

**Strategic complexity and global expansion: An empirical study of newcomer
Multinational Corporations from small economies**

Abstract

In this paper we argue that Multinational Corporations (MNCs) pursue complex global integration strategies (CGIS) through the network of their overseas units. Using a sample of 1089 foreign units (for the year 2008), we explore the determinants of CGIS of Icelandic, Irish and Israeli MNCs. We distinguish four different types of CGIS, namely, horizontal, vertical and lateral integration as well as risk diversification. For this reason, we constructed a categorical variable by comparing the main four-digit industrial classification of each foreign unit in the sample with that of its ultimate parent. In order to investigate the determinants of CGIS, we employed a multinomial logistic regression approach where the probability of a firm having a particular strategy for investing is modelled to be a function of firm-specific and location-specific variables. Our results confirmed the differentiating effect of firm and location variables on each strategic choice stress the determining role of the network of overseas production units in the pursuit of global competitiveness.

Keywords: MNCs, Complex Global Integration Strategies, Iceland, Ireland, Israel

1. Introduction

Recent data (UNCTAD, 2008) indicate that small open economies, such as Estonia, Ireland, Iceland, Bahrain, emerge as dynamic newcomer generators of outward foreign direct investment (OFDI) alongside with other mature small economies including Singapore, Norway, Austria, Denmark, etc.. In the literature it exists considerable evidence that there are certain common characteristics of small open economies (Bellak & Cantwell, 1998; Dunning & Narula, 1996; Freeman & Lundvall, 1988; Van Hoesel & Narula, 1999; Van Den Bulcke & Verbeke, 2001) that cause their firms to be more globalized than firms from larger countries (Narula & Dunning, 2000; Buckley and Ghauri, 2004). Firms from these countries tend to be competitive in a few niche sectors, as small countries tend to have limited resources and prefer to engage in activities in a few targeted sectors, rather than spreading resources thinly across several industries (Benito et al., 2002). The limited domestic market size means that, if such firms are to achieve economies of scale in production, they must seek additional markets to that of their home location in order to increase their market size (Bellak & Cantwell, 1998; Narula, 1996; Walsh, 1988). Firms from small countries have also access to fewer kinds of created location advantages at home. That is, the infrastructure and national business systems tend to be focused on fewer industrial sectors. However, as firms need to maintain competencies in several areas, as products become increasingly multi-technological in nature (Granstrand, Patel, & Pavitt, 1997; Krugman, 1998) thus Multinational Corporations (MNCs) from small economies tend to be more extrovert in order to capitalise on investing opportunities outside their home market. Amongst more mature developed small economies, Switzerland and the Netherlands have for many decades had firms with overseas sales representing a vast proportion of their total operations (e.g. Nestle, Roche Group and Philips).

At the same time the investment choices of many MNCs today are by far more complex. Grossman & Hart (1986) conclude that MNCs can pursue more complicated international integration strategies that are determined by factors such as transport costs, productivity and the relative size of the host market. Delios, Xu, & Beamish (2008) emphasize the importance of the network of subsidiaries in product diversification and highlight the importance of the characteristics of host-country markets as well as the corporate strategy in understanding the extent and direction of product diversification. Thus, the determination of strategic choices of MNCs depends both on internal- firm level as well

as external environment, i.e. location, factors (Dunning, 1993; Markusen & Maskus, 2001; Narula & Dunning, 2000).

In this context the main purpose of this paper is to investigate the location and firm determinants of the global expansion strategies of newcomer MNCs from recently emerging as outward foreign direct investors small open economies. For this purpose the paper focuses on Iceland, Ireland and Israel. All three countries are small open economies, they are considered as developed economies, they are ranked among the top 20 outward investors for the years 2006 and 2007 (UNCTAD, 2008) and their MNCs are emerging as dynamic competitors in the international investment scene with a diversified geographical and product portfolio. Our contribution to the literature is as follows: a) we extend the existing literature on outward FDI by bringing new evidence on the expansion strategies of newcomer MNCs from small open economies; b) we are able to quantify our research and thus differentiate between different expansion strategies; and c) we consider an extended number of firm and location determinants of MNCs' expansion strategies.

The rest of the paper is organized as follows: in the next section we review the relevant theoretical and empirical literature, and develop our hypotheses; we then proceed with the discussion of the data and methodology followed by the reporting and discussing of the econometric results. Finally, we conclude.

2. Theoretical background and hypotheses

Traditionally there are two main, distinct motives for companies to invest in foreign countries i.e. to serve a local market and to access lower-cost inputs. The desire to better serve a local market is often referred to as horizontal FDI (Dunning, 2003; Grossman, Helpman, & Szeidl, 2003). It typically involves the duplication in foreign locations of the activities of the firm in the home market in order to supply foreign customers better. Horizontal FDI arises as a substitute for exporting and from a desire to place production close to customers and thereby avoid trade costs, being both transportation costs and trade barriers. This may be particularly appealing to a company when its home market is small and/or saturated and there are barriers to exporting.

