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Internationalization strategies of hidden champions: lessons from Germany

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Abstract

Purpose – In contrast to the predictions from the family business and the small- and medium-sized enterprise internationalization literatures, Hidden Champions are world-market leaders exhibiting a high share of exports. The purpose of this study is to analyze their strategy of internationalization of Hidden Champions in Germany and find that the international success and strong, sustained performance emanates from their product type, enabling to successfully pursue a niche strategy for differentiated premium products.

Design/methodology/approach – The authors first conceptually explore how Hidden Champions pursue strategic internationalization, and then analyze a sample of \( N = 2,690 \) Hidden Champions to examine why Germany has been able to generate the highest per capita share of Hidden Champions in the world.

Findings – The study finds that on both a micro and macro level, the strong and sustained performance of Hidden Champions is driven by product type and quality strategies. Niche strategies for a knowledge-intensive, technological product enable the firm to lock-in customers. However, to safeguard the internalization of highly specific quasi-rents, Hidden Champions enter foreign markets through fully owned subsidiaries, retaining control and residual property rights. The second finding of this paper is that Germany has succeeded in deploying its high level of human capital into the Mittelstand through highly skilled workers.

Research limitations/implications – Unfortunately, no micro-level panel data are available. Still macro-level data beginning in the nineteenth century provide strong empirical support for the hypothesized causality.

Originality/value – This is the first paper to link the strong and sustained export performance of Germany to the Hidden Champions by examining the origins of the German Mittelstand model, dating back to the social, political and economic developments of nineteenth century.

Keywords Export, Internationalization, Macroeconomic history, Mittelstand, Niche strategy

Paper type Research paper

1. Introduction

The model of the German Mittelstand is frequently characterized as the backbone of the German economy. The stability and resilience of Germany in the wake of the subprime mortgage crisis of 2008 and European sovereign debt crisis in 2010 was at least partially attributed to the Mittelstand. Because of its now celebrated contribution to the strong German economic performance over the past 15 years, the Mittelstand has received global attention from thought leaders in policy and business.

It is well documented that the German Mittelstand has performed very well, enabling Germany to stay competitive in high paying manufacturing, which in turn has maintained
and even enhanced the prosperity of rural regions as well as cities (Audretsch and Lehmann, 2016; Venohr and Meyer, 2007). The Mittelstand is generally considered to refer to small- and medium-sized enterprises (SMEs) in Germany. As the Wall Street Journal puts it in a recent headline, “The Engines of Growth: Forget the big global brands. Germany’s economy is powered by a legion of smaller companies” (Blackstone and Fuhrmans, 2011).

Similarly, The Economist observes, “Most countries want a Mittelstand like Germany’s. It’s not so easy to copy”. (The Economist, 2014) One reason why generating Mittelstand companies outside of Germany remains elusive is that it is not just about firm size. The common misconception about the Mittelstand is that it refers to SMEs in Germany. In fact, that is not true. There are between six and 14 characteristics distinguishing a Mittelstand company, ranging from small size to governance (family ownership), human resource relations, linkages to the local community, finance and long-term orientation, among other things. Firm size, i.e. being classified as an SME, is just one among multiple key salient characteristics (Audretsch and Lehmann, 2016; Welter et al., 2016).

A particularly striking feature of the Mittelstand, which stands in contrast to SMEs in other OECD countries, is the strong performance in exports and internationalization, especially in manufacturing (Venohr and Meyer, 2007).

The Mittelstand is also coveted because it generates what has been termed as “Hidden Champions”. Hidden Champions are a subgroup of such Mittelstand firms and world market leaders of niche products. High export shares are a key element of their strategy fueling their strong and sustained performance (Blackburn et al., 2001; Yoon, 2013; Witt and Carr, 2014; Schlepphorst et al., 2016). Simon (1996) has identified the Hidden Champions and finds that they are not restricted to Germany. However, a spatial analysis of the geographic distribution reveals a high share to be located in Germany. Thus, there is clearly a link between the underlying model of the German Mittelstand and the strong internationalization performance of German Hidden Champions.

Using the specific example of Germany, this study analyzes their strategy of internationalization and finds that the international success and strong, sustained performance emanate from their product type, which enables them to successfully pursue a niche strategy for differentiated premium products. We evaluate these arguments using a sample of 2690 Hidden Champions, of which a majority come from Germany.

We contribute to research on the role of SMEs in internationalization (Audretsch et al., 1999; Coviello and McAuley, 1999; Westhead et al., 2001; Francioni et al., 2016; Fariborzi and Keyhani, 2017) and, in particular, to the special case of the German Mittelstand model in achieving a strong and sustained economic performance through internationalization. It is not surprising that, subsequent to its recovery from the Second World War, German exports soared to unprecedented levels (Audretsch and Lehmann, 2016). However, the extant literature analyzing the strong German export performance typically only starts with the Wirtschaftswunder in the late 1950s. Such studies have generally failed to incorporate the origin of German export and Mittelstand success, which dates back much earlier. Germany’s industrialization in the middle and second half of the nineteenth century and its transition from an agrarian to an industrial economy coincides with the birth of most Hidden Champions and their global dominance in the relevant product niches. A key and novel contribution made by this study is to identify the key strategies of German Hidden Champions in developing and deploying high levels of human capital and in particular skilled labor, as well as a high degree of vertical integration when entering new markets.

Access to highly skilled labor was facilitated by the development of the German vocational educational system along with spillovers from a myriad of supporting institutions designed to provide knowledge and technology to the Mittelstand.
This paper is organized as follows. Section 2 provides an analysis of Mittelstand internationalization strategies revolving around exports and a high number of subsidiaries located in foreign countries, which is subsequently analyzed through lens of property rights theory to develop several main hypotheses linking strategies for product type and product quality to export performance. Using a large global data base consisting of 2,690 Hidden Champions spanning a broad spectrum of national contexts, these hypotheses are then subjected to empirical scrutiny in Section 3. In Section 4, the underlying reasons why the home country of Germany bestows a strong internationalization performance for Hidden Champions are addressed. A summary and conclusions are provided in the final section. In particular, this paper finds that the strong and sustained export performance of Hidden Champions is not only attributable to the types of products sold but also the high product quality combined with a high degree of vertical forward integration.

2. Hidden champions and their strategy of internationalization
Starting in the 1990s, Simon (2009) tried to unravel the secrets of the skyrocketing German export success. In doing so, he discovered a specific subgroup of German SMEs, which he attributed to generating a great share of Germany’s impressive export performance. Hidden Champions are defined by Simon (2009) applying the following criteria:

- the Hidden Champion is ranked among the top three leaders in the world share of the relevant product market or has the highest market share on the continent of the home country;
- revenues do not exceed $4bn; and
- there is a low brand awareness of the company and its products.

The strong export performance of Hidden Champions is difficult to reconcile with the academic research and literature on SME and family business internationalization. The conclusion reached in most studies is that firm size is directly related to internationalization and, in particular, export performance (Bonaccorsi, 1992; Chetty and Hamilton, 1993). In particular, Fernández and Nieto (2005), as well as Graves and Thomas (2008) find that the governance mode of a family owned and/or managed business has a lower propensity to engage in export activities. Internationalization was viewed by an earlier literature as exclusively falling within the domain of large corporations sufficiently equipped with the requisite organizational slack (Bourgeois, 1981). According to this view, larger firms can leverage their resource base to invest in infrastructure facilitating access to foreign markets. The organizational slack is needed to overcome country-specific barriers to entry.

Moreover, Harris et al. (1994) concluded that family businesses internationalize over a stage approach of internationalization. Vahlne and Johanson (1977) similarly found that the process of family business internationalization over these different stages is influenced by the psychic distance to the particular foreign market. The risk-aversion and reluctance to grow aggressively beyond national borders found to characterize family business (Gómez-Mejía et al., 2007) impedes internationalization. Rather than a strategic priority on internationalization, family business has instead appeared to have a higher strategic priority on responsibilities to the local community, such as maintaining employment, as being crucial for a well-known family firm name, so that the managers of family firms “consider themselves as stewards of the family” (Graves and Thomas, 2008, p. 163). The strategic priorities of family and local community over growth and internationalization are consistent with the low propensity for family business to engage in trans-national activities (Zahra, 2003). However, Hidden Champions are different and pose an anomaly to the literatures on
SMEs, family business and internationalization. As Simon (2009) finds, the mean export share of the Hidden Champions is 61.5 per cent.

In his seminal work on generic *Competitive Strategies*, Porter (1980) analyzes organizational strategies available to attain a sustainable competitive advantage. In particular, Porter (1980) distinguished among cost leadership, product differentiation and a product niche strategy. The first strategy, cost leadership, enables the firm to exploit advantages emanating from product standardization, mass markets and scaling fixed costs. The cost leadership strategy maximizes profits by generating a large volume of sales with low profit margins.

By contrast, the product differentiation strategy is based on a high-quality product, which reduces the elasticity of demand by raising the customer willingness to pay, with the goal of creating a monopolistic market. Finally, the niche strategy aims at a small segment of few customers, where the product is tailored to the specific and specialized needs of the particular customer (Stanton *et al.*, 1991). Hidden Champions typically deploy a niche market strategy of premium quality products. Entering new markets is an essential prerequisite for them to grow. Thus, their model of exporting and internationalization emulates the model of a niche strategy.

Being heavily specialized in a particular product niche, the Hidden Champion cannot generate a strong and sustained performance by remaining restricted to the domestic market. Scaling their business would be impossible to achieve solely within their narrow product niche in the home domestic geographic market. Entering new geographic markets through internationalization is their key strategy to attaining and sustaining a strong performance. In addition, their international activities can act to preempt the long-run entry of potential competitors, as their dominating role of an incumbent is not guaranteed (Venohr and Meyer, 2007), though Hidden Champions operate in quasi-monopolistic markets.

Being a product leader dominating the niche implies a presence in other geographic or national markets, which essentially happens on a global scale. Simon (2009) emphasizes that internationalization requires certain attitudes as an antecedent. In particular, an openness to learning about and understanding other national contexts is essential to discover internationalization opportunities. According to Simon, cultural openness and tolerance enable Hidden Champions to embrace foreign cultural patterns of communications and doing business (Nummela *et al.*, 2004; Levy *et al.*, 2007; Ramsey *et al.*, 2016). Though a number of studies address the impact of a global mindset, the current study instead posits that the internationalization performance of Hidden Champions may have more to do with the niche product and market strategies and less to do with the boldness of decision-makers.

Because of the key role played by their internationalization strategy, Hidden Champions need to develop a complementary internal skill base. Developing a company image as a global market leader facilitates attracting, motivating and maintaining highly skilled workers. Workers employed at a Hidden Champion take pride in their work and contribution to a world-class leader. Thus, world-market leadership is an openly stated goal of many Hidden Champions and constitutes a core company value. With smaller organizations simplifying internal integration processes (Fearon, 1999), Hidden Champions’ managers and leaders find it easier to shape both the company culture and organizational self-image as a market-leader than do other firms in the industry.

Venohr and Meyer (2007) similarly point out that advances in transportation, information and communication technologies, which have facilitated globalization, are also conducive to the small firm niche strategy. These developments have mitigated the barriers and obstacles to internationalization that in an earlier era impeded the international
activities of small firms. The niche dominated by Hidden Champions is typically sufficiently small to be attractive to large corporations.

In addition, the large and bureaucratic vertical hierarchically organized companies typically do not have a competitive advantage in a niche characterized by dynamism and close relationships with customers. Using survey-based data, Simon (2009) found that the share of employees having frequent interactions with customers is between one-quarter and one-half for Hidden Champions, compared with 5 to 10 per cent for large corporations. Because Hidden Champions often foster incremental rather than radical innovation, their competitive advantage derives from the unique and customized needs of individual clients. Thus, to meet these specialized and individualized customer demands, technological advancement along with high R&D investments play a key role (Zuchella and Palamara, 2006).

Hidden Champions generate revenue through high profit margins on a relatively low volume of sales. By contrast, the large, mass market counterparts tend to achieve revenues on lower profit margins for a high volume of sales (Kotler, 1991). Dalgic and Leeuw (1994) suggest that while mass marketing firms tend to be centralized and bureaucratic, the niche strategy of smaller firms is more conducive to decentralization and participative decision-making processes. This in turn suggests that the flatter an organizational hierarchy and the more decentralized authority control, the higher are the interaction rates between two entities capitalizing on more points of contact. If more people are involved in exchanging information, the better a seller is able to satisfy the buyer with a highly specialized and knowledge-intense product. An important implication is that the hierarchical and centralized organization of large corporations impedes direct and frequent interactions at the important operational base of engineers on-site (McDonald et al., 2008). Thus, as niches emerge to meet unique customer needs requiring product specialization, the organization type best suited for meeting those needs will prevail – in this case the Hidden Champion.

3. FDI and the theory of property rights

Hidden Champions enter new markets through both direct export and a remarkably high number of subsidiaries. On average, a Hidden Champion owns a high number of (almost) completely owned foreign subsidiaries, 24. Among them, 16 are distinguished sale and service organizations and with eight of them being involved in both manufacturing and sales (Simon, 2009). Remaining independent of third parties (through indirect export or licensing) enables them to retain the unequivocal rights of control. Hidden Champions strategically position themselves along the make or buy continuum toward the former, enabling them to attain a high degree of value added. In light of the ownership advantages in the eclectic model of internationalization (Dunning, 1988), licensing and indirect export present a second best for Hidden Champions against the backdrop of the severe threat of knowledge drain and soaring costs of coordination and contracting.

In addition, foreign subsidiaries facilitate close customer relationships for a Hidden Champion, while at the same time demonstrating a sizeable presence. Internationalization is a key component of the Hidden Champion strategy, as evidenced by the high share of Hidden Champions, 74.4 per cent, which engage in export activities during their startup phase. Similarly, 33.9 per cent of the Hidden Champions opened at least one foreign subsidiary just subsequent to their startup (Simon, 2009). By contrast, the stage models of internationalization, such as Johanson and Vahlne’s (1977), imply that internationalization activities would play only a tangential role for Hidden Champions (Verbeke and Yuan, 2016). Zuchella and Palamara (2006) similarly suggest that niche firms show a higher propensity to internationalize rather simultaneously than serially, because they are less
hampered by geographic or psychic distance than are their large-scale mass market counterparts. This again reflects the general view prevalent in the literature suggesting that a global mindset is not essential for a firm pursuing a niche strategy – which is contrary to the strong internationalization exhibited by the Hidden Champions.

The lens provided by the causal mechanisms of the theory of the firm illuminates why the strategy of developing foreign subsidiaries is so important to Hidden Champions. In particular, this theory explains why integration of transactions within the controllable scope of the boundaries of the firm can be superior to the market and its price mechanism (Demsetz, 1988). Holmström and Tirole (1989) emphasize the key role played by the boundaries of the firm and degree of vertical integration, which was subsequently linked to foreign direct investment (FDI) as a strategy for integrating foreign business into firm hierarchy (Nunn and Trefler, 2008; Antrás and Helpman, 2004). Grossman and Hart (1986) posited that direct ownership over assets contains residual rights of control and thus lessens the scope of action for the integrated party to be misused opportunistically in the light of emerging contingencies from incomplete contracting. Direct ownership therefore restricts the scope of a transaction for a partner’s moral hazard. The welfare maximizing optimum in a first best scenario implies that a party A, with a production function with high investment specificity, has the security of full residual rights from its investments. If not vertically integrated, both parties bargain ex post regarding the return of surplus. Assuming a Nash equilibrium from the bargain only grants them half the benefit from their investments and anticipating this results in both parties, A and B, to underinvest. Ownership rights should thus guard investments for the party contributing more to the value of the transaction. Assuming that A is the residual claimant, none of the possible ex post opportunistic actions of transaction partner B lowers the return of A’s ex ante specific investments. This only is possible if A is granted the viable property rights over assets and thus possesses a natural source of negotiation power.

However, what generates asset specificity between a Hidden Champion’s headquarters in the home country and the transaction partners? Analyzing the determinants comprising the difference between first and second-best solution for the transaction yields insights into why Hidden Champions choose to vertically integrate over market solutions, such as intermediary-based export or licensing.

The striking characteristic generating market advantages emanates from the product strategies of a Hidden Champion. The business model revolves around a deep focus and high-end specialization targeting a highly knowledge-intensive product closely linked to R&D and patenting. Employees are trained accordingly and show remarkably low rates of turnover. Simon (2009) estimates the annual employee turnover rate at 2.7 per cent for Hidden Champions, compared to the average for German firms of 7.3 per cent. The ability of the Hidden Champions to retain its highly skilled workforce serves to enhance the incentive to invest in firm-specific human capital (Becker, 1964). The knowledge-intensity of the Hidden Champions generates knowledge assets, which are sticky in nature and have a firm specificity, which is conducive to achieving and sustaining a competitive advantage within the niche market.

Building on Coase’s insights for the role played by transaction costs, Williamson (1975) explains how the cost of acquiring knowledge for ordinary distributors, courts or other third parties is prohibitively high when it is based on tacit and customized knowledge about the product and production process. This renders arms-length contracts as inefficient and results in underinvestment owing to high levels of uncertainty associated with legal protection.
When designing the boundaries of an organization, the foreign integration model is mainly driven by the concept of headquarter intensity (Nunn and Trefler, 2008; Antrás and Helpman, 2004). Hidden Champions own an average of 24 subsidiaries, of which only a mean of eight are engaged in manufacturing. Thus, the bulk of manufacturing by the Hidden Champions is in the home country, which facilitates monitoring. As Venohr and Meyer (2007) point out, Hidden Champions mostly use productivity gains in manufacturing to remain competitive vis-a-vis lower labor costs of manufacturing abroad. The overseas subsidiaries tend to provide benefits as sole sale and service partners. Thus, the overseas integration for Hidden Champions safeguards against internalizing quasi-rents being contested within market-based relationships.

Antrás and Chor (2013) introduce a property-rights model of the firm analyzing how to allocate control of assets given sequenced stages of contracting between a final-good producer and a supplier. In their scenario, they investigate the acquisition of customized components of high investment specificity. Headquarter intensity, as a proxy for investment specificity, is typically measured by the intensity of human capital, physical capital, R&D and materials, reflecting intrafirm trade. Another factor favoring foreign integration as measure of investment specificity is technological intensity, as used by Acemoglu et al. (2010), Lileeva and Van Biesebroeck (2008). Simon (2009) has attributed all of these characteristics contributing to the strong performance and internationalization of Hidden Champions, which therefore underlines their high headquarter intensity involving a high degree of value added – thus calling for vertical forward integration.

4. Empirical evidence
This paper further sheds light on the determinants of internalization by integrating the characterization of the Hidden Champions introduced by Simon (2009) with the findings from the export determinants literature. In particular, a rich extant literature has generated a plethora of findings highlighting the roles played by product quality and industry type as determinants of export success. Therefore, what Hidden Champions produce seems to be a key to understanding their internationalization strategy and success. Reviewing studies analyzing the determinants of export success, Zou and Stan (1998) categorize this field of literature according to the dimensions of strategically controllable and uncontrollable factors. Leonidou et al. (2002) distinguish among managerial, organizational, environmental, marketing strategy and export target-related factors. Aaby and Slater (1989) classify studies and findings according to internal (firm characteristics, competencies, marketing strategy) and external (environment) determinants.

We instead suggest categorizing the extant literature according to the dimensions of factors especially relevant for mass markets standardization, mass markets customization and niche markets, as many of the determinants of export already substantiated hold only when belonging to one of these categories. Their sign and causal explanations often change with the scope of their market. Among the many factors analyzed, firm size emerges as one of the most highlighted focal points of these studies. The empirical evidence consistently finds that firm size is positively related to export performance for mass markets but negatively for niche markets (Bonaccorsi, 1992; Audretsch et al., 1999). The same findings hold for the literature on prizes, which analyzes how firms compete over low prizes in mass markets, while niches allow for premium products of higher margined products (Kirpalani and Maclntosh, 1980). Management capabilities seem to more important in mass markets, because more competition demands a higher rate of decisions to be made (Cavusgil and Zou, 1994). The niche and its quasi-monopolistic structure provides a source of convenient competitive advantage, therewith reducing the leverage of a single manager.
Product adaption has also been analyzed frequently. The findings prevalent in the literature suggest that mass-customization is more conducive to product adaption (Leonidou et al., 2002; Lages et al., 2009), because niche products often do not adhere to foreign local cultural tastes and preferences but rather follow a technological fit. Top management commitment as a driver of internationalization has been found to be more important in mass markets (Koed Madsen, 1989), as niches require entry into new geographic markets as a precondition for growth. Acquired export experience has been tested vigorously in a number of studies and proves less salient for niches (Katsikeas and Morgan, 1994; Leonidou, 1995), where managers rather follow a simultaneous approach (Cavusgil, 1984), with stage approaches being linked to mass marketing strategies.

Studies have found that product strength enables the firm to prevail against competition in mass markets (Burton and Schlegelmilch, 1987) or for deterring potential competitors in niche markets. In this regard, product strength, in terms of product uniqueness and patents, has been found to have a positive and significant impact on export performance (Michell, 1979; Zou and Stan, 1998; Julian, 2003; Morgan et al., 2004). In terms of product design, the mass-niche dichotomy holds again (Cunningham and Spiegel, 1971). Product quality has also been found to be positively related to higher export rates (Leonidou et al., 2002).

In addition to product quality, the type of product and the industry has been found to be critical to export performance. A higher degree of industry technological sophistication is positively related to the propensity to export (Holzmuller and Kasper, 1991; Cavusgil and Zou, 1994; Majocchi, Bacchiocchi and Mayrhofer, 2005). Lages et al. (2009) introduced a conceptual framework linking the antecedents of quality and innovation to export success. They center their analysis on the impact of firm-specific quality capabilities on employee involvement, customer focus and employee quality training, all of which are consistent with Simon’s (2009) characterization of Hidden Champions.

5. Germany as home country
The final part of this paper extends the work of Audretsch and Lehmann (2016) and in particular Simon (2009, 2012), to explain why Germany is particularly hospitable to both a strong Mittelstand and Hidden Champions. As Simon (2012) shows, Germany serves as the home country to the largest share of Hidden Champions. We posit that the underlying causal mechanisms are attributable to institutions and polices, with deep historical roots. Recent literatures have characterized what is terms as national systems of innovation (Nelson, 1993; Acs et al., 2017) and national systems of entrepreneurship (Acs et al., 2016). Both literatures focus on country-specific institutions and policies shaping the competitive advantage of firms and in the case of the latter, entrepreneurial firms.

The institutions and policies of Germany are compatible with and conducive to producing not just high quality premium goods but also those addressing a niche demand. As Simon (2012) explains, there a strong potential for exporting such goods, with a high worldwide demand, particularly in growing economies (Simon, 2012). Prior to 2009, Germany was the perennial global leader in exports, before being relegated by China to second place.

Figure 1 shows that based on a worldwide sample of 2,690 Hidden Champions, the clear majority reside in Germany as the home country. As explained above, Hidden Champions are generally high performing Mittelstand companies. Germany’s overall SME sector exhibits a strong export performance within the OECD, as Figure 2 shows. The data in Figure 2 are in terms of billions of US dollars and refer to firms between 50-250 employees. This evidence is consistent with the hypothesis positing a strong German Mittelstand internationalization performance.
In light of Germany’s late industrialization as a \textit{belated nation} (Berger, 1995; Weisbrod, 1996), the origin of German (and thus German Hidden Champion) product strength dates back to Germany’s transition from an agrarian to an industrial economy. Figure 3 illustrates this epochal shift. Within a time span of a half century (ca. 1850-1910), rural Germany shifted from producing mainly linen, wool and corn to become the largest world economic power, reflecting a “coalition of rye and iron” (Torp, 2010, p. 401) before First World War[1].
How was that possible? The source of German export success, along with its global reputation and brand for goods Made in Germany and the associated phenomenon of Mittelstand world market leaders can be traced back to this sectoral transformation.

Contemporary German export performance is generally attributed to developments over the past two decades by the extant literature. As recently as the turn of this century Germany had been written off as the sick man of Europe. The more historical accounts of the strong German internationalization performance found in the literature typically start with Stunde Null at the close of the Second World War and the subsequent Wirtschaftswunder of the late 1950s (Venohr and Meyer, 2007; Audretsch and Lehmann, 2016). While such explanatory theories make important contributions to understanding the strong and sustained internationalization performance of the German Hidden Champions as well as the broader Mittelstand, they clearly fail to recognize that the foundations of the Wirtschaftswunder were cemented long before both the world wars of the twentieth century. In fact, they date back to the time when the German Reich was founded in 1871. Thus, the roots of German economic performance are premised on origins from well before the second half of the twentieth century. As Figure 4 shows, Germany’s share of exports in 1910 was actually greater than the Wirtschaftswunder in 1960. Thus, Germany had already emerged as the successful export nation that it is today, right after its industrialization, a century and a half earlier.

