Development Studies, 36*(6), 25-53.
Dethier, J., Hirn, M., & Straub, S. (2011). Explaining enterprise performance in developing countries with business climate survey data. *World Bank Research Observer, 26*(2), 258-309.
Dhanaraj, C., & Beamish, P.W. (2003). Resource-based approach to the study of export performance. *Journal of Small Business Management, 41*(3), 242-261.
Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science, 35*(12), 1504-1511.
Dixon, S.E.A., Meyer, K.E., & Day, M. (2010). Stages of organizational transformation in transition economies: A dynamic capabilities approach. *Journal of Management Studies, 47*(3), 416-436.
Djankov, S., & Murrell, P. (2002). Enterprise restructuring in transition: A quantitative survey. *Journal of Economic Literature, 40*(3), 739-792.
Dunning, J.H. (1981). *International production and the multinational enterprise*. London: Allen & Unwin.
Dunning, J.H. (2000). The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review, 9*(2), 163-190.
Dunning, J.H., & Lundan, S.M. (2008). Institutions and the OLI paradigm of the multinational enterprise. *Asia Pacific Journal of Management, 25*(4), 573-593.
Dunning, J.H., & Narula, R. (1996). The investment development path revisited: Some emerging issues. In J.H. Dunning & R. Narula (eds), *Foreign direct investment and governments: Catalysts for economic restructuring*. London, Routledge.
Dupas, P., & Robinson, J.M. (2009). Savings constraints and microenterprise development: Evidence from a field experiment in Kenya. *NBER Working Papers 14693*.
Eaton, J., Eslava, M., Kirzan, C.J., Kugler, M., & Tybout, J.R. (2012). A search and learning model of export dynamics. *Mimeo*, University of Pennsylvania.
Elango, B, & Pattnaik, C. (2007). Building capabilities for international operations through networks: a study of Indian firms. *Journal of International Business Studies, 38*(4), 541-555.
Ellis, P.D. (2008). Does psychic distance moderate the market size-entry sequence relationship? *Journal of International Business Studies, 39*(3), 351-369.
Estrin, S., Hanousek, J., Kocenda, E., & Svejnar, J. (2009). The effects of privatization and ownership in transition economies. *Journal of Economic Literature, 47*(3), 699-728.
Evans, D.S., & Jovanovic, B. (1989). An estimated model of entrepreneurial choice under liquidity constraints. *Journal of Political Economy, 97*(4), 808-827.
Fafchamps, M. (2000). Ethnicity and credit in African manufacturing. *Journal of Development Economics, 61*(1), 205-235.
Fafchamps, M., McKenzie, D.J., Quinn, S.R., & Woodruff, C. (2011). When is capital enough to get female microenterprises growing? Evidence from a randomized experiment in Ghana. *NBER Working Paper No. 17207*.
Fajnzylber, P., Maloney, W., & Rojas, G.M. (2006). Microenterprise dynamics in developing countries: How similar are they to those in the industrialized world? Evidence from Mexico. *World Bank Economic Review, 20*(3), 389-419.
Felin, T., & Foss, N.J. (2005). Strategic organization: A field in search of micro-foundations. *Strategic Organization, 3*(4), 441-455.
Filatotchev, I., Liu, X., Buck, T., & Wright, M. (2009). The export orientation and export performance of high-technology SMEs in emerging markets: The effects of knowledge transfer by returnee entrepreneurs. *Journal of International Business Studies, 40*(6), 1005-1021.
Filatotchev, I., & Piesse, J. (2009). R&D, internationalization and growth of newly listed firms: European evidence. *Journal of International Business, 40*(8), 1260-1276.
Filatotchev, I., Stephan, J., & Jindra, B (2008). Ownership structure, strategic controls and export intensity of foreign-invested firms in transition economies. *Journal of International Business Studies, 39*(7), 1133-1148.
Filatotchev, I., Wright, M., Uhlenbruck, K., Tihanyi, L., & Hoskisson, R.E. (2003). Governance, organizational capabilities, and restructuring in transition economies. *Journal of World Business, 38*(4), 331-347.