Accessing lower-cost inputs or resource seeking is another motivation for FDI (Dunning, 1993). This form of foreign investment is often labelled as vertical FDI, since it involves breaking up the vertical chain of production and relocating part of the firms' activities in a lower-cost location. Firms with labour-intensive operations, but based in advanced high-cost countries, may establish operations in lower-wage countries to cut costs

(Braconier, Norback, & Urba, 2005; Dunning, 2003; Grossman & Hart, 1986; Markusen, 1995).¹

Markusen and Maskus (2001) note that the choice between vertical and horizontal production structures basically depends on country characteristics. Relative size and relative endowment differences and trade and investment costs, respectively, can determine the choice of foreign strategic expansion. It is well known that the distinctions between horizontal and vertical FDI can become a little fuzzy sometimes because overseas investments may serve more than just one purpose, for example, to lower costs and improve sales in a foreign market or even for some other purpose, or because firms may also invest overseas to acquire new technologies perceived as being important for future competitive success. Yet another important aspect that can explain the pursuit of complex investment strategies is inspired by the transaction cost literature. This is the case for lateral integration. Associated with efficiency-seeking motives, it can be said that lateral integration is affected by the organizational infrastructure and the strategic capabilities of a firm which would pursue through its network of affiliates (Grossman & Hart, 1986; Dunning, 1993; Luo, 2002). A distinct variant of lateral integration is the pursuit of new competences in the form of new knowledge in other markets (Hashai & Almor, 2008). Furthermore, the literature also acknowledges that MNCs can enhance their pool of capabilities through foreign operations (Buckley & Casson, 1981; Dunning, 1979, 1988, 1993) as it has been assumed for a long time that the network of overseas subsidiaries play a distinctive role in generating new capabilities within the firm (Birkinshaw & Hood, 1998; Birkinshaw, Hood, & Jonsson, 1998; Lipparini & Fratocchi, 1999). It could be then argued that firms want to spread the risk, or risk diversify, through the global exploitation of unique assets as yet another reason to invest abroad (Hymer, 1976; Cantwell, 1989, 1991; and Pearce, 1999). This is the case of risk diversification strategies (Bettis & Hall, 1982; Wan, 2005).

In this paper, we support that emerging MNCs from small economies pursue complex global integration strategies (CGIS) beyond the combination of horizontal and vertical strategies (Yeaple, 2003), which also include lateral integration as well as risk-diversification strategies through the network of their overseas foreign units.

¹ Vertical FDI and horizontal FDI have been tested in a number of empirical papers, including those by Brainard & Riker (1997), Carr, Markusen, & Maskus (2001) and Yeaple (2003).

Following Palepu (1985) in order to identify the four types of CGIS, we relate the industrial specialization of the overseas unit with that of its ultimate parent (see Table 1) by using the four-digit SIC classification for each overseas unit and that of its ultimate parent in order to differentiate more accurately between the production profiles of overseas units and at the same time to be able to consolidate observations with common characteristics, i.e., group overseas units with common production profiles (Liu, 2008; Haskel, Pereira, & Slaughter, 2007²). Based on this, the strategy is deemed to be *horizontal integration* if the overseas unit operates in the same 4-digit SIC industry as its parent. *Vertical integration* captures overseas foreign units specializing in natural resource industries (independently of the core 2-digit SIC industry of the parent), whilst *lateral integration* captures foreign units whose 4-digit SIC industry corresponds to different stages of the value chain, forward or backward compared to the 4-digit SIC the primary industry parent is operating (Hanson, Mataloni, & Slaughter, 2005)³. Finally, we identified a fourth strategy, namely, *diversification*, if the overseas unit and its parent operate in unrelated industries, i.e., overseas units and the parent are specialized in different 2-digit SIC industries (see Hobdari et al., 2010).

***Table 1 approximately here ***

Indicatively and based on the above categorization, the Icelandic MNC Actavis has 28 units abroad, 11 of which reflect the horizontal integration strategy, in four cases lateral integration, and in 13 cases the company was diversifying risk. In Ireland, Experian Group Ltd has 19 overseas production operations, 12 of which were integrated horizontally and seven were for diversification. Finally, in Israel, the RAD Group reports 10 units abroad. Four of them are involved in horizontal integration strategies, four in lateral integration, and two in diversification.

The presence of different strategic motivation at the overseas unit level may then reflect either firm -level organisational factors of the parent MNC group or location factors of the host economy. These then in turn provide us with testable hypothesis which are analysed below.

² As Doukas and Kan (2008) state that both 2, 3 and 4-digit SIC levels have been used, and they argue in favor of the application of 2-digit SIC levels in order to show industry relatedness within diversified firms and thus to distinguish between core and non-core business segments.

³ See Kahle & Walking (1996) for arguments for and against the use of different SIC digit levels as well as the potential problems creating to empirical research.

Firm- level organisational factors

Several studies emphasize entry into foreign markets as a means of diversifying the business portfolio of firms (Doukas & Kan, 2008). Thus, the mode of entry into a foreign market can vary depending on the share of ownership (Anderson & Gatignon, 1986; Chen, 2008). A key underlying factor is the need for the MNCs to secure and also to develop proprietary capabilities through their overseas units. In this context, when the foreign unit is pursuing a strategy that is driven by the requirement of unique resources, the more likely it would be for the MNC to secure a high ownership control (Berry & Sakakibara, 2006). We thus formulate hypothesis one as follows:

H1: The higher the ownership and thus the more demanding the strategy in deploying and developing resources, the higher the probability for the foreign unit to be engaged in diversification strategies.

The hierarchy within the MNC also plays a significant role in the chosen investment strategies. As it has been stated in the international management literature, corporate business and functional strategies are not hierarchical necessarily. They are contemporaneous and interactive. Instead of a hierarchy of strategies, we should also think in terms of a heterarchy of strategies (Hedlund, 1986). In a hierarchy, every strategic decision-making node is connected to at most one parent node. In a heterarchy, however, a node can be connected to any of its surrounding nodes without needing to go through or obtain *permission* from some other node (Chakravarthy & Henderson, 2007). In a heterarchical MNC we will find more independent foreign units which will pursue strategies that end up in developing products and services adding to the existing trajectory of the MNC. These types of foreign production units have been labelled in the relevant literature as *strategic leaders* (Bartlett & Ghoshal, 1986). We thus formulate hypothesis two as follows:

H2: The less likely for the foreign unit to report directly to the ultimate parent, the more it pursues diversification strategies.

