

Founder Industry Specific Experience - An Asset or a Liability? The case of International Expansion

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ABSTRACT

Firms typically use their knowledge to achieve growth. In newly established firms, this knowledge initially comes from their founders' experiences. We propose that founders' industry specific prior experience facilitates new firm growth in the short run, but in the long run becomes an obstacle to experiential learning essential for continued growth. We further propose that founders possessing industry specific and general prior experiences are better positioned to facilitate growth in both the short and long runs. Finally, we propose that the combination of industry specific and general prior experience of founders positively affects firm growth. We test these propositions in the context of founders' *international experience* and the *international expansion* of high technology new firms. Our analysis shows that early in new firms' international expansion, the more industry-specific the prior international experience of founders, the more *positive* its effect on international growth. Yet, once these firms gain international experience, the more industry specific the prior international experience of founders the more *negative* its effect on international growth. In parallel, we find that the more diverse are the prior international experiences of individual founders or founding teams, in terms of being industry specific or general, the more positive their effect on international growth.

Key words: founder prior experience, firm growth, congenital learning, experiential learning, new firms, international expansion.

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INTRODUCTION

The role of knowledge in explaining firm growth has been the subject of considerable interest in the literature, ever since the seminal work of Penrose (1959). According to Penrose, growth becomes feasible only when the firm has accumulated significant amounts of knowledge. This proposition is understandable given that knowledge gives firm proprietary advantages in designing its products and competitive moves, allowing it to enter new markets and expand its market shares. While established firms typically have large knowledge reserves they can employ in their expansion activities, new firms are often limited and lopsided in their knowledge bases that come mostly from their founders' prior experiences and knowledge.

The extant literature has emphasized the role of founders' prior experience in facilitating new firm growth (Dencker and Gruber, 2015; Kor, 2003), but also noted the constraints that prior experience imposes on such growth (Fern, Cardinal and O'Neill, 2012; Kor, 2003). Yet, the literature is ambiguous with respect to three important aspects related to founders' prior knowledge and experience. First, we lack sufficient knowledge on whether there are differences in the effects of founders' prior experience that is *specific* to the industry or business area in which the new firm operates and founders' prior experience that is more *general*. Given that the context in which experience is gained has been shown to influence organizational outcomes (Dokko, Wilk and Rothbard, 2009; Groysberg, Lee, and Nanda, 2008), the differences between these two types of experience are likely to matter to the growth of new firms. Second, it is unclear from the literature what happens to the effects of prior industry specific and more general experience of founders *over time* as new firms become more involved in experiential learning. Third, we are relatively uninformed whether the combination of industry specific and general prior experience is beneficial in facilitating firm growth. Understanding how founders' industry specific

and general experience shape new firms' knowledge base over time is therefore likely to generate valuable insight into the factors that contribute to new firms' growth.

The current study addresses these three issues in the context of new firm growth through international expansion. We focus on international expansion because it is an important strategy many new firms follow in today's highly globalized markets *soon after their inception*, aiming to gain profitability and achieve growth (Zahra, Ireland and Hitt, 2000; Zahra and George, 2002; Keupp and Gassman, 2009).¹ Moreover, international expansion offers important and varied opportunities for new firms to learn experientially (Huber, 1991), thereby accumulating considerable knowledge that could be leveraged for competitive advantage. Thus, a focus on international expansion allows us to better understand how experiential learning may complement or substitute congenital learning (i.e., founders' knowledge) over time to shape new firms' growth.

The study advances theoretical arguments and shows empirically how founders' prior industry specific and general international experience affect their new firms' international expansion. In doing so, the study provides a refined conceptualization and measures for founders' prior industry specific versus their general international experiences, ranging from work abroad in the same industry in which their new firms operate, through work abroad in closely related industries, work abroad in unrelated industries and finally study abroad. These different types of international experience are conceived as a continuum where prior international experience in the same industry in which the new firm operates is the most "industry specific" international experience, while study abroad is the most "general" one.

¹ The International Business literature often refers to such firms as 'international new ventures' or 'born global' firms (Cavusgil and Knight, 2015; Coviello, 2015; Oviatt and McDougall, 1994).

To develop our arguments, we propose that early in new firms' international expansion, the more industry specific founders' prior international experience is, the more positive its effect on such expansion. Given that industry specific experience is more contextually aligned to the specific knowledge and capabilities that new firms require to compete abroad (Bruneel, et al., 2010; Dokko, et al., 2009), the more industry specific the prior international experience of founder's the stronger its effect on international expansion. Still, we suggest that at some point, founders with more industry specific prior international experience are likely to more negatively affect the continued internationalization of their new firms relative to founders' with more general prior international experience. Moreover, over time, the more industry specific the prior international experience of founders the more likely it is to become detrimental to international experiential learning (Johanon and Vahlne, 1977, 1990) within new firms and hence negatively affect their continued growth through internationalization. Finally, we propose that when founder possession of both general and industry specific prior international experience should positively affect international expansion both early and late on in their firms' internationalization. This is because early in firm international expansion the more industry specific components of prior international experience drive international expansion, while later on, the more general components of prior international experience mitigate the negative effects of its industry specific component.

We test our predictions in a unique sample of 144 Israel-based, high technology new firms, controlling for possible endogeneity and selection biases. Consistent with our theoretical expectations, the results show that founding teams' prior international experience has the strongest positive effect on new firms' international expansion when it is in the same industry in which the firm operates. The magnitude of this effect gradually diminishes where founders' prior international experience is in related

industries, is the weaker for founder experience in unrelated industries, and is the weakest for founder study abroad experience. Yet, as new firms gain international experience, the effect of more industry specific prior international experience on further international expansion flips to have its strongest negative effect on continued internationalization when founders have international experience in their firm's (same) industry. This negative effect declines in magnitude when founders' international experience is in related industries, and becomes insignificant when international experience is in unrelated industries or studying abroad. In parallel, we find that the more diverse are the prior experiences of individual founders or founding teams, in terms of being industry specific or general, the more substantial is the international expansion of their new firms.

The study makes several contributions. It combines insights from the organizational learning literature (Huber, 1991) with those of the knowledge-based view of the firm (Kogut and Zander, 1992, 1993; Grant, 1996) to explain the development of knowledge in new firms and the effect of this knowledge on their consequent growth. Our theory explains how knowledge specific to founders interacts with the experiential learning of new firm members, and offers novel empirical evidence of how founders' prior knowledge and experience have dual effects on growth. In this way, our study forges a previously unexplored connection between new firms' early and later development, linking congenital learning (Huber, 1991) with firm-specific knowledge generation in more established firms (Kogut and Zander, 1992, 1993; Grant, 1996). The study also suggests how experiential learning matters in affecting new firms' growth in general, and international growth in particular, and how founders' prior experience influences this growth over time (Zahra, 2005). Finally, the study extends the literature that highlights the imprinting effects founders have on the strategies and structures of their firms (Baron and Hannan,

2002; Beckman and Burton, 2008; Burton, 2001) by showing how different types of prior founder experiences differently interact with experiential learning.

The next section of the paper considers how founders' prior industry specific versus general experiences are likely to influence the growth of new firms. It also describes the fundamental learning processes that occur as new firms grow, highlighting the effects of founders' prior industry specific and general experiences, and their combination, on such growth. This section also advances a set of hypotheses that summarize how variations in founders' prior international experience are expected to affect new firms' international growth. A presentation of data, methods and results then follows. Finally, the discussion section highlights how our theory and findings relate to the extant literature on organizational learning and the knowledge-based view, especially concerning new firm growth.

THE ORIGIN AND EARLY GROWTH OF NEW FIRMS

New firms are typically created by one or a few individuals who identify new and unexplored business opportunities they wish to realize (Schumpeter, 1934; Kirzner, 1985).² Many of these firms seek to grow (Penrose, 1959; Kor, 2003), but often lack the resources, and especially the knowledge, essential to support such growth.

Founders are typically the main source for new firms' congenital knowledge (Huber, 1991), imprinting their organizations and substantially affecting their strategies and daily operations (Baron and Hannan, 2002; Beckman and Burton, 2008; Burton, 2001; Felin and Zenger, 2009; Shane, 2000). Founders' aspirations, experiences, and actions strongly influence these firms' growth (Dencker and

² The theoretical framework in this study does not pertain to new firms that are spinoffs from existing firms, management buy-outs or those that are joint ventures of existing firms.

Gruber, 2015; Fern, et al., 2012; Kor, 2003). A key characteristic of founders' knowledge is that it is intuitive and personal (Mintzberg and Waters, 1982). It usually comprises insights or intended actions that are very difficult to fully articulate, describe, explain or share (Crossan, Lane and White, 1999). This knowledge therefore encompasses a set of tacit understandings, images, cognitions and beliefs that cannot be fully expressed and easily conveyed to others (Polanyi, 1962; Kor, 2003; Dencker and Gruber, 2015). Given that this knowledge is highly tacit, it is often hard to codify, share, and disseminate across the new firm. As a result, this knowledge largely remains in the domain of the founders.

Founders' prior experience and initial firm growth

The initially personal, tacit, and intuitive knowledge of founders has significant implications for new firm growth. A thorough understanding of these firms' missions, business models, technologies and products is often unique to their founders (Hodgson, 2004). As a result, founders must remain personally and directly involved in the development, allocation, coordination and deployment of resources and activities driving their firms' growth. While the development and coordination of resources and activities required for new firm growth may partly be achieved through explanation and persuasion, the intuitive, unproven and contestable elements of founders' beliefs about market opportunities open for the new firm, can only be explored if the founders rely on their experience and knowledge, rather than engaging other members of their firm.

The early years of a new firm's existence provide a context where founders enjoy considerable discretion and power (Klotz, Hmieleski, Bradley and Busenitz, 2014) that allows them to run their firm almost singlehandedly, using their intuition and knowledge to make decisions on growth. In particular, by occupying the leading positions in their top management teams (Kazanjian and Rao, 1999), founders can gain tight control of the most critical activities and decisions of new firms (Dew, Velamuri and

Venkataraman, 2004; Hodgson, 2004; Foss and Klein, 2012) and influence their expansion processes. Such tight control, which is well documented among entrepreneurs (Delmar and Shane, 2006; Kazanjian, 1988; Nickerson and Zenger, 2004), gives founders direct personal involvement and direction over their subordinates' work, relying primarily on the founders' prior experience and knowledge to pursue growth opportunities.