Filmer, D., & Pritchett, L. (2001). Estimating wealth effects without expenditure data - or tears: An application to educational enrollments in States of India. *Demography, 38*(1), 115-132.
Fischer, G. (2011). Investment choice and inflation uncertainty. *Mimeo,* London School of Economics.
Foster, J.D., Shenesey, J.W., & Goff, J.S. (2009). Why do narcissists take more risks? Testing the roles of perceived risks and benefits of risky behaviors. *Personality and Individual Differences, 47*(8), 885-889.
Franco, M., & D'Angelo, N. (2010). Investment risk behavior in different domains: Entrepreneurs vs public employees. In Escuela, B. M., Aizpuru, C. M., & Moralales G. M. O. (eds.). *Las politicas de empleo: Macroeconomia y empresa.* Universidad de La Laguna, Spain.
Freixanet, J. (2011). Export promotion programs: Their impact on companies' internationalization performance and competitiveness. *International Business Review,* in press.
Ganotakis, P., & Love, J.H. (2011). R&D, product innovation, and exporting: Evidence from UK new technology based firms. *Oxford Economic Papers, 63*(2), 279-306.
Garciá, F., Avella, L., & Fernández, E. (forthcoming). Learning from exporting: The moderating effect of technological capabilities. *International Business Review,* in press.
Gaur, A.S., & Kumar, V. (2009). International diversification, business group affiliation and firm performance: Empirical evidence from India. *British Journal of Management, 20*(2), 172-186.
Gelbuda, M., Meyer, K.E., & Delios, A. (2008). International business and institutional development in Central and Eastern Europe. *Journal of International Management, 14*(1), 1-11.
Ghatak, M., & Guinnane, T.W. (1999). The economics of lending with joint liability: Theory and practice. *Journal of Development Economics, 60*(1), 195-228.
Ghoshal, S. (1987). Global strategy: An organizing framework. *Strategic Management Journal, 8*(5), 425-440.
Girma, S., Greenaway, D., & Kneller, R. (2004). Does exporting increase productivity? A microeconometric analysis of matched firms. *Review of International Economics, 12*(5), 855-866.
Goldberg, P.K., Khandelwal, A.K., Pavcnik, N., & Topalova, P. (2010). Imported intermediate inputs and domestic product growth: Evidence from India. *Quarterly Journal of Economics, 125*(4), 1727-1767.
Golovko, E., & Valentini, G. (2011). Exploring the complementarity between innovation and export for SMEs' growth. *Journal of International Business Studies, 42*(3), 362-380.
Greenaway, D., & Kneller, R. (2007). Firm heterogeneity, exporting and foreign direct investment. *The Economic Journal, 117*(1), 134-161.
Grimm, M., Krüger, J., & Lay, J. (2011). Barries of entry and capital returns in informal activities: Evidence from Sub-Saharan Africa. *Review of Income and Health, 57*(s1), 27-53.
Gubbi, S.R., Aulakh, P.S., Ray, S., Sarkar, M.B., & Chittoor, R. (2009). Do international acquisitions by emerging-economy firms create shareholder value? The case of Indian firms. *Journal of International Business Studies, 41*(3), 397-418.
Guillén, M.F., & Garcia-Canal, E. (2009). The American model of the multinational firm and the "new" multinationals from emerging economies. *Academy of Management Perspectives, 23*(1), 23-35.
Guillén, M.F. (2000). Business groups in emerging economies: A resource-based view. *Academy of Management Journal, 43*(3), 362-380.
Gunning, J. (2010). Risk and savings: A taxonomy. *Economics Letters, 107*(1), 39-41.
Hagemejer, J., & Tyrowicz, J. (2012). Is the effect really so large? Firm-level evidence on the Role of FDI in a transition economy. *Economics of Transition, 20*(2), 195-233.
Hagemejer, J., & Kolasa, M. (2011). Internationalisation and economic performance of enterprises: Evidence from Polish firm-level data. *The World Economy, 34*(1), 74-100.
Hambrick, D.C., & Mason, P.A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*(2), 193-206.
Harris, R., & Moffat, J. (2011). R&D, innovation and exporting. *SERC Discussion Papers, SERCDP0073.* Spatial Economics Research Centre, London School of Economics.
Heckman, J.J., LaLonde, R.J., & Smith, J.A. (1999). The economics and econometrics of active labor market programs. In O. Ashenfelter & D. Card (eds.), *Handbook of Labor Economics, III.* Amsterdam: Elsevier.
Heckman, J.J., Ichimura, H., & Todd, P. (1998). Matching as an econometric evaluation estimator. *Review of Economic Studies, 65*(2), 261-294.
Helfat, C.E., & Peteraf, M.A. (2003). The dynamic resource-based view: Capabilities lifecycles. *Strategic Management Journal, 24*(10), 997-1010.
Helpman, E., & Krugman, P. (1985). *Market Structure and Foreign Trade.* MIT Press.
Helpman, E., Melitz, M.J., & Yeaple, S.R. (2004). Export versus FDI with heterogeneous firms. *American Economic Review, 94*(1), 300-316.

Hermes, N., & Lensink, R. (2007). The empirics of microfinance: what do we know? *Economic Journal, 117*(517), 1-10.

Hermes, N., & Lensink, R. (2011). Microfinance: Its impact, outreach, and sustainability. *World Development, 39*(6), 875-881.

Herrmann, P., & Datta, D.K. (2002). CEO successor characteristics and the choice of foreign market entry mode: An empirical study. *Journal of International Business Studies, 33*(3), 551-569.

Hessels, Y. (2007). Innovation and international involvement of Dutch SMEs. *International Journal of Entrepreneurship and Small Business, 4*(3), 234-255.

Hill, T.L., & Mudambi, R. (2010). Far from Silicon Valley: How emerging economies are reshaping our understanding of global entrepreneurship. *Journal of International Management, 16*(4), 321-327.

Hitt, M.A., Dacin, T.M., Levitas, E., Arregle, J., & Borza, A. (2000). Partner selection in emerging and developed market contexts: Resource-based and organizational learning perspectives. *The Academy of Management Journal, 43*(3), 449-467.

Hitt, M.A., Bierman, L., Uhlenbruck, K., & Shimizu, K. (2006). The importance of resources in the internationalization of professional service firms: The good, the bad, and the ugly. *The Academy of Management Journal, 49*(6), 1137-1157.