Table I further supports the view that the German internationalization performance dates back to the country’s incipience, by showing various national accounts of Germany between 1880-1979. Between 1902 and 1913 exports doubled and attained a level nearly five times higher than the value of exports in 1880. Even more striking, the value of exports only attained the 1913 peak again (before the First World War) by 1960, after the Wirtschaftswunder. Germany’s export strong and sustained performance therefore is directly linked to the new leading industries back then, with a predominance of Hidden

**Figure 3.**
Employment by sector 1861-1979 (% of total employment)
Champions. The Hidden Champions contributed largely to the German rise to economic world power before First World War.

The boom in railroads and heavy industry drove German industrialization. Financing the transportation revolution, capital markets grew rapidly, resulting in a denser network of railroad lines, which in turn enabled access to regional markets along with increased demand for the production of coal and steel. This early phase of German Industrialization eventually paved the way for other technological-driven sectors to take off. The tightly knitted bond between science and industry in industrial research laboratories generated groundbreaking innovations, inciting rapid gains in productivity and market growth of the new leading sectors, such as chemicals, electrical engineering and electronics. An example of this is the 1911 founded *Kaiser-Wilhelm-Gesellschaft* of which its many subunits later merged into the *Max-Planck* and *Leibniz Institutes* among others.

The sharp rise of knowledge-intensive products stands out as a main driver of the competitiveness of German products. Besides a growing population and liberalization of the economy, groundbreaking technological innovation spurred the rapidly growing German economy, which enjoyed the protection under patent law issue by the Prussian patent office since 1812. The united German Reich later passed a common patent law in 1877 (Machlup and Penrose, 1950; Streb et al., 2006). One of the many examples of beneficiaries of the protective patent laws and research spillovers was Werner von Siemen’s company, which generated electricity. Thanks to the invention and break-through of electronic light and the electric engine, the German electronic industry subsequently emerged with the world-leading position around 1900 (alongside the USA). Other examples include both Nikolaus August Otto’s (1876) internal combustion engines that both were used when engine-driven

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**Figure 4.** Historic export shares major industrial countries (1880-1979)

Source: Own depiction following Sommariva and Tullio (1987, p. 47), data retrieved from Mitchell (1975)
vehicles from entered the market (Mokyr, 1998). Germany’s chemical industry rapidly expanded, particularly in plastics (Meyer-Thurow, 1982), artificial fertilizers and pharmaceuticals, where the global share of production in chemical goods manufactured by Germany reached 90 per cent by the turn of the twentieth century (Berend and Berend, 2013). Finally, heavy industry grew drastically (Figure 5) as a result of a series of technological innovations (e.g. the Siemens-Martin process in producing steel), culminating in the advent of Krupp’s stainless steel in 1912.

A “German scientific superiority in the nineteenth century” (Ben-David, 1960, p. 833) is reflected in the high number of Nobel Prizes awarded to German scientists between 1901-1945. Until shortly after Second World War, Germany won more Nobel Prizes than the UK, USA and Russia combined. Germany was especially successful in physics, medicine and chemistry. In physics, Germany maintained the top spot regarding the number of Nobel prizes for 47 years between 1901 and 1948. In chemistry, Germany prevailed as the global leader between 1905 and 1984 (Schmidhuber, 2010). Thus, the world’s leading science and knowledge base was in place to foster manufacturing in general and in particular the chemistry, electronic and engineering sectors.

The strategies driving the export performance a century ago still prevail for the strategy underlying the contemporary German Hidden Champions. This is consistent with the high share of Hidden Champions not just in manufacturing but also in those sectors that have been thriving since emerging as the leading industries after Germany’s industrial transition. For example, in 2015, 44.9 per cent of all Hidden Champions were classified as belonging to the manufacturing sector, 15.9 per cent to chemicals and 15.5 per cent to electrical engineering and electronics (Rammer and Spielkamp, 2015). In fact, mechanical engineering, chemicals, electrical engineering and electronics comprised the largest subgroups of Hidden

<table>
<thead>
<tr>
<th>Year</th>
<th>Stock of capital</th>
<th>Imports</th>
<th>Exports</th>
<th>NNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1880</td>
<td>93.97</td>
<td>2.77</td>
<td>2.31</td>
<td>19.9</td>
</tr>
<tr>
<td>1885</td>
<td>106.16</td>
<td>3.48</td>
<td>2.66</td>
<td>23.5</td>
</tr>
<tr>
<td>1890</td>
<td>122.68</td>
<td>4.86</td>
<td>3.09</td>
<td>27.8</td>
</tr>
<tr>
<td>1895</td>
<td>141.18</td>
<td>5.77</td>
<td>3.73</td>
<td>32.1</td>
</tr>
<tr>
<td>1900</td>
<td>169.37</td>
<td>7.11</td>
<td>4.65</td>
<td>36.5</td>
</tr>
<tr>
<td>1905</td>
<td>197.21</td>
<td>8.42</td>
<td>5.99</td>
<td>43.4</td>
</tr>
<tr>
<td>1910</td>
<td>231.30</td>
<td>9.90</td>
<td>8.00</td>
<td>47.4</td>
</tr>
<tr>
<td>1913</td>
<td>255.94</td>
<td>11.20</td>
<td>10.20</td>
<td>52.4</td>
</tr>
<tr>
<td>1915</td>
<td>239.31</td>
<td>3.90</td>
<td>1.90</td>
<td>42.9</td>
</tr>
<tr>
<td>1920</td>
<td>197.01</td>
<td>3.70</td>
<td>3.70</td>
<td>31.9</td>
</tr>
<tr>
<td>1925</td>
<td>232.19</td>
<td>8.56</td>
<td>6.89</td>
<td>46.9</td>
</tr>
<tr>
<td>1929</td>
<td>253.90</td>
<td>10.63</td>
<td>10.01</td>
<td>51.7</td>
</tr>
<tr>
<td>1939</td>
<td>307.60</td>
<td>7.87</td>
<td>6.07</td>
<td>83.6</td>
</tr>
<tr>
<td>1946</td>
<td>133.20</td>
<td>1.50</td>
<td>0.30</td>
<td>29.9</td>
</tr>
<tr>
<td>1950</td>
<td>173.80</td>
<td>5.10</td>
<td>3.46</td>
<td>44.9</td>
</tr>
<tr>
<td>1955</td>
<td>218.80</td>
<td>10.70</td>
<td>8.73</td>
<td>64.8</td>
</tr>
<tr>
<td>1960</td>
<td>282.93</td>
<td>19.36</td>
<td>13.95</td>
<td>86.8</td>
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<tr>
<td>1965</td>
<td>372.63</td>
<td>32.20</td>
<td>19.82</td>
<td>109.2</td>
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<tr>
<td>1970</td>
<td>480.28</td>
<td>48.39</td>
<td>31.81</td>
<td>137.8</td>
</tr>
<tr>
<td>1975</td>
<td>606.73</td>
<td>57.44</td>
<td>39.84</td>
<td>150.1</td>
</tr>
<tr>
<td>1979</td>
<td>711.69</td>
<td>79.93</td>
<td>52.23</td>
<td>175.4</td>
</tr>
</tbody>
</table>

*Note: NNP = net national product*

*Source: Own depiction following Sommariva and Tullio (1987, p. 226); prices are in 1913 prices*
Champions, suggesting a path dependence where continuity has generated a sustained performance in traditionally strong sectors, which were the same sectors serving as the major engines of Germany’s industrialization.

A second country-specific source bestowing a strong and sustained international performance of the Mittelstand and German Hidden Champions is human capital in general and skilled labor in particular. The vocational education system, which includes the apprentice system (Greinert, 2005), is both specific and unique to Germany (Audretsch and Lehmann, 2016; Jahn, 2015). The apprentice system along with the other institutions facilitating worker training and skills has been identified as one of the keys to the competitiveness of the German Mittelstand (Lehmann et al., 2017). The educational vocation system in Germany reflects an institution that dates back to the system of guilds that organized vocational education.

Industrialization enabled the rise of corporations and manufacturing. The new mass-production technologies and management exerted competitive pressures on the old Mittelstand firms in the craft sector (Blackbourn, 1977). Therefore, Mittelstand policy under the German Reich between 1878-1897 provided special protections to this craft sector, the old Mittelstand, through a string of legal amendments. Wilhelm II, with the parliamentary backing of the Conservative and von Bennigsen’s Nationalliberale Partei (National Liberal Party), established new chambers of craft firms with the Handwerkerschutzgesetz of 1897 (“law to protect the craft sector”), which transferred the full control of the vocational education of apprentices to the craft firms.

This early recognition of the key role played by skilled workers and the need for institutions supporting their training, explains the strength of vocational education in

**Figure 5.**
National shares of world manufacturing output

*Source:* Own depiction following Floud et al. (2014), data from Bairoch (1982, p. 296, 304)
Germany, already back then. Table II shows that as early as 1910, Germany led in terms of the provision of this kind of “third-way” human capital or skilled labor, next to tertiary or high education. Thus, the human capital needs of German manufacturing and engineering firms (including the Hidden Champions) has subsequently benefitted from Germany’s emphasis and strength in vocational education. Germany, along with the Scandinavian countries, exhibited especially higher literacy rates at the turn of the twentieth century (compared to South and East Europe), which was a central prerequisite for vocational education regarding the formation of specific human capital (Kaestle, 1985). It is not a coincidence that both the German speaking countries and Scandinavia exhibit the highest prevalence of Hidden Champions (Figure 1).

As Figure 6 shows, the majority of Hidden Champions (53.4 per cent) was founded prior to the end of Second World War (Simon, 2009). Thus, the same institutions underlying

<table>
<thead>
<tr>
<th>Sector</th>
<th>Year</th>
<th>UK (high/intermediate)</th>
<th>Germany (high/intermediate)</th>
<th>USA (high/intermediate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>1910</td>
<td>-/-</td>
<td>-/-</td>
<td>-/-</td>
</tr>
<tr>
<td>Industry</td>
<td>1910</td>
<td>-/15.1</td>
<td>2.4/1.6</td>
<td>-/-</td>
</tr>
<tr>
<td>Services</td>
<td>1910</td>
<td>2.0/2.0</td>
<td>-/-</td>
<td>-/2.8</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1930</td>
<td>-/-</td>
<td>-/-</td>
<td>-/23.7</td>
</tr>
<tr>
<td>Industry</td>
<td>1930</td>
<td>-/15.6</td>
<td>-/2.8</td>
<td>4.1/1.9</td>
</tr>
<tr>
<td>Services</td>
<td>1930</td>
<td>2.6/1.5</td>
<td>2.1/1.2</td>
<td>3.5/0.1</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1950</td>
<td>-/0.5</td>
<td>-/0.5</td>
<td>-/-</td>
</tr>
<tr>
<td>Industry</td>
<td>1950</td>
<td>5.7/12.9</td>
<td>5.7/24.4</td>
<td>10.5/1.6</td>
</tr>
<tr>
<td>Services</td>
<td>1950</td>
<td>3.8/1.8</td>
<td>3.1/3.9</td>
<td>4.0/1.6</td>
</tr>
</tbody>
</table>

**Source:** Broadberry (2003)

**Table II.**
Stock of vocationally qualified employees (% of all employees)

**Figure 6.**
Founding years of hidden champions

**Source:** Own depiction following Simon (2009, p. 21)
German industrialization 150 years ago also served as the catalyst for the birth and subsequent sustained of many of the Hidden Champions.

Lagging behind the industrialization process of other western countries, such as the UK, USA, Belgium and France for many decades, a unified and empowered Germany not only presented a military threat to other nations but also emerged as the leading economy in the world, which eventually served as a catalyst underlying First World War (Berend and Berend, 2013). For a long time, the UK had stood out has the cradle of industrialization and had been referred to as the *Workshop of the World* (Samuel, 1977). The soaring German manufacturing output prompted England in 1887 to brand imported goods from its main competitor, Germany, as *Made in Germany*, which was intended to cast German manufactured products as having poor quality. In fact, this move ironically only brought about a prestigious brand of high quality that continues today and instead provided a sharp contrast to goods manufactured in Britain. Warning British Customers of low quality goods manufactured in Germany had the opposite effect and instead highlighted a quality difference to the detriment of the UK. The reputation of German manufactured goods remains an obvious reflection of outstanding quality and continues to sustain a strong reputation of German manufacturing.

At least some empirical evidence supports the superior reputation of German manufacturing. For example, respondents of the Statista Survey for the Made in Country Index (2017) used a five-point Likert scale to answer the question „On a lot of products you can find a label stating where product was made. How do you feel about labeled with [...]?” The rank in the worldwide index is bounded as an index benchmark of 100 points. As Table III shows that not only does Germany clearly hold the top spot but also together with Switzerland and the UK, accounts for 55 per cent of all Hidden Champions worldwide. This underlines the link between quality capabilities and the ability to generate and sustain Hidden Champions.

In addition, as Table IV shows, the Deloitte (2016) Global Manufacturing Competitiveness Index ranked nations based on their manufacturing competitiveness. Germany is ranked in third place, just behind China and the USA. The global CEO survey identifies talent as the key driver to competitiveness. The country-specific institutions and policies focusing on science, human capital, worker skills and training have resulted in a relative abundance of talent in Germany, which in turn underlies the country’s competitive advantage in manufacturing. Although neither of these indices directly measure the role of the Hidden Champions, their presence and impact are implied, as they play a key role in both German manufacturing and internationalization. Thus, both of these indices are consistent

<table>
<thead>
<tr>
<th>Country</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>100</td>
</tr>
<tr>
<td>Switzerland</td>
<td>98</td>
</tr>
<tr>
<td>UK</td>
<td>91</td>
</tr>
<tr>
<td>Sweden</td>
<td>90</td>
</tr>
<tr>
<td>Canada</td>
<td>85</td>
</tr>
<tr>
<td>Italy</td>
<td>84</td>
</tr>
<tr>
<td>Japan</td>
<td>81</td>
</tr>
<tr>
<td>France</td>
<td>81</td>
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<tr>
<td>USA</td>
<td>81</td>
</tr>
<tr>
<td>Finland</td>
<td>77</td>
</tr>
</tbody>
</table>

*Table III.*
Made in country index top 10

*Source:* Statista (2017)
with the view that *German Engineering* is the source of the high-quality product niche strategy central to the Hidden Champions.

Another source of the Hidden Champions export performance is cultural. Much of the special skill set supporting technology-driven products dates back to typical Prussian-German virtues that spread from the former parts of the North German Confederation (*Norddeutscher Bund*) throughout the rest of Germany following the Lesser German solution, when Prussia took the lead in the German Reich. Among these virtues, discipline, determination, diligence and toughness stand out (Dorn, 1931; Veblen, 1990) and are also partly based on the Puritan work ethos that Max Weber described in his seminal 1905 book, *The Protestant Ethic and the Spirit of Capitalism* (Weber, 1930; Becker and Woessmann, 2011). Support of the key role played by the meaning of culture is provided from a survey of 220 German Mittelstand firms revealing that the four most important human qualities for what is crucial to their success are precision, innovativeness, technical expertise and longevity of planning (PWC, 2017). These attributes are key characteristics exhibited by the German Mittelstand (Audretsch and Lehmann, 2016).

In particular, the model of the German Mittelstand reflects a core set of traditional values: long-term orientation of planning and decision-making (Le Breton-Miller and Miller, 2006), which results in agency cost minimizing owner-management (Schulze *et al.*, 2001). Similarly, the Mittelstand values long-turn sustainability that is lasting and preserves the owner’s name and family through internal succession. To extend their legacy beyond their working career, family business owners tend to treat profitability as a long-run rather than a short-run goal. Finally, the German Mittelstand as bearer of Prussian-German Virtues generally exhibits both thoroughness and precision. As they are a subset of the Mittelstand, the superior product quality and strong internationalization performance of the German Hidden Champions reflect those cultural virtues. The long-term orientation is especially conducive to developing a viable knowledge base and continually improving the product, particularly in manufacturing (Le Breton-Miller and Miller, 2006). In addition, the cultural values of meticulous and precise work ascribed to the German Mittelstand is conducive to the technological intensive products manufactured by the Hidden Champions.

This very formation of the German Mittelstand as epitome of the *German Engineering* model also dates back to the middle of the twentieth century, when the traditional handcraft firms became outdated. With the *old handcraft-based Mittelstand* diminishing by half after 1880, industrialization triggered the emergence of a new type of Mittelstand citizens ranging

<table>
<thead>
<tr>
<th>Country</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>100.0</td>
</tr>
<tr>
<td>USA</td>
<td>99.5</td>
</tr>
<tr>
<td>Germany</td>
<td>93.9</td>
</tr>
<tr>
<td>Japan</td>
<td>80.4</td>
</tr>
<tr>
<td>South Korea</td>
<td>76.7</td>
</tr>
<tr>
<td>UK</td>
<td>75.8</td>
</tr>
<tr>
<td>Taiwan</td>
<td>72.9</td>
</tr>
<tr>
<td>Mexico</td>
<td>69.5</td>
</tr>
<tr>
<td>Canada</td>
<td>68.7</td>
</tr>
<tr>
<td>Singapore</td>
<td>68.4</td>
</tr>
</tbody>
</table>

*Source:* Deloitte (2016)
from upper-middle class industrial managers from the so-called Bourgeoisie on the one hand and ordinary employees from the (educated) middle-class on the other.

Leadership played a core role in shaping the institutions central to the Hidden Champions strong economic and export performance. In particular, the Chancellor of the country, Otto von Bismarck, to sustain social cohesion, recognized the need to win the support of a broad spectrum spanning disparate elements of society, ranging from the nobility, the bourgeoisie to a mostly social democratic-oriented proletariat. The contemporary view that the Mittelstand provides the backbone of German economy dates back to the German Empire of 1871, when first von Bismarck and subsequently Wilhelm II both wisely foresaw the necessity of supporting the Mittelstand as the backbone of a stable monarchy (Blackbourn, 1977; Abrams, 2007).

The new Mittelstand citizens found their way to German society through the rise of the new corporate centered industrial landscape of firms that offered plenty of jobs in business administration, commerce, banks and insurance. The old Mittelstand (handcraft) gradually developed their businesses around the niches of newly pioneered technological innovations, shifting from former mostly textile-driven to metal processing and mechanical engineering businesses, which fueled the birth of many Hidden Champion firms.

To conclude this section on Germany’s role as the home country of Hidden Champion, Simon (2012) posited another hypothesis of why Germany exhibits such a strong internationalization performance in general and export success in particular. He argues that Germany’s historic Kleinstaaterei (which translates as German particularism) forces German firms to engage in international transactions more frequently when exporting to other countries than when trading between Prussia, Wurttemberg or Hanover. While this argument provides some insight, it overlooks a key source that benefitted the Mittelstand and Germany’s Hidden Champions. Simon (2012) overlooks the key role played by the German Customs Union (Zollverein). Reviewing the full original contract of March 22, 1833, the Zollverein provides a mandate that free trade for business transactions was to be organized in a united customs union, erasing almost all trade barriers. Still Simon’s (2012) argument of an early tradition of transnationally trade (Simon, 2012) may at least partially hold when considering that the 1865 Commercial (Handelsgesetzbuch) and 1900 Civil Code (Bürgerliches Gesetzbuch), along with a common currency, weights and measures were not introduced nationwide until the founding of the Reich in 1871.

However, it is even more important to emphasize that a virtually free trade zone lowered transaction costs, enabling greater economies of scale in production. Other arguments raised by Simon (2012) include above average English language proficiency skills, high rates of incoming and outgoing students and tourism to shape a German global awareness, which in turn contributed to internationalization activities more naturally (Hejazi and Ma, 2011). Again, these arguments do not explain the German export success prior to First World War around 1900. English as foreign language was introduced as a compulsory language in secondary schools (Haupt- and Realschule) only as recently as 1964 (Christ and Rang, 1985). Graduates from the Haupt- and Realschule generally pursue careers in vocational education and comprised a large share of the workforce employed by Hidden Champions. Thus, Simon’s argument of language proficiency does not hold importance. In addition, it should also be noted that neither mass tourism nor large-scale student exchanges became prevalent prior to the 1960s. Therefore, there must be more than Simon’s (2012) explanation attributing foreign language proficiency, tourism and student exchanges to the strong
internationalization activities exhibited by the Mittelstand in general and the Hidden Champions in particular.

6. Conclusion

The Hidden Champions of Germany present an anomaly to the more general findings in a burgeoning literature finding that SMEs have a low propensity to internationalize. This paper has shed light not just on why the Hidden Champions provide an exception to the rule of a paucity of internationalization activities but also how and why the home country of Germany is particularly conducive to developing and sustaining Hidden Champions (Rammer and Spielkamp, 2015). This paper is the first to link the success of Germany’s Hidden Champions to the historic origins of its Mittelstand model and the transition of economic sectors in the second half of the nineteenth century.

The high degree of internationalization exhibited by the Hidden Champions mirrors their core strategy. In particular, the strategic priority of manufacturing high quality premium products to dominate market niches requires geographic expansion in narrowly defined market niches across national borders.

Germany has proven to be a particularly fertile home country generating and fostering Hidden Champions because of the historical and traditional institutions, along with policies focusing on creating and sustaining a highly skilled labor force. The relative abundance of highly skilled labor, together with investments in science and technology is conducive to the key inputs requisite to a sustained competitive advantage of the Mittelstand in general and the Hidden Champions in particular.

The German Mittelstand along with its subset of Hidden Champions provides a seductive model for policymakers throughout the world. However, an important conclusion of this paper is that the strong and sustained export and internationalization performance of the Mittelstand and Hidden Champions are rooted in institutions and polices dating back to the Middle Ages. Whether contemporary policies in other countries can synthetically emulate institutions and values that are historically rooted in a different national context remains an important and open question for further research.

Note

1. The coalition of rye and iron is an established term that points to the alliance of both industrial and agrarian interest groups with regard to protective tariffs.

References


Becker, G.S. (1964), Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, Chicago University Press, Chicago, IL.


Fearon, J.D. (1999), “What is identity (as we now use the word)”, working paper, Stanford University, Stanford, CA.


Veblen, T. (1990), Imperial Germany and the Industrial Revolution, Transaction Publishers, NJ.


Further reading


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Geography of corporate innovation

Internationalization of innovative activities by MNEs from developed and emerging markets

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Abstract

Purpose – The purpose of this paper is to identify major developments in corporate innovation. The author focuses on the behavioral differences between MNEs from developed and emerging markets in the way they locate their R&D activities.

Design/methodology/approach – With the help of descriptive statistics, the paper identifies major trends in the global distribution of innovative activity. The novel source of patent statistics, Patent Cooperation Treaty (PCT) applications, is used as a proxy for innovative effort by leading MNEs. This paper is among the first attempts to analyze the global geography of innovation based on PCT statistics.

Findings – The analysis underscores differences in the patenting activities of MNEs from emerging and advanced markets. It confirms that innovative activity by major MNEs remains largely home-based, which contradicts the premise of the global nature of corporate innovation. At the same time, the growing importance of China as a research center attracts MNEs from a variety of developed markets. Emerging MNEs also file patent applications domestically. Most Chinese R&D subsidiaries of MNEs from advanced economies in our sample do not pursue technological specialization, as they produce patents in the same technological areas as the corporate headquarters or other subsidiaries.

Originality/value – A number of assumptions about the innovation geography of major MNEs were empirically tested. An attempt was made to fill the gaps in our understanding of innovation strategies pursued by MNEs in emerging markets. The author uses the concept of MNEs as meta-integrators to explain the observed dynamics. Its explanatory power is more convincing as applied to our data than the concept of national systems of innovation.

Keywords Innovation, MNE, Internationalization, Patent data

Paper type Research paper

1. Introduction

1.1 Objectives

The objective of this paper is to identify major global trends in corporate innovation. The changing nature of corporate innovation calls for empirical tests of theoretical assumptions about the location of innovative activities. We address the question of differences among MNEs in the way they site their R&D activities. R&D is treated as the practical side of innovation. Innovation in the form of new products or processes is a desirable outcome of investment into R&D. Patent statistics serve as a measure of innovative activity by MNEs and help identify the national origins of innovation.