Since Hymer (1976) and Horst (1972), firm-level empirical studies have identified a firm's size as a key determinant of its propensity to undertake FDI. Blomström & Lipsey (1991), Swedenborg (1979), and Trevino & Daniels (1994) have found that firm size (as well as R&D expenditures, export intensities, and previous investment experience) contributes to

increased FDI likelihood. As sales reflect also the performance of the firm, we would expect that higher sales represent riskier strategic choices. In this light we formulate hypothesis three as follows:

H3: The higher number of sales, the higher the probability for the foreign unit to pursue diversification strategies.

An important component of the OFDI strategy is the age of the parent company, which is expected to represent the importance of accumulated experience on integration decisions. More experienced firms are expected to have the managerial capacity to integrate their activities (Chandler, 1990; Rumelt, 1974), so they could follow much more complicated integration strategies than firms that have less experience. Various studies support the positive relationship between firm age and the degree of internationalization (Kotha, Rindova, & Rothaermel, 2001). In this context parents' age can be explained through the literature on the "liability of foreignness" as experienced parents equip their foreign units with the necessary management skills to overcome the adversities of a new business environment (Zaheer, 1995; Peng, 2001; Luo 2000). We thus formulate hypothesis four as follows:

H4: The more experienced the parent company is, the more likely for the foreign unit to pursue lateral integration and/or diversification strategies.

The MNC international network experience is expected to affect the investment strategy of its overseas operating units. For instance, Feinberg & Keane (2006) conducted a study on U.S. multinationals with affiliates in Canada and showed that 69% of the companies in the study adopted complex integration strategies. Foreign operations are often seen as a means to assimilate new capabilities from their local, external network and integrate these capabilities into the multinational corporation (Schmid & Schurig, 2003). Further to this argument, Rugman & Verbeke (2004) argue that short-term strategies seem to be negatively affected by wide geographical operations, as these would put a constraint on resources availability. We consequently expect that larger MNC groups, with a diversified network of foreign operations or with international experience, will tend to pursue more complex integration strategies and have a longer-term perspective than MNCs with a limited foreign presence (Elang, 2009). Thus we formulate hypothesis five as follows:

H5: The higher the number of overseas units of the MNC group, the higher the probability for the subsidiary to engage in lateral and/or diversification strategies.

The literature on small countries shows that a handful of MNCs are responsible for the majority of OFDI. For instance, information from FORFAS (2006) on Ireland states that 10–15 companies were responsible for the majority of OFDI. According to Bellak (1996), the leading 20 manufacturing Austrian MNCs comprised of almost 75% of total employment in overseas subsidiaries in 1989 (through a network of 669 subsidiaries) and that their investment in 1990 represented 40% of the total Austrian OFDI. Similarly, Oxelheim & Gartner (1996) showed that the top 10–15 MNCs from Finland, Sweden, Denmark and Norway, respectively, were the main engines of growth for the Scandinavian economies. Recent data, i.e. 2008 and 2009, on the leading Israeli MNCs confirm that the top 15% MNCs accounted for almost 20% of Israel's outward FDI stock (VCC – Columbia, 2009). Building on Pfaffermayr & Bellak (2000) and Eden, Levitas & Martinez (1997) it is then argued that larger MNCs would also have the capability to operate in international value chains (Porter, 1990), thus “inducing further gains from specialization of affiliates vis-à-vis smaller non-fragmented firms” (Pfaffermayr & Bellak, 2000, p.11). Thus, we formulate hypothesis six as follows:

H6: Leading MNCs' foreign production units would be more likely to be engaged in lateral integration and/or diversification strategies.

Host –country location factors

Market potential or size (Agarwal & Ramaswami, 1992; Brouthers & Brouthers, 2000), political and legal environments (Delios & Beamish, 1999; Gomes-Casseres, 1989), and production and transportation costs (Root, 1994) have been emphasized as major factors that an MNC should consider before selecting target countries. Recently, international locations have gained additional strategic importance as sources of new learning, of knowledge creation, and of new or enhanced competitiveness (Buckley & Casson, 1976; Dunning, 1998; Dunning & Lundan, 1998; Frost & Zhou, 2000; Makino, Lau, & Yeh, 2002; Porter & Sölvell, 1998).

Thus, location-specific advantages are also important determinants of MNC expansion strategies (Dunning, 1993; Markusen & Maskus, 2001).

A larger host market makes the realization of economies of scale in production more feasible and thus favours FDI servicing rather than export (Venables, 1999; Vernon, 1966). Various studies use GDP as a core determinant of an MNC's decision to invest, with the underlying hypothesis of a positive sign (Barrell & Pain, 1996; Braunerhjelm & Svenson, 1996; Culem, 1988; Veugelers, 1991; Wheeler & Mody, 1992). We thus formulate hypothesis seven as follows:

H7: The larger the host market, the more likely for the foreign unit to pursue horizontal strategies.

The institutional development and the “market- friendliness” of the host economy should have a positive effect on OFDI (Wei, 1997). Furthermore, an open trade regime facilitates OFDI and encourages MNCs to follow location strategies based on various types of efficiency considerations. Assuming that trade is a sign of country competitiveness and value-chain based OFDI (Porter, 1990; Amiti & Wakelin, 2001), we would expect that foreign units operating in such an environment will be part of FDI stimulating trade activities (Bevan & Estrin, 2004) creating a virtuous growth cycle for the host economy (Markusen, 1997). Therefore, we formulate hypothesis eight as follows:

H8: The more market-friendly and the more open to trade the host country is, the more likely for the foreign unit to be engaged in vertical, lateral and diversification strategies.