Hoyle, R.H. (1995). *Structural equation modeling: Concepts, issues, and applications.* Thousand Oaks, California: SAGE Publications, Inc.

Hsieh, C., & Klenow, P.J. (2009). Misallocation and manufacturing TFP in China and India. *Quarterly Journal of Economics, 124*(4), 1403-1448.

Ibeh, K.I.N., & Wheeler, C.N. (2005). A resource-centered interpretation of export performance. *International Entrepreneurship and Management Journal, 1*(4), 539-556.

Impullitti, G., & Licandro, O. (2010). Trade, firm selection, and innovation: The competition channel. *UFAE-IAE Working Paper, No. 841.10.*

Javalgi, R.G., & Todd, P.R. (2011). Entrepreneurial orientation, management commitment, and human capital: The internationalization of SMEs in India. *Journal of Business Research, 64*(9), 1004-1010.

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

Johanson, J., & Vahlne, J.E. (1990). The mechanism of internationalisation. *International Marketing Review, 7*(1), 11-24.

Johanson, J., & Vahlne, J.E. (2003). Business relationship learning and commitment in the internationalization process. *Journal of International Entrepreneurship, 1*(1), 83-101.

Johanson, J., & Vahlne, J.E. (2009). The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership. *Journal of International Business Studies, 40*(9), 1411-1431.

Johnson, V. (2009). Risk style, regulatory focus, and the situation in risky choice decision making. *Ph.D. dissertation No. 3394617*. Auburn University.

Jones, M.V., & Coviello, N.E. (2005). Internationalisation: Conceptualising an entrepreneurial process of behavior in time. *Journal of International Business Studies, 36*(3), 284-303.

Kaboski, J.P., & Townsend, R.M. (2012). The impact of credit on village economies. *American Economic Journal: Applied Economics, 4*(2), 98-133.

Kafouros, M.I., Buckley, P.J., Sharp, J.A., & Wang, C. (2008). The role of internationalization in explaining innovation performance. *Technovation, 28*(1), 63-74.

Karlan, D., & Goldberg, N. (2007). The impact of microfinance: A review of methodological issues. *Doing Impact Evaluation Series, 7*. The World Bank.

Karlan, D., & Morduch, J. (2010). Accces to finance. In Rodrik, D., & Rosenzweig, M. (eds.). *Handbook of development economics, V*. Amsterdam: Elsevier.

Karlan, D., & Valdivia, M. (2011). Teaching entrepreneurship: Impact of business training on microfinance clients and institutions. *Review of Economics and Statistics, 93*(2), 510-527.

Karlan, D., & Zinman, J. (2008). Credit elasticities in less-developed economies: Implications for microfinance. *American Economic Review, 98*(3), 1040-1068.

Karlan, D., & Zinman, J. (2009). Expanding credit access: Using randomized supply decisions to estimate the impacts. *Review of Financial Studies, 23*(1), 433-464.

Kasahara, H., & Rodrigue, J. (2008). Does the use of imported intermediates increase productivity? Plant-level evidence. *Journal of Development Economics, 87*(1), 106-118.

Kedia, B.L., & Mukherji, A. (1999). Global managers: Developing a mindset for global competitiveness. *Journal of World Business, 34*(3), 230-251.

Khandker, S.R. (2005). Microfinance and poverty: Evidence using panel data from Bangladesh. *World Bank Economic Review, 19*(2), 263-286.