This paper investigates leading multinationals from developed and emerging markets. Most research studies have focused on the motives and strategic choices of MNEs from developed economies (Chen and Vang, 2008), so the patterns of behavior and innovation strategies of MNEs from emerging markets still remain a relatively unexplored area of
research (Narula, 2016, p. 7), as little is known about their strategic priorities. MNEs from emerging markets might be motivated by a completely different set of incentives and have ownership advantages different from those in MNEs from advanced economies (Ramamurti, 2012). In addition, as a group, emerging MNEs are quite heterogeneous, so it is hard to generalize regarding their innovation strategies based on a number of corporate case studies. Another relatively new subject matter addressed in this paper is the nature of patenting by MNEs’ subsidiaries in emerging markets and whether their capacity for technological specialization is different from the overall corporate technology portfolio. China is a case study for this particular aspect of technological competence, as it is an attractive destination for foreign direct investment (FDI) from developed regions and it has made considerable advances in developing its national system of innovation (NIS). We will focus on the differences in technological expertise offered by R&D facilities in China and how they compare with the rest of the company. The main goal here is to understand whether emerging markets like China can develop their own technological specialization.

This paper attempts to obtain a “bigger picture” of the geography of corporate innovation, identify major developments and analyze them from the perspective of three theory-based assumptions. The first focus is the destination of R&D FDI, namely, where MNEs from developed and emerging markets site their R&D operations. It is believed that both types of multinationals are attracted by developed markets. MNEs from developed markets seek to diversify their technological capabilities, while emerging MNEs are expected to locate their R&D facilities in developed markets where they can profit from the local knowledge base and advanced national systems of innovation. The second assumption concerns the distribution of corporate innovation between home and abroad. It is believed that globalization drives MNEs to internationalize their R&D activities. The degree of internationalization of corporate innovation is measured as a percentage of patenting activity at home and abroad (developed and emerging markets)[1]. The third assumption concerns the nature of technological specialization of R&D facilities in emerging markets. It is assumed that developed markets are specializing in specific types of know-how, which explains their attractiveness as locations for R&D activities. Do developing or emerging markets offer similar advantages as locations for R&D activities. We will address this question by looking at the technological classification of patent applications filed in China by MNEs from advanced economies.

The following section discusses relevant literature and defines major concepts like “home base augmenting” (HBA) or MNEs as “meta-integrators.” The section also focuses on setting up the problematic and major assumptions about the determinants that shape the geography of corporate innovation by MNEs from developed and emerging markets in both developed and emerging markets.

1.2 MNEs and home base augmenting
The recent literature on the global technological competitiveness of MNEs emphasizes the ability of firms to augment their ownership advantages via international expansion (Cantwell, 1993; Cantwell and Piscitello, 2005; Frost, 2001; Kuemmerle, 1999). MNEs not only exploit their ownership advantages abroad, as per Hymer (1976) and Vernon (1966), and engage in so-called “home base exploiting (HBE)” FDI (Kuemmerle, 1999) or “competence-exploiting” FDI (Narula and Pineli, 2016), but also build international networks to leverage the knowledge, technology, skills and expertise of international subsidiaries. This is “HBA” FDI (Kuemmerle, 1999) or “competence-creating” FDI (Narula and Pineli, 2016). HBA implies creation of new products or technologies, which become part of the company’s technological portfolio (Cantwell and Mudambi, 2005). MNEs build their technological expertise by
“augmenting” the knowledge base of their subsidiaries in foreign markets. New products or technology are being sourced from the local environment (Cantwell and Piscitello, 2005, pp. 2-3). In this context, the location of subsidiaries involved in R&D and patenting activities is strategically important as it determines the extent of home-base augmenting capability. We use international patenting by foreign subsidiaries as an indicator of HBA.

Questions about the choice of location for R&D activities carried out by MNEs have been explored in Cantwell and Janne (1999), Cantwell and Piscitello (2005), Frost (2001), Kuemmerle (1999), Kumar (1995), Patel and Pavitt (1991) and Pearce and Papanastassiou (1996). Local contexts in which subsidiaries operate matter, as they serve as a source of indigenous expertise, ideas, information, etc. that help build upon the advantages that MNEs already possess (Patel and Pavitt, 1991). Augmentative strategic motives dictate the selection of countries with superior national institutional and technological flora or NIS. HBA laboratories:

[...] will be more probable if the size of a country’s knowledge base is large and the quality of this knowledge base is high. Firms who seek to augment their home base are looking for a large pool of qualified engineers and scientists from which they can select those most suited to the firm’s needs (Kuemmerle, 1999, p. 4).

According to the classical definition in Lundvall (1992), NIS are “elements and relationships” which collectively produce innovation within the national borders of a particular country. These elements include firms, research institutes, government, universities and other innovative actors that work together (purposefully or subconsciously) to create a more conducive environment for creative effort. MNEs’ local subsidiaries tap into the native sources of innovation engendered by this environment. Thus, there is a strong link between the quality of NIS and HBA activities of MNEs expressed as international patent filings by foreign subsidiaries.

The question of the strategic contribution of R&D subsidiaries in developing economies and emerging markets remains comparatively little researched. “Emerging markets” are loosely defined here as transitioning from a “developing” to a “developed” status. For example, economically vibrant (but politically stagnant) BRIC (Brazil, Russia, India and China) nations are frequently referred to as emerging markets. There is empirical evidence indicating that developed markets are becoming more technologically specialized, which explains the emergence of centers or clusters of specific expertise in different industrialized regions of the world (Cantwell, 1993; Frost, 2001). Do MNEs’ subsidiaries in emerging markets offer similar advantages of specialization? This question entails important theoretical, as well as practical, implications and can be explored, in our opinion, based on data of MNEs’ patenting activity in emerging markets. China was chosen as an appropriate case to investigate if Chinese subsidiaries of major MNEs from advanced markets develop their own technological specialization. This technological specialization can be captured by the ability to generate patentable ideas in a field different from the headquarters and other subsidiaries.

With this new strategic role attributed to the R&D activities of foreign subsidiaries, they are expected to contribute to the overall competitiveness of MNEs (Bartlett and Ghoshal, 1989; Birkinshaw and Hood, 2001; Cantwell, 1995; Cantwell and Mudambi, 2005; Rugman and Verbeke, 2001; Zanfei, 2000). The ability to exploit local innovation networks or NIS is related to the notion of the ability to “meta-integrate” internal and external networks. Internal and external networks of knowledge exchange are crucial for creating new technological specializations and competencies by subsidiaries. External networks are the interactions of affiliates with their local counterparts, institutions, and other partners, while
internal networks imply the transfer of knowledge within an organization. The interconnection between external and internal networks of knowledge transfer is referred to as a “double network” (Zanfei, 2000). This double network of innovation generation and management illustrates how “multinationals’ organization is subject to both centripetal and centrifugal forces” (Zanfei, 2000, p. 515). The ability to leverage the external and internal networks of innovation makes up the core of the new source of competitive advantage (Meyer et al., 2011; Narula, 2014a). According to Narula (2014a), a new type of competence is emerging—the ability to balance between the internal and external embeddedness of innovative activities. MNEs have emerged to become “meta-integrators” engaging in the art of combining and augmenting the technological competences of their various subsidiaries (Narula, 2014a, p. 7). Internationalization of R&D and the ability to “span diverse institutional contexts” make a multinational “unique as a knowledge-creating organization” (Frost, 2001, p. 103). Thus, internationalization and innovation are closely related and come together as a source of competitive advantage.

1.3 Internationalization of innovation
At the center of strategic balancing of internal and external networks of innovation is the geographical positioning of R&D activities. The geography of corporate innovation is shaped by a combination of trade-offs, conditions and complicated motivations, one of which is the extent of internationalization or the choice between R&D at home and abroad [2]. Based on the assumption that NIS are more advanced in developed economies, we should be able to observe a very particular pattern of corporate innovation. MNEs from both emerging and developed markets should be attracted by advanced NIS in developed markets to pursue HBA activities, while home base exploiting activities should take place predominantly in emerging or developing markets. In spite of the spread of global value chains, Vernon’s “product life cycle” (Vernon, 1966) rings true for many MNEs even today. It has been empirically ascertained that MNEs from developed economies tend to concentrate a great deal of their R&D activities at home (Blomstrom and Kokko, 1998; Frost, 2001; Kuemmerle, 1999; Narula, 2014a), or, as Laurens et al. (2015, p. 26) concluded, since the mid-2000s, developed MNEs have experienced a declining trend of R&D internationalization activities. Apparently, the degree of internationalization of MNEs should not be taken for granted even as the world is becoming more technologically interconnected.

One of the explanations for the concentration of technological activities at home is the tacit nature of knowledge, which is frequently transferred via social contacts and physical proximity (Patel and Pavitt, 1991). Chen and Vang (2008) argue that a concentration of R&D activities in developed countries leads to even more concentration and specialization. This argument is essentially about path dependence and higher levels of embeddedness of developed regions in a global innovation network (GIN). GIN refers to a globally interactive innovation process (Chen and Vang, 2008, p. 13). This concept is similar to the ability to manage efficiently a firm’s internal and external networks of innovation on a global scale. Another explanation goes back to the discussion in Narula and Zanfei (2005) about the ever-increasing difficulties of managing technological portfolios, which leads to slowing down or “inertia” in the globalization of innovation. Narula points to the challenges of balancing internal and external networks of innovation:

As distances (technological, organizational, and physical) become greater, there may be decreasing returns to R&D spread. Greater resources for knowledge integration and coordination are needed as intra-MNE and inter-firm R&D cooperation becomes more intensive and extensive (Narula, 2014a, p. 4).
Reddy is reconciling Vernon’s theory with today’s realities when he argues that the “product life cycle” theory is relevant to the extent of the concentration of innovation at home. But in the present global context the product life cycle can start anywhere in the corporate centers of excellence (Reddy, 2010, p. 259). Nonetheless, the national concentration of R&D activities is puzzling in light of the widely held view that technological and economic globalization has reduced the importance of geography and national borders. It is worthwhile exploring this puzzle by using recent patent data.

The globalized view of corporate innovation assumes that it is not a zero-sum game, and the ability to benefit from various markets, both developed and developing, underscores the role of MNEs as meta-integrators. NIS in emerging markets can be particularly conducive to innovation in specific industries or regions, for instance, in the cases of industrial clusters or technological concentration as a result of government support or path dependence. It is presumed here that meta-integrating skills are linked to the competence of strategically siting R&D activities and should be measured by the extent of internationalization of innovation: ability to generate innovation in various locations. In other words, when companies from advanced NIS engage in innovation activities only at home, today, because of technological globalization, this can only mean poor mega-integrating skills. Indeed, Cantwell and Janne (1999) observed that MNEs skilled in the art of home-augmenting have been diversifying their home-augmenting locations and develop complex networks of innovative activity. Plus, they are increasingly involved in HBA rather than home base exploiting abroad (Cantwell and Janne, 1999, p. 122).

2. Foreign locations of innovation

2.1 Locations of innovation in developed markets

It is believed that mostly advanced economies attract “HBA” FDI because they have superior innovation capabilities. They have better technology infrastructure, human capital, and the overall institutional context conducive to innovative effort (Kuemmerle, 1999; Veliyath and Sambharya, 2011). Centers of excellence in developed markets attract MNEs from other developed economies that are looking to diversify their knowledge base. For example, leading European MNEs carry out technological activity in locations where they can plug into the knowledge and expertise differentiated from their own proficiency (Cantwell and Janne, 1999; Globerman, Kokko, and Sjoholm, 1996). MNEs from developing or emerging markets also tend to gravitate toward those centers of excellence in search of modern technology, expertise and skills (Blomstrom and Kokko, 1998).

The considerations discussed above, such as the level of technological and economic development of host or home countries, as well as the quality of their NIS, determine the level of internationalization and the choice of location for R&D activities. The trade-off between the internal and external embeddedness of innovative activities is also an important consideration that dictates where these activities should be sited and in how many locations. As a result of these considerations, strategic choices are being made that shape the global map of corporate innovation.

2.2 Locations of innovation in emerging markets

Emerging markets provide a number of advantages, including affordable and abundant local talent. Leading multinationals engage in arbitrage by leveraging differences between home and host conditions (Jha et al., 2015) and profit from the diversity of local contexts in developing markets (Meyer et al., 2011). Since the mid-2000s, they are believed to become even more attractive locations of innovative activities than developed economies because of rapidly growing markets and increasing customer base (Reddy, 2010). The trend of siting
R&D facilities in emerging markets is escalating but, apart from the factors discussed above, the technological contribution of these locations to the corporate GIN is an unsettled issue requiring further empirical investigation.

Recent research, especially focusing on emerging markets, provides evidence of new knowledge clusters and hotspots in these locations (Dicken, 2003; Chen and Vang, 2008; Cuervo-Cazurra and Genc, 2011). Multinationals from advanced economies are increasingly conducting innovative activities in emerging markets (Griffith and Miller, 2011; Reddy, 2010). Products and services are being developed there addressing not only local needs but also global markets. The examples of bottom-up or reverse innovation are multiple. For instance, the subsidiaries of General Electric in India and China came up with two products that were successfully sold worldwide: a portable electrocardiogram device and a PC-based ultrasound machine (Immelt et al., 2009). This is a well-known case that illustrates one of the main characteristics of innovation generated in emerging markets – frugality (Brem and Wolfram, 2014). Another example is Cisco India R&D facility in Bangalore that successfully developed new mobile communication products sold across the globe and generated hundreds of patents along the way (Jha et al., 2016).

2.3 Locations of innovation in China

China presents a unique case for studying the opportunities for HBA in an emerging market for a number of reasons. First, China remains the largest recipient of FDI among emerging markets and one of the largest in the world. In 2016, it ranked third after the USA and the UK with regard to the total inflows, in 2015 – it was second after the USA (UNCTAD, 2017, pp. 11-12). Second, China is just behind the USA in terms of gross domestic spending on R&D in the US Dollars in 2016. Gross domestic spending on R&D is defined as the total expenditure on R&D carried out by all resident companies, research institutes, university and government laboratories, etc., in a country (OECD, 2017). Third, following the logic of industrial clusters in Porter (1990), specialized technological expertise can develop in specific locations. These clusters provide fertile soil for HBA by MNEs. The Chinese government exerts a strategic effort to enhance geographical concentrations of technology via technology development zones (Williams and Du, 2014, p. 974). The government also pursues targeted investment (even though often this investment is motivated by political connections) into high tech industries such as space exploration, defense and supercomputers (Gupta and Wang, 2016). All these developments should make China an ideal host among emerging markets for technology augmenting activities. Fourth, prior research underscored HBA activities by leading MNEs in China, for instance in the case of Motorola explored by Chen and Vang (2008, p. 27). Chen and Vang stated that the company’s R&D centers in China not only applied technology generated elsewhere, but also produced new technology. Another case study of Novozymes, a Danish biotechnology company, reported that the company’s R&D operations in China over time transitioned from home base exploiting to HBA. The company’s R&D center in Beijing is now a center of excellence and part of the company’s GIN (Haakonsson and Ujjual, 2015, p. 114). Ultimately, research of R&D activities by MNEs from advanced economies in China is mostly based on case studies, a macro-level look at the nature of HBA activity by Chinese subsidiaries is needed.

3. Methodology

We investigate the geographical distribution of the innovative activities of Fortune Global 500 companies for the year 2015[3]. These are the largest world corporations ranked on total revenue (for the fiscal year that ended on March 31, 2016). The overwhelming majority are
MNEs that have extensive foreign operations. The Fortune list provides a good opportunity to identify a target population of technologically active MNEs. For example, Cantwell and Janne (1999) used it to examine the patenting activity of world-leading corporations in the USA for the period 1969-1995. However, because of economic globalization that allowed for the rise of multinationals from emerging markets, the very nature of the list has since changed, and it now features companies from Brazil, China, India, Russia, and other fledging centers of innovative activity.

Innovative activities are measured as patent statistics. Specifically, herein, we use Patent Cooperation Treaty (PCT) patent data – PCT applications published by WIPO (World Intellectual Property Organization) for 2013 and 2016 – as a data source for investigating the innovative activities of leading MNEs. WIPO patent database is the most diversified source of patent data. Previous research has typically used patent statistics from the USA Patent and Trademark Office (USPTO), ignoring the recent advancements of technological centers of excellence in emerging markets, which can patent domestically as well as internationally. The US patent data were frequently utilized because of the assumed desirability of the US market. Corporate innovators worldwide were expected to file their inventions in the USA, but today, China or India are universally appealing large markets, which is why national (the USA) or regional intellectual property (IP) protection systems like the European Patent Office (EPO) are not “global” enough to reflect all recent changes in corporate innovation on a global scale. The PCT system offers this level of coverage.

PCT applications in the WIPO Statistics Database are a novel and useful data source for looking at the innovative activities of MNEs. The global scope of the PCT mechanism makes it an ideal indicator of the internationalization of the innovative effort. PCT applications are the so-called “international” applications that allow inventors to patent their inventions in 151 countries, PCT-contracting states, simultaneously (WIPO, 2017). Approval power still lies within national jurisdictions, but the PCT system considerably simplifies the bureaucratic side of the application process as an efficient alternative to filing applications separately in multiple countries. Under the PCT system, an application can be filed through a national or regional patent office (for instance, the EPO), or it can be filed directly with the International Bureau (IB) of WIPO. We, therefore, look at the geographical identity of a patent application (where the application was filed) as an indicator of R&D activity being performed by an MNE subsidiary in this location[4]. An algorithm in the Perl programming language (based on the regular expression technique) sorted out PCT applications according to the two-letter country code assigned to each filing. This code indicates the country where the application was filed.

Even though patent applications represent only the first stage of the innovation process, namely, invention, patent statistics have been used frequently as a proxy for innovative activity:

The use of corporate patents as an indicator of advanced technological capacity and the ability to develop innovation is one of the most established and reliable methods of estimating cross-sectorial patterns of innovative activities (Cantwell and Piscitello, 2005, p. 5).

Furthermore, patent applications contain information about the geographical location “where the novelty creation occurred” (Laurens et al., 2015, p. 22). Patent statistics for foreign subsidiaries provide good evidence of HBA or competence-creating innovative activities, because novelty is one of the requirements for obtaining patent rights[5]. By studying patenting activity by MNEs, we automatically focus on in-house innovative effort and exclude all other R&D activities like patent acquisition, licensing, etc. or R&D activities that do not result in patent applications. In this regard, internationally oriented patent
filings by foreign subsidiaries as a measure of internationalization of corporate innovation have a limitation as they do not capture all other forms of innovative activities. However, what makes patent data especially suitable for our purposes is that patent applications leave a physical record of novel and applied inventions of products or technology. A patent application constitutes strong evidence of HBA or competence-creating capacity since novelty is the main criterion for granting IP rights. A patent filed by a local subsidiary serves as evidence of locally sourced innovation. After all, the creation of new products and technology based on local knowledge captures the essence of HBA (Cantwell and Mudambi, 2005).

After WIPO publishes an application[6] on its website, it becomes public knowledge. Over 400,000 filings published in 2013 and 2016 were screened, and 166 Fortune Global 500 multinationals that filed PCT applications were selected for this study. The nationality of an MNE was determined based on the location of its corporate headquarters. The next step was to identify the geographical origin of patent filings. As mentioned above, based on where the application was filed, a two-letter country code is assigned to a patent application that serves as an indicator of its geographical origin. We identified the originating country for all patent filings made by the 166 MNEs on our list. Our results serve as an empirical platform to test theoretical assumptions about the location and dispersion of R&D activities by multinationals. Even though we were guided by a number of theory-based assumptions, we were open to new observations essentially pursuing an inductive approach. Patent data were explored with the intention of identifying current trends and patterns of innovative behavior by leading global corporations.

Another line of inquiry involved looking at the nature of patenting in emerging markets. The objective was to investigate whether foreign subsidiaries in emerging markets would be pursuing the same type of technology as the rest of applications filed by the company. The case of China was chosen to explore this question. The assumption is that if a Chinese R&D facility were engaged in independent research, it should be reflected in the type of technology being patented. The codes of the International Patent Classification (IPC), patent classification system administered by WIPO, were explored for applications filed from China and in the rest of the company. IPC classifies the type of technology that each patent pursues. Several IPC codes could be assigned to one patent application; we looked at the first letter and the two following digit numbers or the “class” identification of the first code being listed. In total, 26 companies in our patent dataset for 2016 were selected that had over two applications coming from China. We compared the modes (most frequent) IPC code being used for Chinese filings and for the rest of the company.

4. Findings

4.1 Location of innovation

The results of the patent analysis for 2013 are presented in Table I and for 2016 in Table II. Over 160 companies on our list come from 23 countries, both developed and from the three emerging markets, namely China, India, and Brazil. In total, 15 countries that boast technologically active multinationals were selected. The tables display very similar patterns, which confirms that the described trends are at least three years old. Japanese MNEs filed the largest number of applications in 2013, 12,637, and in 2016, 11,245, followed by the US with 10,695 patents in 2013 and 8,376 in 2016. Overall, developed MNEs filed more patent applications than their counterparts from China, Brazil or India. Nevertheless, unlike the state of affairs back in the 1990s, when the innovative activities of multinationals still focused largely on developed countries in the so-called “triad” of North America, Europe and Japan (Bruche, 2009), today many PCT patents by MNEs from developed economies are
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<td><strong>43</strong></td>
<td><strong>5</strong></td>
<td><strong>0</strong></td>
<td><strong>15</strong></td>
<td><strong>0</strong></td>
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<td><strong>186</strong></td>
<td><strong>39,323</strong></td>
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</tr>
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</table>

**Data source:** WIPO Statistics Database

**Note:** Compiled by the author
**Table II. PCT applications by MNE nationality and country of filing, 2016**

<table>
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<tr>
<th># Firms</th>
<th>Home</th>
<th>US</th>
<th>JP</th>
<th>DE</th>
<th>FR</th>
<th>CN</th>
<th>GB</th>
<th>KR</th>
<th>IN</th>
<th>BR</th>
<th>IT</th>
<th>CH</th>
<th>CA</th>
<th>IE</th>
<th>NL</th>
<th>SE</th>
<th>EP</th>
<th>IB</th>
<th>Rest</th>
<th>Total</th>
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<tbody>
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<td>The USA (US)</td>
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<td>24</td>
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<td>France (FR)</td>
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<td>15</td>
<td>8</td>
<td>22</td>
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<td>0</td>
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<td>2</td>
<td>0</td>
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<td>70</td>
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<td>117</td>
<td>44</td>
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<td>361</td>
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<tr>
<td>7</td>
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<td>1</td>
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<td>649</td>
<td>611</td>
<td>347</td>
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<td><strong>Total</strong></td>
<td><strong>10,473</strong></td>
<td><strong>11,305</strong></td>
<td><strong>28</strong></td>
<td><strong>652</strong></td>
<td><strong>1,046</strong></td>
<td><strong>174</strong></td>
<td><strong>2,182</strong></td>
<td><strong>18</strong></td>
<td><strong>23</strong></td>
<td><strong>2</strong></td>
<td><strong>0</strong></td>
<td><strong>17</strong></td>
<td><strong>0</strong></td>
<td><strong>2</strong></td>
<td><strong>659</strong></td>
<td><strong>6,998</strong></td>
<td><strong>1,089</strong></td>
<td><strong>124</strong></td>
<td><strong>34,792</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Data source:** WIPO Statistics Database

**Note:** Compiled by the author
filed from China. This implies that innovative activity conducted by an MNE’s subsidiary actually takes place in China.

Based on Table I, as well as Table II, the US companies file patents mostly in the USA, but considerable numbers of patents have been filed in Europe with the EPO – 476 (2013) and 455 (2016) – and China – 257 (2013) and 481 (2016). The number of applications filed by subsidiaries of the US companies in China has almost doubled in three years. Japanese firms file overwhelmingly on home soil, but 168 (2013) and 240 (2016) applications were filed in Europe, 105 (2013) and 151 (2016) in China and 157 (2013) and 139 (2016) in the USA. This shows that Japan has strong ties with these locations vis-à-vis the rest of the world. German companies filed mostly with the EPO – 6,575 (2013) and 4,590 (2016) applications – and in the USA with 654 (2013) and 441 (2016) patents. French multinationals, unlike their German counterparts, filed mostly at home – 582 (2013) and 711 (2016) – and with the EPO – 654 (2013) and 465 (2016) applications. The USA is the second largest foreign technology market for France with 133 (2013) and 185 (2016) applications. In 2013 British MNEs filed mostly in the US – 166 – and at home – 90 applications. While in 2016 they mostly filed at home and with the EPO, with 118 and 117, respectively. South Korean applicants filed almost exclusively at home – 2,100 patents in 2013 and 2,054 – in 2016. In 2013 Indian multinationals filed mostly at home – 25 applications and via WIPO – 13. In 2016, Indian companies filed predominantly with WIPO – 56 – and only eight patents were filed with the Indian national patent office. Brazilian firms, on the other hand, filed 36 (2013) and 14 (2016) applications at home and one (2013) and two (2016) with the US Patent and Trademark Office. Italians filed with the EPO and WIPO in both years. Swiss companies filed 380 (2013) and 279 (2016) patents with the EPO, 122 (2013) and 129 (2016) in the USA, and 111 (2013) and 115 (2016) with WIPO. Canadian firms filed 12 (2013) and 17 (2016) in the USA and 12 at home in both years. In 2013 Ireland did not have any corporate applications in China, but in 2016 most patents filed by Ireland were in China – five. Companies from The Netherlands filed mostly with the EPO in both years, while Swedes filed 644 (2013) and 649 (2016) at home, 524 (2013) and 611 (2016) with the EPO and 101 (2013) and 123 (2016) in China.