Another aspect of the host country's institutional development is its national innovation system, namely, the ability of the host country to generate new knowledge. Similarly, we assume that a country committed to R&D would attract FDI associated with knowledge and technology sourcing. We build on Syrneonidis (1996), who distinguishes between “innovative input” and “innovative output”, and Neven & Siotis (1996), who use R&D intensity ratio at a host-country level as an indicator for attracting knowledge-based FDI. Filippaios & Papanastassiou (2008) used patents as an indicator of innovative output . Therefore, we formulated hypothesis nine as follows:

H9: The higher the share of R&D expenditures and the higher the number of patents granted in the host country, the more likely the foreign unit to be engaged in lateral and/or diversification strategies.

Finally, labour cost is a major component of the cost of production, and thus is frequently tested in the literature. However, there are no uniform empirical conclusions for the effect of labour cost on investment incentives. While some studies have shown no significant role for labour costs, others have shown a positive relationship between labour costs and FDI. The latter result is often attributed to the level of labour productivity or the quality of human capital that may be reflected in the wage variables (Bevan & Estrin, 2004; Egger & Stehrer, 2003; Holland & Pain, 1998; Weise, et al., 2001). We then formulate hypothesis ten as follows:

H10: The higher the labour costs in the host country, the less likely for the foreign unit to be engaged in vertical and lateral integration strategies.

3. Data and Methodology

Data Description

Our data cover a sample of 1089 overseas operating units,⁴ of which 187 are Icelandic, 444 are Irish, and 458 are Israeli. These data are obtained from the Spring 2008 edition of the LexisNexis Corporate Affiliations Plus Directory, which contains detailed information on the firm-level variables used in our analysis. Companies listed in the Directory usually report revenues in excess of \$10 million and employment larger than 300 persons.

***Table 2 approximately here ***

The geographical distribution reveals that there are 57 host countries in which Icelandic, Irish and Israeli firms have established operations. Among them, Icelandic, Irish and Israeli firms have the highest number of foreign units in the USA and the UK. If, however, the focus is set on the geographical distribution by major regions of these units (see Table 2), we would observe that, instead of being globally distributed, there is a strong regional dimension, with almost an equal number of units being directed to Europe and North America. This evidence supports Rugman & Verbeke (2007) who argue in favour of strong

⁴ We use the terms overseas production units or operations in order to avoid confusion with the term subsidiary, which in this paper is used a proxy for the legal status of the overseas unit.

regionalisation holding among MNCs from Europe or smaller NAFTA countries such as Canada. The second distant destination is Asia Pacific, hosting 70 units, followed by South America. In contrast, Africa and the Middle East host very few operations from the three countries.

***Table 3 approximately here ***

Table 3 looks at the CGIS by country of origin and geographical distribution. It can be seen that Irish firms are mainly investing in North America and Europe, and that their expansion strategy is mostly lateral integration in Europe and diversification in North America. Icelandic firms have mainly focused on Europe as their host region for OFDI and their dominant expansion strategy is horizontal integration and diversification. Israeli firms have invested mainly in North America, through horizontal integration and diversification, whilst lateral integration is the dominant strategy of expansion in Europe.

***Table 4 approximately here ***

Table 4 shows the distribution of overseas units across sectors. Across all three origin countries, their overseas units are concentrated in the manufacturing and finance, insurance, and real estate industries with no or very few investments in agriculture or in mining and construction.

Methodology and econometric specification

As the aim of this paper is to analyse the CGIS of MNCs from small countries, we have constructed a categorical variable by comparing the four-digit SIC industrial classification of each overseas unit in the sample with that of its ultimate parent. The SIC classification is a well-established measure in the wider management and economics literature (see Lenox, Rockart & Lewin 2010; Feenstra & Hanson, 1996; Palepu, 1985). The main source of SIC classification in this paper is LexisNexis. As most of the foreign units had multiple industrial profiles, i.e., more than one 4-digit SIC industrial classification, the data and business description of each unit with cross-verification of the industrial classification of the parent and overseas units by consulting also other major databases such as ORBIS of BureauVan Dijk. This allowed us to distinguish the primary 4-digit SIC classification of the foreign unit and to benchmark it against the primary 4-digit industry specialisation of the parent. In the empirical analysis, we thus investigate the determinants of CGIS, employing a multinomial logistic regression approach where the probability of a firm having a particular strategy for investing is modelled as a function of firm-specific and location-specific

variables. This model is appropriate as it is used to model relationships between a multiple response variable and a set of regressors (Greene, 2003; Wooldridge, 2002). The specification that we estimate then is the following:

$$Y_{ij} = \alpha_0 + \beta_{ij} * X_{ij} + \delta_c * Z_c + u_{ij} \quad (1)$$

where X_{ij} is a vector of variables for firm i in industry j , Z_c is a vector of host-country-specific variables, and u_{ij} is the error term. The dependent variable, Y_{ij} , is the categorical investment strategy variable for firm i in industry j , where the investment strategy is divided into the following categories:

1 = horizontal integration; 2 = vertical integration; 3 = lateral integration; 4 = diversification.

Then the probabilities estimated in the multinomial logistic model are:

$$\Pr ob(Y_{ij} = k | X_{ij}, Z_c) = \frac{e^{\beta_{ij} * X_{ij} + \delta_c * Z_c}}{1 + \sum_{k=1}^4 e^{\beta_{ij} * X_{ij} + \delta_c * Z_c}}, \text{ for } k(\text{category}) = 2, 3, 4 \quad (2)$$

For the base category, $k = 1$, the probability estimated is:

$$\Pr ob(Y_{ij} = 1) = \frac{1}{1 + \sum_{k=2}^4 e^{\beta_{ij} * X_{ij} + \delta_c * Z_c}} \quad (3)$$

Definitions of variables

With regards to the independent variables, vector X_{ij} includes the following firm-specific variables:

According to the definitions provided by the Corporate Affiliations Directory with regards to ownership share of the parent into the foreign unit, *subsidiary* indicates majority ownership (more than 50%), *affiliate* indicates ownership less than 50%, and *joint venture* indicates a share of ownership. *Ownership control* of establishing an affiliate, subsidiary, or joint venture is captured by their respective dummies. For instance, a dummy equals 1 if the firm is an affiliate and zero otherwise. We construct dummies similarly for the subsidiaries and joint ventures.