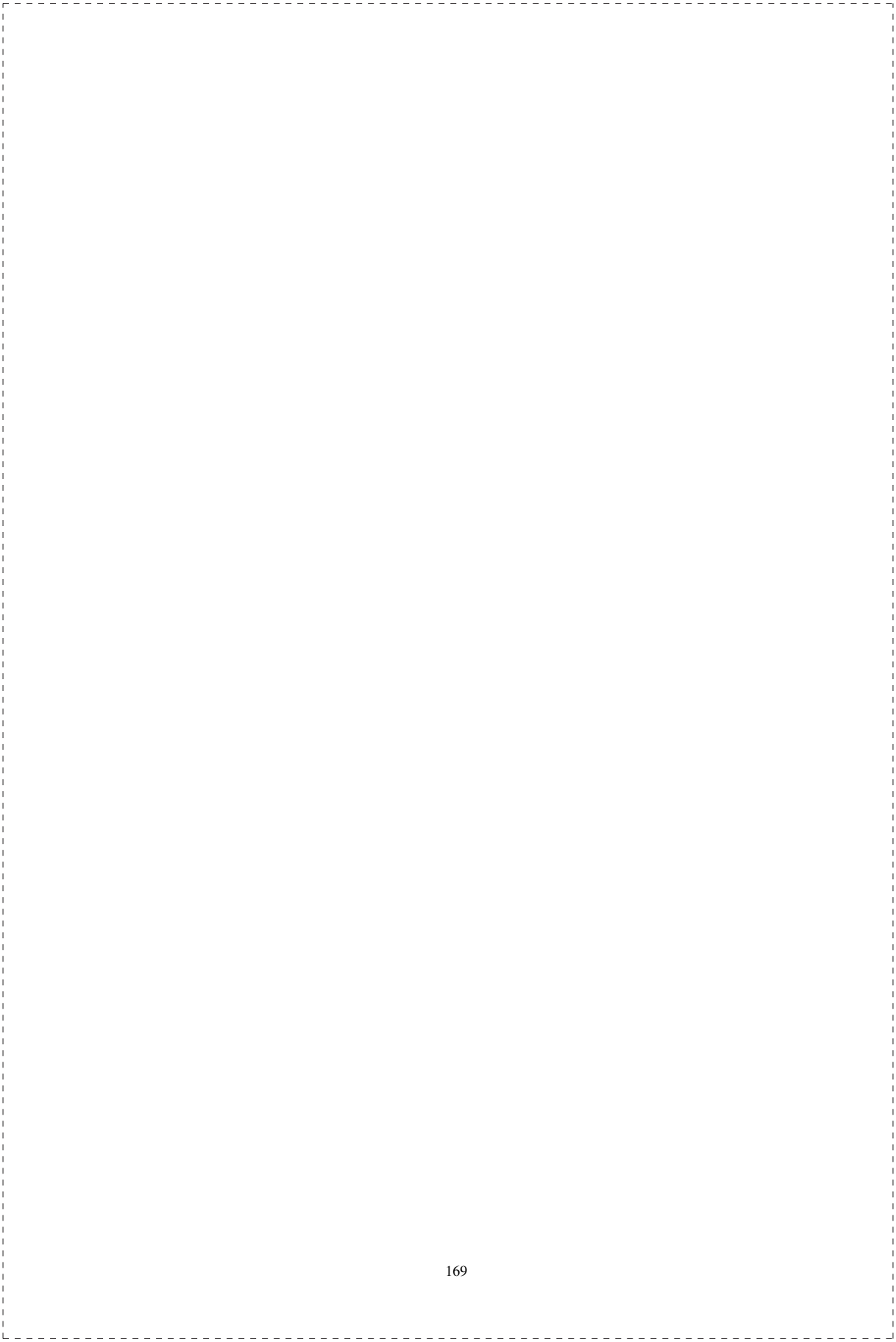
Kinda, T., & Loening, J.L. (2010). Small enterprise growth and the rural investment climate: Evidence from Tanzania. *African Development Review, 22*(1), 173-207.
Kline, R.B. (2005). *Principles and practice of structural equation modeling,* New York: The Guilford Press.
Knight, F. (1921). *Risk, uncertainty and profit.* New York: Augustus Kelley.
Knight, G.A., & Cavusgil, S.T. (2004). Innovation, organizational capabilities, and the born-global firm. *Journal of International Business Studies, 35*(2), 124-141.
Koellinger, P., Minniti, M., & Schade, C. (2007). "I think I can, I think I can": Overconfidence and entrepreneurial behavior. *Journal of Economic Psychology, 28*(4), 502-527.
Kogut, B., & Zander, U. (1993). Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies, 24*(4), 625-645.
Kogut, B., & Singh, H. (1988). The effect of national culture on the choice of entry mode. *Journal of International Business Studies, 19*(3), 411-432.
Kor, Y., Mahoney, J., & Michael, S. (2007). Resources, capabilities and entrepreneurial perceptions. *Journal of Management Studies, 44*(7), 1187-1212.
Krammer, S.M.S. (2009). Drivers of national innovation in transition: Evidence from a panel of Eastern European countrie. *Research Policy, 38*(5), 845-860.
Kraus, S. I., Rigtering, J. P. C., Hughes, M., & Hosman, V. (2011). Entrepreneurial orientation and the business performance of SMEs: A quantitative study from the Netherlands. *Review of Managerial Science, 6*(2), 161-182.
Kremer, M., Lee, J.N., & Robinson, J.M. (2010). The returns to capital for small retailers in Kenya: Evidence from inventories. *Mimeo,* Harvard University.
Kriauciunas, A., & Kale, P. (2006). The impact of socialist imprinting and search on resource change: A study of firms in Lithuania. *Strategic Management Journal, 27*(7): 659-679.
Kumar, N. (2007). Emerging multinationals: trends, patterns and determinants of outward investment by Indian enterprises. *Transnational Corporations, 16*(1), 1-26.
Lachenmaier, S., & Wößmann, L. (2006). Does innovation cause exports? Evidence from exogenous innovation impulses and obstacles using German micro data. *Oxford Economic Papers, 58*(2), 317-350.
Levine, R., Loayza, N., & Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics, 46*(1), 31-77.
Li, P.P. (2003). Toward a geocentric theory of multinational evolution: The implications from the Asian MNEs as latecomers. *Asia Pacific Journal of Management, 20*(2), 217-242.
Li, P.P. (2007). Towards an integrated theory of multinational evolution: The evidence of Chinese multinational enterprises as latecomers. *Journal of International Management, 13*(3), 296-318.
Lileeva, A., & Trefler, D. (2010). Improved access to foreign markets raises plant-level productivity... for some plants. *Quarterly Journal of Economics, 125*(3), 1051-1099.
Love, I., & Mylenko, N. (2003). Credit reporting and financing constraints. *Mimeo,* The World Bank.
Lu, J.W., & Beamish, P.W. (2006). SME internationalization and performance: Growth vs. profitability. *Journal of International Entrepreneurship, 4*(1), 27-48.
Lumpkin, G.T., & Dess, G.G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review, 21*(1), 135-172.
Lumpkin, G.T., & Dess, G.G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing, 16*(5), 429-451.
Luo, Y. (2000). Dynamic capabilities in international expansion. *Journal of World Business, 35*(4), 355-378.
Luo, Y., & Tung, R.L. (2007). International expansion of emerging market enterprises: A springboard perspective. *Journal of International Business Studies, 38*(4), 481-498.
Lyles, M.A., & Salk, J. (1996). Knowledge acquisition from foreign parents in international joint ventures: An empirical examination in the Hungarian context. *Journal of International Business Studies, 27*(5), 877-903.
Mahoney, J.T., & Pandian, J.R. (1992). The resource-based view within the conversation of strategic management. *Strategic Management Journal, 13*(5), 363-380.
Malik, O.R. (2008). Adapting to market liberalization: The role of dynamic capabilities, initial resource conditions, and strategic path choices in determining evolutionary fitness of less developed country (LDC) firms. *Journal of International Management, 14*(3), 217-231.
Marinov, M.A., & Marinova, S.T. (2011). *The changing nature of doing business in transition economies.* New York: Palgrave Macmillan.
Marinov, M.A., & Marinova, S.T. (2012). *Impacts of emerging economies and firms on international business.* New York: Palgrave MacMillan.
Markusen, J.R. (2004). *Multinational firms and the theory of international trade.* Cambridge: MIT Press.