In 2013 and 2016 China attracted an impressive number of applications – 705 (2013) and 866 (2016) – from developed markets, made up of: 257 (2013) and 481 (2016) from the USA, 105 (2013) and 151 (2016) from Japan, 101 (2013) and 123 (2016) from Sweden, 19 (2013) and 55 (2016) from Switzerland, 101 (2013) and 37 (2016) from Germany, and 19 (2013) and 15 (2016) from France. To sum up, the patterns of international patenting in 2013 are almost identical with the developments in 2016. The only significant difference is that the US multinationals filed almost twice as many applications from China in 2016 than in 2013. Except for China being an attractive FDI target, multinationals from developed markets filed mostly at home and in other developed markets. In total, 705 applications were filed by subsidiaries of multinationals from the USA, Japan, Germany and Sweden in China in 2013 and 1,046 in 2016. MNEs from emerging markets file predominantly at home (China and Brazil) or at home and through WIPO (India).

Figures 1 and 2 show data on the national origin of patenting companies and the origin of innovation, i.e. where PCT applications were filed for both years. Companies from Japan, the USA, Germany, South Korea, Sweden and France filed the largest numbers of applications (Figure 1). Based on patent applications, innovative activity takes place mostly in Japan, the USA, EPO, South Korea, China and France (Figure 2).

4.2 China and technological specialization
Looking at the nature of patents from China, we focused on the most recent year, 2016. PCT applications filed in China by 26 MNEs in 2016 (MNEs that had more than two PCT filings
in China) from our dataset were investigated to identify differences or similarities with technology being pursued at company headquarters and the rest of subsidiaries. The goal was to find out if the Chinese subsidiaries of MNEs from developed economies involved in innovative activities independent from the rest of the company or, in other words, specialized in a particular type of technology. The outcomes of this investigation are presented in Table III.

Figure 1. MNE nationality and PCT applications, 2013 and 2016

Note: Compiled by the author
Data source: WIPO Statistics Database

Figure 2. Location of innovation activity measured as PCT filings, 2013 and 2016

Note: Compiled by the author
Data source: WIPO Statistics Database
### Table III.
R&D activities in Chinese subsidiaries and the extent of their specialization, 2016

<table>
<thead>
<tr>
<th>MNE</th>
<th>Chinese PCT filings</th>
<th>Total PCT filings</th>
<th>(%) from Total of IPC codes</th>
<th>Technology based on mode of IPC codes</th>
<th>R&amp;D activity in China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>2</td>
<td>479</td>
<td>0.4</td>
<td>Same</td>
<td>Production facilities, announced four R&amp;D centers to be open (Gartenberg, 2017)</td>
</tr>
<tr>
<td>Microsoft</td>
<td>3</td>
<td>8</td>
<td>37.5</td>
<td>Different</td>
<td>Microsoft Asia-Pacific Research and Development Group (ARD) (Microsoft, 2017)</td>
</tr>
<tr>
<td>Novartis</td>
<td>3</td>
<td>189</td>
<td>1.6</td>
<td>Same</td>
<td>Opened a third largest R&amp;D center in China in 2016 (Cendrowski, 2016)</td>
</tr>
<tr>
<td>Johnson Controls</td>
<td>3</td>
<td>160</td>
<td>1.9</td>
<td>Same</td>
<td>Three R&amp;D facilities in China (Johnson Controls, 2017)</td>
</tr>
<tr>
<td>Schlumberger</td>
<td>3</td>
<td>514</td>
<td>0.6</td>
<td>Same</td>
<td>Beijing Geoscience Center (BGC) in China is the largest Schlumberger Center of Excellence (Schlumberger, 2017)</td>
</tr>
<tr>
<td>GlaxoSmithKline</td>
<td>4</td>
<td>97</td>
<td>4.1</td>
<td>Same</td>
<td>Global R&amp;D center in Shanghai (GlaxoSmithKline, 2017)</td>
</tr>
<tr>
<td>Hitachi</td>
<td>5</td>
<td>481</td>
<td>1.0</td>
<td>Same</td>
<td>R&amp;D facilities in Beijing and Shanghai (Hitachi, 2017)</td>
</tr>
<tr>
<td>Accenture</td>
<td>5</td>
<td>11</td>
<td>45.5</td>
<td>Same</td>
<td>Accenture Technology Lab in Beijing (Accenture, 2012)</td>
</tr>
<tr>
<td>Schneider Electric</td>
<td>5</td>
<td>40</td>
<td>12.5</td>
<td>Different</td>
<td>Company fifth R&amp;D in China (Arnold, 2014)</td>
</tr>
<tr>
<td>BASF</td>
<td>9</td>
<td>754</td>
<td>1.2</td>
<td>Different</td>
<td>BASF Innovation Campus Asia Pacific (BASF, 2015)</td>
</tr>
<tr>
<td>Robert Bosch</td>
<td>11</td>
<td>1,326</td>
<td>0.8</td>
<td>Different</td>
<td>R&amp;D center (Bosch in China, 2012)</td>
</tr>
<tr>
<td>3M</td>
<td>11</td>
<td>678</td>
<td>1.6</td>
<td>Different</td>
<td>Second largest company’s R&amp;D center is in China (Mahajan, 2014)</td>
</tr>
<tr>
<td>Saint-Gobain</td>
<td>12</td>
<td>208</td>
<td>5.8</td>
<td>Different</td>
<td>Saint-Gobain Research Shanghai (SGRS) (Saint-Gobain, 2017)</td>
</tr>
<tr>
<td>Siemens</td>
<td>15</td>
<td>1,340</td>
<td>1.1</td>
<td>Different</td>
<td>20 R&amp;D hubs in China (Siemens, 2014)</td>
</tr>
<tr>
<td>NEC</td>
<td>18</td>
<td>1,118</td>
<td>1.6</td>
<td>Same</td>
<td>NEC Laboratories China (NEC, 2017)</td>
</tr>
<tr>
<td>Panasonic</td>
<td>19</td>
<td>126</td>
<td>15.1</td>
<td>Same</td>
<td>Panasonic Beijing Laboratory (PBJL) of Panasonic R&amp;D Center China Co., Ltd. (Panasonic, 2017)</td>
</tr>
<tr>
<td>General Electric</td>
<td>20</td>
<td>454</td>
<td>4.4</td>
<td>Same</td>
<td>GE Global Research Center, Shanghai (GE, 2017)</td>
</tr>
<tr>
<td>Honeywell</td>
<td>24</td>
<td>183</td>
<td>13.1</td>
<td>Different</td>
<td>R&amp;D facilities in Shanghai (Honeywell, 2016)</td>
</tr>
<tr>
<td>International</td>
<td>52</td>
<td>1,859</td>
<td>2.8</td>
<td>Same</td>
<td>Sony China Research Laboratory and a number of R&amp;D partnerships, including SICCAS-Sony Joint Laboratory (Sony, 2015)</td>
</tr>
<tr>
<td>Sony</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R&amp;D activities in Chinese subsidiaries and the extent of their specialization, 2016</td>
</tr>
<tr>
<td>ABB</td>
<td>52</td>
<td>396</td>
<td>13.1</td>
<td>Same</td>
<td>The ABB Corporate Research Center in China (ABB, 2017)</td>
</tr>
<tr>
<td>Procter &amp; Gamble</td>
<td>55</td>
<td>651</td>
<td>8.4</td>
<td>Same</td>
<td>Technical Center in Beijing (P and G, 2017)</td>
</tr>
<tr>
<td>Merck</td>
<td>56</td>
<td>414</td>
<td>13.5</td>
<td>Same</td>
<td>R&amp;D Beijing Hub (Merck, 2017)</td>
</tr>
<tr>
<td>Fujitsu</td>
<td>57</td>
<td>373</td>
<td>15.3</td>
<td>Different</td>
<td>Fujitsu R&amp;D Center Co., Ltd. (Fujitsu, 2017)</td>
</tr>
</tbody>
</table>

(continued)
The first column contains the list of the 26 MNEs. The second column provides the number of PCT applications filed by a company’s subsidiary in China, the third – the total number of PCT applications filed by the company in 2016, and the fourth – the percentage of Chinese applications from the total. The fifth column indicates whether the technology pursued by a Chinese subsidiary [expressed as the mode of the International Patent Classification (IPC) codes – more specifically, the first letter and the two following numbers of the first IPC code – assigned to patent applications] was similar or different from the technology being patented in the rest of the company. The last column has information about the corporate R&D activities in China. Ten MNEs out of 26 seem to practice technological specialization in their Chinese subsidiaries. Therefore, most companies (regardless of the extent of their technological presence in China or the number of patent applications) engage in similar innovative activities in China as in the rest of the company.

### Table III.

<table>
<thead>
<tr>
<th>MNE</th>
<th>Chinese PCT filings</th>
<th>Total PCT filings</th>
<th>(% from Total)</th>
<th>Technology based on mode of IPC codes</th>
<th>R&amp;D activity in China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualcomm</td>
<td>95</td>
<td>2528</td>
<td>3.8</td>
<td>Same</td>
<td>Qualcomm Research China (Qualcomm, 2017)</td>
</tr>
<tr>
<td>Ericsson</td>
<td>123</td>
<td>1635</td>
<td>7.5</td>
<td>Same</td>
<td>Five R&amp;D centers (Ericsson, 2012)</td>
</tr>
<tr>
<td>Intel</td>
<td>126</td>
<td>1720</td>
<td>7.3</td>
<td>Different</td>
<td>The Intel R&amp;D Center in Zizhu, Shanghai (Yiyao, 2016)</td>
</tr>
</tbody>
</table>

Data source: WIPO Statistics Database
Note: Compiled by the author

The first column contains the list of the 26 MNEs. The second column provides the number of PCT applications filed by a company’s subsidiary in China, the third – the total number of PCT applications filed by the company in 2016, and the fourth – the percentage of Chinese applications from the total. The fifth column indicates whether the technology pursued by a Chinese subsidiary [expressed as the mode of the International Patent Classification (IPC) codes – more specifically, the first letter and the two following numbers of the first IPC code – assigned to patent applications] was similar or different from the technology being patented in the rest of the company. The last column has information about the corporate R&D activities in China. Ten MNEs out of 26 seem to practice technological specialization in their Chinese subsidiaries. Therefore, most companies (regardless of the extent of their technological presence in China or the number of patent applications) engage in similar innovative activities in China as in the rest of the company.

### 5. Discussion of results

#### 5.1 Innovation strategies by MNEs from advanced economies

Based on our data, MNEs from advanced markets tend to file domestically, and therefore they rely mostly on domestic R&D. Back in the 1990s, the R&D activities of MNEs were overwhelmingly conducted at home, within the domestic NIS (Freeman, 1995, p. 17; Gassmann and von Zedtwitz, 1999, p. 234). Abundant empirical evidence has been collected to confirm this statement; for instance, Patel and Pavitt (1991) explored the US patenting activity of 686 largest companies and concluded that their innovation efforts remained far from globalized, since they were mostly home-based. The self-sufficient nature of R&D activity in Japan has been well documented, for instance, in Lee et al. (2016). Lee, Mudambi and Kollmann analyze Japanese patent data from the perspective of co-inventor connectivity and conclude that despite global R&D operations of major Japanese MNEs, their innovation process remains inward-oriented and not well connected with the rest of the world.

Table IV summarizes the main trends of innovative activities undertaken by the MNEs in our sample by providing data on the percentage of PCT patents filed at home and in developed and emerging markets in 2013 and 2016. South Korean, Japanese and the US multinationals filed mostly at home, while French, Canadian, Swedish and British companies made considerable filings at home and abroad. German and Italian firms filed mostly with the EPO. Firms from Switzerland and The Netherlands did not file through national offices at all, but with the EPO. This is still home or “close-to-home” innovation. Filing directly with the EPO has the advantage of obtaining patent rights from all members of the European Patent Convention[7].
Between 1987 and 1995 the share of the US patents for the world’s largest multinationals, based on research conducted by foreign subsidiaries, was in the following order: Europe – 32.5 percent, the USA – 8.3 percent and Japan – 1 percent (Narula, 2014b, p. 28). Based on the data in Table IV, the internationalization of R&D activities by MNEs increased, but the order remained the same: Europe led the internationalization trend, the US had an international patent share of about 14 per cent (in developed and emerging markets), and Japan had roughly 5 per cent.

Narula’s thesis on the “dispersion-bandwidth paradox” (Narula, 2014a, pp. 11-13) can serve as an explanation for the high concentration of R&D activities among MNEs from developed regions at home. MNEs stretch their worldwide innovation-generating resources too thinly under the pressure to globalize, which leads to higher coordination costs and ultimately to higher levels of autonomy and specialization by headquarters and various subsidiaries. The ability to meta-integrate or combine the competencies of various subsidiaries becomes a competitive advantage in its own right – “recombinant advantage.” (Narula, 2014a, p. 13). If we assume that this advantage manifests itself in a healthy balance between domestic and foreign patenting (provided that most companies in our list are indeed large MNEs with multiple foreign subsidiaries), then most multinationals from advanced markets lack in the capacity to meta-integrate their innovation competencies.

The quality of NIS is frequently used to explain why R&D activity is concentrated in developed regions. According to theory, good technology infrastructure, improved human capital and institutions conducive to innovative efforts should attract competence-creating FDI: “The R&D investments of MNEs are highly dependent upon the country’s ability to provide necessary technological resources and local technological capability” (Kumar, 1995, p. 22). MNEs strive to gain knowledge from the various institutional contexts in which they operate, as empirically ascertained by Frost (2001). A well-functioning NIS is an important factor in attracting R&D FDI, especially HBA. MNEs from developed markets build upon their competencies or acquire new ones abroad, and the higher the initial level of the firm’s

<table>
<thead>
<tr>
<th>Country</th>
<th>2013</th>
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<th>2016</th>
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<td>Home (%)</td>
<td>Developed (%)</td>
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<td>IB (%)</td>
<td>Country</td>
<td>Home (%)</td>
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<td>Emerging (%)</td>
<td>IB (%)</td>
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<td>3.6</td>
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<td>36.4</td>
<td>51.5</td>
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<tr>
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**Data source:** WIPO Statistics Database

**Note:** Compiled by the author
technological development, the more advanced should be the quality of NIS and resources in a foreign location. This logic is similar to the concept of the International Development Path when advanced stages of development attract a particular kind of strategic knowledge-asset seeking FDI (Narula and Dunning, 2010). From this perspective, as Veliyath and Sambharya note, the innovation activity of MNEs from developed economies in emerging markets is “counterintuitive” (Veliyath and Sambharya, 2011, p. 409). Indeed, back in the 1990s, technological activities by major MNEs from advanced economies were concentrated mostly at home and in other industrialized countries. Today, we observe a different pattern – MNEs from advanced economies file mostly domestically and in emerging markets like China. This indicates that the quality of NIS cannot serve as an overarching explanation for the location of R&D activities by MNEs. NIS is an indicator of potential location-specific advantages, but the ability to utilize these advantages lies with a company’s “recombinant” competence.

According to Bruche (2009), R&D FDI into China and India has not yet reached the level of “HBA”, but both countries provide a number of regional opportunities – “innovation nodes”, which are highly concentrated and specialized technological clusters – though the main R&D investment motivators remain the growing market and the growing quality of its human resources. Human resources improve because of the commitment of national authorities to education, especially in science and technology (Bruche, 2009). Reddy (2010, p. 251) argues that “mainly only the MNCs dealing with new science-based technologies (e.g. ICT, biotechnology and so forth) have started locating strategic innovation activities in emerging markets”; however, this research activity remains marginal at the global level as compared to innovation being conducted in developed regions. Based on our data, we see intensive patenting activity by MNEs from developed markets in emerging markets, especially in China. These patent applications serve as evidence of HBA activities taking place in these locations, which can be prompted by various locational advantages, including NIS, market size or affordable human capital.

5.2 MNEs from advanced economies in China

China is the PCT application site for a number of American, Japanese, Swiss and Swedish MNEs; indeed, it has become an important R&D destination for many companies from developed markets, which is a relatively new phenomenon (but at least three years old). This paradigm shift is explained by two developments: the growing importance of the country as a market and improvements in the NIS infrastructure, including human capital (Bruche, 2009, p. 275)[8]. Certainly, the size of a host market is an important factor determining the strategic choice behind the location for R&D, especially for home base exploiting activities (Braunerhjelm and Svensson, 1996; Kuenmerle, 1999; Kumar, 1995). Another factor is “the divisibility of innovation process into activities and sub-activities”, which “allows MNCs to offshore and/or outsource some innovation activities (core or noncore) to emerging economies” (Reddy, 2010, p. 38). Thus, the growing tendency to slice the innovation value chain, depending on local competencies, allows for the globalization of innovative activities. Another reason, according to Reddy, is that innovation in science-based technology is based on “learning-by-training” rather than “learning-by-doing”. In other words, in many cases it does not require extensive hands-on industrial experience, which makes it easier to outsource certain R&D functions to emerging markets with a system of education that can produce top quality science graduates (Reddy, 2010, p. 38).

The picture of R&D activities by Chinese subsidiaries of leading world MNEs remains complex. On the one hand, as discussed above, Chinese subsidiaries actively engage in patenting and therefore, HBA is taking place. On the other hand, we cannot draw categorical conclusions about the level of technological specialization of these subsidiaries. Ten out of
26 companies in our sample for 2016 showed signs of technological specialization by generating inventions different from those by the headquarters and the rest of subsidiaries. Thus, as per our investigation (Table III), regardless of the number of Chinese filings and their share from the total, most companies seem to pursue similar technological endeavors in their Chinese affiliates as at home or in other subsidiaries. At face value, this shows a limited nature of specialization and higher levels of dependence on corporate innovation network. This dependence is not necessarily a negative sign from the perspective of recombinant advantage. It can also indicate better integrative capacities by local subsidiaries to absorb and add value to knowledge and technology “borrowed” from the head office or other subsidiaries. More empirical research is, however, needed to investigate this recombinant capacity and the roles of local environment and the rest of the company as sources of inspiration.

5.3 Innovation strategies by emerging MNEs
Emerging MNEs in our sample from Brazil, India and China engaged mostly in home-based research. We failed to find evidence to support the assumption that emerging MNEs tend to conduct R&D activities in developed markets in search of modern technology and expertise. Only a few patents were filed by Indian and Brazilian companies in developed markets, and all 11 Chinese companies in our sample filed at home. They are, in fact, state-owned enterprises mostly in the strategically important oil, telecommunications, utilities, automobile and financial sectors[9]. Among them, the tendency to file domestically might originate from the inability to manage their internal and external networks of innovation or utilize “recombinant” advantage, i.e. the special type of advantage highlighted in Narula (2014a, 2016) and Meyer et al. (2011). Narula (2016) points out that emerging MNEs have been expanding internationally mostly through acquisitions, and this strategy does not encourage greater internal embeddedness or the efficiency of internal communication between a new foreign subsidiary and its parent company. The propensity to engage in R&D domestically, as expressed through locally filed PCT applications by Chinese MNEs, could be an indication of their deficient capacity to “meta-integrate” and build a GIN. Without the ability to transfer and manage knowledge between a parent and foreign subsidiaries, an MNE from an emerging market is a “multi-locational collection of free standing establishments” (Narula, 2016, p. 5).

According to our data, Indian companies filed most of their patents not domestically but through WIPO. In fact, China, outside of our dataset, demonstrates a similar pattern, filing an unprecedentedly high number of patent applications through the EPO and WIPO in 2015 and 2016 (Salvacion, 2017). These are nationally generated ideas that seek international protection. In essence, this is home-based innovation. In sum, our results cast doubt on the assumption that developing economies site R&D operations in developed markets in search for expertise and know-how.

Another trend evident in our data is that emerging multinationals do not file PCT applications in other emerging markets. This finding is contrary to the developments discussed in Reddy (2010, p. 236) about the growing tendency of emerging MNEs to locate R&D activities in emerging markets. MNEs from advanced economies, however, do locate R&D in emerging markets. What, therefore, makes MNEs from advanced economies more capable of leveraging locational advantages in emerging markets like China? The only theoretical explanation that we can offer lies in the ability of MNEs from advanced economies to build better channels of communication between internal and external networks of innovation. This means that emerging MNEs might lack the capacity to balance their internal and external embeddedness or “meta-integrate” – an assumption that must be tested empirically.
5.4 Implications for research, policy, and practice

The global wave of economic liberalization in the 1980s and 1990s resulted in easing up of FDI regulations in most parts of the world, including in developing regions like South East Asia or the former Soviet Union. Governments were motivated by an expectation of higher fiscal revenues, employments and, most importantly, spillovers of knowledge and technology.

The most important reason why countries try to attract foreign investment is perhaps the prospect of acquiring modern technology, interpreted broadly to include both product, process, and distribution technology, as well as management and marketing skills (Blomstrom and Kokko, 1998, p. 1).

These technological spillovers are believed to improve productivity in host economies and ultimately lead to higher levels of economic development. Thus, host governments have been devising various FDI-attracting policies, including substantial investments into improving local innovation-enhancing infrastructure (hence the interest in the link between FDI and national or regional systems of innovation). Because of obvious practical implications the question of economic benefits of FDI has become a dominant research focus (Aitken and Harrison, 1994; Blomstrom and Kokko, 1998; O’Donnell and Blumentritt, 1999). Recent research emphasizing the difference between HBA and home base exploiting FDI emerged as a response to the theoretical premise that all FDI is “created equal” and should have (more or less) homogenous technological spillovers (Narula and Pineli, 2016).

Our findings demonstrate that corporate innovation in both developed and developing economies is mostly home-based. This sobering conclusion undermines the focus on technological spillovers in host markets. And it also discredits the argument that the quality of national or regional systems of innovation determines the location of corporate R&D activity. In our view, present results can be better explained by the concept of meta-integrating ability rather than by advantages of NIS in host countries. The concept of the recombinant advantage or meta-integrating ability, the ability to balance internal and external networks of innovation, encourages a comprehensive look not only at external environment, but also, most importantly, at the inner workings of corporate innovation management, namely the ability to strategically site R&D divisions, source from the local pool of expertise and combine with the overall company’s technological portfolio. Of course, the quality of regional or NIS in host economies is an important aspect of the “double network” analysis but cannot entirely explain the geography of corporate innovation. Therefore, we emphasize the need to focus further research efforts on the internal dynamics of the corporate meta-integrating effort. Recent research, indeed, has been taking the inward-looking view of innovation. For instance, Cho and Kim (2017) argue that not only external factors like the national quality of IP protection regime, but also internationalization of innovation (an internal factor expressed as the geographical spread of foreign subsidiaries and their patents filed locally) determine the firm’s domestic innovative effort.

The discussion above has practical policy implications. It shows the limitations of generic and across-the-board FDI-attracting policies, including those aimed at improving NIS. Host governments should engage in more customized, industry-specific policies that anticipate that foreign MNEs can engage in both HBA and home base exploiting R&D activities abroad. Depending on the need, policies should encourage development of local expertise, and, therefore, focus on technology-sharing opportunities (encouraging HBA FDI) or should be able to attract specific technology through technology transfer-enabling policies (facilitating home base exploiting FDI).