The *MNC hierarchy* identifies the reporting node of foreign units within their MNC group, with 1 being the value of the node of the ultimate parent. Foreign units reporting to higher value nodes suggest that they have different immediate reporting parent companies.

Firm size is measured by sales at the MNC group level.

Parent age controls for possible effects of firm age and accumulated experience on integration decisions. It is constructed as the difference between 2008 (the year to which the data belong) and the year of establishment of the MNC parent.

MNC international network experience is measured as the number of overseas units each parent company has reported in a given year. It is included in order to capture how the MNC's international network experience affects the investment strategy of its overseas operating units.

Top tier MNCs international network is a dummy variable for the top five parents with the highest number of foreign units.

In turn, vector Z_c includes the following location-specific variables:

Gross domestic product (GDP in constant prices) is included to account for the market size of the host country.

Trade openness is measured by two alternative measures, namely, merchandise trade as a percentage of GDP and ores and metals exports as a percentage of total exports.

R&D expenditures as a percentage of the GDP of the host country and *the number of patents granted* by the host country is included in order to capture the capability of the host country to generate new knowledge. Thus, we employ two technology- and knowledge-related variables.

Labour cost is measured as constant hourly labour cost, included to account for the cost of production.

The *Economic Freedom Index (EFI)* serves as an indicator of the institutional and political stability of the host country and thus market friendliness. The index ranks annually more than 150 countries (with lower scores standing for less free countries) and takes into account 10 factors of “economic freedom” of the host economy.⁵

Control Variables: include country dummies and parents' industry affiliation dummies.

4. Results and discussion

It is customary in the literature to report the estimates of multinomial regression analysis as relative likelihood or odds ratios⁶. The coefficients are then interpreted as changes

⁵ Such factors include trade policy, taxation, government intervention in the economy, monetary policy, foreign investment, banking, wage and price controls, property rights, regulation, and black market activity.

⁶ The maximum likelihood estimates are obtained using Stata 10.

in the relative likelihood of the respective category over the base category. While important in understanding the determinants of firm motivations behind decisions to invest, relative likelihood ratios are not directly interpretable in terms of incremental impacts on probabilities of respective motives. This is done through the calculation of marginal effects or elasticities, reported in Table 7 for all the strategic categories (see Tables 5 and 6 on correlation and VIF tests respectively).

Tables 5, 6 and 7 approximately here

In order to account for country-specific effects, we have included in the regression the interactions of country dummies for Iceland and Israel with all the independent variables. Consequently, the variables without interactions indicate the respective marginal effects for Ireland. We estimate different versions of our equations by experimenting with the variables included in the specifications. For instance, we run regressions with GDP per capita or GDP growth. Standard model selection criteria, such as individual coefficients' significance, the pseudo R², Akaike Information Criteria, and Schwartz Information Criteria, were then used to discriminate among models. The results presented are those for the best performing model. Overall, the results of Table 7 provide evidence that both firm-specific and location-specific factors are important in the determination of the strategy when investing.

Focusing on firm-specific variables, results on ownership confirm H1 and underline the importance of ownership control when it comes to risk-diversifying strategies, with subsidiaries and affiliates being a more preferred form of controlling foreign assets. These results also seem to be consistent across countries. Results on hierarchy support H2 for diversification strategies; however, we also find a positive statistically significant result for vertical integration strategies suggesting a flatter organization form.

Results on firm size confirm H3. Thus, larger firms tend to become involved in strategies seeking new knowledge through involvement in new sectors whilst smaller firms tend to follow market-seeking strategies capitalizing on an established portfolio of products with a less fragmented structure (via horizontal integration). Results also provide evidence to the importance of parent age in a chosen integration strategy. In particular, they support H4, and show that experienced firms are more likely to choose a risk-diversifying strategy compared with newly established corporations, which are more likely to choose a market-seeking strategy in the form of horizontal integration. Results on the MNC international network experience partially confirm H5, as they show a statistically positive relationship

with diversification strategies. At the same time we see that MNC network experience is positively associated with horizontal integration, suggesting a hybrid nature of MNCs from small economies in the sense that they operate both on fragment value chain operations and on non-fragmented value chain operations (Pfaffermayr & Bellak, 2000). In regards to the top-tier MNCs' international network, as in the case of H5, results partially confirm H6, and they show that very large MNCs from small countries are usually more likely to be involved in both horizontal integration and in diversification. Focusing on country differences, we see that the number of foreign units for the top five parents significantly increases the likelihood of an Icelandic firm to engage in horizontal integration (0.076, $p < 0.047$) and diversification strategies (0.018, $p < 0.021$), whereas it significantly increases the likelihood of Israeli firm to engage only in horizontal integration (0.017, $p < 0.0058$).

Results on the size of the host-country market, captured by GDP, support H7. In particular, we find a statistically significant positive relationship with horizontal integration suggesting that capturing a foreign market, probably larger than the home country with an existing array of products and services, characterizes a serious strategic option for MNCs coming from small countries. Hypothesis 8 (H8) is tested with , the economic freedom index (EFI) and trade openness. The coefficient for the EFI is negative and significant for horizontal integration suggesting that that the less liberal the business environment the higher the likelihood to attract horizontal types of foreign operations underlying a distorting import substituting effect on FDI. In contrast, the positive coefficient for vertical integration supports H8 and suggests ease of controls and liberalization in sensitive sectors such as primary resources in advanced economies reflects the increased pressures of competitiveness that lead countries and firms to work closer together. With regards to measures of trade openness trade openness measured by trade in ores and metals is positively related to lateral integration, suggesting that, when investment is directed to resource-rich but also economically advanced countries, further processing could be necessary before exporting takes place.