We propose that the extent to which such experience is relatively more "industry specific" or more "general", matters greatly in terms of its effect on new firm growth. Industry specific experience is likely to reflect the greater expertise of founders which increases the efficiency of their decision-making (Dane, 2010). It further reflects founders' greater knowledge of competitive conditions and technologies (Delmar and Shane, 2006; Kor, 2003) as well as stronger network relationships within the industry (Freeman, Edwards and Schroder, 2006; Sullivan-Mort and Weerawardena, 2006). Thus, it is not surprising that past studies show that industry specific experience enhances new firm growth (Dencker and Gruber, 2015; Kor, 2003). However, industry specific experience also implies reduced flexibility and adaptability that may become a fundamental obstacle to achieving successful organizational change, which is often a prerequisite for growth (Dane, 2010). Founders' industry specific experience may further constrain their choices and encourage replication of past practices at the expense of developing new ones (Fern, et al., 2012; Kor, 2003), which can severely limit new firms' growth.

International expansion is one of the most frequently used strategies that new firms pursue to achieve growth, often shortly after their inception (Autio, Sapienza, and Almeida, 2000; Filatotchev, Liu, Buck and Wright, 2009; Oviatt and McDougall, 1994; Zahra, Ireland, and Hitt, 2000). Capitalizing on opportunities in foreign markets by internationalizing rapidly shortly after their inception, new firms

aim to build their market shares, increase their revenues and eventually their profits (Zahra and George, 2002; Keupp and Gassman, 2009).

Absent experiential knowledge of how to effectively internationalize (Johanson and Vahlne, 1977, 1990), founders' prior international experience becomes a key guide to their firms' early and rapid internationalization decisions (Reuber and Fischer, 1997; Oviatt and McDougall, 1994). Such international experience develops subtle and nuanced understanding of foreign markets based on past familiarity with these markets, often through first-hand experience from working or studying abroad (Bruneel et al., 2010; Filatotchev, et al., 2009; Sambharya, 1996; Nakdarni and Perez, 2007).

Founders' experiential knowledge reduces the perceived uncertainty of operating foreign markets, and in turn is likely to reduce the perceived risks of increasing foreign market commitment (Johanson and Vahlne, 1977, 1990). This knowledge also facilitates foreign opportunity recognition, foreign market knowledge and foreign network building, which usually encourage international expansion (Bruneel et al. 2010; Oviatt and McDougall, 2005; Sapienza, Autio, George and Zahra, 2006). Hence, founders' prior international experience is likely to influence their new firms' resource commitments to foreign markets in pursuit of international growth (Bloodgood, Sapienza and Almeida, 1996; Bruneel et al. 2010; Filatotchev, et al., 2009).

The influence of founders on the identification and realization of foreign market opportunities for the technologies and products of new firms is not expected to be uniform. Founders with greater international experience positively contribute to new firms' international expansion (Bruneel, et al., 2010; Zahra et al., 2000) and reduce the perceived risk of further internationalization moves (McDougall, Shane and Oviatt, 1994). Generally speaking, founders with greater international experience are likely to have greater knowledge on how to address host markets' idiosyncrasies and

more effectively coordinate their operations in culturally and institutionally diverse foreign markets (Bartlett and Ghoshal, 1989; Tan and Mahoney, 2007; Reuber and Fischer, 1997; Zahra et al., 2000). This knowledge becomes a key source for new firms' congenital learning, absent experiential learning that usually takes time to accumulate (Bruneel, et. al., 2010). Hence, by employing founders' prior foreign market knowledge to pursue foreign market opportunities, new firms can often successfully grow through international expansion (Bloodgood, et al., 1996; Bruneel, et al., 2010; Filatotchev, et al. 2009; Oviatt and McDougall, 1994, 1997; Reuber and Fischer, 1997).

Yet, we propose that the extent to which the prior international experience of founders is *specific* to the industry in which their new firm operates or more *general* in nature is another important source of variation in the effect of founder international experience on new firm international expansion. Prior experience gained by working abroad in the same industry in which the new firms operate is likely to give founders foreign market knowledge that is contextually aligned to the specific knowledge and capabilities that their new firms need to successfully compete abroad (Bruneel, et al., 2010; Dokko, et al., 2009).³ When such prior international experience is largely in industries that are related to the new firm's focal industry (but *not* in that industry), their knowledge is less contextually aligned to the specific knowledge and capabilities that their new firms need to successfully compete abroad, but is still somewhat aligned to such knowledge and capabilities. Yet, prior international experience gained from working in industries that are unrelated to the new firm's focal industry is of a more "general" nature. Thus, it is likely to be even less contextually aligned to the knowledge and capabilities that new firms need to successfully internationalize. Finally, prior international experience gained in studying abroad

³ In a somewhat related study Takeuchi, Tesluk, Yun and Lepak (2005) show that prior work experience (but not prior non-work international experience) positively moderates the association between current assignment tenure and work adjustment of expatriates.

is likely to be the least contextually aligned to the knowledge and capabilities that new firms need to internationalize.

Since the context in which new firm founders' experience is gained significantly influences its effectiveness (Dokko, et al., 2009; Groysberg, et al., 2008), the differences in the industry specificity of their prior international experience are likely to enable new firms whose founders have amassed prior international experience that is more industry specific to internationalize more rapidly than those firms whose founders have more general prior international experience. For instance, industry specific prior experience is likely to reflect founders' greater knowledge of competitive conditions and technologies (Delmar and Shane, 2006; Kor, 2003) and hence can facilitate international expansion. In a similar vein, the strength of the founders' network relationships that promote greater understanding of foreign markets enables new firms' rapid international expansion (Freeman, Edwards and Schroder, 2006; Johanson and Vahlne, 2009; Sullivan-Mort and Weerawardena, 2006). Yet, network relationships that are more industry specific are likely to have a greater impact on growth than network relationships that are more general in nature (Baum, Shipilov, and Rowley, 2003; Stuart, Ozdemir, and Ding, 2007; Dencker and Gruber, 2015), making them more likely to positively influence international expansion.

In addition, more industry specific familiarity of founders with foreign markets is likely to enable them to better forecast demand, assess risk and make decisions regarding the scope, scale and speed of internationalization. Moreover, given that a new firm's products and technologies often offer different opportunities (Gruber, MacMillan and Thompson, 2008, 2012), founders' with more industry specific prior international experience are likely to be invaluable in selecting the right opportunity and deploying resources for its pursuit (Fern et al., 2012), relative to those with more general international experience. These observations suggest our first hypothesis:

Hypothesis 1: Early in new firms' internationalization, the more "industry specific" the prior international experience of founders the more positive its effect on international expansion.

EXPERIENCE ACCUMULATION OVER THE DEVELOPMENT OF NEW FIRMS

Over time, progressively, engagement in commercialization processes allows new firms' managers to better understand and evaluate market opportunities. Often new firms' ongoing operations demand greater reliance on specialized, hired professionals. Thus, given that high technology new firms usually hire highly trained and professional managers, these managers are well positioned to learn about the new firm's product specifications and functionality and thus accumulate knowledge about specific market needs and characteristics, ultimately developing their own capabilities for coordinating market related activities. These managers interact with one another as they analyze market and competitive trends and make resource allocation decisions. They also share what they have learned about products and customers and market responses to their decisions. These frequent interactions and knowledge sharing enhance managers' mutual learning and improves decision making capabilities (Kogut and Zander, 1992). Thus, over time, what started as the founders' partly unarticulated perceptions of the new firm and its market opportunities is gradually replaced with hired managers' own experiential learning which evolves in ways that are independent of the founders (Salvato, 2009) into increasingly dispersed and validated knowledge within the firm.

As market opportunities become clearer, what started as the founders' personal, intuitive and tacit knowledge also becomes more explicit and more easily codifiable knowledge that can be stored in written manuals and guidelines that are easily communicated to and shared with others throughout the

firm (Nelson and Winter, 1982; Nonaka, 1994). Moreover, specific market opportunities and penetration plans can be laid out in greater clarity as the formation of interpersonal connections, common language and shared identity among organizational members ultimately allow for more seamless coordination and fluid knowledge exchange and sharing (Kogut and Zander, 1992; Nahapiet and Ghoshal, 1997).

Over time, new firm growth gradually draws more upon hired managers who have been involved in the firm development, allowing them to accumulate a broad range of market contacts to facilitate further growth. Importantly, with the accumulation of experience in the firm, new business initiatives draw more heavily upon the validated industry specific knowledge bases that have emerged throughout the firm. They develop through the sharing of explicit knowledge and trial-and-error processes (Nonaka, 1991, 1994), as the combinative capabilities of the more seasoned managers become increasingly leveraged (Kogut and Zander, 1992; Galunic and Rodan, 1998; Smith, Collins and Clark, 2005).

Founders' prior experience and continued firm growth

As new firms accumulate experience, both their founders and hired managers will likely draw more on this experience at the expense of the founders' prior experience. In the context of international expansion, as new firms gain more international experience, hired managers are likely to increasingly make use of extensive industry specific experiential knowledge that becomes widely shared within the firm to further support internationalization (Bruneel, et al., 2010; Kogut and Zander, 1992, 1993; Martin and Salomon, 2003a, b). An increasing number of new initiatives that require greater foreign market resource commitment are therefore expected to emerge (Bruneel, et al. 2010; Hashai. 2011).