Masakure, O., Cranfield, J., & Henson, S. (2008). The financial performance of non-farm microenterprises in Ghana. *World Development, 36*(12), 2733-2762.
Mathews, J.A. (2002). Competitive advantages of the latecomer firm: A resource-based account of industrial catch-up strategies. *Asia Pacific Journal of Management, 19*(4), 467-488.
Mathews, J.A. (2003). Competitive dynamics and economic learning: An extended resource-based view. *Industrial and Corporate Change, 12*(1), 115-145.
Mathews, J.A. (2006). Dragon multinationals: New players in 21st century globalization. *Asia Pacific Journal of Management, 23*(1), 5-27.
Mayer, T., Melitz, M.J., & Ottaviano, G.I.P. (2011). Market size, competition, and the product mix of exporters. *NBER Working Paper No. 16959*.
McInstoch, C., Villaran, G., & Wydick, B. (2011). Microfinance and home improvement: Using retrospective panel data to measure program effects on fundamental events. *World Development, 39*(6), 922-937.
McKenzie, D.J., & Woodruff, C. (2006). Do entry costs provide an empirical basis for poverty traps? Evidence from Mexican microenterprises. *Economic Development and Cultural Change, 55*(1), 3-42.
Melitz, M.J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica, 71*(6), 1695-1725.
Melitz, M.J., & Costantini, J.A.(2008). The dynamics of firm level adjustment to trade liberalization. In Helpman, E., D. Marin & T. Verdier (eds.), *The organization of firms in a global economy*. Harvard University Press, Massachusetts.
Melitz, M.J., & Ottaviano, G.I.P. (2008). Market size, trade, and productivity. *Review of Economic Studies, 75*(1), 295-316.
Meyer, K.E., & Peng, M.W. (2005). Probing theoretically into Central and Eastern Europe: Transactions, resources, and institutions. *Journal of International Business Studies, 36*(6), 600-621.
Meyer, K.E., Estrin, S., Bhaumik, S.K., & Peng, M.W. (2009a). Institutions, resources, and entry strategies in emerging economies. *Strategic Management Journal, 30*(1), 61-80.
Meyer, K.E., Wright, M., & Pruthi, S. (2009b). Managing knowledge in foreign entry strategies: a resource-based analysis. *Strategic Management Journal, 30*(5), 557-574.
Mishra, S., Lalumiere, M. L., & Williams, R. J. (2010). Gambling as a form of risk-taking: Individual differences in personality, risk-accepting attitudes, and behavioral preferences for risk. *Personality and Individual Differences, 49*(6), 616-621.
Monreal-Pérez, J., Aragón-Sánchez, A., & Sánchez-Marín, G. (forthcoming). A longitudinal study of the relationship between export activity and innovation in the Spanish firm: The moderating role of productivity. *International Business Review,* in press.
Morduch, J. (1999). The microfinance promise. *Journal of Economic Literature, 37*(4), 1569-1614.
Morgan, N.A., Vorhies, D.W., & Schlegelmilch, B.B. (2006). Resource-performance relationships in industrial export ventures: the role of resource inimitability and substitutability. *Industrial Marketing Management, 35*(5), 621-633.
Musso, P., & Schiavo, S. (2008). The impact of financial constraints on firm survival and growth. *Journal of Evolutionary Economics, 18*(2), 135-149.
Mutinelli, M., & Piscitello, L. (1998). The entry mode choice of MNEs: an evolutionary approach. *Research Policy, 27*(5), 491-506.
Nadkarni, S., & Herrmann, P. (2010). CEO personality, strategic flexibility, and firm performance: The case of the Indian business process outsourcing industry. *Academy of Management Journal, 53*(5), 1050-1073.
Naldi, L., Nordqvist, M., Sjöberg, K., & Wiklund, J. (2007). Entrepreneurial orientation, risk taking, and performance in family firms. *Family Business Review, 20*(1), 33-47.
Narula, R. (2006). Globalization, new ecologies, new zoologies, and the purported death of the eclectic paradigm. *Asia Pacific Journal of Management, 23*(2), 143-151.
Navaretti, B.G., & Castellani, D. (2004). Investments abroad and performance at home: Evidence from Italian multinationals. *CEPR Discussion Papers, 4284*.
Naudé, W., & Matthee, M. (2012). Do export costs matter in determining whether, when, and how much African firms export? *JICA-RI Working Paper No. 38*.
Newbert, S.L. (2007). Empirical research on the resource-based view of the firm: An assessment and suggestions for future research. *Strategic Management Journal, 28*(2), 121-146.
Newman, K.L. (2000). Organizational transformation during institutional upheaval. *Academy of Management Review, 25*(3), 602-619.
Nichter, S., & Goldmark, L. (2009). Small firm growth in developing countries. *World Development, 37*(9), 1453-1464.