At the other side of the table, MNEs’ strategies should be motivated by similar considerations. Depending on local advantages, including NIS, strategic decisions must be
made on the choice of HBA or home base exploiting activities. The risk of overstretching is
another consideration, which is mitigated by enhancing meta-integrating skills. Getting
skilled at meta-integrating implies flexibility and the ability to balance asset development at
home and abroad in both developing and developed contexts. Indeed, as Lee, Mudambi and
Cano-Kollmann note, large MNEs have difficulties of leveraging knowledge created in
foreign subsidiaries vis-à-vis smaller, agile and internationally oriented start-ups, which can
benefit from diverse international contexts (Lee et al., 2016, p. 417). MNEs from both
developed and developing markets must improve their meta-integrating skills. For MNEs
from developed economies it means reaching an equilibrium between the spread of R&D
activities and their coordination costs. For MNEs from emerging markets the skill implies
keeping a balance between internalization of innovation (including by foreign-based
subsidiaries) and acquisition of technology. Another important consideration is the advent
of new digital technologies like the Internet of things, big data, 3-D printing and robotics.
These new technologies can potentially disrupt global value chains, according to Strange
and Zucchella (2017), and completely change current geography of innovation. The new era
of digital economy will reconfigure where and how knowledge is generated. For example, it
is anticipated that as products become more customized, with the breakthroughs in 3-D
technology, customers will be more involved in the design and even manufacturing. With
the rise of industrial robotics, we should also anticipate a withdrawal of production from
developing markets that currently offer lower labor costs back to developed markets. All
these prospective changes should be part of the long-term and even short-term planning and
strategizing by MNEs from both developing and developed markets.

6. Conclusions
We used PCT patent applications, a novel source of patent data, to explore the R&D sites of
leading multinationals. The objective was to identify major global trends and developments
in corporate patenting activity between 2013 and 2016. International patent applications
served as a proxy for HBA by the leading world MNEs. We looked into national differences
as well as differences between developed and emerging markets. Data in our sample of
multinationals from the Fortune Global 500 list revealed a tendency toward the national
concentration of innovative activities. The focus on home-based innovation was typical for
both emerging MNEs and MNEs from advanced economies. This finding confirms earlier
research emphasizing the limited internationalization of corporate innovation. The reasons
for national concentration of innovative activities might be different for emerging MNEs
and MNEs from advanced economies. Path dependence and the tacit nature of knowledge
might explain why multinationals from advanced economies engage in R&D mostly at
home. The most plausible explanation, especially in light of technological globalization and
the acknowledged dispersion of R&D activities by MNEs in recent decades, is the inability
to properly balance internal and external embeddedness or “meta-integrate” innovation-
generating efforts at the level of headquarters and subsidiaries. Foreign innovation-related
activities require intensive coordination efforts and lead to overstretching. This
overstretching (in a circular motion) leads to more technological specialization and
concentration at home.

We can also explain the behavior of MNEs from emerging markets from the perspective
of “meta-integrating” competence. For emerging MNEs, the lack of ability to leverage and
coordinate internal and external networks of innovation might be a decisive factor pushing
them to concentrate on home-based research. We suggest that predominantly home-based
innovation by Chinese MNEs has something to do with the fact that all Chinese companies
in our sample are state-owned or state-controlled enterprises. Future research could test this
assumption and address the puzzle that despite technological globalization and the availability of superior NIS in more advanced economies, Chinese, Indian and Brazilian companies (in our sample) predominantly generated innovation at home. This finding casts doubts on the importance of local technological infrastructure or NIS for attracting HBA activities of MNEs.

Another important trend is that MNEs from advanced economies located their R&D activities in emerging markets such as China. HBA implies introduction of novel ideas sourced locally; therefore, leading MNEs engage in HBA in China. But we failed to produce evidence that MNEs in China engage in more specialized innovation. This conclusion is reached based on the analysis of IPC codes of PCT applications in 2016 of major 26 MNEs, which are active in China. Most of MNEs under investigation conduct similar R&D activities in their subsidiaries in China as in the rest of the company. The lack of technological specialization by Chinese subsidiaries might indicate that they are well-equipped to integrate and put their own spin on ideas coming from the head office. This could also indicate a better integrative capacity by headquarters to share knowledge and technology with subsidiaries in China. But the integrative competence of headquarters and subsidiaries requires further empirical investigation.

In many respects, this research project is an explorative effort. The empirical contribution stays, however, beyond doubt. Both emerging MNEs and MNEs from advanced economies tend to generate innovation at home. Over 400,000 PCT applications published by the WIPO in 2013 and 2016 were analyzed. As a result of scrupulous selection process, the applications of 166 companies from 23 countries from the list of the Fortune Global 500 companies were studied. Their domestic and foreign PCT applications have been isolated. The results identify recent trends and they question a number of theoretical assumptions about the contribution of NIS to the location of HBA activities of multinationals.

There are, of course, limitations of using patent-based data. These data may include an inherent bias toward home-based innovative activities. It is logical to assume that it is more convenient to file a patent application at home rather than abroad because of the familiarity with legal and administrative requirements. But the invention being patented could be generated elsewhere. Furthermore, we do not consider any patentable results of international collaborative efforts or joint ventures. Plus, depending on the importance of the local market or because of other considerations, MNEs might establish legal representations in multiple locations and channel domestic inventions or inventions by subsidiaries through those centers, which makes the geographical identification of innovation virtually impossible. This might be especially true for emerging MNEs that take advantage of stronger IP protection in developed markets and set up their legal officers there.

To conclude, the explanatory power of the recombinant advantage or the ability to meta-integrate should be underscored. This explanation has practical implications for both MNEs from developed economies and emerging markets. MNEs from developed economies are confronted with a challenge of keeping a balance between geographical dispersion of technological activities (with all the advantages that local sourcing could bring) and keeping costs of coordination in check. While MNEs from emerging economies should strengthen their meta-integrating capability and increase their international R&D presence through not only asset acquisition but also asset development.
Notes

1. Internationalization can be measured differently. For example, it can be measured as a number of countries where R&D facilities of an MNE operate. Alternatively, Gassmann and von Zedtwitz (1999) estimated the degree of internationalization as a percentage of R&D spent abroad.

2. A summary of the literature on the trade-off between R&D centralization and dispersion strategies can be found in Narula and Zanfei (2005) and Laurens et al. (2015, p. 20).

3. See the full list and the methodology of selection at http://beta.fortune.com/global500/

4. We assume that the origin of a PCT application—where the application was filed—is a result of an innovative effort by an MNE’s subsidiary in this country. However, we acknowledge that the assumption that PCT applications can be used as a proxy for the dispersion of innovation by MNEs is problematic. MNEs seeking IP protection, because of the importance of a particular market, may establish a legal office in a foreign location and channel domestic inventions or inventions by other subsidiaries through it. Furthermore, IB (the International Bureau of WIPO) and EP (patents filed through the EPO) filings are difficult to pin down with regard to where innovation was produced. They indicate a desired destination of IP protection more than a patent’s origin, which limits our assumption that the country where patents are filed reflects the location of innovative activity.

5. The European Patent Convention, Article 54; The United States Code Title 35, 102: Conditions for patentability; novelty and loss of right to patent, the USPTO.

6. After it has been checked by an International Searching Authority (ISA) and a written opinion has been produced, or 18 months after filing the application.

7. The EPO has 38-member states, including all the members of the European Union together with Albania, Croatia, Macedonia, Iceland, Liechtenstein, Monaco, Norway, San Marino, Serbia, Switzerland and Turkey: www.epo.org/about-us/foundation/member-states.html

8. We did not find evidence in our dataset that India attracted a great deal of technological investment.

9. State Grid; China National Petroleum; China Construction Bank; China Mobile Communications; SAIC; China National Offshore Oil; China United Network Communications; Shannxi Yanchang Petroleum; China National Building Materials; China Electronics; China Electronics Technology Group.

10. EP stands for “European Patent” filed with the European Patent Office (EPO). And IB is the International Bureau of WIPO.

References


**Further reading**


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Top management team international experience and strategic decision-making

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Abstract
Purpose – This study aims to explore the influence of top management team international experience on international strategic decision-making rationality and, subsequently, its effect on decision effectiveness (decision performance).

Design/methodology/approach – This analysis is based on survey data of small- and medium-sized international Pakistani firms operating in the IT industry.

Findings – Results show that top management team international experience is positively related to international strategic decision-making rationality, and the latter partially mediates the international experience – decision effectiveness relationship.

Research limitations/implications – The study is based on data collected from a single industry and focuses on an international decision that occurred within a time-frame of previous four years.

Practical implications – Findings suggest that international firms, when composing their top management teams, should favor the inclusion of internationally experienced managers.

Originality/value – The study of the influence of international experience on the decision-making process in general and decision-making rationality in particular has been largely neglected in extant literature. This paper highlights one way through which the international experience of the top management team as a whole relates to the effectiveness of international decisions. The paper also advances emergent managerial cognition literature focusing on the top management team and not individual decision makers.

Keywords SMEs, Rationality, Emerging countries, International strategic decisions, Strategic decision-making process, TMT international experience

Paper type Research paper

Introduction
Strategic decisions shape the direction of a firm and they are critical for organizational success and survival. In the case of international firms, strategic decisions are particularly

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complex because they need to take into account different types of consumer preferences, cultures, governments and competitors (Hermann and Datta, 2005; Le and Kroll, 2017). Consequently, decision makers of international firms dealing with large and diverse amount of (potentially) conflicting information face high information processing demands (Carpenter et al., 2001). In international business research, scholars argue that the international experience (IE) of members of top management teams (TMT), gained through a foreign education or foreign work experiences, represents a key resource for international firms to improve decision effectiveness and firm performance because it might help to deal with the complexity and amount of information processing (Hermann and Datta, 2005; Nielsen and Nielsen, 2011). Without further theorizing or testing, this literature assumes that decision effectiveness hinges on the successful integration and analysis of relevant international information, but it overlooks the micro-processes of the effects of IE on TMT strategic decision-making (SDM). Recently, Clark and colleagues concluded that:

International business literature has long demonstrated the effects of international experience on a variety of internationalization decisions […] However, there has been little research on the influence of international experience on the decision-making process” (2017, forthcoming).

Thus, there appears to be a void in the literature on the influence of IE on SDM processes, and its further impact on decision effectiveness. As a consequence, our comprehension of how IE affects international SDM process and how the process further transfers this effect on decision effectiveness is still incomplete, limiting the ability to exploit this valuable resource in practice.

Drawing insights from the literature on TMT SDM processes and from recent advancements of managerial cognition literature that has confirmed how IE can facilitate decision makers’ information search (Maitland and Sammartino, 2015), we explore the role of SDM rationality on the IE-decision effectiveness relationship. Decision effectiveness is the decision level performance. It reflects the broader satisfaction level of decision makers regarding predefined objectives set by the decision makers (Ji and Dimitratos, 2013). SDM rationality is a key dimension of the SDM process as it reflects “the extent to which the decision process involves the collection of information relevant to the decision and the reliance upon analysis of this information in making the choice” (Dean and Sharfman, 1996, p. 373). Thus, it directly speaks to the way people and managers can address the limitations in cognitive resources. Therefore, several authors are urging the inclusion of rationality as a critical process in international SDM research (Deligianni et al., 2016; Elbanna et al., 2015). We propose that the TMT SDM rationality, a team-level cognitive process, will be positively affected by TMT IE and will effectively integrate information and knowledge among TMT members, thus, partially mediating the effect of TMT IE on decision effectiveness.

Our basic argument is that IE makes top managers more cautious and careful in international SDM. Furthermore, in the context of international firms, TMT’s diversity and richness of mental models, knowledge and information might have significant influence on the rationality of international strategic decisions. Central to our theorizing are recent advancements in managerial cognitions (Collinson and Houlden, 2005; Maitland and Sammartino, 2015) that suggest how IE, and the associated personal international knowledge and access to international information from foreign networks (Chen et al., 2016; Cui et al., 2015), lead to decision makers’ richer and heterogeneous mental models. For instance, Maitland and Sammartino’s (2015) study suggests that the breadth, depth and the diversity of IE of decision makers lead to mental models that are characterized by both a higher number of knowledge domains and a higher number of interconnections among domains. When richer mental models are brought together inside a team engaged in an
international decision, a number of different perspectives and interpretations are brought to the team decision, and the collective cognitive base may be expanded leading the group to engage in more scanning, analyzing and deciphering, thus, we argue, influencing positively the international SDM process rationality.

The data collected in a sample of small and medium enterprises (SMEs) from Pakistan support our hypothesized positive relationship between a TMT IE and its SDM rationality and the subsequent influence of SDM rationality on the effectiveness of the international decisions.

This paper makes the following contributions. First, we contribute to our understanding of how top managers’ backgrounds in terms of IE influence international SDM process (i.e. rationality). In doing so, we add to the scant literature on international SDM process in general and in SMEs in particular (Elbanna et al., 2015; Francioni et al., 2015). This issue seems particularly salient for SMEs that, lacking resources and the elaborate procedures and routines often found in large organizations, may undertake decision-making processes whose rationality is strongly affected by personal characteristics of top managers (Elbanna et al., 2015). Second, we contribute to opening the black box of upper echelons theory, helping to specify one way through which the IE of the TMT as a whole is related to the effectiveness of international decisions. In addition, our research complements recent advancements in individual cognitions of top managers (Maitland and Sammartino, 2015) focusing on TMT SDM process as a collective cognition process. These findings and theorizing can inform research on SMEs or entrepreneurial firms that has started to acknowledge how crucial decisions able to affect international performance are often taken by teams rather than single individuals (Deligianni et al., 2016; Shepherd and Rudd, 2014; West, 2007).

Theoretical background and hypotheses development

Previous research investigated the relationship between TMT IE and performance (Gupta and Govindarajan, 2002; Nielsen, 2010). Carpenter et al. (2000) suggested that top managers’ IE could have a positive effect on the performance of an international firm. This proposition was confirmed empirically by Daily et al. (2000), Carpenter et al. (2001), Carpenter (2002), Fernández-Ortiz and Lombardo (2009) and Le and Kroll (2017). The same might apply to the relationship between TMT IE and international strategic decision effectiveness, that is to say performance at the decision level that measures the satisfaction of decision makers with the decision outcomes (Dean and Sharfman, 1996; Elbanna and Child, 2007b). Hough and White (2003) postulate that relating decision processes directly to firm performance is problematic because it would assume that all decision-making processes are the same. Conversely, the link between decision-making process and decision level performance is direct and less likely to be contaminated by exogenous factors, and it allows for differences in various strategic decisions. Forbes (2007) also raises similar concerns.

The idea of a positive relationship between TMT IE and decision effectiveness is based on the logic that a TMT with IE has diverse and valuable international knowledge, resources, expertise, and networks that help in better decision-making (Cui et al., 2015). Top managers with IE understand the institutions, quality standards, and expectations of international markets (Banerjee et al., 2015) and they are better at judging the risks and returns of international investments (Hermann and Datta, 2005). This capability helps to make more effective international strategic decisions. This is our baseline hypothesis (not specifically hypothesized).

Our research takes a process view of the SDM and focuses on how TMT composition (in terms of IE) affects the formulation of strategic decisions in small- and medium-size
international firms with a focus on international SDM rationality. The construct of procedural rationality means organizational level formal, systematic and comprehensive decision-making process by key decision makers. Derived from the synoptic model of SDM, it refers to the extent to which decision makers engage in the collection of decision related information and make decisions based on the analysis of such information (Dean and Sharfman, 1996). The perspective we adopt on rationality is different from the normative economic concept of maximizing utility (preference) functions; instead, it represents how important decisions are actually made in organizations. It reflects the attempts of decision makers to make the best possible decisions given competing interests, imperfect information and bounded rationality. This approach recognizes that organizational decision-making processes are bounded by cognitive and political realities (Elbanna and Child, 2007a). This bounded rationality model “involves such concepts as aspiration levels, sequential attention to goals, and satisficing” (Dean and Sharfman, 1993, p. 589). Thus, it involves making acceptable or good enough rather than “the best” decisions (Deligianni et al., 2016).

We submit that without the incorporation of this construct, the association between the potential information-based benefits of TMT IE and decision effectiveness cannot be well understood. Even if the literature on international SDM has predominantly focused on large companies and MNEs, a growing body of literature is addressing the critical role of decision makers’ characteristics on SMEs international processes and the related performance (Collinson and Houlden, 2005; Hsu et al., 2013; Jones and Covello, 2005), recognizing also that decision makers operate more often in teams rather than individually. Among these characteristics, IE is deemed relevant to international SDM processes (Child and Hsieh, 2014; Clark et al., 2017) because it could provide SMEs that suffer from limitations in resources and capabilities (Fernández-Ortiz and Lombardo, 2009) the knowledge and the network attachments that should “enable them progressively to adopt more rational decision-making modes” (Child and Hsieh, 2014, p. 607). At the same time, one of the few empirical works that investigated the relationship between individual decision makers’ IE and SDM process rationality found no significant results (Francioni et al., 2015), offering us a puzzling picture that calls for an additional and more nuanced understanding.

In examining the phenomenon of interest, we use the upper echelons theory coupled with insights from upper echelons literature on the role of managerial cognition on SDM process (Bromiley and Rau, 2016; Hambrick and Mason, 1984). In doing so, we borrow heavily from recent developments in the literature on managerial cognition (Collinson and Houlden, 2005; Maitland and Sammartino, 2015; Piaskowska and Trojanowski, 2014). Recognizing that strategic decisions are made by top managers and they are influenced by their characteristics (Bromiley and Rau, 2016; Ruigrok et al., 2013) and cognitive limitations (Hambrick and Mason, 1984), we propose a mediation model in which TMT IE affects a dimension of international SDM process like rationality that further affects decision effectiveness.

**TMT IE and international SDM rationality**

More and more TMTs of SMEs, as well as large organizations, are composed of members who hold IE (who worked abroad or got their education abroad), especially in the case of international firms. Increasing the number of internationally experienced TMT members is considered a valid way to enhance the alignment between the complexity of the environment and the firms’ resources. Interestingly, evidence shows that IE affects, on the one hand, the decision makers’ cognitive mindsets, motivations and knowledge, as well as their professional and personal networks (Cui et al., 2015; Godart et al., 2015), and, on the other
hand, their sensitivity and cautiousness in international SDM (Franchioni et al., 2015; Powell and Rhee, 2016).

According to existing literature, the IE of TMT members shapes their cognitive mindset increasing their awareness of foreign business environment, broadening their horizon and, consequently, increasing the likelihood that they will recognize international business opportunities (Hermann and Datta, 2005; Kim et al., 2015). In addition, IE endows TMT members with personal international knowledge that will increase their understanding of the economic, cultural and institutional international environments (Kim et al., 2015). Also, TMT members who have worked in different countries or been educated in foreign countries are also likely, compared to members without such experience, to have built social ties with their (international) colleagues through face-to-face interactions (Storper and Venables, 2004). Thus, they have valuable international networks that can provide access to useful and diverse information (Athanassiou and Nigh, 2002; Cui et al., 2015; Ellis, 2011). At the same time, they are aware of the risks and nuances of operating in different cultural environments (Kim et al., 2015; Nielsen, 2010). We thus propose that knowing that there is a different world abroad can make TMT members more attuned to the need for rationality in any given international SDM process. Rhee et al. (2006) show that the variety in experiences may diminish the confidence in relevant experience. Consistent with this literature, Powell and Rhee (2016) found that greater variety of IE coupled with specific host country-related experience leads international firms to be cautious in choosing foreign subsidiary structures by opting for majority-owned foreign subsidiary structures to a more limited extent. This study suggests that the diversity of IE may lead managers to be more sensitive about substantial differences across worlds. Thus, they tend to be careful in international SDM.

While the increased experience of single decision makers is important, we argue that one of the processes through which the IE of TMT members influences the quality of international decisions is through the creation of a broader resource and knowledge base within the team that will allow the team to scrutinize and analyze more and diverse information and engage in a more rational SDM process.

To extend research on how a TMT characteristic like IE may influence rationality in team decision-making processes, we draw insights from recent theoretical advancements in managerial cognition that investigated the role of IE in individuals’ mental models (Collinson and Houlden, 2005; Maitland and Sammartino, 2015; Piaskowska and Trojanowski, 2014). Mental models are “simplified representations of reality that help decision-makers to make sense of empirical reality” (Harms and Schiele, 2012, p. 100). As such, decision makers often may not use comprehensive analysis in making international decisions but are guided by their representations (for instance, of what constitutes a competitive advantage or what the customer demands may be), thus neglecting other sources of information. Studies on the role of managerial cognition in internationalization highlight that previous IE exerts significant influence on decision makers’ mental models by making them richer, that is to say more variegated in terms of skills and knowledge basis, values and cognitive preferences (Hsu et al., 2013). Particularly relevant for the current study is the recent theorizing by Maitland and Sammartino (2015) who studied board members engaged in decisions about foreign direct investments and explicitly linked the experience and learning of decision makers to their mental models. They proposed that decision makers with IE, compared to less expert members, will hold mental models characterized by more detailed knowledge domains both in terms of quantity of elements and in ability to see connections between those elements. Experts, therefore, will not only be able to draw connections within different domains but also evaluate dependencies between domains based on the elaborated connections. Those managers’ mental models will make them more
sensitive to culturally embedded work practices (Maitland and Sammartino, 2015) and make it possible to grasp the similarities across international markets and transfer inside the TMT the learning from one market to another market with similar characteristics (Gupta and Govindarajan, 2002; Perkins, 2014; Ramsey et al., 2016). Gupta and Govindarajan (2002) discussed the example of Microsoft in China. They suggested that the learning from the Chinese market could be useful in other markets with similar issues such as software piracy, nationalist public policy and an underdeveloped market. The same argument can be made in other cases. For example, IE of a Muslim country in Asia can be useful in a Muslim country in Africa or to better understand the needs of the Muslim population in the EU, the USA and Australia. On top of that, the exposure to different environments offers managers access to a diverse and larger number of ideas, concepts and inputs that push individuals to questioning the status quo and extant information. In turn, the exposure to a variety of inputs pushes managers to look for a higher number of approaches for dealing with a specific issue (Godart et al., 2015). According to Dane (2010), IE is particularly relevant because it helps individuals to discard the application of habitual behaviors and schemas that in the context of an international decision could be particularly detrimental and facilitates the understanding that different perspectives need to be considered as a consequence of increased doubts about a decision. To sum it up, internationally experienced TMT, because of their members’ richer mental models, can bring into the team discussion a higher number of knowledge domains as well as higher number of interconnections between domains that can lead them to engage in a more rational SDM process (in terms of available options, information scanning, quantity of information and extensiveness of the analysis of such information).

Gibson (2001, p. 123) suggests that a team collective cognition (collective decision-making), “the group process involved in the acquisition, storage, transmission, manipulation and use of information” resides inside the interrelationship between the activities of a group’s members. She highlights how teams of decision makers may suffer from substantial inertia in the use of information for taking decisions and actions, and once knowledge has been constructed inside a team, it becomes entrenched overtime and it is often retained for interpreting future issues (Weick, 1979). However, she theorizes that TMT’s with different cognitive structures, that in our case derive from the different IEs held by their members (and possibly from their personal foreign networks), can inspire decision makers to use a larger variety of information in SDM processes. Chen et al. (2016), in their study of Chinese firms, suggest that teams in small or entrepreneurial firms can benefit even more than their counterparts in larger organizations from the returnees’ expertise and enhanced cognition because those firms’ cooperative and learning culture facilitates their embeddedness and incorporation into the team decision-making processes. The literature on cognitive bias in entrepreneurial ventures strengthens this argument. Facing contrasting, opposing or diverse ideas helps to address bias and heuristics and enables a more rational decision-making (Tversky and Kahneman, 1974). Encouraging decision makers to “consider the opposite” was found to reduce errors in judgment (Kahneman and Lovallo, 1993) and is deemed particularly useful for entrepreneurial ventures involved in SDM (York and Danes, 2014). We claim that within a TMT composed of managers with diverse and rich IE, the chances of facing contrasting ideas increase, likely favoring the emergence of more rational decisions. To sum it up, the cognitive benefits of TMT IE such as increased cautiousness, diversity in perspectives, increased sensitivity and understanding of international opportunities and information, combined with TMT personal international knowledge and international information available from their foreign networks (Cui et al., 2015), can have positive effects on international SDM rationality, as decision-making rationality is a
function of availability of different options to choose, different perspectives to evaluate the options, relevant information and knowledge of potential options (Cosier and Schwenk, 1990; Nutt, 2004). We thus propose that in the context of international firms:

$H1$. TMT IE is positively associated with international SDM rationality.

International strategic decision-making rationality as mediator between TMT IE and international strategic decision effectiveness

The literature on international management suggests that the main mechanism explaining the effect of TMT IE on decision effectiveness relates to information sourcing and processing. Based on this premise, we propose a mediation model where TMT IE influences TMT’s SDM rationality which then affects decisions’ effectiveness. We theorized regarding the effects of TMT IE on international SDM rationality. In turn, differences in the SDM process rationality can affect decision effectiveness (Ji and Dimitratos, 2013). In $H1$, we have already discussed how TMT IE affects international SDM rationality. Now, we discuss how international SDM rationality relates to decision effectiveness to justify the hypothesis on mediation.