The effect of founders' prior international experience on their new firms' internationalization is also likely to vary in strength when these firms have accumulated international experience. Such variance depends on the extent to which founders' prior international experience is relatively more

industry specific or relatively more general. When founders' have prior experience in the same industry in which their firm operates, their knowledge is highly industry specific and will likely be a substitute for international experiential learning. This happens because prior industry specific international knowledge is highly contextually aligned with the specific knowledge gained through experiential international learning. Founders with prior industry specific international experience may well possess specific beliefs and views about the correct internationalization paths in which their firm should proceed (Ensley, Pearson and Amason, 2002; Fern, et al., 2012), narrowing down the range of international market opportunities they will consider (Gruber, et al., 2012). Given the dominance of founders in decision making processes within their young firms (Dew, et al., 2004; Hodgson, 2004; Foss and Klein, 2012), these beliefs and views may imprint the entire organization (Baron and Hannan, 2002; Beckman and Burton, 2008; Burton, 2001). When there are contradictions between founders' prior industry specific knowledge and experiential international learning, new firms are likely to rely more on the former than on the latter (Fern, et al., 2012). It follows that founders with prior industry specific international experience may become entrenched in their past norms and practices (Kor, 2003) and consequently make their firms less capable to draw upon their experiential international learning. Given that experiential international learning is often more current and relevant than prior congenital international knowledge (Bruneel, et al, 2010), marginalizing such learning may well lead to less successful international expansion moves, and in turn international expansion processes may be slowed down or even halted.

On the other hand, when founders' prior international experience is more general, it is often less contextually aligned to the specific knowledge gained through experiential international learning. Realizing this, founders may be less keen to impose their prior international knowledge on their new

firm. This will not only provide greater room for reliance on self-experiential international learning on behalf of the founders, but will also likely make such founders more willing to rely on the experiential international knowledge of hired managers. Furthermore, being less contextually aligned to industry specific knowledge, more general prior international knowledge is likely to become complementary to international experiential learning, offering insights that are more diverse than those that hired managers could gain throughout their experiential international learning (Huber, 1991; Gruber, 2009; Bruneel, et al, 2010; Fern et al., 2012). Thus, the more general the prior international experience of founders, the more capable are new firms' to capitalize on their accumulated international experience. Since such experiential international knowledge is likely to be more current and relevant, it is likely to facilitate the identification of the right foreign market opportunities and the deployment of resources that will facilitate internationalization (Bruneel, et al, 2010).⁴

The above discussion suggests that, with the accumulation of international experience, the effects of congenital learning on new firms' international expansion vary with the industry specificity of founders' knowledge. More industry specific prior international experience will likely stall international expansion, while more general prior international experience will likely impel it. These observations suggest the following hypothesis:

Hypothesis 2: As new firms gain international experience, the more "industry specific" the international experience of founders the more negative its effect on international expansion.

⁴ This view is consistent with recent findings showing that new firms whose founders possess more general experience are more inclined to innovate, rather than imitate, than those whose founders possess industry specific experience (Cliff, Jennings, and Greenwood, 2006).

BALANCING PRIOR INDUSTRY SPECIFIC AND GENERAL EXPERIENCE

In essence, our discussion thus far has suggested a dual effect of founders' prior industry specific experience on new firms' growth. While early in new firms' development, we expect more industry specific prior experience to facilitate growth, later on as the new firms gains experiential knowledge, we expect prior industry specific experience to become detrimental for continued growth. These expectations might well suggest that new firms where founders possess both prior industry specific experience and prior general experience may benefit from a more diverse set of experiences (Fern et al., 2012; Gruber, 2009). This diversity should allow such new firms to sustain growth both early on in their stages of development and later on.

The possession of both prior industry specific experience and prior general experience can be at the individual founder level (specific founders with both industry-specific and more general prior experience) or within founding teams (where some founders have more industry specific experience while others have more general experience). In both cases, new firms are expected to be able to rely on both types of prior experiences, and therefore benefit from each type of exuberance at different stages of their development. Early in the development of new firms, the industry specific component of prior experience is expected to be a key driver of firm growth. Later on, the general component of prior experience is likely to mitigate the negative effects of the industry specific component, predicted in Hypothesis 2, and therefore facilitate continued growth.

In the context of international expansion, we expect that the more diverse is the prior international experience of founders (in terms of experiences gained in the same industry where the new firm operates, in related industries, in unrelated industries and while studying abroad), the more positive its effect of the new firm's international expansion. Early in new firms' internationalization, it would be the more

industry specific prior international experiences of founders facilitating international expansion. Later on in the internationalization of new firms, it would be the more general prior international experiences compensating for the entrenchment effects of prior industry specific international expansion. As new firms accumulate international experience, this prior general international experience should therefore allow greater reliance on experiential international learning to facilitate international expansion. Our final hypothesis therefore suggests:

Hypothesis 3: The more diverse the prior international experience of founders, in terms of industry specificity and generality, the more positive its effect on international expansion.

DATA AND METHOD

The Sample

We tested our hypotheses using a sample of Israel-based, high technology new firms. Israel is a suitable setting for the study of high technology entrepreneurial firms, because it is ranked first in the world in per capita venture capital investments, per capita high technology startup formations (Bosma and Levie, 2009), and is world renowned for its high technology entrepreneurial success (Senor and Singer, 2009). Being a country with a small local market, many of Israel's entrepreneurial firms enter foreign markets shortly after their inception (Hashai, 2011).

We collected our data from multiple secondary and primary sources that include the full list of Israel-based, high technology firms constructed by Dolev and Abramovitz Ltd (D&A) for the year 2007. D&A is a private company that collects information on the Israeli high technology sector. The dataset covers information on firms back to the mid-1980s, and D&A publishes periodical reports, describing

the high technology sector in Israel. We supplemented the data drawn from the D&A dataset extensively with data from the Israel Venture Capital (IVC) dataset, annual financial reports, prospectuses and other written reports supplied by firms, press announcements from *Lexis Nexis Academic*, NBER U.S. Patent Citations Data File and the United States Patent and Trademark Office (USPTO) database (for patent data). The D&A and the IVC datasets are widely recognized as comprehensive and authoritative sources of information on Israeli high-tech industries (Hashai, 2015).

Given our focus on the role of founders in influencing the international expansion of their high technology new firms, we have collected additional data on the presence of these founder(s) in their firms' top management teams. Data, indicating whether the founder(s) is or is not part of a new firm's top management team, were gathered from multiple sources that included the IVC and D&A datasets, various financial reports and prospectuses, the Dun and Bradstreet Israel dataset (*DunsGuide Global*), and press announcements from *Lexis Nexis Academic*.

Further, we collected additional data through interviews, where senior management members of each surveyed new firm were asked to complete structured questionnaires. Given our emphasis on founders' knowledge and experience and their role in shaping new firm growth, we were particularly interested in those high technology new firms that were established by an individual or a group of individual founders, rather than in new firms that resulted from a spin-out from an already established firm, a management buy-out or a joint venture between established firms. The 2007 D&A dataset includes 408 such new firms that have reached the point where they already sell their products or services, allowing us to observe foreign market involvement and its change over time. Two hundred of

the new firms in the original dataset were randomly selected⁵ and the senior management of these firms was asked to participate in face-to-face interviews.

Senior representatives of 165 new firms agreed to participate in the interviews that were conducted by one of the authors and a small group of graduate students, and completed a structured questionnaire.⁶ We interviewed two to three senior firm representatives whose replies were triangulated to ensure consistency. A chronicle of major events in each firm's history (as obtained from secondary sources) was presented to the interviewees to minimize the likelihood of information omission⁷. The interviewees were typically Chairmen, CEOs, or other C-suite level executives, with the prerequisite that they had long enough tenure in the firm to effectively reflect on the firm's history as well as access to supporting formal documentation.⁸ Our interview questionnaires covered a wide range of data including the type of international experience of the founders and other top team managers, the location of R&D, production and marketing and sales activities, sales and foreign sales distribution, number of employees and global distribution of employees, and market size. These data items often originated in written annual financial reports and prospectuses and could therefore be cross-checked for consistency.

Out of the 165 new firms, 18 firms whose interviewees supplied incomplete information were excluded from the analysis reported in this paper. Three additional firms were excluded as they were substantially larger and older than all other firms.⁹

⁵ Approaching every second firm from a list of alphabetically sorted firms.

⁶ Basic T-tests did not reveal evidence of interviewer-specific bias in the collected data.

⁷ Typical events included specific rounds of investments in the firm, introduction of first prototype and subsequent product versions, appointment of key executives in the firm, founders' departure from the top management team and so forth.

⁸ Fifty-five percent of the interviewees were at the CEO level, twenty percent were at the Chairman level and twenty-five percent were at the senior management level (mostly CTOs, COOs or CFOs). The average tenure of interviewees in their firms was five years and a month, which is only nine months less than the average firm age in the sample.

⁹ These firms had over 1,000 employees and were over 20 years old, whereas on average the firms in the sample enroll 120 employees and are less than six years old.

This resulted in a sample of 144 new firms, all of which with foreign operations, for which we could trace annual level data as of their inception to 2006. T-test comparisons between the 144 participating firms and the 264 non-participating firms showed no evidence of non-response bias in terms of average firm sales, number of employees, age of firm, firm valuation or industrial classification (at the six-digit North American Industrial Classification System (NAICS) level).

The firms in our sample operated in various high technology sectors¹⁰, including: Printing Machinery and Equipment, Semiconductor Machinery, Optical Instrument and Lens, Computer Terminal, Telephone Apparatus, Radio and Television Broadcasting and Wireless Communications Equipment, Semiconductor and Related Device, Electronic Components, Electromedical and Electrotherapeutic Apparatus, Surgical and Medical Instrument, Software, Custom Computer Programming, and Computer Systems Design.¹¹

Measures

The variables examined in the study as well as their measures and sources are presented below.

Dependent variable

We operationalize a new firm's *international expansion* as the growth in its foreign sales, a widely used measure for the level of firm internationalization (Gomes and Ramaswamy, 1999; Sullivan, 1994). We measured growth in foreign sales to sales using the following logarithmic power function:

$\ln(\text{Foreign_Sales}_{i,t+1}) = \alpha \ln(\text{Foreign_Sales}_{i,t}) + \pi' x_{i,t} + e_{i,t}$, where $x_{i,t}$ is the covariate matrix of all independent and control variables.