Hypothesis 9 (H9) is tested with. R&D expenditure and the number of patents granted. With regards to R&D expenditures results confirm H9 and the statistically significant positive result on horizontal integration shows that these operations are of a dynamic nature, reflecting the fact that even horizontal types of operations face serious competitive pressures that push firms to look constantly for new sources of ideas and knowledge (Criscuolo & Martin, 2004; Griffith, 1999; Griffith & Simpson, 2001; (Almor &

Hashai, 2004) In contrast, results on patents do not support H9, as they are proven statistically insignificant.

Results on labour costs suggest that higher labour costs are detrimental to the strategy chosen, with labour costs having a negative impact on the probabilities of horizontal integration, vertical integration, and diversification supporting H10.

Finally, looking at the results for the control variables, we see that Israeli manufacturing firms are more likely to engage in horizontal integration (0.018, $p < 0.031$), vertical integration (0.037, $p < 0.061$), and diversification (0.012, $p < 0.017$), while Icelandic manufacturing firms are likely to engage mainly in horizontal integration (0.003, $p < 0.067$) and diversification (0.013, $p < 0.019$).

5. Conclusions

In this paper we argued that MNCs pursue complex global integration strategies (CGIS) through the network of their overseas units. Using a sample of 1089 foreign units (for the year 2008), of which 187 are Icelandic, 444 are Irish, and 458 are Israeli, we explored the determinants of their CGIS. We distinguished four different types of CGIS, namely, horizontal, vertical and lateral integration as well as risk diversification. For this reason, we constructed a categorical variable by comparing the main four-digit industrial classification of each foreign unit in the sample with that of its ultimate parent. In our empirical work, in order to investigate the determinants of CGIS, we employed a multinomial logistic regression approach where the probability of a firm having a particular strategy for investing is modelled to be a function of firm-specific and location-specific variables. Our empirical results confirmed the differentiating effect of firm and location variables on each strategic choice. For instance, mature and experienced MNCs tend to expand via their network of overseas units in order to pursue risk-diversification strategies, whilst newly established MNCs tend to prefer horizontal integration. Similarly, we saw that certain location factors, such as the Economic Freedom Index, tend to favour vertical integration and not horizontal integration. In addition, we saw that the three countries exhibit different investment patterns, which nevertheless are commonly characterized by the adoption of a complex global strategy plan that involves the adoption of more than one strategic option. Although this diversified organizational structure would not come as a surprise for MNCs coming from mature investing home countries such the U.S. or Japan, it appears that global competitive forces and pressures are the main drivers for such a strategic decision for MNCs coming from relatively

newcomer investing countries. In all cases, the network of overseas operations is the key implementer of such strategies and thus plays a crucial role in the sustainable competitiveness of small country MNCs. In this context future research should take into account the multiple specialization profile of overseas production units, look deeper into the similarities and differences between small and larger countries' MNCs in a dynamic context, and thus understand the complex integration structures developing and evolving within MNC groups which apparently drive us away from simplistic dualities in the understanding of the MNC organization structure and strategic choices.

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Appendix:

Definition of variables

Variable	Definition
Strategy	A categorical variable defined as follows: 1 – horizontal strategy, 2 – vertical integration, 3 – lateral integration, 4 – Risk Diversification motive. Constructed by comparing the 4-digit SIC industrial classification code of the relevant company and that of its ultimate parent. Source: Lexis Nexis Corporate Affiliations Directory, Spring 2008.
Type	Classifies companies by their legal relationship to their parent as affiliates, branches, divisions, joint ventures, operations, group insurers, plants, subsidiaries or units. 3 dummy variables were constructed as follows: 1 if the company is a subsidiary and zero otherwise, 1 if the company is a joint venture and zero otherwise, and 1 if the company is any other form than subsidiary and joint venture and zero otherwise. Source: Lexis Nexis Corporate Affiliations Directory, Spring 2008.
Sales range	An interval measure of yearly company sales as follows: 1) Up to 100 million USD in sales 2) between 100 and 500 million USD in sales 3) between 500 million and 1 billion USD in sales 4) between 1 and 1.5 billion USD in sales and 5) over 1.5 billion USD in sales. Source: Lexis Nexis Corporate Affiliations Directory, Spring 2008.
Hierarchy	Classifies companies by the reporting hierarchy within the multinational. Source: Lexis Nexis Corporate Affiliations Directory, Spring 2008.
Merchandise trade	Measured as percentage of GDP. Obtained from World Development Indicators.
Ore and metal exports	Measured as percentage of merchandise exports. Obtained from World Development Indicators.
R&D expenditure	Measured as percentage of GDP. Obtained from World Development Indicators.
Economic freedom index	The index takes values between 1 and 100, with 100 denoting the country with the most liberal economic environment. Source: The Heritage Foundation and the Wall Street Journal.

Patents granted	Number of patents granted by host countries in 2005. Obtained from World Intellectual Property database.
Labour cost	Constant 2000 dollar hourly labour cost. Obtained from ILO database.
Parent age	Defined as the difference between 2008, that is, the year the data belong to, and the year of establishment of parent. Source: Lexis Nexis Corporate Affiliations Directory, Spring 2008.
Number of foreign units per parent	The absolute number of foreign units each parent has. Source: Lexis Nexis Corporate Affiliations Directory, Spring 2008.
Number of foreign units of the leading 5 firms	Dummy variable for top 5 parents with the highest number of foreign units. Source: Lexis Nexis Corporate Affiliations Directory, Spring 2008.