International strategic decisions require dealing with different cultures, institutions, and political regimes. More relevant information considered on these unknown foreign factors and a rational-comprehensive analysis might result in effective and successful decisions. A more informed international strategic decision will consider the foreign environment that will result in a better fit between internal sources and (foreign) environment, thus leading to more effective decisions.

We acknowledge that extant research provides mixed evidence on the relationships between SDM rationality and performance. Although the majority of studies has established that SDM rationality has a positive effect on decision-effectiveness and firm performance (Dean and Sharfman, 1996; Elbanna and Child, 2007a; Goll and Rasheed, 2005; Mueller et al., 2007; Walter et al., 2008), some authors hypothesized and found a negative relationship between SDM rationality and performance (Fredrickson and Mitchell, 1984; Souitaris and Maestro, 2010). In the case of international firms, it is well established that foreign markets knowledge and information is the key driver of international growth and success (Banerjee et al., 2015; Hermann and Datta, 2005; Nielsen, 2010). Consistent with these arguments, Jones et al. (1992) reported a positive association between international SDM rationality and firm performance. Similarly, Ji and Dimitratos (2013) reported a positive association between international SDM rationality and decision effectiveness. A recent study by Deligianni et al. (2016) showed that international SDM rationality has a positive effect on performance in the case of small entrepreneurial international firms. Therefore, in our theorizing, we expect a positive relationship between international SDM rationality and decision effectiveness that, consistent with several other studies, reflects the satisfaction of decision makers with the decision outcomes (e.g. Dean and Sharfman, 1996; Elbanna and Child, 2007b; Ji and Dimitratos, 2013). Overall, we propose the following hypothesis:

$H2$. International SDM rationality mediates the positive relationship between TMT IE and decision effectiveness.

Data and methods

Sample and data collection
We collected the data for this study from international small- and medium-sized software firms from Pakistan during the summer of 2014 via a questionnaire. This industry is
growing despite of the fact that it has to face difficult domestic environmental conditions such as domestic turmoil, geopolitical tensions with neighbors, and a lack of venture capital and entrepreneurial ecosystems (Khan et al., 2017; Khan and Lew, 2018). This industry generates revenues in range of $2.8bn; the revenues from foreign sales are $1.6bn (Khan and Lew, 2018). There are mainly two types of software firms operating: locally owned software houses and foreign-owned software development centers of international firms. This industry consists mostly of SMEs and it is very active in international business. As local market demand is limited, the main source of revenues is represented by foreign markets (Khan and Lew, 2018).

Several managers of these firms have IE, but there is a considerable variation in IE. In our data, the mean of ratio of managers with IE is 0.6987 and SD is 0.2917 (min = 0; max = 1). This makes our context very relevant for our study. We think that our context is in line with the upper echelons theory as executives enjoy more discretion in developing countries. Thus, in such contexts, we can directly relate the strategic decisions and their outcomes with managerial characteristics (Banerjee et al., 2015). Furthermore, we know that executives have more control over strategic decisions in SMEs (Souitaris and Maestro, 2010) which is the case in our context. We used the official lists of companies developed and updated by Pakistan Software Ware Association (PASHA) and Pakistan Software Export Board (PSEB) to create a sample of 250 international software firms. To be included in the sample, firms should have been locally owned (not subsidiaries of foreign firms) and have international sales. The questionnaires were dropped off by the first author in person or online (when requested). We called or personally visited the firms after one week and again after three weeks as a reminder, and a new questionnaire was provided if requested. As we were interested in SDM processes regarding a team of top managers and not single entrepreneurs, we involved only firms that held a top management team. We collected 91 completed questionnaires (a response rate of 36 per cent). We dropped seven questionnaires because of incomplete responses. The remaining 84 usable questionnaires represent a final response rate of 34 per cent. This response rate can be considered satisfactory, given the seniority of our informants and the context of our research. The final sample size is also consistent with similar TMT and process-related studies (Vissa and Chacar, 2009; Mueller et al., 2007). We checked for non-response bias by comparing the age of respondent and non-respondent firms. The t-test did not reveal any significant difference ($p > 0.05$). We asked respondents to focus on the most important foreign market entry decision in the recent past when answering the survey questions. The data on entry decisions are from 2010 to 2014, which are well within four-year range: a reasonably recent time to recall a strategic decision such as a foreign market entry (Bingham and Davis, 2012). The questionnaire was filled by the CEO or any other top manager (e.g. chief strategy officer, manager of international operations) directly involved in that international strategic decision of interest as done in other similar studies (Walter et al., 2008). We used foreign market entry decision because it is well recognized in international business literature as one of the most critical strategic decisions taken by an international firm (Ellis, 2000). The focus on the most important entry decision might be useful in reducing recall bias that might be a potential threat for such studies. Another advantage is that firms provided data on a similar type of international strategic decision rather than different types of strategic decisions, which might result in unnecessary variance. We also conducted 16 face-to-face interviews with responding top managers after collecting the questionnaires. We provide few relevant insights from interviews in the results section.

The questionnaire used for data collection was pre-tested by three academics and three top managers of IT firms of the target population. The questionnaire has a mix of factual
data questions (e.g. TMT profile) and perceptual questions. It is well recognized that the collection of survey data is difficult in emerging countries like Pakistan (Hoskisson et al., 2000). It was not possible to collect data from multiple top managers. The same issue is faced by other researchers in emerging countries (Elbanna and Child, 2007b) and even in developed countries (Walter et al., 2008). To control for the effect of single respondent bias and common method variance, we used several ex ante and ex-post approaches suggested by Chang et al. (2010). The perceptual measures were based on previously developed scales; the dependent and independent variables were placed on different pages and in different sections, with different types of scales; scales have reversed coded items; and we assured anonymity to respondents. Our model is a mediation model that is less likely to have common method variance (Chang et al., 2010). Furthermore, to reduce the threat of common method variance, we also used filler variables between our variables. Nevertheless, we checked the possibility of common method variance with Harman’s single factor test with our three perceptive measures. It resulted in three factors having eigenvalues of more than one and the first factor accounted for only 36 per cent of variance. This result provides evidence that common method variance is not a serious issue.

Measures and reliability
We used existing scales for all the measures of our study. We measured the perceptive constructs on a seven-point Likert scale. TMT IE is measured by two variables:

1. proportion of TMT members with IE (international education or international work experience); and
2. experience of TMT in numbers of six continents or broader regions of the world (Asia, Africa, Europe, North America, South America and Australia).

As expected, the correlation between these two variables is high (0.41, \( p < 0.001 \)). Following Clark et al. (2017) and Reuber and Fischer (1997), we combined the two dimensions of IE. Le and Kroll (2017) suggest that an interaction of different dimensions of IE captures the multidimensional construct of IE better than individual dimensions alone. For example, if a TMT has fifty per cent members with IE (0.50 proportion) and TMT has experience of two continents, then its TMT IE score is equal to one (0.50 \( \times \) 2 = 1). If a TMT has 50 per cent members with IE (0.50 proportion) and TMT has experience of five continents, then its TMT IE score is equal to 2.5 (0.50 \( \times \) 5 = 2.5). This way we measured not only the level of IE of TMT (Banerjee et al., 2015; Hermann and Datta, 2005) but also the diversity of IE of TMT following Athanassiou and Roth (2006). This measure is in line with our arguments of diversity in IE. A more refined measure of IE such as the number of years of IE (Carpenter et al., 2001) was not possible because such detailed information is not available from firms in Pakistan and Asia, a fact also noted by Cui et al. (2015). Furthermore, the percentage of TMT members’ IE is shown to be highly correlated (correlation 0.80, \( p < 0.01 \)) with TMT’s years of IE by Sambharya (1996) and used by several researchers (Banerjee et al., 2015; Cui et al., 2015; Hermann and Datta, 2005; Nielsen and Nielsen, 2011). Therefore, we believe ours is an adequate measure of TMT IE in terms of level and diversity of IE. To measure international SDM rationality at the top management level, we applied the four items scale (Cronbach’s \( \alpha = 0.86 \)) of Elbanna and Child (2007a). In international business literature, this construct is already used by Ji and Dimitratos (2013) and Deligianni et al. (2016). Decision effectiveness is measured by two questions (Cronbach’s \( \alpha = 0.78 \)) taken from Kale, Dyer, and Singh (2002). One question is about the primary objectives achieved and the other is about the general satisfaction with the decision. The use of a subjective measure of decision performance was driven by the fact that valid objective measures of decision level performance are not well documented in the literature.
(Ji and Dimitratos, 2013; Dean and Sharfman, 1996). Furthermore, all the firms in our sample are privately held and not willing to share objective performance data. Because of the same restraints, similar studies have used subjective performance measures in strategy research on decision processes (Elbanna and Child, 2007b; Ji and Dimitratos, 2013; Walter et al., 2008). Thus, we are confident that this self-reported measure of decision effectiveness is a valid measure of our main dependent variable.

Constructs and measures provide the main statements of the three perceptive measures: decision rationality, environmental uncertainty (control variable), and decision effectiveness. We conducted the confirmatory factor analysis (CFA) to examine the psychometric properties of these measures. In CFA, each item was constrained to load on the respective variable. The CFA results show a reasonable fit of the model ($\chi^2 = 26.75$; d.f. = 24; CFI = 0.991; TLI = 0.986; RMSEA = 0.037; SRMR = 0.069). All the loadings of items were significant which showed convergent validity of the constructs. We used the CFA measurement model to establish the constructs’ discriminant validity. The variance extracted for each construct is higher than the squared correlation between the constructs which demonstrates the convergent validity of constructs (Fornell and Larcker, 1981):

**Constructs with operational measures**

**SDM rationality.** To what extent did TMT follow the items below in the foreign market entry decision-making?

- looked for related information (regarding other options, competition, customers, broader environment, etc.) in decision-making;
- analyzed relevant information (regarding other options, competition, customers, broader environment, etc.) in decision-making;
- used analytic techniques in decision-making; and
- focused attention on crucial information (regarding other options, competition, customers, broader environment, etc.) in decision-making.

**Environmental uncertainty.** Please assess the following items regarding the foreign country entered.

- The general stability of the political, social and economic conditions in the target country (reverse coded).
- The risk of converting and repatriating income from the target country.
- The risk of target government actions such as nationalization.

**Decision effectiveness.** To what extent are you satisfied with the foreign market entry decision in relation to:

- the primary objectives of the foreign market entry decision; and
- the overall decision-making effectiveness.

Consistent with TMT and SDM studies in international business literature, we used control variables potentially affecting decision-making processes and decision performance (Hermann and Datta, 2005; Ji and Dimitratos, 2013). We controlled for firm size, firm IE, cultural distance, environmental uncertainty, FDI/non-FDI decision, local experience (host country experience) of TMT, TMT size and TMT tenure. We measured firm size by the logarithm of the number of employees. Firm IE is measured as the number of countries entered before the decision of interest. Cultural distance was measured following Kogut and
Singh (1988) based on Hofstede’s (1980) cultural scores using the formula $CD = \sum (I_{ij} - I_{iv})^2 / V_i$, where $I_{ij}$ is the index for the $i$th cultural dimension and the $j$th country, $v$ is Pakistan and $V_i$ is the variance of the index of the $i$th dimension. Environmental uncertainty (of country of entry) is measured with a three-items scale (Cronbach’s $\alpha = 0.72$) following Ji and Dimitratos (2013). The mode of entry was coded “1” for FDI decisions (wholly owned subsidiaries and joint ventures) and “0” for non-FDI decisions (exporting). Local experience was coded “1” if TMT had prior experience of host country and “0” otherwise. We measured TMT size as the number of top managers at the time of the decision of interest mentioned by the responding top manager and TMT tenure as the average tenure of TMT members with the firm until the time of the decision of interest.

As the data collected for this study derive from a single source and are about a decision in past, we tried our best to check and establish reliability of our data through different sources. The information on firm age and internationalization was cross checked through online sources such as company websites, industry websites and LinkedIn. The information on TMT was crosschecked by responding top manager or HR/Administration department of the firm, and, if possible, by LinkedIn. We also conducted short (approximately 20 min) face-to-face semi-structured interviews with responding top managers of 16 firms after collecting back the questionnaire (within two to three days). Interviews were not audio-recorded but thoroughly transcribed after their collection and coded sentence-by-sentence. The variety of methods allowed us not only to test our hypotheses but also to develop a more nuanced interpretation of results (Mattarelli et al., 2015).

Finally, following Yli-Renko et al. (2001), we resurveyed respondent firms after a two-year lag (in summer 2016). This second survey focused on the main dependent variable: decision effectiveness (decision performance). We used a single-item format to decrease recall bias and to increase the response rate. We adapted Bingham and Davis’s (2012) single question, asking the respondents to “rate the success of the firm in the country of entry after the first year” (1 = “very unsuccessful”, 4 = “moderately successful”, 7 = “extremely successful”). This question provides a general but direct measure of perceived entry decision effectiveness and it is easy to recall. CEO filled the questionnaire. We received 68 responses (a response rate of 81 per cent) in eight weeks. This country performance variable ($M = 5.47, SD = 1.04, Min = 3, Max = 7$) correlates significantly with our decision effectiveness variable ($r = 0.73$). This result provides further evidence of the reliability of our data, indicating that there is a low probability that common method variance is driving our results (Yli-Renko et al., 2001).

**Results**

Table I shows the descriptive statistics and correlations of study variables. The average firm size is 38.62 employees. It is interesting to comment also on firm age, that we measured as the number of years from foundation of firm to the decision of interest and that we did not include in our regression models because it is highly correlated with firm size and TMT tenure. These firms were rather young at the time of decision since the average firm age was 2.71 years. A look at correlations gives early insights on the relationships among constructs in our study. The correlations among TMT IE, international SDM rationality, and decision effectiveness are in the expected directions. A high level of multicollinearity can be problematic in regression analysis. To check for multicollinearity, we used the variance inflation factor (VIF). Since the highest VIF is 2.23 (TMT tenure), well below the recommended cutoff value of 10 (Neter et al., 1990), we do not have reason to suspect threat of multicollinearity.
| Variables                        | Mean  | SD    | Minimum | Maximum | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   |
|---------------------------------|-------|-------|---------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Control                         |       |       |         |         |      |      |      |      |      |      |      |      |      |      |      |      |      |
| 1. TMT international experience | 2.029 | 1.195 | 0       | 5       | 1    |      |      |      |      |      |      |      |      |      |      |      |      |
| 2. Decision rationality         | 4.881 | 1.312 | 1       | 7       | 0.402|      |      |      |      |      |      |      |      |      |      |      |      |
| 3. Decision effectiveness      | 5.506 | 1.034 | 2.5     | 7       | 0.231| 0.341|      |      |      |      |      |      |      |      |      |      |      |
| 4. TMT size                     | 2.845 | 1.047 | 2       | 7       | 0.324| 0.250| 0.033|      |      |      |      |      |      |      |      |      |      |
| 5. TMT tenure                   | 2.221 | 2.360 | 1       | 12      | 0.008| 0.056| 0.233| 0.250|      |      |      |      |      |      |      |      |      |
| 6. Firm age                     | 2.714 | 2.696 | 1       | 12      | 0.005| 0.007| 0.170| 0.099| 0.786|      |      |      |      |      |      |      |      |
| 7. Firm size †                  | 3.541 | 0.440 | 2.996   | 5.193   | 0.182| 0.140| 0.112| 0.248| 0.655| 0.731|      |      |      |      |      |      |      |
| 8. Firm international experience| 1.321 | 1.985 | 0       | 10      | 0.198| 0.085| 0.054| 0.128| 0.254| 0.277| 0.178|      |      |      |      |      |      |
| 9. Uncertainty                  | 2.452 | 1.163 | 1       | 5.67    | 0.018| 0.024| 0.181| 0.004| 0.053| 0.079| 0.005| 0.089|      |      |      |      |      |
| 10. Cultural distance           | 2.392 | 0.960 | 0.1     | 3.99    | 0.007| 0.039| 0.138| 0.002| 0.304| 0.262| 0.238| 0.237| 0.104|      |      |      |      |
| 11. Local experience            | 0.655 | 0.478 | 0       | 1       | 0.154| 0.298| 0.020| 0.036| 0.140| 0.152| 0.125| 0.004| 0.198| 0.075|      |      |
| 12. FDI/non-FDI decision        | 0.381 | 0.489 | 0       | 1       | 0.108| 0.020| 0.257| 0.142| 0.060| 0.056| 0.176| 0.053| 0.096| 0.158| 0.106|      |

**Notes:** N = 84; Correlations with the absolute value greater than 0.19 are statistically significant at $p < 0.10$ and 0.22 are statistically significant at the $p < 0.05$ or lower level; † Transformed variable (log of firm size)
We used hierarchical regression to test our hypotheses. We estimated the parameters with robust standard errors. Table II presents the regression results for the effect of TMT IE on SDM rationality and Table III presents the regression results of the effects of TMT IE on decision effectiveness and mediation hypothesis.

The regression results in Table II supported H1, predicting a positive association between TMT IE and SDM rationality \((p < 0.01)\). Model 4 in Table III supports our baseline hypothesis, positing a positive association between TMT IE and decision effectiveness \((p < 0.01)\). We used Baron and Kenny’s (1986) approach for mediation analysis of H2. Model 2 in Table II combined with Models 4 and 6 in Table III support H2, positing a mediating role of SDM rationality between TMT IE and strategic decision effectiveness. When we included TMT IE with SDM rationality and strategic decision effectiveness, the coefficient of TMT IE

### Table II
Regression analysis for international SDM rationality

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMT size</td>
<td>0.288 (0.136)</td>
<td>0.153 (0.125)</td>
</tr>
<tr>
<td>TMT tenure</td>
<td>−0.00269 (0.0797)</td>
<td>0.0372 (0.0767)</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.0806 (0.460)</td>
<td>−0.106 (0.422)</td>
</tr>
<tr>
<td>Firm international experience</td>
<td>0.0232 (0.0707)</td>
<td>−0.0143 (0.0812)</td>
</tr>
<tr>
<td>Local experience</td>
<td>0.813 (0.328)</td>
<td>0.742 (0.310)</td>
</tr>
<tr>
<td>FDI/non-FDI decision</td>
<td>0.0413 (0.292)</td>
<td>−0.0671 (0.274)</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>−0.0498 (0.114)</td>
<td>−0.0382 (0.111)</td>
</tr>
<tr>
<td>Cultural distance</td>
<td>−0.0643 (0.131)</td>
<td>−0.0847 (0.120)</td>
</tr>
<tr>
<td>TMT international experience</td>
<td>0.368 (0.155)</td>
<td>0.384 (0.150)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.472 (1.606)</td>
<td>3.847 (1.508)</td>
</tr>
</tbody>
</table>

**Notes:** Robust standard errors in parentheses; **\(p < 0.01\); * \(p < 0.05\); † \(p < 0.1\)

### Table III
Regression analysis for international strategic decision effectiveness

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMT size</td>
<td>−0.0313 (0.0973)</td>
<td>−0.128 (0.0994)</td>
<td>−0.128 (0.0867)</td>
<td>−0.173 (0.0859)</td>
</tr>
<tr>
<td>TMT tenure</td>
<td>−0.175 (0.0728)</td>
<td>−0.147 (0.0716)</td>
<td>−0.174 (0.0568)</td>
<td>−0.157 (0.0587)</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.509 (0.393)</td>
<td>0.374 (0.363)</td>
<td>0.481 (0.316)</td>
<td>0.405 (0.310)</td>
</tr>
<tr>
<td>Firm international experience</td>
<td>0.00696 (0.0577)</td>
<td>−0.0244 (0.0675)</td>
<td>−0.00288 (0.0452)</td>
<td>−0.0202 (0.0531)</td>
</tr>
<tr>
<td>Local experience</td>
<td>−0.0804 (0.232)</td>
<td>−0.132 (0.220)</td>
<td>−0.354 (0.203)</td>
<td>−0.348 (0.205)</td>
</tr>
<tr>
<td>FDI/non-FDI decision</td>
<td>−0.660 (0.261)</td>
<td>−0.738 (0.249)</td>
<td>−0.674 (0.235)</td>
<td>−0.719 (0.230)</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>−0.146 (0.0932)</td>
<td>−0.138 (0.0918)</td>
<td>−0.130 (0.0844)</td>
<td>−0.127 (0.0849)</td>
</tr>
<tr>
<td>Cultural distance</td>
<td>0.00778 (0.122)</td>
<td>−0.00690 (0.119)</td>
<td>0.0294 (0.115)</td>
<td>0.0177 (0.115)</td>
</tr>
<tr>
<td>TMT international experience</td>
<td>0.265 (0.0856)</td>
<td>0.265 (0.0856)</td>
<td>0.158 (0.0839)</td>
<td>0.158 (0.0839)</td>
</tr>
<tr>
<td>Decision rationality</td>
<td>0.337 (0.0932)</td>
<td>0.291 (0.0977)</td>
<td>0.369 (0.181)</td>
<td>0.396 (0.101)</td>
</tr>
<tr>
<td>Constant</td>
<td>4.819 (1.356)</td>
<td>5.088 (1.224)</td>
<td>3.649 (1.181)</td>
<td>3.969 (1.101)</td>
</tr>
</tbody>
</table>

**Notes:** Robust standard errors in parentheses; **\(p < 0.01\); * \(p < 0.05\); † \(p < 0.1\)
became smaller and less significant ($p < 0.1$) while the coefficient of SDM rationality is significant as before ($p < 0.01$). This supports $H2$ concerning the mediation role of SDM rationality.

Recently, researchers have criticized Baron and Kenny’s method and recommended bootstrapping mediation analysis. We tested our mediation $H2$ by employing the bootstrapping procedure using the SPSS INDIRECT macro of Preacher and Hayes (2008). Table IV shows these results. The paths from TMT IE to SDM rationality and from SDM rationality to decision effectiveness are positive and significant ($p < 0.01$). This suggests a significant indirect effect (mediation) via SDM rationality. For the significance test, Table IV provides bootstrapped 95 per cent confidence intervals for the indirect effect of TMT IE on decision effectiveness via SDM rationality. The indirect effect via SDM rationality is positive and significant because zero is not included in the 95 per cent confidence intervals, providing support for $H2$.

The analysis of our qualitative follow-up interviews largely supports these results and helps to clarify the challenges entailed in the international SDM process. For instance, a CEO told us how his and another top manager’s friends (classmates of their foreign education) in two western countries played a pivotal role in helping the TMT to decide which foreign country to enter (first foreign entry). He mentioned that they collected useful information from their friends and requested them to get more information from other sources. He commented that:

We attended very carefully to that specific information that also helped us to refine our existing knowledge and make sense of the international context. Therefore, we were in a better position to process it carefully, always trying to make connections with our ultimate goals.

Overall, it took nine months to decide which country to enter, but time and effort put in the process paid off and they were extremely satisfied with the performance in their target country. The TMT of this company is composed of three members all holding IE. The CEO of another firm (graduate of an Ivy league US business school) explained how the TMT approached the choice of country to enter with the following words:

You know, we are working hard to make money rather than betting on blind choices. Therefore, in general, we try to follow a systematic decision-making process. [...] For our recent most important foreign entry decision, since all the three of us have international experience we

<table>
<thead>
<tr>
<th>Mediator variable</th>
<th>Stage 1 Path XM</th>
<th>Stage 2 Path MY</th>
<th>Indirect effects (XMMY)</th>
<th>Confidence interval</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationality</td>
<td>0.369***</td>
<td>0.292**</td>
<td>0.108</td>
<td>Bias-corrected</td>
<td>0.037</td>
<td>0.240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>confidence intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Percentile confidence intervals</td>
<td>0.027</td>
<td>0.213</td>
</tr>
<tr>
<td>Total indirect effect</td>
<td>0.108</td>
<td></td>
<td></td>
<td>Bias-corrected</td>
<td>0.037</td>
<td>0.240</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>confidence intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Percentile confidence intervals</td>
<td>0.027</td>
<td>0.213</td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.358</td>
<td></td>
</tr>
<tr>
<td>$F$-test model</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.085**</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** TMT international experience → Decision rationality → Decision effectiveness; $N = 84$; **$p < 0.01$; *$p < 0.05$; Number of bootstrap resamples: 5000; Path XM: path from TMT international experience to the mediator (i.e. rationality); Path MY: path from the mediator (i.e. rationality) to decision effectiveness; and Control variables and their effects are not included for the sake of simplification and clarity
followed a very systematic decision-making process and were able to collect information from
different sources and process and use them effectively. […] Actually, there were several options
that we explored, but at the end of the process, we choose one that was the best choice keeping in
mind our capabilities and resources. This is extremely important for a firm like ours because, as
you can imagine, we do not have the resources to enter every country.

Overall, he was highly satisfied with their performance in that country.