¹⁰ As defined by the National Science Foundation.

¹¹ The NAICS codes of the sectors served by a firm are always reported for public firms, and most often appear on the web sites and financial documentation of private firms as well. In the rare cases where no NAICS codes were reported (less than 10 percent of the sample firms), we used high technology industry experts to determine the relevant NAICS codes based on the firms' product/service descriptions.

Independent variables

Following Bruneel et al. (2010), Sambharya (1996), Nakdarni and Perez (2007) and others, we proxy founder and firm international experience by the total number of years founders spent abroad. Importantly, this measure was used also in the context of high technology firms (e.g., Bruneel et al., 2010) similar to those we study. To capture the effects of founders' (who also assume active senior managerial roles in their firms) prior international experience, we use four measures that can be thought of as representing a range of international experiences, ranging from a more industry specific one to more general one. These measures are: (a) *Founder industry specific international experience* is proxied by the aggregate prior international experience of a new firm's founders in any six-digit NAICS industry in which their firm operates;¹² (b) *Founder industry related international experience* is proxied by the aggregate prior international experience of a new firm's founders in any industry belonging to the three-digit NAICS industry in which their firm operates (other than the industries in which their firms operate in); (c) *Founder industry unrelated international experience* is proxied by the aggregate prior international experience of the new firm's founders in any industry that does not belong to the three-digit NAICS industry in which their firm operates; and (d) *Founder study abroad international experience* is proxied by the aggregate prior international experience of the new firm's founders studying in higher education institutions outside Israel, prior to the establishment of their current firm. All four measures are log transformed to reflect the intuition that foreign experience is not purely additive (Goerzen and Beamish, 2003).

¹² Most firms in the sample are active in one six-digit NAICS industry (60%), 30% of the firms in the sample are active in up to two six-digit NAICS industries, while a few are active in three such industries (10 percent of the firms).

Further, we operationalize a new firm's diversity in prior international experience as the dispersion of its founder's prior international experience across the four categories above (same industry, related industry, unrelated industry and study abroad). Our measure for prior *founder international experience diversity* is one minus the Herfindahl-Hirschman index (HHI) of founder prior international experience across the four categories, where the larger the HHI index value the more diverse a firm's international experience.

We further proxy a new firm's accumulated international experience (*firm international experience*), calculated on an annual basis, as the number of years in which each new firm has been active in foreign markets. Consequently, we use the measure *firm international experience squared* to identify those new firms with more substantial international experience.

Control variables

We also use multiple control variables that may affect the international expansion of high technology new firms. Since some of our arguments for the effects of the industry specificity of founders prior international experience may also hold for hired top managerial team (TMT) members than are non-founders (Kor, 2003), we use identical prior experience measures for TMT hired members. These measures, namely: *TMT industry specific international experience*, *TMT industry related international experience*, *TMT industry unrelated international experience*, and *TMT study abroad international experience* are computed on an annual level (as per the TMT composition on that year). The measures refer to the total number of years spent abroad prior to becoming part of the focal firm's TMT member, and are also log transformed.

To control for the likely positive effect of a firm's product scope on its international expansion, we control for each firm's *product scope* which is calculated as one minus the Herfindahl-Hirschman index (HHI) of annual sales dispersion across the six-digit NAICS sectors in which the firm is active. We assume the per sector share of sales to be zero in years where firms have not yet started selling their products, exhibiting activity in only a single sector.¹³

To control for the possible effect of biases of new firms toward knowledge exploration on international expansion, we also use the measure *exploration level*. Following Katila and Ahuja (2002), *exploration level* is measured by a share of each new firm's patent citations in a given year's citations that could not be found in the previous five years' list of patents and citations by that firm. If that proportion is high, it means that, to a large extent, the firm is involved in exploring technologies that do not build on its previously accumulated knowledge base. Such exploration is likely to be negatively related to the firm's international expansion, as it prevents firms from locking on a specific growth trajectory (Levinthal and March, 1993). We further control for the possible effects of a firm's level of technological investments (*R&D intensity*) and the size of its core market (*market size*) on its international expansion. The latter measure typically reflects the size of the market segment served within the firm's core six-digit NAICS industry. Both measures are likely to be positively related to international expansion.

The international scope of new firms may be further affected by the availability of financial resources which reflect these firms' resource constraints (Jacobides and Winter, 2007). We therefore control for the level of invested funds (*investments*) in millions of US dollars up to the end of each year, where higher levels of investments are expected to be associated with greater international expansion.

¹³ Using a count number of product categories in which each firm operates, we obtained results that are consistent with the results using the HHI measure.

Finally, we use *year* controls to account for exogenous effects of specific time periods (e.g., the growth of many high technology firms was halted in 2001 and 2002 because of the burst of the "dot.com" bubble). *Year* controls are introduced as dummy variables.

Methods

When testing the effect of founders and their international experience on new firms' international expansion, we need to account for the potential selection and potential endogeneity biases. The former bias concerns selection in the presence of the founder(s) in the TMT of the sample firms. Thus, we need to account for the possibility that the sample is biased towards firms where founders take a role in the TMT or toward firms where founders cease to assume such role, because any such bias may affect the observed patterns concerning the effects of founders' prior international experience on international expansion. It is also possible that new firms where founders assume a role in the TMT (or for the sake of argument do not take such a role) systematically differ in other parameters. If this is the case, one may attribute the observed patterns of international expansion to founders' prior international experience whereas, in fact, such patterns may result from other differences in the attributes of the analyzed firms.

Endogeneity bias exists in our analysis almost by definition because of the reciprocal interrelations between a firm's international experience and its international expansion, as argued by Johanson and Vahlne (1977, 1990). The actual involvement of founders in their firms and these firms' international expansion may also be endogenous in the sense that these firms' extent of international expansion may affect board decisions regarding the continued involvement of founders in the TMT. For instance, for those firms that are internationalizing rapidly, boards may decide that professional managers need to replace the founders (Gedajlovic, Lubatkin and Schulze, 2004; Wasserman, 2003).

Endogeneity can also result from unobserved firm specific characteristics that affect both founders' presence and international expansion (Wooldridge, 2010).

In order to account for the potential selection bias in our data set we employ a Coarsened Exact Matching (CEM) estimation. To address the endogeneity bias we complement our analyses with the generalized method of moments (GMM) introduced by Arellano and Bond (1991).

Matching treatment and control groups on relevant observable characteristics is likely to mitigate selection bias concerns as it creates a sub-sample of comparable firms. Recent studies (e.g., Blackwell, Iacus, King and Porro, 2009, 2012; King, Nielsen, Coberley, Pope and Wells, 2011) suggest that CEM is likely to produce matched samples that are more balanced than those of propensity score matching (Rosenbaum and Rubin, 1983). CEM also assures that adjusting the imbalance on one variable has no effect on the maximum imbalance of any other variable. We have therefore adopted CEM as our matching strategy. The CEM algorithm performs exact matching on coarsened data to determine matches between control and treatment groups. Exact matching is conducted by sorting all the observations into strata, each of which has identical values for all the coarsened pre-treatment covariates, and then discarding all observations within any stratum that do not have at least one observation for each unique value of the treatment variable. While CEM is not expected to control for all unobservable differences between firms, it mitigates selection effects by reducing the *observable* differences between treatment and control groups.

In our coarsened exact matching model, a first-stage regression is fitted to estimate the probability of startups for being "treated" by a departure of the founder from the TMT, and those that are a control group. We do this by choosing a type of coarsening for all of our covariates. We have experimented with several coarsening alternatives in order to minimize the imbalance between our control and treatment

observations. The best coarsening strategy (i.e., the one minimizing sample imbalance) was achieved when industry is coarsened into three digit NAICS groups (allowing us to have treatment and control observations from similar industries) and the remaining covariates (Ln_Foreign Sales, TMT industry specific international experience, TMT industry related international experience, TMT industry unrelated international experience, TMT study abroad international experience, product scope, exploration level, R&D intensity, market size, and investments) are coarsened into quartiles based on their distributions.¹⁴ Since CEM does not require a one to one matching between control and treated observations, control observations within each stratum are weighted to equal the number of treated observations in that stratum.¹⁵ The predicted propensities of founder departure from the TMT, as derived from the output of the coarsened first-stage regression, are then incorporated into a second-stage regressions estimating new firms' international expansion. The inclusion of uncoarsened values of the independent variables in the second-stage regressions accounts for any remaining imbalance in the sample.

Ideally, we would have liked to use instrumental variables to control for potential endogeneity discussed above. Unfortunately, we could not identify strong instruments for our sample. We have therefore followed a well-accepted approach in the literature related to expansion and growth models. We first take differences in our regression models to control for unobservable model-specific effects and then estimate the model using the general method of moments (GMM), applying panel random-effect methods. Arellano and Bond (1991) show that the most efficient set of instruments in the absence of serial correlation is found using the lagged values of the dependent variable and the potentially

¹⁴ Our results are unchanged if we allow Stata to choose the values on which to coarsen the independent variables in the first-stage regression.

¹⁵ Yet, the results are robust to forcing the matches to be one-to-one.

endogenous explanatory variables (i.e., the various founder prior international experience measures and international expansion) from $t-2$. We follow Arellano and Bond (1991) and adopt these instruments.

In addition, building on the work of Arellano and Bover (1995), who use two years lagged differences as potential additional instruments, Blundell and Bond (1998) exploit additional moment restrictions, which substantially improve the performance of the Arellano and Bond GMM estimator in circumstances where the number of time-series observations is relatively small (e.g., when there are relatively few years of data). Given that we have on average six observations per firm (for a total of 874 observations), we adopt the Blundell and Bond extension and include two years lagged differences of the dependent variable and the potentially endogenous explanatory variables as additional instruments to improve our estimates.