Table 1: Definition of Complex Global Integration Strategies

	Parent	CGIS
Foreign Unit	Same primary industry	Horizontal integration
	Natural resource industries	Vertical integration
	Operate in the same industry/different stages	Lateral integration
	Unrelated industries	Risk diversification

Table 2: Geographical distribution of foreign units

	Africa	Asia Pacific	Europe	Middle East	North America	South America	Total
Iceland	0	9	132	0	34	2	177
Ireland	1	18	172	1	244	4	440
Israel	1	43	142	0	167	14	367
Total	2	70	446	1	445	20	984

Source: Lexis Nexis Corporate Affiliations Directory, 2008 (authors' estimations)

Table 3: Geographical Distribution and CGIS Strategies by country of origin of MNCs

CGI Strategies	Horizontal Integration	Vertical Integration	Lateral Integration	Risk Diversification	Total
Country of Origin & Regional Distribution					
Icelandic					
Africa	0	0	0	0	0
Asia Pacific	5	0	1	3	9
Europe	55	0	22	55	132
Middle East	0	0	0	0	0
North America	14	0	7	13	34
South America	2	0	0	0	2
Total Iceland	76	0	30	71	177
Irish					
Africa	1	0	0	0	1
Asia Pacific	9	0	9	0	18
Europe	48	10	92	22	172
Middle East	0	0	1	0	1
North America	48	27	72	97	244
South America	4	0	0	0	4
Total Ireland	110	37	174	119	440
Israeli					
Africa	1	0	0	0	1
Asia Pacific	16	0	19	8	43
Europe	49	9	54	30	142
Middle East	0	0	0	0	0
North America	34	17	26	90	167
South America	7	4	3	0	14
Total Israel	107	30	102	128	367

Source: Lexis Nexis Corporate Affiliations Directory, 2008 (authors' estimations)

Table 4: Sectoral Distribution of Icelandic, Irish and Israeli overseas units

Industry	Number of Icelandic overseas units	Number of Irish overseas units	Number of Israeli overseas units	Total
Agriculture, Forestry & Fishing	0	8	0	8
Mining & Construction	0	4	1	5
Manufacturing: Food, Textile, Furniture, Chemicals	62	43	68	173
Manufacturing: Rubber, Leather, Stone, Electronics and Transportation Equipment	19	132	75	226
Wholesale & Retail Trade	0	26	11	37
Finance, Insurance & Real Estate	89	136	89	314
Transportation, Communication, Electric, Gas and Sanitary Services	7	23	17	47
Services: Hotel, Business Service	5	50	86	141
Services: Health and Legal Services	5	18	11	34
Total	187	440	358	985

Source: Lexis Nexis Corporate Affiliations Directory, 2008 (authors' estimations)

Table 5: Correlation Matrix of Key Variables

Constructs	1	2	3	4	5	6	7	8	9	10
1.Sales/Firm Size	1									
2.Host Country GDP	0.12	1								
3.R&D Expenditure	0.08	0.48	1							
4.Merchandise Trade	0.10	0.54	0.29	1						
5.Ores and Metals Trade	0.05	0.49	0.23	0.13	1					
6.Patents	0.03	0.11	0.58	0.51	0.59	1				
7.Economic Freedom Index	0.14	0.26	0.13	0.44	0.29	0.19	1			
8. Labor Cost	0.21	0.28	0.10	0.44	0.52	0.08	0.34	0.55	1	
9.Parent Age	0.25	0.34	0.22	0.31	0.19	0.46	0.11	0.15	0.17	1

Table 6: Variance Inflation Factor Test for the Pooled Sample

Constructs	VIF	1/VIF
Sales/Firm Size	1.98	0.51
Host Country GDP	2.04	0.49
R&D Expenditure	2.38	0.42
Merchandise Trade	3.67	0.28
Ores and Metals Trade	2.12	0.47
Patents	2.61	0.38
Economic Freedom Index	3.11	0.32
Number of Foreign units per Parent	2.82	0.36
Labor Cost	1.26	0.79
Parent Age	2.83	0.35

The correlation matrix of the independent variables, Table 8, shows that the pairwise correlations do not seem to present serious multicollinearity problems for the multivariate analysis, as none of the variables have correlation coefficients above 0.60. This conclusion is further confirmed by the VIF test in Table 9, which reveals values much smaller than 10.

Table 7: Marginal Effects of Explanatory Variables on Motivation for Outward DI for Pooled Sample¹ (with GDP and R&D Expenditure and Parent Age)

	Horizontal Integration	Vertical Integration	Lateral Integration	Diversification
Affiliate	-0.064*** (0.003)	0.038 (0.218)	-0.095** (0.018)	0.047** (0.025)
Subsidiary	-0.097 (0.311)	0.134 (0.167)	-0.032** (0.016)	0.035* (0.067)
Hierarchy	0.012 (0.568)	0.014* (0.071)	0.058 (0.276)	0.006* (0.095)
Sales/Firm Size	-0.108 (0.196)	0.034 (0.127)	-0.093 (0.254)	0.018** (0.042)
Host Country GDP	0.011** (0.047)	0.031** (0.027)	-0.024 (0.218)	0.079** (0.028)
Parent Age	-0.025** (0.026)	0.052 (0.134)	0.105 (0.218)	0.031* (0.073)
R&D Expenditure	0.025* (0.088)	0.025** (0.031)	0.121 (0.269)	0.013* (0.071)
Merchandise Trade	0.031** (0.025)	0.003 (0.163)	0.001 (0.412)	0.005 (0.274)
Ores and Metals Trade	0.127 (0.407)	0.089 (0.216)	0.077** (0.031)	0.047 (0.216)
Patents	0.003 (0.195)	-0.044** (0.017)	0.026 (0.196)	0.027 (0.471)
Economic Freedom Index	-0.068** (0.018)	0.026** (0.031)	0.025 (0.117)	0.027 (0.371)
Foreign units per Parent	0.153** (0.015)	0.084* (0.058)	0.063 (0.173)	0.185** (0.037)
Foreign units for top 5 Parents	0.211*** (0.009)	0.107 (0.116)	0.016 (0.218)	0.076* (0.084)
Labour Cost	-0.012** (0.021)	-0.018*** (0.000)	0.027 (0.167)	-0.016** (0.027)
Food Industry Dummy	0.145 (0.457)	0.048 (0.167)	0.134 (0.197)	0.028 (0.381)