Conversely, another CEO, commenting on the most important (first) foreign market entry
decision, described his dissatisfaction with that decision and the subsequent performance in
the foreign country. He underlined that none of the TMT members had IE and international
ties to get relevant information. He told us that:

We looked at the success of other firms in foreign countries and decided to internationalize.
Beyond that, we put little effort in information collection, seeking different perspectives also as a
way to challenge our existing assumptions.

He regretted that they should have collected more and relevant information before investing
in their target country. They learned, too late, that the market was already saturated and it
was extremely difficult to get customers without personal relations. Since the performance
was not satisfactory, they were thinking to close the subsidiary.

Discussion
Our study contributes to the current scholarly conversation that advocates the need to
investigate how individual- and team-level characteristics of companies’ leadership, like
TMT IE, influence SDM processes and the subsequent decisions’ effectiveness related to
global operations.

Our data collected in a sample of software SMEs support both our hypotheses. First, we
found that the IE held by TMT members is positively associated to TMT SDM rationality
(H1). This evidence helps to disentangle a possible theoretical puzzle. On one hand,
emergent managerial cognition literature (Maitland and Sammartino, 2015; Piaskowska and
Trojanowski, 2014) suggests that managers’ IE increases their cognitive base, the
subsequent set of possibilities and abilities available in a team, and possibly their confidence
about an international decision. Conversely, research on decision science and organizational
learning shows that the combination of both deep experience and experience variety
diminishes the confidence of decision makers in relevant knowledge (Rhee, et al. 2006;
Powell and Rhee, 2016). We argue that the two perspectives can be reconciled, prompting the
idea that members of TMT with IE will not only bring specific insights into the complexity
of international SDM but will also be aware of cultural differences and therefore more
attuned to engaging in a rational international SDM process.

Our findings also show that SDM rationality partially mediates the relationship between IE
and decision effectiveness (H2). In the context of international SDM of small firms,
internationally experienced managers tend to engage in a more rational SDM process that in
turn enhances decision makers’ satisfaction with the final outcome. This evidence has a number
of implications. First, while some research studies propose that a more analytical and rational
SDM process can be problematic – especially for small or entrepreneurial firms – because it
may slow down the process and hinder opportunities’ recognition (Allinson et al., 2000; Kor et al., 2007), other authors postulate the benefits in terms of enhanced international
performance for small and entrepreneurial firms that value a rational SDM process over an
intuitive one (Buckley et al., 2016; Deligianni et al., 2016). We add to this stream indicating that
because firms’ international decisions entail extensive information gathering and processing,
the TMT decision-making rationality is functional both with respect to the effectiveness of the
decisions undertaken during the internationalization process and also in that it represents one of the channels through which IE affects (decision) performance.

Within the same literature, our results underline the prominent role that teams of decision makers, beyond the achievements of single CEOs or entrepreneurs, play in international SDM because of the collective cognition processes they can engage in.

Additionally, our results have implications for SMEs from emerging countries engaged in foreign market entry decision. For these firms, the lack of information and managerial expertise represent two of the major constraints in making international decisions (Hsu et al., 2013). We show that, within these contexts, IE of TMT members represents a key resource for overcoming limitations in other resources. These SMEs coming from an adverse environment like Pakistan have limited resources that make them more vulnerable to the liabilities of newness, smallness and foreignness (Khan and Lew, 2018). These resource-constrained SMEs cannot rely on experimentation with international location choices and on time-consuming training of their managers abroad (Cui et al., 2015). We submit that relying on managers with IE enables them not only to detect more international opportunities but also to use rational SDM to evaluate effectively those opportunities in international contexts (Deligianni et al., 2016). This process can reduce costly mistakes, enhance decision effectiveness, and boost firms’ overall performance.

Finally, our findings could also explain the multinationality performance nexus (and the shape of the relationship). More internationally experienced TMTs will emerge within more internationally experienced firms, thus creating a “boost” for firms as they expand beyond their first few countries.

Implications for practice
Our focus on antecedents of TMT SDM rationality and specifically on the degree to which it may be influenced by TMT IE, and in turn relates to decisions’ effectiveness, is relevant for managers for several reasons. First, there is increasing recognition of the use of “returnees” (employees and managers who worked or studied abroad) as a main source of experience and knowledge transfer. Second, firms, also SMEs, in emergent countries are more and more engaged in international decisions. Third, despite the attention devoted to entrepreneurs and individual CEOs in making decisions in SMEs and entrepreneurial firms, the role of TMT in taking decisions and influencing the organization’s performance is being increasingly recognized. Therefore, an improved understanding of the factors that affect team cognition and decision-making processes provides organizations and their members with precious indications regarding how to perform better. More specifically, our evidence provides practical advice to international firms in terms of selection and training of their managers. First, our results suggest that international firms, when selecting their TMT members, should pay a great deal of attention to their IE, as this can affect the SDM processes and decision effectiveness. Although international firms can train and develop their employees in a way that will give them not only functional experience but also IE and exposure (e.g., rotation of people to different countries), SMEs from emerging countries might not rely extensively on the training of their managers because of cost and time constraints. Thus, in agreement with Cui et al. (2015), we recommend recruitment of managers with prior IE, especially in case of emerging market SMEs and the creation of management teams where both depth and diversity of IE are guaranteed.

Limitations and further research
While we believe this research contributes to theory and practice, it is not without limitations. First of all, we collected our data from a single industry of an emerging country;
therefore, the results may not be generalizable to other industries and developed countries. At the same time, a focus on a single industry and a single country helps to avoid undesirable variance because of industry and country differences. While we believe that our findings offer important insights to other developing countries' SMEs, we recognize that conducting similar studies in developed countries and different industries will provide the confidence to generalize our findings to these settings as well.

Second, our study may have retrospective bias because the most important foreign market entry decision of our firms was taken within the range of four years before our survey. To face this issue, we collected data on the most important foreign market entry decision, expecting that respondents might not have had difficulty in recollecting decision-related information for this study. Moreover, our respondents were the most knowledgeable about the issue at hand. Third, we collected our data from a single respondent. Data collection from a second respondent is very difficult in an emerging country like Pakistan. We tried to check the reliability of our data with interviews and engaged in a subsequent data collection as detailed above. Fourth, we focused only on the mediating role of SDM rationality. We acknowledge that other decision-making processes, for instance, political behaviors may occupy a relevant position in the relationship between TMT characteristics and quality of outcomes. Our theoretical interest in the relationship between IE and managers' cognitive structures, coupled with empirical evidence that did not find a significant relationship between IE and political behaviors in a sample of SMEs (Francioni et al., 2015), drove our decision to focus only on rationality. Nevertheless, we recognize that models that incorporate multiple TMT processes may contribute greatly to expanding our knowledge basis.

Finally, we focused only on one dimension of TMT internationalization (i.e. IE). An interesting extension of our study might be to consider other dimensions of TMT internationalization such as nationality diversity to explore links between TMT internationalization and SDM processes for which, we argue, different mechanisms could be in place. We leave these insights to future research.

References


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The value of internationalization
Disentangling the interrelationship between regionalization strategies, firm-specific assets related to marketing and performance

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Abstract

Purpose – Current discussions in the international business community have demonstrated that the focus of MNCs operations tends to be more regional than global. This paper aims to investigate the performance effects of intra-regional and inter-regional strategy among large companies in European countries.

Design/methodology/approach – The authors test the research hypothesis on a sample of 25 largest European companies from six regional, as well as global-oriented, industries using the random effects model.

Findings – The authors find that an increase in a firm’s degree of regionalization leads to value enhancement. On the other side, the results reveal that an inter-regional strategy is associated with value discount. Moreover, empirical findings show that the higher the degree of inter-regional expansion the more pronounced is the effect of firm-specific assets related to marketing on performance. Hence, the negative valuation impact of an inter-regional strategy may be attenuated or even overcome through the interplay of inter-regional internationalization and firm-specific assets related to marketing.

Originality/value – By introducing a theoretical framework, the authors discuss the performance effects of regional-oriented and inter-regional-oriented strategies. Furthermore, they investigate the moderating effect of inter-regional expansion on the performance impact of firm-specific assets related to marketing in the case of large companies. Empirically, they test the hypotheses on a sample of large firms for an 11-year period using different measurements regarding the degree of intra-regional and inter-regional expansion.

Keywords Firm-specific advantages, Performance, European companies, Inter-regional strategy, Intra-regional strategy

Paper type Research paper

1. Introduction
For nearly 50 years, international business (IB) scholars have been struggling to resolve the multinationality-performance (M–P) puzzle (Bühner, 1987; Errunza and Senbet, 1981, 1984; Marano et al., 2016; Siddharthan and Lall, 1982; Oh and Contractor, 2014). Although some scholars expressed severe criticism regarding these attempts as being inconsistent (Ruigrok and Wagner, 2003), contradictory (Contractor et al., 2007) or disappointing (Hennart, 2007), academic research has nevertheless contributed significantly to a more profound understanding of the relationship between multinationality and performance. Over time, theoretical arguments have become more elaborated and empirical models more sophisticated leading to differentiated insights about the M–P relationship. Meanwhile, there is general consensus that the performance effect of multinationality is not unconditionally generalizable but depends on a number of specific contingencies. Morck and Yeung (1991) found that the impact of multinationality on performance is determined by the firm’s endowment with firm-specific assets (FSAs)[1]. Follow-up empirical studies supported the influence of these FSAs on the M–P relationship (Kirca et al., 2011).
Other studies have shown that the performance effect of multinationality also depends on the geographical scope of a firm’s multinational activities (Oh et al., 2015; Rugman, 2005; Rugman and Verbeke, 2004). According to these contributions, the liabilities of intra-regional foreignness tend to be much smaller than the liabilities that firms are confronted with when leaving their home region[2], because the home region offers rather homogeneous environmental conditions. Thus, access to country-specific advantages (CSAs) should be easier within the own home region (Qian et al., 2010). Moreover, if the home region provides easier access to CSAs as compared to other regions, the combination of FSAs with CSAs within the home region should be more efficient than the combination of FSAs with CSAs from other regions (Rugman, 2005; Verbeke and Kano, 2012). However, even within the home region the combination of FSAs and CSAs beyond the borders of the home country may not always run smoothly. Rugman and Verbeke (2001) point out that the cross-national transferability of FSAs varies. They propose to differentiate between location bound and non-location bound FSAs. Whereas the exploitation of location bound FSAs is confined to the firm’s home-country, non-location bound FSAs are suitable for exploitation beyond the borders of the home country (Collinson and Rugman, 2008). Thus, only non-location bound FSAs provide the basis for successful internationalization. Based on these considerations, the concept of regional-bound and non-regional-bound FSAs was introduced to take consideration of the regional dimension of multinational business activities (Ral-Trebacz and Eckert, 2016). FSAs related to R&D do not tend to be confined to the home region, whereas FSAs related to marketing tend to be regional bound. Consequently, R&D-related FSAs can be expected to improve the performance effect of an internationalization strategy that is not confined to the home region. However, as FSAs related to marketing cannot be transferred beyond the borders of the home region as easily as FSAs related to R&D, MNCs which rely mainly on marketing-related FSAs should be better off limiting their expansion strategy to their home region. Based on a sample of large European companies, Ral-Trebacz and Eckert (2016) provided empirical evidence for the regional boundedness nature of marketing-related FSAs, indicating the limited transferability of FSAs related to marketing. However, the relationship between FSAs related to marketing and the impact of a firm’s geographical scope on performance may not be unconditionally valid. Especially, very large firms may have established strong brands that, on the one hand, might have achieved a potential marketing impact range which reaches far beyond the home region, and on the other hand, these firms need to expand beyond the home region to capitalize the huge amount of expenses necessary to build up such strong FSAs related to marketing. Hence, from this point of view, large firms which possess strong marketing capabilities should benefit from an inter-regional strategy, although as argued above, an inter-regional expansion per se should be associated with a decrease in performance because of relative high inter-regional liabilities of foreignness.

In this paper, we analyze the relationship between the scope of a firm’s geographical expansion and performance. In addition, on the basis of considerations outlined above, we consider the specific function of FSAs related to marketing with regard to the M–P relationship in the case of very large firms. Empirically, we test our hypotheses using panel data techniques for a sample of large European companies from the manufacturing sector and from the services sector for the period from 2001 to 2011. Our findings indicate that an increase in the degree of intra-regional expansion is associated with higher performance, whereas an increase in inter-regional expansion leads to a performance decrease. However, we also provide evidence that inter-regional expansion positively moderates the link between marketing-related FSAs and performance.
This paper contributes to the IB literate in the following ways. First, we confirm previous empirical findings on the different performance effects of intra-regional versus inter-regional strategies. Second, we provide evidence of the moderating effect of inter-regional expansion on the performance impact of FSAs related to marketing in the case of large companies. We test our hypotheses on a sample of large firms for an 11-year period using different measurements regarding the degree of intra-regional and inter-regional expansion.

The structure of this paper is organized as follows. First, we discuss the theoretical arguments describing the advantages and disadvantages of being multinational. Second, we develop our hypotheses regarding the performance effects of different geographical expansion strategies, as well as regarding the moderating effect of an inter-regional expansion strategy on the link between marketing-related FSAs and performance. Then, we introduce the methodology before presenting our empirical findings. In the final section of our paper, the main results are summarized and conclusions are drawn about the managerial implications of our findings.

2. Performance impact of multinationality

In recent decades, IB scholars have considered quite a number of theoretical arguments about how multinationality might affect a company’s performance. On the one hand, there are basically three main arguments why multinationality might be detrimental for performance. The first is the liabilities of foreignness argument: multinational companies (MNCs) operate in a number of foreign countries, in which they may experience certain disadvantages compared to domestic competitors. These disadvantages result from their lack of knowledge about relevant business conditions abroad, as well as from the fact being considered as a foreigner by host country customers and host country organizations (Eckert et al., 2010; Lu and Beamish, 2004; Zaheer 1995[3]). These disadvantages lead to additional costs which host country firms usually do not encounter. A second argument concerns increased organizational complexity. MNCs are operating not only in one market but conduct activities in a number of different country markets simultaneously. Usually, these firms employ various modes of market entry for distinct markets to adapt their strategies to the differing markets settings. Furthermore, they may have divided their value chains geographically to reap benefits from location arbitrage (Kotabe et al., 2002; Lu and Beamish, 2004). The resulting structure of a geographically dispersed network of activities implies on the one hand increased costs of coordinating the multinational network and on the other hand a heightened likelihood for inefficiencies within the network (Hitt et al., 1997; Lu and Beamish, 2004). A third argument, why multinationality might be detrimental for performance, is rooted in agency theory (Jensen and Meckling, 1976). As foreign activities are more difficult to monitor, there is a risk that management will use internationalization activities to pursue goals, which may not be in the best interest of shareholders (Eckert et al., 2016b; Mishra and Gobeli, 1998[4]).

On the other hand, IB scholars have also developed a number of theoretical arguments why multinationality might be beneficial for firms. One argument in favor of multinationality is the possibility to realize economies of scale. Hitt et al. (1997, p. 771) argue that, “international diversification provides greater opportunities to achieve optimal economic scale and to amortize investments in critical functions such as R&D and brand image over a broader base”. Another argument focuses on the increased operational flexibility which can be realized through multinationality. Because of the geographically dispersed network of value chain activities and the multiplication of certain activities MNCs are able to reap the benefits of differing location conditions, e.g. differences in production costs (Kogut, 1985; Pantzalis, 2001). Furthermore, a network structure creates a higher value
of real options for a multinational firm which facilitates reaction to unanticipated changes in the environment (Lee and Makhija, 2009). A third argument concerns the risk structure of MNCs. By diversifying across different countries, MNCs may reduce their systematic risk (Gande et al., 2009; Eckert and Trautnitz, 2010). As a result, MNCs can be a “surrogate diversification vehicle[s] for their investors” (Eckert and Trautnitz, 2010, p. 97) and by this means they can lower their costs of capital. Some scholars argue, whether multinationality is beneficial or not depends upon certain firm-specific characteristics, so called monopolistic advantages or firm-specific advantages. This line of argumentation can be traced back to Hymer (1976), who states that multinational firms have to be in charge of certain monopolistic advantages to overcome the liabilities of foreignness. These FSAs mostly occur as intangible assets, such as technologies, innovative products, brand names, organizational learning capabilities or certain managerial skills (Rugman, 2005; Rugman and Verbeke, 2003). If MNCs have such assets at their disposal, they can charge higher prices for their products or effectively lower their overall operating costs (Bae et al., 2008; Kotabe et al., 2002).

Empirical research concerning the performance effects of multinationality has been quite extensive over the past five decades. Unfortunately, the outcomes of these research activities have not provided a coherent picture, but, instead, have contributed to a substantial disagreement on the true nature of the relationship between multinationality and performance. Previous empirical results have provided support for a linear positive relationship between multinationality and performance (Eckert et al., 2010; Lee et al., 2015; Mishra and Gobeli, 1998; Pangarkar, 2008), as well as for a linear negative (Click and Harrison, 2000; Denis et al., 2002; Geringer et al., 2000; Kim and Mathur, 2008), a U-shaped (Capar and Kotabe, 2003; Lu and Beamish, 2001; Mathur et al., 2001), an inverted U-shaped form (Gomes and Ramaswamy, 1999; Hsu and Boggs, 2003; Ruigrok and Wagner, 2003), an S-shaped relationship (Contractor et al., 2003; Lu and Beamish, 2004; Oh and Contractor, 2014; Thomas and Eden, 2004) and an inverted S-shaped relationship (Eckert et al., 2016a; Krist, 2009; Ral-Trebacz, 2016; Ruigrok et al., 2007).

3. Hypotheses
3.1 Performance consequences of an intra-regional strategy

Empirical contradictions regarding the performance effects of multinationality may be partially explained by an insufficient consideration of the geographical scope of MNCs’ international activities. Some IB scholars argue that the focus of MNCs’ operations tends to be more regional than global (Rugman, 2001, 2005; Rugman and Verbeke, 2004, 2007). Rugman and Verbeke (2004) addressed this issue in their seminal work on regionalization. Based on a sample of 380 firms from the Fortune Global 500, they investigated the distribution of sales across the triad regions (defined as the USA, European Union (EU) and Asia-Pacific). According to their results, approximately 85 per cent of the firms in their sample generated at least 50 per cent of their sales within their specific home region. Subsequent studies supported this finding (Berrill, 2015; Cerrato, 2009; Collinson and Rugman, 2008; Oh, 2009, 2010; Rugman and Collinson, 2006; Rugman and Oh, 2008, 2010, 2013; Rugman and Sukpanich, 2006; Rugman and Verbeke, 2008a, 2008b; Rugman et al., 2009). Consequently, Rugman and Verbeke notice that the “home-region orientation of most multinational enterprises implies that the reality of globalization has been vastly exaggerated” (Rugman and Verbeke, 2008b, p. 398).

These findings concerning the regional nature of MNCs bear important implications for our understanding of the M–P relationship (Chen and Tan, 2012). Following Rugman and Verbeke (2005), the home region constitutes the optimal environment to maximize profits.
Based on the transaction cost perspective, Lee and Rugman (2012) as well as Rugman and Verbeke (2004) argue that international activities in other home region markets tend to be more beneficial than activities in foreign regions. Economic, cultural and institutional similarities of country markets with the home region given, it provides the best opportunities for the exploitation of FSAs (Banalieva and Santoro, 2009; Rugman, 2005; Rugman and Verbeke, 2008a; Verbeke and Kano, 2012). Li (2005, p. 42) suggested that the regional:

\[ \ldots \] strategy may facilitate the realization of economies of scale and scope by confining the transfer and utilization of intangible assets to a regional market that is physically and economically close to the domestic market.

Environmental similarities in the home region are associated with less uncertainty and lower degrees of complexity. Thus, many scholars suggest that liabilities of foreignness within the home region (liabilities of intra-regional foreignness) are lower compared to those outside the home region (liabilities of inter-regional foreignness) (Lee and Rugman, 2012; Rugman and Verbeke, 2004; Rugman and Oh, 2010). Besides, higher operating costs of an inter-regional strategy may arise because of higher uncertainty and higher degrees of complexity caused by unfamiliar environmental conditions in host regions (Qian et al., 2013; Rugman and Verbeke, 2007), an inter-regional strategy is also associated with higher costs regarding communication and coordination (Lee and Rugman, 2012). On the whole, an intra-regional expansion should be more favorable compared to an inter-regional expansion.

Empirical research on the impact of regionalization on performance predominantly supports the superiority of intra-regional expansion. Qian et al. (2010) provide evidence that the degree of regionalization has a positive impact on performance. Ruigrok et al. (2013) found that an increasing degree of regionalization leads to superior performance. In general, most of extant studies considering the impact of regionalization on performance concluded that home-region-oriented firms perform better than companies operating outside the home region (Lee, 2013; Mohr et al., 2014; Oh, 2010; Oh et al. 2015; Sukpanich and Rugman, 2007). According to previous empirical results on the relationship between regionalization and performance, we propose that an intra-regional expansion should lead to an increase in performance, whereas an inter-regional expansion strategy should be associated with performance decreases:

\[ H1a. \] Intra-regional expansion leads to an increase in firm performance.

\[ H1b. \] Inter-regional expansion leads to a decrease in firm performance.

3.2 The role of marketing-related FSAs

FSAs are crucial to compete successfully in national and international markets (Lee and Rugman, 2012). Rugman defines an FSA as a “unique capability proprietary to the organization \[ \ldots \] built upon product or process technology, marketing, or distribution skills” (2005, p. 34). Downstream FSAs, like marketing-related FSAs (e.g. innovative products, brand names, unique marketing capabilities or customer service etc.) contribute effectively to increase competitiveness (Lee and Rugman, 2012). Multinational firms which possess FSAs related to marketing are in the position to charge premium prices. Furthermore, they are able to increase their overall efficiency by spreading their sales across foreign markets (Bae et al., 2008; Kotabe et al., 2002). Referring to the resource-based view (Barney, 1991), firms which possess unique marketing FSAs “can identify idiosyncratic
lucrative opportunities, exploit them with relevant marketing strategies, and [...] realize high performance” (Lee and Rugman, 2012, p. 135).

Numerous empirical studies provide results which support a positive moderating effect of marketing-related FSAs on the relationship between multinationality and performance (Holm and Sharma, 2006; Kirca et al., 2011; Kotabe et al., 2002; Lee and Rugman, 2012). Based on a home country perspective, Rugman and Verbeke (1992, 2001) distinguish between FSAs which are restricted to the home country (location-bound) and FSAs which are not restricted to a specific location (non-location-bound)[5]. Collinson and Rugman (2008) assume that location-bound FSAs can only be exploited efficiently within the borders of the home country. However, in the case of a foreign market entry, either necessary adaptations may render the transfer of these FSAs unprofitable or almost unprofitable or a transnational transfer of these FSAs may even be impossible from the start (Collinson and Rugman, 2008). In contrast, non-location bound FSAs are not related to specific locations, can, therefore, be transferred abroad and can be exploited across different countries (Collinson and Rugman, 2008). Nevertheless, even those FSAs which are non-location-bound may not be exploited equally easily in all other markets around the globe. Several studies provide evidence that FSAs related to marketing tend to be regional-bound and can only be exploited efficiently within the home region (Banalieva and Eddleston, 2011; Rugman and Verbeke, 2007; Rat-Trebacz and Eckert, 2016). On the contrary, FSAs related to R&D seem to be less regional-bound (Banalieva and Dhanaraj, 2013; Cerrato, 2009; Rugman and Oh, 2010). Rat-Trebacz and Eckert (2016) provide empirical evidence for a positive moderating impact of these FSAs on the link between intra-regional expansion and performance. They conclude that the:

[...] superior value of these [i.e. marketing-related] FSAs tends to be limited to the home region and an intra-regional strategy can be seen as an efficient mechanism to transfer, deploy, and exploit marketing-related FSAs (Rat-Trebacz and Eckert, 2016, p. 17).

Nevertheless, we argue that this relationship between FSAs related to marketing and the impact of a firm’s geographical scope on performance may not be unconditionally valid. We suggest that this relationship is influenced by firm size.