RESULTS

Descriptive Statistics

Descriptive statistics for the study's variables are presented in Table 1. The foreign sales of the firms in our sample average \$US 17 million (representing 62% of their total sales). On average, these firms have started internationalizing 1.4 years after their inception¹⁶. The average international experience of new firms is 4.35 years. Founders' prior international experience ranges from eight years (industry specific experience) to 6.2 years (industry unrelated experience), whereas the prior international experience of the TMT (excluding founders) ranges from 11 years (industry specific experience) to six years (industry unrelated experience). The average ratio of R&D to sales is 0.25, reflecting the fact that new firms in the sample invest heavily in technology. The average investment per firm is about \$US 8 million, mostly

¹⁶ Importantly, the difference between firm age and international experience is insignificant, making it impossible to include age in the regression analyses due to multicollinearity.

from venture capital funds and private investors. Among the study's variables, the highest observed correlations (Table 1) are between foreign sales and firm international experience. The correlations in Table 1 are generally low and the values of the variance inflation factor (VIF) are lower than acceptable thresholds (reaching up to 2.23), suggesting that multicollinearity is not a likely problem in the dataset.

[Insert Table 1 about here]

Primary Tests

In Tables 2 and 3 we present our CEM and GMM regressions estimates, respectively. The CEM models include 768 firm-year observations out of the original 874 observations, as a second stage of the first stage coarsened exact matching. Overall, the R squared of our CEM regressions range between 0.20-0.28 while the Sargan tests (Sargan, 1988; Blundell and Bond, 1998) of our GMM models support the validity of the instruments, and the null hypothesis of no serial autocorrelation of the residuals is also accepted. Reassuringly, the results of the models presented in Tables 2 and 3 are highly consistent. The models within each table are also fairly consistent, in terms of the size of coefficients', significance and direction.

The first models in Tables 2 and 3 include only the independent and control variables. These models show that the international expansion of firms¹⁷ is positively correlated with founders' prior international experience measures, with the industry specific and industry related international experience measures of TMT members, and with firm-level international experience, product scope, and R&D intensity. These correlations are consistent with the literature on new firms' internationalization (Reuber and Fischer, 1997; Shrader, Oviatt and McDougall, 2000; Zahra et al., 2000).

[Insert Tables 2 and 3 about here]

¹⁷ As a standard procedure in growth models Ln foreign sales is included in the right hand side of the regression.

While international experience is shown to positively affect international expansion,¹⁸ we next examine how different types of founders' prior international experience affect it. In the second models in each table (models 2 and 12), we add the effect of the interaction between founders' prior industry specific international experience and the new firm's international experience. The coefficients of this interaction are positive and significant ranging at .61 to .68 in Table 2 and .52 to .57 in Table 3. This result indicates that prior industry specific international experience positively moderates international expansion early in new firms' internationalization. The third models in of Tables 2 and 3 (models 3 and 13 respectively) include the effect of the interaction between founders' prior industry specific international experience and international experience squared to reflect the effect of founders' prior international experience when the new firm has already gained international experience. The coefficients of this interaction are significant and range between -.04 to -.06 in Table 2 and between -.03 to -.05 in Table 3, indicating that later in a firm's international expansion, founders' prior industry international experience hampers international expansion.

In the fourth models (models 4 and 14), we add the interaction terms of founders' prior industry related international experience and the firm international experience. These coefficients are significant but lower in magnitude than founders' industry specific international experience measures (ranging at .42 to .46 in Table 2 and .33 to .38 in Table 3). In the fifth models (models 5 and 15), the interaction of the latter measure with the squared terms of firm international experience, to capture such effects, after the new firm has gained international experience. Once again these interaction measures are significant and negative (with coefficient between -.04 to -.06 in Table 2 and between -.02 to -.03 in Table 3),

¹⁸ Note that the squared term of international experience is insignificant.

reflecting a stalling effect of founders' industry related experience on international expansion as new firms gain international experience.

The sixth and seventh models (models 6 and 7 in Table 2, and models 16 and 17 in Table 3) respectively add the interactions of founders' prior industry unrelated international experience with firm international experience and its squared term. Importantly, only the coefficients of the interactions with the linear term of international experience are significantly positive, ranging between .12 and .15 in Table 2 and between .18 and .21 in Table 3. The coefficients on the interactions with the squared term of international experience are insignificant, suggesting that there is no change in the direction of the effect of founders' prior industry unrelated international experience as new firms gain international experience.

The last models in Tables 2 and 3 (Models 8 and 9 and models 17 and 18, respectively) indicate that the effect of founders study abroad international experience is lower than that of the three other founder international experience measures, where also in this case only the coefficients of the interactions with the linear term of international experience are significantly positive, ranging from .05 to .06 in Table 2 and from .10 to .12 in Table 3. The coefficients on the interactions with the squared term of international experience are insignificant.

Following the tests suggested by Haans, Pieters and He (2015), the inflection points of the interactions of founders' prior industry specific- and industry related- international experiences and firm international experience fall well within the required confidence levels ($p < .05$) of the multiplication of the two variables with firm international experience. Thus, there exist inverted U-shaped relationships between founders' prior industry specific- and industry related- international experiences and international expansion (Haans, et al., 2015).

Wald tests further show that both in Table 2 and Table 3 the coefficients of the interaction of founders' industry specific international experience and firm international experience have a stronger effect on international expansion than those of the interaction between founders' industry related international experience and firm international experience. In turn, the latter interactions have significantly higher coefficients than the interaction between founders' industry unrelated international experience. Finally, the coefficients of the interaction between founders' industry unrelated international experience are significantly higher than those of the interaction between founders' study abroad international experience and international experience.¹⁹ Taken together, these differences lend strong support for Hypothesis 1.

In a similar vein, Wald tests show that the negative interaction between founders' industry specific international experience and firm international experience squared is stronger than that of the negative interaction between founders' industry related international experience and firm international experience.¹⁹ In addition, no such negative interaction is found for founders' industry unrelated international experience and founders' study abroad international experience. These results support Hypothesis 2, indicating that, the more industry specific is founders' prior international experience the more negative its effect on international expansion, once firms gain their own international experience.

The results are further depicted in Figure 1 below,²⁰ which shows that initially (as new firms start internationalizing) the more industry specific is founders' prior international experience the stronger its positive effect on international expansion. As these firms gain international experience, the more industry specific the founders' prior international experience is, the more negative its effect on international expansion. For both founders' industry specific international experience and founders'

¹⁹ All the mentioned differences are confirmed through Wald tests at a significance level of $p > F = 0.01$.

²⁰ Using the parameters of Model 18 in Table 3.

industry related international experience, the peaks in international expansion are at one standard deviation above the mean. There is no decline in international expansion in the cases of founders' industry unrelated international experience and founder study abroad international experience.

[Insert Figure 1 about here]

Finally, Tables 2 and 3 also present the coefficients for founders' international experience diversity. Reassuringly, in all models this measure is significantly positive, ranging from .23 to .28 in Table 2 and from .33 to .39 in Table 3. These results support the prediction in Hypothesis 3 concerning the positive effect of prior international experience diversity on new firms' international expansion. In that respect we also wanted to test whether there are differences in the effect of international experience diversity when it is at the individual level (i.e. the same founder has different types of prior international experience) and when it is at the team level (i.e. different founders in the same top management team have diverse prior international experience). Model 9a in Table 3 (and model 18a in Table 4) includes only firms whose founders had different types of prior international experience (e.g. both within the same industry and general). Model 9b in Table 3 (and model 18b in Table 4) includes only firms whose founders had a specific type of international experience. In both types of models there is a significant positive effect of founders' international experience diversity on international expansion (ranging from .22 to .27), suggesting that these diversity effects work both at the individual and team level.

Robustness Tests

To establish the robustness of our findings, we ran several robustness tests. First, in order to establish the effects of founders' international experience at early and later phases of international expansion, we divided our sample into observations below the mean and observations above the mean of international

experience. Table 4 presents the results for the CEM regression models, yet the Arellano Bond GMM models (available upon request) are fully consistent with the CEM models results.

Model 19 presents the results for observations below the mean while model 20 presents the results for observations above the mean. The results show a consistently positive effect of all four founder international experience measures for observations below the mean. In contrast, only founders' industry specific international experience and founders' industry related international experience have a negative effect on international expansion for observations above the mean. The differences between the different coefficients, for both below and above the mean values, are again significant at the level of $p > F = 0.01$. These results corroborate our main results concerning Hypothesis 1 and Hypothesis 2.

In addition, we have interacted the founder international experience diversity measure with the different founder prior international experience for observations above and below the mean of international experience. Model 21 shows that the interaction of founder international experience diversity with founder industry specific experience is not significant for those observations below the mean. In contrast, model 22 shows that this interaction is significant for those observations above the mean. We get the same pattern for the interaction of founder international experience diversity with founder industry related international experience below the mean (model 23) and above it (model 24). Yet, model 25 shows that that the interaction of founder international experience diversity with founder industry unrelated experience is significant for observations below the mean, while model 26 shows that this interaction is not significant for observations above the mean. The same pattern repeats itself in models 27 and 28 pertaining to the interaction of founder international experience diversity with founder study abroad international experience. Taken together, this set of results support our argument that diversity of international experience fosters the effects of more general prior international experience

when new firms lack their own international experience, but is also important to mitigate the negative effects of more industry specific prior international experience when new firms have already accumulated international experience.

To further establish the robustness of our findings, we ran an extensive number of alternative models as described below.²¹ To start with, we entered several additional controls to verify that the effects we are getting indeed stem from our main independent variables. These additional controls included: firm age at foreign market entry, domestic prior experience of founders (industry specific, industry related and industry unrelated), a dummy indicating whether one of the founders is CEO in the firms (which may intensify his effect on international expansion), number of founders in the TMT (as means to get an average founder effect), number of TMT members, founders' prior startup establishment experience, a dummy indicating whether founders have a technological background (Gruber et al., 2012), a dummy indicating whether a firm is public²², type of investor (ten different types of investors including, local and foreign venture capital funds) and the fixed assets of firms. In all cases, these additional controls were insignificant and our baseline results were maintained.

In another set of robustness tests, we have collapsed our founder and TMT prior international experience measures into two (industry specific experience composed of same industry and related industry experience, and general experience composed of unrelated industry and study abroad experience). The results have remained consistent with our main results. Likewise, when using average founder and TMT prior international experience, as another way to control for the number of founders and TMT members in each firm, the results have not changed.