O'Cass, A., & Weerawardena, J. (2009). Examining the role of international entrepreneurship, innovation and international market performance in SME internationalization. *European Journal of Marketing, 43*(11/12), 1325-1348.
Oviatt, B.M., & McDougall, P.P. (1994). Explaining the formation of international new ventures: The limits of theories from international business research. *Journal of Business Venturing, 9*(6), 469-487.
Oviatt, B.M., & McDougall, P.P. (2005). Toward a theory of international new ventures. *Journal of International Business Studies, 36*(1), 29-41.
Palich, L.E., & Bagby, D.R. (1995). Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom. *Journal of Business Venturing, 10*(6), 425-438.
Parker, S.C., & Van Praag, M.C. (2006). Schooling, capital constraints, and entrepreneurial performance. *Journal of Business and Economic Statistics, 24*(4), 416-431.
Paulson, A.L., & Townsend, R. (2004). Entrepreneurship and financial constraints in Thailand. *Journal of Corporate Finance, 10*(2), 229-262.
Pavcnik, N. (2002). Trade liberalization, exit, and productivity improvement: Evidence from Chilean plants. *Review of Economic Studies, 69*(1), 245-76.
Peng, M.W. (2001). The resource-based view and international business. *Journal of Management, 27*(6), 803-829.
Peng, M.W., Sun, S.L., Pinkham, B., & Chen, H. (2009). The institution-based view as a third leg for a strategy tripod. *Academy of Management Perspective, 23*(1), 63-81.
Peng, M.W., Wang, D.Y.L., & Jiang, Y. (2008). An institution based view of international business strategy: a focus on emerging economies. *Journal of International Business Studies, 39*(5), 920-936.
Penrose E.T. (1959). *The theory of the growth of the firm*. Blackwell, Oxford.
Persson, T., & Tabellini, G. (2005). *The economic effects of constitutions*. Cambridge: MIT Press.
Peteraf, M.A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal, 14*(3), 179-191.
Porter, M.E. (1980). *Competitive strategy*. New York: Free Press.
Pradhan, J.P (2004). The determinants of outward foreign direct investment: a firm-level analysis of Indian manufacturing. *Oxford Development Studies, 32*(4), 619-639.
Pradhan, J.P. (2008). Outward foreign direct investment from India: recent trends and patterns. *International Journal of Technology and Globalisation, 4*(1), 70-86.
Prahalad, C.K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review, 68*(3), 71-91.
Prashantham, S. (2011). Social capital and Indian micromultinationals. *British Journal of Management, 22*(1), 4-20.
Pratt, J.W. (1964). Risk aversion in the small and in the large. *Econometrica, 32*(1-2), 122-136.
Priem, R.L., & Butler, J.E. (2001). Is the resource-based "view" a useful perspective for strategic management research? *Academy of Management Review, 26*(1), 22-40
Rajan, R.G., & Zingales, L. (1998). Financial dependence and growth. *American Economic Review, 88*(3), 559-586.
Rauch, A., Wiklund, J., Lumpkin, G.T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice, 33*(3), 761-787.
Reuber, A.R., & Fischer, E. (1997). The influence of the management team's international experience on the internationalization behaviors of SMEs. *Journal of International Business Studies, 28*(4), 807-825.
Reynaud, A., & Couture, S. (2010). Stability of risk preference measures: Results from a field experiment on French farmers. *TSE Working Papers, 10-151*. Toulouse School of Economics.
Roberts, M.J., & Tybout, J.R. (1997). The decision to export in Colombia: An empirical model of entry with sunk costs. *American Economic Review, 87*(4), 545-564.
Rojec, M., Damijan, J.P., & Majcen, B. (2004). Export propensity of Estonian and Slovenian manufacturing firms. *Eastern European Economics, 42*(4), 33-54.
Rosenbaum, P.R., & Rubin, D.B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70*(1), 41-55.
Rosenbaum, P.R., & Rubin, D.B. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *The American Statistician, 39*(1), 33-38.
Rosenzweig, M.R., & Binswanger, J.P. (1993). Wealth, weather risk and the composition and profitability of agricultural investments. *The Economic Journal, 103*(416), 56-78.
Rugman A.M. (1981). *Inside the multinationals: The economics of internal markets*. Columbia University Press: New York