Rubber Industry Dummy	0.017 (0.332)	0.003 (0.105)	0.081 (0.148)	0.021 (0.218)
Manufacturing Dummy	0.015** (0.048)	0.093* (0.082)	0.011 (0.227)	0.007** (0.024)
Finance Dummy	0.005** (0.015)	0.004 (0.137)	0.001 (0.162)	0.002*** (0.005)
Iceland*Affiliate	-0.018 (0.349)		-0.008** (0.017)	0.031* (0.059)
Iceland*Subsidiary	-0.107* (0.062)		-0.107* (0.063)	0.034 (0.318)
Iceland*Hierarchy	0.0001 (0.187)		0.003 (0.568)	0.072 (0.418)
Iceland*Sales/Firm Size	-0.117* (0.0723)		0.231 (0.194)	0.104 (0.217)
Iceland*Parent Age	-0.017* (0.069)		0.145 (0.148)	0.021* (0.057)
Iceland*Host Country GDP	0.024 (0.172)		0.116 (0.583)	0.084 (0.379)
Iceland*R&D Expenditure	0.085 (0.662)		0.183 (0.286)	0.059* (0.063)
Iceland*Merchandise Trade	0.041 (0.179)		0.106 (0.274)	0.112 (0.108)
Iceland*Ores and Metals Trade	0.183 (0.533)		0.017** (0.022)	0.043 (0.143)
Iceland*Patents	0.034** (0.047)		0.000 (0.206)	0.029 (0.347)
Iceland*Economic Freedom Index	-0.028** (0.015)		0.027 (0.371)	0.031 (0.375)
Iceland*Unit Labour Cost	-0.004** (0.044)		0.038 (0.523)	-0.014* (0.083)
Iceland*Foreign units per Parent	0.026** (0.037)		0.006 (0.267)	0.108** (0.027)
Iceland*Foreign units for top 5 Parents	0.076** (0.047)		0.007 (0.438)	0.018* (0.021)
Iceland*Food Industry Dummy	0.037 (0.319)		0.127 (0.218)	0.014 (0.431)

Iceland*Rubber Industry Dummy	0.033 (0.178)		0.019 (0.214)	0.011 (0.127)
Iceland*Manufacturing Dummy	0.003* (0.067)		0.018 (0.105)	0.013** (0.019)
Iceland*Finance Dummy	0.013*** (0.002)		0.003 (0.171)	0.008** (0.012)
Israel*Affiliate	-0.047 (0.286)	0.027 (0.449)	-0.073** (0.021)	0.072 (0.318)
Israel*Subsidiary	0.169 (0.331)	0.029 (0.178)	-0.104** (0.028)	0.037** (0.027)
Israel*Hierarchy	0.001 (0.197)	0.041 (0.178)	0.031 (0.365)	0.019* (0.093)
Israel*Sales/Firm Size	-0.047** (0.033)	0.101 (0.481)	0.086 (0.418)	0.018 (0.538)
Israel*Parent Age	-0.009** (0.032)	0.021 (0.218)	0.085 (0.237)	0.014* (0.71)
Israel*Host Country GDP	0.000 (0.572)	0.081 (0.117)	0.027 (0.371)	0.091* (0.073)
Israel*R&D Expenditure	0.022 (0.108)	0.021** (0.047)	0.083 (0.127)	0.013** (0.037)
Israel*Merchandise Trade	0.041* (0.085)	0.018 (0.733)	0.002 (0.267)	0.055 (0.174)
Israel*Ores and Metals Trade	0.125 (0.298)	-0.005*** (0.000)	0.019** (0.042)	0.015 (0.638)
Israel*Patents	0.013 (0.381)	0.034 (0.196)	0.006 (0.137)	0.011 (0.482)
Israel*Economic Freedom Index	-0.024** (0.048)	0.011** (0.024)	0.008 (0.185)	0.205 (0.348)
Israel*Unit Labour Cost	-0.018** (0.042)	-0.037** (0.028)	0.028 (0.306)	0.029 (0.137)
Israel*Foreign units per Parent	0.027* (0.086)	0.017 (0.178)	0.045 (0.163)	0.032** (0.032)
Israel*Foreign units for top 5 Parents	0.017* (0.058)	0.106 (0.278)	0.007 (0.178)	0.004 (0.186)
Israel*Food Industry Dummy	0.093 (0.319)	0.041 (0.175)	0.071 (0.208)	0.018 (0.185)

Israel*Rubber Industry Dummy	0.011 (0.218)	0.001 (0.127)	0.078 (0.219)	0.020 (0.198)
Israel*Manufacturing Dummy	0.018** (0.031)	0.037* (0.061)	0.009 (0.175)	0.012** (0.017)
Israel*Finance Dummy	0.002 (0.315)	0.001 (0.128)	0.004 (0.184)	0.005*** (0.002)
LR Chi2	187.12	144.67	156.71	111.06
p=	0.00	0.00	0.00	0.00
Pseudo R2	0.24	0.22	0.23	0.22
Number of Observations	283	67	306	309

¹ *** denotes significant at 1%, ** significant at 5%, * significant at 10%

p- values are reported in parenthesis