²¹ All results available upon request.

²² 28% of the firms in our sample have gone through an initial public offering at some point.

Next, we used two alternative measures for international expansion. The first measure refers to the dispersion of new firms' international sales, using an entropy measure across six world regions (Hitt, Hoskisson, and Kim, 1997). This classification has the advantage of capturing diversity between regions in terms of geographic, institutional and cultural distance (Delios and Henisz, 2003; Ronen and Shenkar, 1985). The measure takes the following logarithmic power function: $\ln(\text{Foreign_Sales_Entropy}_{i,t+1}) = \alpha \ln(\text{Foreign_Sales_Entropy}_{i,t}) + \pi' x_{i,t} + e_{i,t}$, where $x_{i,t}$ is the covariate matrix of all independent and control variables.

In addition, we used a measure that captures the change in the number of employees in foreign subsidiaries as an additional measure for international expansion. This choice follows a long tradition of using the number of foreign subsidiaries as a proxy for the extent of irreversible investments in foreign markets (Lu and Beamish, 2001; Tang and Tikoo, 1999) but also takes into account the scale of such commitments in terms of the number of employees (Goerzen and Beamish, 2003). This measure is calculated as: $\ln(\text{Foreign_Employees}_{i,t+1}) = \alpha \ln(\text{Foreign_Employees}_{i,t}) + \pi' x_{i,t} + e_{i,t}$, where $x_{i,t}$ is the covariate matrix of all independent and control variables. For both alternative measures, the results have remained robust.

In additional robustness tests, we used squared terms our founders' prior international experience measures to test the proposition that such experience may have different effects when it is extensive. These squared measures came out insignificant. We also interacted our measures of TMT prior international experience with firm international experience and its squared term to test whether these measures also change with the accumulation of international experience like founders' international experience measures do. However, in all cases, we did not get any significant results. The insignificant

results pertaining to the prior experience of TMT members support our expectation that founders and hired managers differ in their effects on new firms' growth.

Still, in another robustness check, we have tested whether the foreign countries in which founders have gained prior international experience affect our results. To that extent, we have added a dummy measure that receives a value of '1' if founders' experience was gained in a foreign country in which the new firm operates in a given year and '0' otherwise. Surprisingly, this dummy measure was generally insignificant, indicating that prior foreign experience in the countries in which the new firm operates does not affect international expansion. This finding indicates that, at least for our sample of high Israeli technology firms, industry specific rather than country specific international experience matters more. In any case, our baseline results remained consistent also with the addition of this control measure.

Finally, we have tested whether the moderating effects of founder international experience diversity vary when they are within person (the same founder has several types of prior international experience) and when they are inter-person (some founders have a specific type of prior international experience while others have a different type of experience). To that extent we have, respectively, confined the calculation of the international experience diversity measure to be the latter or the former. Interestingly, our main results hold for both types of measures.

DISCUSSION

Understanding the factors driving firm growth is an important research question, especially among new firms seeking to build their market positions and gain profitability. In this study, we propose that while a firm's knowledge is an important factor that shapes its future growth, the source of this knowledge is apt to change over time. Our arguments highlight the importance of founders' knowledge in this regard,

especially in the early stages of their new firms' existence. Further, we argue that the specificity of founders' prior experience affects differently new firms' growth at different points of their development. While founders' prior industry specific experience positively affects growth early on, as new firms gain experiential learning their founders' prior industry specific experience is likely to hamper continued growth.

We test this proposition in the context of founders' prior international experience and its effect on new firms' international growth at different points in their internationalization. Consistent with our theoretical expectations, the results show that initially the more industry specific the founders' prior international experience, the stronger its positive effect on international expansion. Further, as argued, as new firms gain international experience, the more industry specific the founders' international experience the more negative its effect on continued international expansion. We further show that diversity in founders' prior international experience is pivotal for enhancing growth in foreign markets in both early and late growth stages, where such diversity intensifies the moderate positive effects of prior general experience (both at the individual and team level) in early growth stages and mitigates the negative effects of industry specific prior experience at later growth stages.

Implications for Theory

While this study supports past finding concerning the importance of diversity in prior founder experience (Fern et al., 2012; Gruber, 2009), to some extent, it resolves some of the contradictory findings of past studies that have shown that prior industry specific experience enhances new firm growth (Dencker and Gruber, 2015; Kor, 2003), but also that such industry specific experience hampers growth (Fern, et al., 2012; Kor, 2003). Our core argument is that founders' prior industry specific

experience will likely facilitate growth in the short run, but will become detrimental for continued growth over time.

The study further focuses on congenital knowledge and its dissemination as new firms gain and accumulate experiential knowledge (Huber, 1991). The results indicate an evolutionary process of congenital knowledge accumulation, sharing and dissemination throughout a new firm. Our starting point is founders; i.e., those entrepreneurs whose knowledge is central to the creation and growth of new firms. These entrepreneurs are individuals who develop and act upon their personal and oftentimes intuitive knowledge about opportunities for their new firms' products and technologies and how to seize such opportunities (Shane and Venkataraman, 2000; Short, Ketchen, Shook and Ireland, 2010). Our results suggest that it is the interaction of such knowledge with the knowledge gained through experiential learning that shapes new firm growth through international expansion.

A key contribution of our study is extending the knowledge-based view of the firm (Kogut and Zander, 1992, 1993; Nonaka, 1994; Grant, 1996) by clarifying the role of founders' prior industry specific and more general experiences in the early years of new firms' existence. The focus on the developments that occur early on in a new firm's life span adds an important and complementary aspect to the knowledge-based view, which essentially treats firm-specific knowledge as a given, often without explaining where it originates and how it is created in the first place. By outlining the processes by which congenital knowledge interacts with experiential knowledge to affect new firm growth, our study highlights important mechanisms that establish the connection between individual and firm level knowledge in the knowledge-based view of the firm. We show how and when such interaction may complement and enrich the knowledge base of new firms and when it may counteract it.

In that respect, our findings interestingly suggest that the positive effect of founder international experience diversity is not confined to specific individuals (possessing different types of experiences), but also matters across individuals. Consistently with prior literature (Beckman, 2006; Hambrick, Cho and Chen, 1996; Taylor and Greve, 2006) it therefore follows that, as much as an individual can benefit from the combination of her diverse experiences, teams can also combine different individual experiences and benefit from them.

Our study also contributes to the literature on founders' imprinting effects (Baron and Hannan, 2002; Burton, 2001; Beckman and Burton, 2008). First, although this stream of literature typically assumes long-lasting effects of founders on their firms' outcomes, our study articulates the less explored process by which in certain respects founders' influence gradually fades away over time (Marquis and Tilcsik, 2013). The interplay between the imprinting effects of founders and knowledge that is ultimately shared among the new firm hired managers, extends our understanding of the ways a new firm's operations and structures develop over time. Second, we suggest that while founders have a longstanding impact on the new firms they found, this impact differs when founders have industry specific rather than general prior knowledge. Prior industry specific knowledge has stronger imprinting effects (both negative and positive) than prior general knowledge, most probably because it is more contextually aligned to the new firm's operations. In contrast, the positive effect of prior general knowledge may be weaker in the short run but is more sustainable. This view is consistent with findings showing that founders with less experience in the core of an organizational field, but with greater experience in its periphery or in other industries are more likely to be innovative entrepreneurs (Shane, 2000; Shane and Venkataraman, 2000).

Implications for Internationalization Theory

Our findings also contribute to the rich stream of literature on the internationalization of new firms. First, it proposes that more "industry specific" and more "general" prior international experiences lead to different types of congenital learning which differently affect these firms' international growth. Second, the study shows that founders' prior international experience plays a dual role in affecting the rate at which their firms expand internationally over time, especially when such experience is more industry specific. In essence, we propose that founders' tacit knowledge of foreign market opportunities for their firms' technologies and products may facilitate international growth, but it can also slow down the codification and dissemination of foreign market knowledge in their firms, stalling long term international growth.

Our study further brings closer two seemingly contradictory streams of literature. A key difference between the classic internationalization stage model literature (Johanson and Vahlne, 1977, 1990) and the International New Venture (INV) literature (Autio, et al., 2000; Oviatt and McDougall, 1994; Zahra, et al., 2000) lies in their assumptions about the role of international experience of the firm. In the internationalization stage model literature, expansion is driven by the experiences of the firm *after* operations begin. The INV model posits that founders' prior international experience, *before* the new firm has been established, is a key determinant of its international expansion. Our results show how both types of knowledge interact in significant ways to contribute to new firms' international expansion. Thus, founders' prior international experience clearly matters, but also its *interaction* with the accumulation of international experience over time. Our results further offer a more refined view for such interaction relative to the existing literature (e.g., Bruneel, et al., 2010), by highlighting how the variance in the industry specificity of founders' prior international experience bears different effects on international

expansion when combined with different level of firm international experience. These results add to the emerging stream of literature positing that INVs also exhibit gradual increased commitment to foreign markets, albeit in different ways than other firms (Bruneel, et al., 2010; Hashai, 2011).

Managerial implications

This study shows that founders of young high technology firms who possess prior international experience in the same industry in which their firms operate positively affect their firms' internationalization. Founders with prior international experience in related industries have a positive but weaker effect on their firms' internationalization, while those with prior international experience in non-high technology industries have the weakest effect. Yet, once firms gain international experience these relationships flip. Founders with same industry prior international experience most negatively affect their firms' continued internationalization, founders with prior international experience in other high technology industries have a negative but weaker effect on their firms' continued internationalization, while founders with prior international experience in non-high technology industries continue to positively affect their firms' internationalization.