Rugman, A.M., & Verbeke, A. (2002). Edith Penrose's contribution to the resource-based view of strategic management. *Strategic Management Journal, 23*(8), 769-780.
Rumelt, R.P. (1984). Toward a strategic theory of the firm. In R. Lamb (ed.), *Competitive strategic management*. Englewood Cliffs, NJ: Prentice-Hall.
Sahn, D.E., & Stifel, D.C. (2000). Poverty comparisons over time and across countries in Africa. *World Development, 28*(12), 2123-2155.
Salomon, R.M., & Jin, B. (2010). Do leading or lagging firms learn more from exporting? *Strategic Management Journal, 31*(10), 1088-1113.
Salomon, R.M., & Shaver, J.M. (2005). Learning by exporting: New insights from examining firm innovation. *Journal of Economics & Management Strategy, 14*(2), 431-460.
Sapienza, H.J., Autio, E., George, G., & Zahra, S.A. (2006). A capabilities perspective on the effects of early internationalization on firm survival and growth. *Academy of Management Review, 31*(4), 914-933.
Schiantarelli, F. (1996). Financial constraints and investment: Methodological issues and international evidence. *Oxford Review of Economic Policy, 12*(2), 70-89.
Shane, S., & Ventaktaram, S. (2000).The promise of entrepreneurship as a field of research. *Academy of Management Review, 25*(1), 217-226.
Shih, T., & Wickramasekera, R. (2011). Export decisions within Taiwanese electrical and electronic SMEs: The role of management characteristics and attitudes. *Asia Pacific Journal of Management, 28*(2), 353-377.
Singh, S. (1989). Personality characteristics, work values, and life styles of fast- and slow-progressing small-scale industrial entrepreneurs. *Journal of Social Psychology, 129*(6), 801-805.
Sitkin, S.B., & Pablo, A.L. (1992). Reconceptualizing the determinants of risk behavior. *Academy of Management Review, 17*(1), 9-38.
Sleuwaegen, L., & Goedhuys, M. (2002). Growth of firms in developing countries: Evidence from Cote D'Ivoire. *Journal of Development Economics, 68*(1), 117-135.
Smith, J.A., & Todd, P.E. (2005). Does matching overcome LaLonde's critique of nonexperimental estimators? *Journal of Econometrics, 125*(1-2), 305-353.
Steensma, H.K., Barden, J.Q., Dhanaraj, C., Lyles, M.A., & Tihanyi, L. (2008). The evolution and internalization of international joint ventures in a transitioning economy. *Journal of International Business Studies, 39*(3), 491-507.
Sun, S.L., Peng, M.W., Ren, B., & Yan, D. (2012). A comparative ownership advantage framework for cross-border M&As: The rise of Chinese and Indian MNEs. *Journal of World Business, 47*(1), 4-16.
Svejnar, J. (2002). Transition economies: Performance and challenges. *Journal of Economic Perspective, 16*(1), 3-28.
Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal, 17*(1), 27-43.
Tan, D., & Meyer, K.E. (2010). Business groups' outward FDI: A managerial resources perspective. *Journal of International Management, 16*(2), 154-164.
Tang, J., & Tang, Z. (2007). The relationship of achievement motivation and risk-taking propensity to new venture performance: a test of the moderating effect of entrepreneurial munificence. *International Journal of Entrepreneurship and Small Business, 4*(4), 450-472.
Teece, D.J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509-533.
Tihanyi, L., Ellstrand, A.E., Daily, C.M., & Dalton, D.R. (2000). Composition of the top management team and firm international diversification. *Journal of Management, 26*(6), 1157-1177.
Udry, C., & Anagol, S. (2006). The return to capital in Ghana. *American Economic Review, 96*(2), 388-393.
Van Beveren, I., & Vandenbussche, H. (2010). Product and process innovation and firms' decision to export. *Journal of Economic Policy Reform, 13*(1), 3-24.
Van Biesebroeck, J. (2005). Exporting raises productivity in Sub-Saharan African manufacturing plants. *Journal of International Economics, 67*(2), 373-391.
Van Biesebroeck, J. (2008). Aggregating and decomposing productivity. *Review of Business and Economics, 53*(2), 112-146.
Vereshchagina, G., & Hopenhayn, H.A. (2009). Risk taking by entrepreneurs. *American Economic Review, 99*(5), 1808-1830.
Verhoogen, E.A. (2008). Trade, quality upgrading, and wage inequality in the Mexican manufacturing sector. *Quarterly Journal of Economics, 123*(2), 489-530.
Vijverberg, W.P.M. (1991). Profits from self-employment: The case of Cote d' Ivoire. *World Development, 19*(6), 683-696.