Kirca et al. (2012) argue that large firms tend to be in charge of stronger FSAs and can realize economies of scale more easily. Furthermore, large firms possess more resources, which enable risky strategies like internationalization. Marano et al. (2016) found a positive impact of firm size on the M–P relationship. We argue that firm size plays a significant role for the regional-boundedness of FSAs in the field of marketing. Especially, very large firms may have established strong brands that, on the one hand might have a sphere of impact which transcends the home region considerably. On the other hand, firms with highly valuable FSAs related to marketing require expansion beyond the home region to capitalize the expenses necessary to build up these FSAs. This is because firms which are in charge of substantial FSAs related to marketing must reach a critical size with regard to their geographical scope to exploit them in a profitable way. While it is well known that multiple marketing strategies and leveraging a firm’s brand over several countries cause additional control and coordination costs (Lee and Rugman, 2012; White et al., 2003), high levels of an inter-regional strategy can help a company to efficiently exploit marketing-related FSAs because of scale and scope economies. Therefore, contrary to conventional theoretical reasoning, in the case of large firms which are in charge of strong FSAs related to marketing the interplay between multinationality, FSAs and performance, may not be characterized appropriately by the classical theoretical thinking prevalent in M–P research. Usually, these theoretical models assume a direct relationship between multinationality and performance.
which is moderated by FSAs. However, in the case of large firms with strong FSAs related to marketing, we suspect that the interplay between these variables changes. We suggest that strong FSAs related to marketing are the dominating performance effect. Therefore, in the case of large firms with strong FSAs related to marketing, we propose a direct relationship between FSAs related to marketing and performance which is moderated by multinationality, respectively, the degree of inter-regional expansion. We propose the second hypothesis as follows:

\( H2 \). Inter-regional expansion will positively moderate the relationship between marketing-related FSAs and performance.

4. Methodology

4.1 Data

Recent studies in IB call for a consideration of context-related factors with regard to the analysis of the M–P relationship (Dittfeld, 2017; Kirca et al. 2012; Marano et al., 2016). Kirca et al. (2012) differentiate between context related factors on the firm level, on the industry level, and on the country level. Extending the perspective of Kirca et al. (2012), Marano et al. (2016) distinguish on the country level between the home country and the host country level. Our sample encompasses aspects of all four levels of context related factors.

Rugman and Oh (2010) argue that the tendency to conduct business activities more regionally than globally depends on the specific industry sector. In particular, they show that firms from service industries have a stronger focus on their home region (Oh et al., 2015), whereas manufacturing companies are less regionally oriented. To consider different internationalization and regionalization strategies because of specific industries patterns, we consider a broad range of industries from the manufacturing sector and from the service sector. As a result, our sample allows us to control for industry effects and host country effects (in terms of different regionalization strategies). Based on Rugman and Oh (2010), we selected firms from the manufacturing sector, in detail from the following industries: motor vehicles and parts; chemicals and pharmaceuticals; and computer, office and electronics and the service sector, in detail from the following industries: merchandise, telecommunication and utilities and banks.

In contrast to other studies, which simultaneously analyze firms from different home regions (Rugman and Oh, 2010; Banalieva and Dhanaraj, 2013; Mohr et al. 2014; Rugman and Oh, 2010), we focus exclusively on firms from one region. Investigating European firms allows us to consider entities from a homogeneous economic background and to control for home country effects. In general, companies from Europe represent a unique sample to address our research question. According to Verbeke and Kano (2012), the European market can be considered as a mechanism removing natural market imperfections because of the deep economic and institutional integration within Europe. Furthermore, we focus on large firms. Large firms tend to be in charge of strong FSAs related to marketing. These firms are able to realize economies of scale more easily. They are in charge of huge resources, which enable risky strategies like internationalization. The companies in our sample are the largest ones in their industries; they have already established global brands; therefore, the selected sample represents an appropriate setting to test our hypothesis regarding the moderating effect of an inter-regional strategy on the impact of marketing-related FSAs on performance.

We selected the largest firms (25) from each of the six industries[6]. The companies originated from Finland, France, Germany, Italy, The Netherlands, Spain, Sweden and the UK.
The information on firms’ regional activities was collected from the Osiris database over the time period ranging from 2001 to 2011. After identifying the largest companies (25) from each industry, we gathered data on the distribution of firms’ subsidiaries across different regions as reported in the companies’ annual statements[7]. This step was necessary to compute the inter-regional and intra-regional expansion variables. Then, we matched the information obtained from Osiris with firm-level information provided by Datastream. Improving the quality of the sample required several editing steps. We ended up with a total of \( N = 458 \) firm-year observations. 3.8 per cent of the firm-year-observations originated from Finish firms, 15.7 per cent from French firms, 40.2 per cent from German firms, 3.1 per cent from Italian firms, 7.2 per cent from Dutch firms, 0.1 per cent from Spanish firms, 9.6 per cent from Swedish firms and 20.3 per cent from British firms. Because of missing data our sample is an unbalanced panel.

4.2 Measures

4.2.1 Performance measurement. In accordance with most of the literature, we used Tobin’s Q (TQ) as measure for firm performance (e.g. in Eckert et al., 2010; Olsen and Elango, 2005). Tobin’s Q was computed based on Chung and Pruitt (1994) and Eckert et al. (2010) in the following way:

\[
TQ = \frac{MVE + MVPS + BVD}{BVE + BVPS + BVD}
\]

where

\[
MVE = \text{market value of equity};
\]
\[
MVPS = \text{market value of preferred stock};
\]
\[
BVD = \text{book value of debt};
\]
\[
BVE = \text{book value of equity}; \text{ and}
\]
\[
BVPS = \text{book value of preferred stock}.
\]

4.2.2 Intra-regional and inter-regional expansion strategy. To assess the degree of intra-regional and inter-regional expansion, we relied on information about the regional distribution of foreign subsidiaries from Osiris. Our measurement for the intra-regional expansion strategy of a particular firm \( i \) represents the proportion of subsidiaries in the home region (RS) (i.e. within Europe, including country of origin) in relation to the number of total subsidiaries (TS) (Qian et al., 2008). To account for the home country bias (Asmussen, 2009), we also measure the degree of regionalization excluding subsidiaries from the home country:

\[
RSTS = \frac{\text{Regional subsidiaries (excluding country of origin)}}{\text{Total subsidiaries}}
\]

Furthermore, we calculate inter-regional expansion strategy using three different indicators. First, we measure inter-regional strategy as the proportion of foreign subsidiaries, which are not located within the home region in relation to total subsidiaries (INTER):

\[
\text{INTER} = \frac{\text{Inter-regional subsidiaries}}{\text{Total subsidiaries}}
\]

Second, referring to some recent studies on regionalization (Qian et al., 2010; Wiersema and Bowen, 2008), we also measure the degree of inter-regionalization of a firm as the number of regions[8], where its subsidiaries are located (REGIONS). Finally, we also capture inter-
regional expansion strategy using an entropy measure (Qian et al., 2010). We computed the entropy variable for the inter-regional strategy (ENTROPY) as follows:

$$\text{ENTROPY} = \sum_{i=1}^{m} P_i \ln \left( \frac{1}{P_i} \right)$$

Where, $m$ is the number of regions (min. $m = 1$, max. $m = 6$) in which a firm’s subsidiaries are located. $P_i$ refers to the share of subsidiaries within a specific region as measured by the number of subsidiaries in the $i^{th}$ region to a firm’s total number of subsidiaries.

4.2.3 Marketing-related FSAs. Following Kirca et al. (2011) we use the ratio of selling, general and administrative expenses to sales (SAS) as a proxy for FSAs related to marketing. Lee and Rugman (2012) emphasize that SAS is an appropriate measurement to capture marketing-related FSAs.

4.2.4 Control variables. In line with previous research (Qian et al., 2010; Ruigrok et al., 2013), we control for various effects on the firm level, on the industry level, and on the country level. Firm size was measured as the natural logarithm of a firm’s total assets (TA). Firm leverage was calculated as the ratio of total debt to total assets (TDTA). We measured R&D intensity as the ratio of R&D expenditures to total sales (RDS). To control for capital intensity, we introduced the variable capital expenditures to total sales (CETS).

To control for the impact of past profitability on current performance, we include return on assets (ROA) in our regression model. Using a control variable for the proportion of domestic subsidiaries to total subsidiaries (DOMESTIC), we account for the home-country bias. To control for industry effects, we used industry dummies. Since our sample consists of companies from several countries, we also adopt dummies for each home country[9].

4.3 Estimation
Given the panel structure of our data, a simple ordinary least squares regression should not be appropriate to test our hypotheses. Current IB research has started to focus on more sophisticated estimation methods (Reeb et al., 2012). In particular, the most common panel data analysis techniques include the random effects model and the fixed effect model. However, the latter one has attracted some criticism in recent years (Gelman and Hill, 2007). Since our sample represents pooling time-series and unbalanced cross-sectional data[10], a random effects model seems to be the method of choice (Gelman and Hill, 2007). Therefore, we estimate the regression parameters using the random effects model.

5. Results
Table I shows descriptive statistics. On average, companies in the sample had more than 71 percent of their subsidiaries within the home region. In total, 37.70 per cent of all subsidiaries were located in the home country. Furthermore, descriptive statistics indicate that the firms in our sample spent large portions of their sales on marketing activities (on average: 18 per cent with a standard deviation of more than 10 per cent). Finally, the firms in our sample had subsidiaries in more than four regions on average.

Descriptive statistics reveal that the companies included in our sample tend to have a regional focus. These findings are in line with other recent results (Collinson and Rugman, 2008; Oh and Rugman, 2012; Rugman and Oh, 2010; Rugman and Verbeke, 2004). Table II presents the regression results. Dependent variable is Tobin’s Q. Model 1 was defined as the basic model. Note that firm leverage (TDTA), firm size (TA), profitability (ROA), capital intensity (CETS) and R&D intensity (RDS) have a significant impact on performance.
<table>
<thead>
<tr>
<th>Variables</th>
<th>mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TA(^{a})</td>
<td>16.599</td>
<td>1.631</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2. TDTA</td>
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<td>0.136</td>
<td>0.156</td>
<td>1</td>
<td></td>
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<tr>
<td>3. ROA</td>
<td>0.056</td>
<td>0.080</td>
<td>−0.002</td>
<td>−0.303</td>
<td>1</td>
<td></td>
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<tr>
<td>4. CETES</td>
<td>0.063</td>
<td>0.049</td>
<td>0.283</td>
<td>−0.293</td>
<td>−0.138</td>
<td>1</td>
<td></td>
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<tr>
<td>5. RDS</td>
<td>0.053</td>
<td>0.058</td>
<td>0.083</td>
<td>−0.285</td>
<td>0.128</td>
<td>−0.061</td>
<td>1</td>
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<td>6. SAS</td>
<td>0.180</td>
<td>0.101</td>
<td>0.093</td>
<td>−0.125</td>
<td>0.263</td>
<td>−0.088</td>
<td>0.250</td>
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<td>7. DOMESTIC</td>
<td>0.373</td>
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<td>0.060</td>
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<td>8. RSTS(^{b})</td>
<td>0.714</td>
<td>0.162</td>
<td>0.035</td>
<td>0.082</td>
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<td>9. RSTS(^{c})</td>
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<td>0.167</td>
<td>0.196</td>
<td>−0.003</td>
<td>0.072</td>
<td>−0.124</td>
<td>0.044</td>
<td>0.115</td>
<td>−0.714</td>
<td>0.011</td>
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<td>10. INTER</td>
<td>0.286</td>
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<td>−0.082</td>
<td>0.126</td>
<td>−0.114</td>
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<td>0.262</td>
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<td>−0.199</td>
<td>0.130</td>
<td>−0.233</td>
<td>0.199</td>
<td>0.058</td>
<td>0.156</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: N = 458; \(^{a}\)logarithm; \(^{b}\)including country of origin; \(^{c}\)excluding country of origin; \(****p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001\)

Table I. Descriptive statistics and correlations matrix
<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.796*** (0.780)</td>
<td>2.525** (0.786)</td>
<td>3.298*** (0.783)</td>
<td>3.411*** (0.782)</td>
<td>2.647** (0.770)</td>
<td>2.592*** (0.782)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.066 (0.148)</td>
<td>0.143 (0.152)</td>
<td>0.125 (0.149)</td>
<td>0.135 (0.148)</td>
<td>0.110 (0.149)</td>
<td>0.107 (0.150)</td>
</tr>
<tr>
<td>TA^a</td>
<td>-0.057*** (0.033)</td>
<td>-0.044 (0.033)</td>
<td>-0.041 (0.032)</td>
<td>-0.046 (0.032)</td>
<td>-0.033 (0.033)</td>
<td>-0.034 (0.033)</td>
</tr>
<tr>
<td>TDTA</td>
<td>-0.617* (0.283)</td>
<td>-0.601* (0.282)</td>
<td>-0.591* (0.279)</td>
<td>-0.540**** (0.279)</td>
<td>-0.585* (0.281)</td>
<td>-0.607* (0.283)</td>
</tr>
<tr>
<td>ROA</td>
<td>1.078** (0.319)</td>
<td>1.126*** (0.317)</td>
<td>1.168*** (0.317)</td>
<td>1.215*** (0.316)</td>
<td>1.142*** (0.318)</td>
<td>1.138*** (0.318)</td>
</tr>
<tr>
<td>CETS</td>
<td>1.322*** (0.760)</td>
<td>1.257*** (0.757)</td>
<td>1.141 (0.752)</td>
<td>1.214 (0.750)</td>
<td>1.273*** (0.754)</td>
<td>1.241 (0.759)</td>
</tr>
<tr>
<td>RDS</td>
<td>2.588*** (0.731)</td>
<td>2.668*** (0.729)</td>
<td>2.748*** (0.719)</td>
<td>2.754*** (0.717)</td>
<td>2.598*** (0.722)</td>
<td>2.611*** (0.725)</td>
</tr>
<tr>
<td>SAS</td>
<td>2.182*** (0.469)</td>
<td>2.102*** (0.468)</td>
<td>1.973*** (0.461)</td>
<td>0.740 (0.722)</td>
<td>2.193*** (0.460)</td>
<td>2.681*** (0.967)</td>
</tr>
<tr>
<td>DOMESTIC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSTS^b</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTER</td>
<td></td>
<td></td>
<td>-0.463* (0.200)</td>
<td>-0.429* (0.199)</td>
<td>-0.274 (0.180)</td>
<td>-0.277 (0.181)</td>
</tr>
<tr>
<td>INTERxSAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REGIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.052* (0.023)</td>
<td>-0.033 (0.040)</td>
</tr>
<tr>
<td>REGIONSxSAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.111 (0.195)</td>
<td></td>
</tr>
<tr>
<td>ENTROPY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTROPYxSAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSTS^c</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall R^2</td>
<td>0.399</td>
<td>0.400</td>
<td>0.427</td>
<td>0.416</td>
<td>0.421</td>
<td>0.419</td>
</tr>
<tr>
<td>Wald-Chi^2</td>
<td>111.83***</td>
<td>117.77***</td>
<td>128.07***</td>
<td>133.57***</td>
<td>122.55***</td>
<td>121.57***</td>
</tr>
</tbody>
</table>

Notes: N = 458; dependent variable: Tobin’s Q (TQ); standard errors are shown in the parentheses; logarithm; ^a logarithm; ^ including country of origin; ^ excluding country of origin; ****p < 0.10; *p < 0.05; **p < 0.01; ***p < 0.001

(continued)
<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 7</th>
<th>Model 8</th>
<th>Model 9</th>
<th>Model 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.751*** (0.763)</td>
<td>2.833*** (0.769)</td>
<td>2.681*** (0.763)</td>
<td>2.481** (0.772)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.130 (0.149)</td>
<td>0.138 (0.149)</td>
<td>0.064 (0.144)</td>
<td>0.125 (0.149)</td>
</tr>
<tr>
<td>TA*</td>
<td>-0.034 (0.033)</td>
<td>-0.033 (0.033)</td>
<td>-0.049 (0.032)</td>
<td>-0.041 (0.032)</td>
</tr>
<tr>
<td>TDTA</td>
<td>-0.603* (0.279)</td>
<td>-0.572* (0.282)</td>
<td>-0.601* (0.280)</td>
<td>-0.591* (0.279)</td>
</tr>
<tr>
<td>ROA</td>
<td>1.174*** (0.319)</td>
<td>1.181*** (0.319)</td>
<td>1.136*** (0.317)</td>
<td>1.165*** (0.317)</td>
</tr>
<tr>
<td>TDTA</td>
<td>1.222 (0.752)</td>
<td>1.272*** (0.754)</td>
<td>1.175 (0.753)</td>
<td>1.141 (0.752)</td>
</tr>
<tr>
<td>ROA</td>
<td>2.709*** (0.718)</td>
<td>2.686*** (0.720)</td>
<td>2.695*** (0.720)</td>
<td>2.748*** (0.719)</td>
</tr>
<tr>
<td>SAS</td>
<td>2.093*** (0.456)</td>
<td>1.492*** (0.787)</td>
<td>2.015*** (0.461)</td>
<td>1.973*** (0.461)</td>
</tr>
<tr>
<td>DOMESTIC</td>
<td>-0.374**** (0.196)</td>
<td>-0.370**** (0.196)</td>
<td></td>
<td>0.354**** (0.203)</td>
</tr>
<tr>
<td>RSTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INTER</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>INTERxSAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REGIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REGIONSxSAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTROPY</td>
<td>-0.355* (0.139)</td>
<td>-0.548* (0.249)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENTROPYxSAS</td>
<td></td>
<td></td>
<td>0.997 (1.057)</td>
<td></td>
</tr>
<tr>
<td>RSTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall R²</td>
<td>0.434</td>
<td>0.433</td>
<td>0.428</td>
<td>0.427</td>
</tr>
<tr>
<td>Wald-Chi²</td>
<td>125.84***</td>
<td>126.08***</td>
<td>124.95***</td>
<td>128.07***</td>
</tr>
</tbody>
</table>
Furthermore, as shown in model 1 FSAs related to marketing (SAS) had a significant positive effect on Tobin’s Q. In Model 2 we added intra-regional expansion strategy (RSTS). Note that RSTS in Model 2 includes subsidiaries from the specific home country. H1a suggested that higher degrees of intra-regional strategy are associated with higher performance outcomes. The results in Table II provide evidence of a positive ($\beta = 0.446$) and significant ($p < 0.05$) impact of RSTS on TQ. Additionally, Models 9 and 10 analyze the influence of an intra-regional expansion on performance based on measuring intra-regional expansion excluding subsidiaries from the home country. Whereas Model 9 does not control for the share of domestic subsidiaries to total subsidiaries, Model 10 accounts for this effect. Both models again provide a positive and significant impact of RSTS on TQ. Additionally, we find that implementing RSTS excluding subsidiaries from the home country (Model 9: overall $R^2 = 0.428$, Wald-Chi$^2 = 124.95$, $p < 0.001$; Model 10: overall $R^2 = 0.427$, Wald-Chi$^2 = 128.07$, $p < 0.001$) improves the model fit as compared to model 2 (overall $R^2 = 0.400$, Wald-Chi$^2 = 117.71$, $p < 0.001$). Hence, H1a is supported. Insofar our results for large European MNCs coincide with past and recent research which assumes a positive effect of intra-regional expansion on performance (Lee, 2013; Mohr et al., 2014; Qian et al., 2010)

In Models 3, 5 and 7, we test H1b taking consideration of different measurements for inter-regional strategy, respectively. In all equations, we observe an improvement in model fit compared to the basic model as indicated by the overall $R^2$ and Wald-Chi$^2$ value. The impact of inter-regional expansion strategy on performance is negative and significant in Model 3 (INTER: $\beta = -0.818$, $p < 0.01$), in Model 5 (REGIONS: $\beta = -0.052$, $p < 0.05$) and in Model 7 (INTER: $\beta = -0.355$, $p < 0.05$). Thus, for all our models we are able to support H1b. Finally, we add the interaction term of inter-regional strategy variable with FSAs related to marketing (SAS) to test H2 (Models 4, 6 and 8). In Model 4, the interaction effect is positive and significant ($\beta = 4.313$, $p < 0.05$). Simultaneously, the direct effect of SAS is not significant anymore and the inter-regional expansion variable (INTER) remains significantly negative. Hence, H2 is supported. To understand how the joint effects differ depending on the degree of inter-regional expansion, we built simple slopes (Figure 1) for the regression for high (one standard deviation over the mean), medium (mean) and low (one standard deviation under the mean) degrees of inter-regional strategy (INTER). All

![Figure 1. Interplay between Tobin’s Q, inter-regional strategy and marketing-related FSAs](image-url)

**Notes:** $\beta$ = Simple slope; one-tailed significance: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; t-statistics in parentheses
presented simple slopes in Figure 1 are highly significant ($p < 0.001$) and positive at low, medium and high degrees of inter-regional strategy. The figure also shows that for companies spending very large amounts on marketing-related FSAs, high degrees of inter-regional expansion strategy seem to be most beneficial ($\beta = 2.604$) as compared to medium degrees of inter-regional expansion strategy ($\beta = 2.180$) and as compared to low degrees of inter-regional expansion strategy ($\beta = 1.758$).

6. Conclusions

Does the geographic scope of multinational operations matter? Are companies which focus on their home region better off than companies which move beyond the borders of their home region? Our empirical results confirm Rugman’s argument that liabilities of intra-regional foreignness tend to be smaller than inter-regional liabilities of foreignness. According to our findings, an intra-regional strategy leads to value increases whereas an inter-regional strategy implies a valuation discount. An intra-regional strategy, which concentrates on business activities in the home region, leads to decreasing transaction costs and consequently higher performance outcomes. Firms which pursue an inter-regional strategy are faced with higher degrees of uncertainty and complexity which lead to higher coordination costs. These results are in line with the results found in previous studies and highlight the fact that regional expansion tends to be preferable compared to activities beyond the home region (Mohr et al., 2014; Qian et al., 2010; Ruigrok et al., 2013; Sukpanich and Rugman, 2007).

Managers who plan to expand beyond the borders of their home country have to be aware of the associated challenges and the corresponding impact of internationalization on their firm’s performance. In general, expanding firms should carefully assess the costs of an inter-regional strategy, which tend to be much higher in comparison to an intra-regional strategy. Insofar, decision makers should conduct a diligent cost-benefit analysis with regard to their internationalization strategy.

Moreover, our results underline the positive performance effect of FSAs. Past studies explicitly attribute a location bound character to FSAs in the field of marketing. Contrary to conventional theoretical argumentation, we find that FSAs related to marketing can overcome their regional boundedness. We provide evidence that the geographic scope of international expansion positively moderates the relationship between FSAs related to marketing and performance.

Large firms which are in charge of strong FSAs related to marketing are able to exploit these FSAs globally and to realize economies of scale and scope. As a consequence, in the case of large companies the negative valuation impact of an inter-regional strategy may be attenuated or even overcome through the interplay of inter-regional internationalization and firm-specific assets related to marketing. At least for these firms, investments in FSAs related to marketing seem to be worth the effort. These FSAs lead to valuation increases even if a firm expands beyond the home region. In particular, the higher the degree of inter-regional expansion, the more pronounced is the effect of firm-specific assets related to marketing on performance.

Nevertheless, we have to consider certain limitations with regard to our study. We investigated a sample of large European firms. It remains an open question if and to what extent our findings can be transferred to companies from other regions or other industry sectors.

FSAs and their degree of location boundedness seem to be crucial for our understanding of the M–P relationship. Our study provides evidence of a positive effect of inter-regional strategy on firm performance if FSAs related to marketing are strong. However, our proxy for FSAs related to marketing is a quite rough estimate. To generate more sophisticated results, more precise measures should be worked out and employed for large samples of companies.
Notes

1. In this paper the terms “firm-specific advantages”, “firm’s intangible assets/resources”, or “firm’s specific assets” refer to the same concept. According to Rugman, firm-specific advantages represent a “unique capability proprietary to the organization” (Rugman, 2005: p. 34). Such assets usually include brand, know-how, innovative products, technology, managerial and/or marketing capabilities etc. The IB-literature often distinguishes between downstream such as marketing or upstream such as production business activities.

2. A company’s home region can be defined as a closed geographic area with a “grouping of countries with physical continuity and proximity” (Arregle et al., 2009, p. 8).

3. These disadvantages, however, can be mitigated by firms’ international experience gained on international markets to adapt more efficiently to a new and heterogeneous environment (Contractor et al., 2003).

4. This effect should be expected if a company’s incentive system for managers and/or corporate governance system are not sufficiently effective.

5. Although the concept of location-bound and non-location-bound FSAs was predominantly developed at the home-country level the extension beyond national frontiers to a specific geographic region seems to be appropriate in the recent regionalization debate.

6. The selection was based on firms’ revenues as reported in the financial statements. The completed list of included companies is available on request.

7. We divided the distribution of foreign subsidiaries into seven regions: Europe including country of origin, Europe excluding country of origin, North America, South America, Asia, Australia and Oceania, Africa.

8. I.e. Europe, North America, South America, Asia, Australia and Oceania, Africa.

9. Country dummies are not in the focus of this study; thus, they are not reported in the tables.

10. The unbalanced panel data is a result of the editing steps while sampling.

References


Further reading


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