Future Research and Study Limitations

Our findings offer several opportunities for future research. For instance, we have documented how founders' prior international experience influences the international expansion of new firms, and our study provides a preliminary assessment of how this knowledge disseminates and affects the development of firm international boundaries. Additional studies would help to explain and empirically document how founders' prior experience affects other domains of their firms' boundary choices, including their vertical scope (i.e., the extent to which operations are outsourced or conducted in-house) and their product scope. In fact, as Hodgson (2004) and Levie and Lichtenstein (2010) note, the

relationship between founders' knowledge and their firms' experiential knowledge is not unidirectional because founders' knowledge is also affected by their experiences that are typically honed over the course of their firms' development. Future research should examine how the experience gained through firms' development (e.g., through internationalization) may differently affect founders with industry specific- vs. general congenital knowledge.

Further, even though our study is likely to capture common tendencies in new firms' international expansion, its results apply primarily to those high technology new firms started by individual founders (as opposed to those firms that are established as joint ventures between already existing firms, or those that come about through management buy-outs or spin-outs). In addition, our theoretical arguments and findings highlight developments that occur when founders' personal international experience is introduced in high technology new firms. Consequently, future studies covering firms that have not been established by individual founders and non-high technology new firms would be helpful in establishing the external validity of our findings.

Finally, our results are derived from a sample of successful and surviving technology-based firms. We do not have data on firms that failed to reach the point where they could start selling their products or services. This is a frequent complication in the study of new firms (Beckman and Burton, 2008; Mudambi and Zahra, 2007), a factor that raises the question about potentially deviating patterns among non-surviving firms. Therefore, future research should investigate whether new firms that fail to survive the challenges they encounter early on may represent significantly different prior founder experience effects.

SUMMARY AND CONCLUSIONS

Our study expands the theory of new firm growth by proposing that the effects of their founders' prior experience on this growth are closely related to the industry specificity vs. generality of that experience. It also proposes that even though founders with prior industry specific experience drive new firms to grow more rapidly early on, such founders' direct involvement in their firms later, negatively moderates the establishment of experiential learning that, in turn, slows down new firm growth. Finally, the study highlights the positive effects of diversity in prior international experience, both at the individual and founding team level. We find strong empirical support for this proposition in the case of founders' prior international experience and the international expansion of new firms. Our study forges an important theoretical connection between new firms' development and their founders' prior experience and highlights how the role of congenital and experiential knowledge interact over time to determine new firm growth.

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Figure 1 – The effects of founders' prior international experience on international expansion (at different levels of firm international experience)

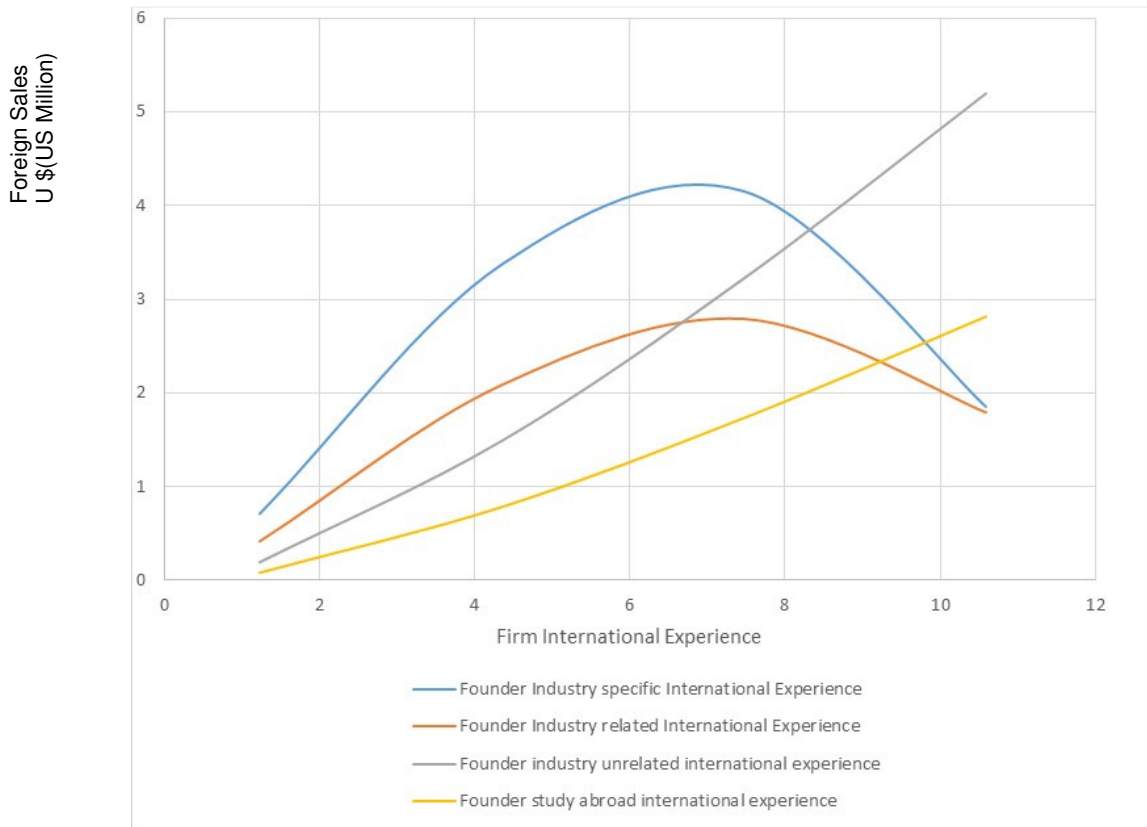


Table 1 – Descriptive statistics and correlation matrix (N=874)

Variable	Mean (STD deviation)	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1. Foreign Sales (\$US Million)	16.78 (5.23)	0	32.75	1															
2. Founder industry specific international experience	8.01 (5.03)	0	23.50	.19	1														
3. Founder industry related international experience	6.83 (4.15)	0	19.50	.14	.06	1													
4. Founder industry unrelated international experience	6.69 (4.29)	0	20.00	.13	.04	.06	1												
5. Founder study abroad international experience	6.05 (4.11)	0	18.50	.11	.07	.06	.02	1											
6. TMT industry specific international experience	11.32 (4.18)	0	24.50	.09	.05	.04	.06	.03	1										
7. TMT industry related international experience	9.79 (3.82)	0	22.00	.07	.02	.04	.05	.04	.03	1									
8. TMT industry unrelated international experience	6.12 (3.36)	0	16.50	.05	.05	.03	.04	.06	.02	.07	1								
9. TMT study abroad international experience	4.30 (3.10)	0	13.50	.03	.02	.06	.04	.06	.04	.05	.02	1							
10. Product scope	0.23 (0.26)	0	0.92	.13	.05	.06	.03	.06	.09	.08	.04	.02	1						
11. Exploration level	0.66 (0.38)	0	1.00	.15	.04	.05	.02	.08	.10	.06	.07	.04	.01	1					
12. R&D intensity	0.25 (0.27)	0.07	0.79	.17	.18	.16	.08	.09	.14	.12	.07	.05	.08	.20	1				
13. Investments (in Million \$US)	8.24 (12.25)	0	45.20	.08	.11	.09	.08	.06	.08	.07	.02	.01	.06	.12	.24	1			
14. Market size (in Billion \$US)	3.2 (15.10)	0.50	49.50	.14	.06	.05	.05	.01	.09	.06	.02	.04	.03	.23	.14	.04	1		
15. firm International experience	4.35 (3.12)	0	16.00	.24	.14	.12	.09	.07	.11	.10	.06	.04	.10	.05	.14	.05	.02	1	
16. Founder international experience diversity	0.32 (0.18)	0	0.88	.21	.09	.07	.10	.06	.02	.01	.03	.02	.17	.09	.08	.03	.01	.11	1

Significance measures (two-tailed) of correlations above .08 are statistically significant at 1%.