Volpe Martincus, C. & Carballo, J. (2008). Is export promotion effective in developing countries? Firm-level evidence on the intensive and the extensive margins of exports. *Journal of International Economics, 76*(1), 89-106.
Volpe Martincus, C., & Carballo, J. (2010). Beyond the average effects: The distributional impacts of export promotion programs in developing countries. *Journal of Development Economics*, *92*(2), 201-214.
Wagner, J. (2002). The causal effect of exports on firm size and labor productivity: First evidence from a matching approach. *Economics Letters, 77*(2), 287-292.
Wagner, J. (2007). Exports and productivity: A survey of the evidence from firm level data. *The World Economy, 30*(1), 60-82.
Wagner, J. (2011). International trade and firm performance: A survey of empirical studies since 2006. *IZA Discussion Paper, 5916*.
Weerawardena, J., Mort, G.S., Lies, P.W., & Knight, G. (2007). Conceptualizing accelerated internationalization in the born global firm: A dynamic capabilities perspective. *Journal of World Business, 42*(3), 294-306.
Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171-180.
Wernerfelt, B. (1995). The resource-based view of the firm: Ten years after. *Strategic Management Journal, 16*(3), 171-174.
Westhead, P., Wright, M., & Ucbasaran, D. (2001). The internationalization of new and small firms: A resource-based view. *Journal of Business Venturing, 16*(4), 333-358.
Wiklund, J., & Shepherd, S. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal, 24*(13), 1307-1314.
Wilhelmsson, F., & Kozlov, K. (2007). Exports and productivity of Russian firms: In search of causality. *Economic Change and Restructuring, 40*(4), 361-385.
Wilkinson, T., & Brouthers, L.E. (2006). Trade promotion and SME export performance. *International Business Review, 15*(3), 233-252.
Willebrands, D., Lammers, J., & Hartog, J. (2012). A successful businessman is not a gambler: Risk attitude and business performance among small enterprises in Nigeria. *Journal of Economic Psychology, 33*(2), 342-354.
Williamson, O.E. (1975). *Markets and hierarchies*. Free Press: New York.
Witt, M.A., & Lewin, A.Y. (2007). Outward foreign direct investment as escape response to home country institutional constraints. *Journal of International Business Studies, 38*(4), 579-594.
Wolf, J.A., & Pett, T.L. (2006). Small firm performance: Modeling the role of product and process improvements. *Journal of Small Business Management, 44*(2), 268-284.
World Bank (2007). Tanzania pilot rural investment climate assessment: Stimulating non-farm microenterprise growth. *World Bank Report, 40108-TZ*.
World Bank (2011a). *Doing Business 2012: Doing Business in a More Transparent World*. Washington, DC: World Bank.
World Bank (2011b).*World Development Indicators 2010*. Washington, DC: World Bank.
WTO (2008). *World Trade Report 2008: Trade in a Globalizing World*. Geneva: World Trade Organization.
Yamakawa, Y., Peng, M.W., & Deeds, D.L. (2008). What drives new ventures to internationalize from emerging to developed economies? *Entrepreneurship Theory and Practice, 32*(1), 59-82.
Yeaple, S.R. (2005). A simple model of firm heterogeneity, international trade, and wages. *Journal of International Economics, 65*(1), 1-20.
Yiu, D.W., Lau, C., & Bruton, G.D. (2007). International venturing by emerging economy firms: the effects of firm capabilities, home country networks, and corporate entrepreneurship. *Journal of International Business Studies, 38*(4), 519-540.
Zahra, S.A., Ireland, R.D., & Hitt, M.A. (2000). International expansion by new venture firms: International diversity, mode of market entry, technological learning, and performance. *The Academy of Management Journal, 43*(5), 925-950.
Zahra, S.A., Ucbasaran, D., &. Newey, L.R. (2009). Social knowledge and SMEs' innovative gains from internationalization. *European Management Review, 6*(1), 81-93.
Zhou, L. (2007). The effects of entrepreneurial proclivity and foreign market knowledge on early internationalization. *Journal of World Business, 42*(3), 281-293.
Zhao, H., Seibert, S.E., & Lumpkin, G.T. (2010). The relationship of personality to entrepreneurial intentions and performance: A meta-analytic review. *Journal of Management, 36*(2), 381-404.
Zoogah, D.B., Vora, D., Richard, O., & Peng, M.W. (2011). Strategic alliance team diversity, coordination, and effectiveness. *International Journal of Human Resource Management, 22*(3), 510-529.



CURRICULUM VITAE

Martijn Adriaan Boermans (1984) studied at the Vrije Universiteit Amsterdam (VU) where he completed his Bachelor degrees *Economics* (2006) and *Communication Science* (2007). After his undergraduate education he went to Utrecht University (UU) and finished the MPhil. program *Multidisciplinary Economics* (2009). Concurrent to his studies in Utrecht, he has been a Lecturer at the Hogeschool Utrecht (HU) University of Applied Sciences at the Faculty of Economics and Management. While working on his dissertation, at the HU he collaborated in research projects for the research centre Innovation and Business Centre (InnBus) and organized the Premaster program with the UU.

His PhD. research was conducted at the Chair of International Macroeconomics and focused on Trade Theory, Entrepreneurship and Development Economics. The thesis is part of the Utrecht School of Economics (USE) research line *Sustainability & Globalization* at the Tjalling C. Koopmans Research Institute (TKI).

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