Table 2 – CEM Regression Models of Founders' Effect on International Expansion

DV= Ln Foreign sales(t)	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 9a	Model 9b
Founder industry specific international experience x firm international experience		.61* (.30)	.63* (.26)	.62* (.28)	.60* (.43)	.61* (.30)	.65* (.27)	.68* (.24)	.64* (.31)	.46* (.19)	.44* (.18)
Founder industry specific international experience squared			-.06* (.03)	-.06* (.03)	-.05* (.02)	-.04* (.02)	-.06* (.03)	-.06* (.03)	-.05* (.02)	-.04* (.02)	-.05* (.02)
Founder industry related international experience x firm international experience				.45* (.20)	.42* (.19)	.43* (.20)	.44* (.22)	.44* (.22)	.46* (.23)	.32* (.15)	.35* (.13)
Founder industry related international experience squared					-.04* (.02)	-.04* (.02)	-.04* (.02)	-.06* (.03)	-.05* (.02)	-.03** (.01)	-.04* (.02)
Founder industry unrelated international experience x firm international experience						.12** (.04)	.13* (.06)	.12* (.05)	.15* (.07)	.10* (.05)	.11* (.05)
Founder industry unrelated international experience squared							.10 (.09)	.11 (.07)	.12 (.09)	.09 (.05)	.10 (.09)
Founder study abroad international experience x firm international experience								.05* (.02)	.06* (.03)	.04* (.02)	.04* (.033)
Founder study abroad international experience squared									.03 (.05)	.03 (.04)	.04 (.05)
Founder international experience diversity		.28* (.13)	.25* (.12)	.23* (.10)	.24* (.11)	.29* (.14)	.24* (.10)	.23* (.09)	.26* (.12)	.27* (.12)	.22* (.10)
Ln Foreign sales(t-1)	.63*** (.04)	.63*** (.05)	.65*** (.06)	.66*** (.05)	.67*** (.05)	.68*** (.07)	.66*** (.04)	.71*** (.09)	.66*** (.07)	.51*** (.11)	.54*** (.12)
Founder industry specific international experience	.23* (.11)	.21* (.09)	.19* (.09)	.18* (.08)	.26* (.12)	.20* (.09)	.21* (.08)	.19* (.09)	.18* (.07)	.12* (.05)	.10* (.05)
Founder industry related international experience	.12* (.05)	.10* (.05)	.10* (.04)	.11* (.05)	.12* (.05)	.13* (.06)	.12* (.05)	.11* (.05)	.10* (.04)	.10* (.05)	.13** (.04)
Founder industry unrelated international experience	.07* (.03)	.06* (.03)	.05* (.02)	.07* (.03)	.06* (.03)	.07* (.03)	.05* (.02)	.08* (.03)	.11* (.04)	.06* (.03)	.09* (.04)
Founder study abroad international experience	.02* (.01)	.03** (.01)	.04* (.02)	.02* (.01)	.02* (.01)	.03** (.01)	.04* (.02)	.03** (.01)	.02* (.01)	.02* (.01)	.02* (.01)
Firm international experience	.15* (.06)	.17* (.08)	.15* (.07)	.12* (.06)	.14* (.07)	.16* (.08)	.14* (.07)	.13* (.06)	.15* (.08)	.11* (.05)	.13* (.06)
Firm international experience squared	.10 (.10)	.12 (.09)	.09 (.10)	.12 (.11)	.10 (.11)	.10 (.12)	.11 (.09)	.13 (.11)	.12 (.12)	.23 (.20)	.32 (.22)
TMT industry specific international experience	.04* (.02)	.06** (.02)	.05* (.02)	.03** (.01)	.06* (.03)	.06* (.03)	.04* (.02)	.02* (.01)	.05* (.02)	.02* (.01)	.04* (.02)
TMT industry related international experience	.02* (.01)	.02* (.01)	.03** (.01)	.03** (.01)	.04* (.02)	.02* (.01)	.01*** (.00)	.01*** (.00)	.02* (.01)	.03** (.01)	.02* (.01)
TMT industry unrelated international experience	.04 (.06)	.08 (.09)	.10 (.08)	.07 (.08)	.08 (.07)	.04 (.03)	.07 (.06)	.06 (.04)	.08 (.09)	.05 (.04)	.07 (.09)
TMT study abroad international experience	.04 (.03)	.04 (.05)	.03 (.05)	.05 (.04)	.03 (.06)	.05 (.04)	.06 (.07)	.04 (.05)	.03 (.05)	.03 (.05)	.06 (.05)
Product scope	.22* (.11)	.21* (.10)	.20* (.08)	.21* (.09)	.18* (.08)	.19* (.08)	.17* (.08)	.15* (.07)	.20* (.09)	.14* (.07)	.17* (.08)
Exploration level	.16 (.10)	.17 (.11)	.15 (.09)	.16 (.09)	.17 (.10)	.16 (.09)	.15 (.08)	.14 (.08)	.16 (.09)	.15 (.08)	.17 (.09)
R&D intensity	.33* (.12)	.28* (.12)	.26* (.12)	.29* (.14)	.28* (.13)	.32* (.10)	.30* (.13)	.28* (.12)	.27* (.11)	.31* (.13)	.29* (.14)
Investments	.23 (.15)	.16 (.18)	.15 (.14)	.18 (.15)	.20 (.15)	.17 (.16)	.15 (.12)	.12 (.16)	.15 (.17)	.15 (.17)	.16 (.19)
Market size	.04 (.03)	.03 (.04)	.05 (.03)	.03 (.04)	.04 (.05)	.05 (.04)	.04 (.03)	.05 (.04)	.03 (.04)	.05 (.04)	.04 (.04)
Year	+	+	+	+	+	+	+	+	+	+	+
Number of firm-year observations	768	768	768	768	768	768	768	768	768	322	446
Adjusted R Squared	.20	.23	.23	.26	.26	.28	.27	.28	.28	.25	.24

*- significant at 5%, **- significant at 1%, significant at 0.1%.

Standard errors in brackets.

Table 3 – Arellano–Bond GMM Regression Models of Founders' Effect on International Expansion

DV= Ln Foreign sales(t)	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 18a	Model 18b
Founder industry specific international experience x firm international experience		.53* (.25)	.52* (.21)	.54* (.22)	.55* (.23)	.54* (.23)	.55* (.25)	.57* (.26)	.59* (.24)	.45* (.19)	.47* (.22)
Founder industry specific international experience x firm international experience squared			-.04* (.02)	-.04* (.02)	-.04* (.02)	-.03** (.01)	-.04* (.02)	-.03** (.01)	-.05* (.02)	-.02* (.01)	-.04* (.02)
Founder industry related international experience x firm international experience				.33* (.16)	.37* (.15)	.34* (.14)	.35* (.12)	.36* (.17)	.38* (.16)	.31* (.14)	.30* (.15)
Founder industry related international experience x firm international experience squared					-.03** (.01)	-.02* (.01)	-.03** (.01)	-.02* (.01)	-.03** (.01)	-.02* (.01)	-.02* (.01)
Founder industry unrelated international experience x firm international experience						.19* (.09)	.21* (.10)	.20* (.09)	.18* (.09)	.18* (.09)	.17* (.08)
Founder industry unrelated international experience squared							.12 (.09)	.10 (.08)	.11 (.10)	.11 (.09)	.10 (.11)
Founder study abroad international experience x firm international experience								.12* (.06)	.10* (.05)	.06* (.03)	.08* (.04)
Founder study abroad international experience squared									.06 (.07)	.04 (.06)	.05 (.07)
Founder international experience diversity		.36* (.15)	.37* (.15)	.33* (.13)	.35* (.14)	.38* (.16)	.37* (.16)	.34* (.24)	.39* (.18)	.24* (.12)	.26* (.13)
Ln Foreign sales (t-1)	.58*** (.03)	.54*** (.04)	.56*** (.07)	.55*** (.05)	.58*** (.08)	.54*** (.06)	.58*** (.06)	.55*** (.07)	.59*** (.09)	.50*** (.09)	.49*** (.11)
Founder industry specific international experience	.18* (.09)	.20* (.09)	.19* (.08)	.14* (.06)	.16*** (.06)	.19* (.09)	.18*** (.08)	.15* (.07)	.13* (.06)	.13* (.06)	.12* (.06)
Founder industry related international experience	.10* (.05)	.09* (.04)	.10* (.05)	.09* (.04)	.11* (.05)	.11* (.05)	.09* (.04)	.08* (.03)	.09* (.04)	.06* (.03)	.08* (.04)
Founder industry unrelated international experience	.08* (.03)	.07* (.03)	.06* (.03)	.08* (.04)	.07* (.03)	.05* (.02)	.07** (.02)	.08* (.04)	.09** (.03)	.09* (.04)	.06* (.03)
Founder study abroad international experience	.06* (.03)	.05* (.02)	.04* (.02)	.07* (.03)	.06* (.03)	.06* (.03)	.05* (.02)	.06* (.03)	.05* (.02)	.07* (.03)	.04* (.02)
Firm international experience	.24* (.10)	.26* (.12)	.23* (.11)	.22* (.11)	.23* (.10)	.27* (.13)	.24* (.11)	.23* (.11)	.22* (.10)	.24* (.11)	.20* (.10)
Firm international experience squared	.13 (.10)	.12 (.13)	.12 (.09)	.11 (.10)	.12 (.11)	.15 (.13)	.12 (.09)	.12 (.10)	.13 (.10)	.11 (.13)	.12 (.10)
TMT industry specific international experience	.05* (.02)	.06* (.03)	.04* (.02)	.02* (.01)	.06* (.03)	.07* (.03)	.05* (.02)	.03** (.01)	.06* (.03)	.02* (.01)	.06* (.03)
TMT industry related international experience	.03** (.01)	.02* (.01)	.02* (.01)	.03** (.01)	.04* (.02)	.04* (.02)	.02** (.01)	.02* (.01)	.03** (.01)	.02* (.01)	.02* (.01)
TMT industry unrelated international experience	.09 (.12)	.08 (.05)	.11 (.07)	.10 (.08)	.09 (.07)	.08 (.06)	.07 (.05)	.06 (.04)	.05 (.04)	.07 (.04)	.06 (.04)
TMT study abroad international experience	.04 (.03)	.03 (.05)	.06 (.05)	.06 (.04)	.03 (.02)	.02 (.03)	.05 (.07)	.06 (.05)	.03 (.04)	.08 (.05)	.05 (.06)
Product scope	.30* (.11)	.31* (.10)	.29** (.09)	.26** (.08)	.25** (.08)	.28* (.10)	.26* (.09)	.25** (.08)	.22* (.08)	.21* (.09)	.20* (.08)
Exploration level	.20 (.11)	.21 (.12)	.20 (.12)	.18 (.13)	.19 (.10)	.21 (.12)	.21 (.13)	.22 (.12)	.19 (.10)	.205 (.12)	.14 (.11)
R&D intensity	.23* (.10)	.18* (.08)	.20* (.10)	.19* (.09)	.20* (.09)	.19* (.08)	.20* (.10)	.19* (.08)	.20* (.09)	.18* (.08)	.21* (.10)
Investments	.23 (.14)	.27 (.17)	.24 (.14)	.20 (.14)	.21 (.13)	.22 (.16)	.20 (.13)	.21 (.13)	.25 (.17)	.20 (.14)	.23 (.18)
Market size	.05 (.03)	.06 (.04)	.05 (.04)	.04 (.04)	.04 (.03)	.06 (.04)	.05 (.03)	.04 (.03)	.03 (.02)	.03 (.03)	.02 (.02)
Year	+	+	+	+	+	+	+	+	+	+	+
Number of firm-year observations	874	874	874	874	874	874	874	874	874	349	525
Sargan Test (Prob>Chi²)	.280	.318	.340	.379	.335	.339	.343	.382	.371	.271	.302
2nd Order Serial Correlation (Pr>Z)	.344	.474	.462	.458	.457	.471	.468	.473	.457	.324	.366
Wald test	329.32	432.51	472.29	497.88	433.39	424.58	432.38	484.97	500.36	372.51	406.11

*- significant at 5%, **- significant at 1%, significant at 0.1%.

Standard errors in brackets.

Table 4 –Below and Above International Experience Mean CEM Regression Models

DV= Ln Foreign sales(t)	Model 19 Below Mean	Model 20 Above Mean	Model 21 Below Mean	Model 22 Above Mean	Model 23 Below Mean	Model 24 Above Mean	Model 25 Below Mean	Model 26 Above Mean	Model 27 Below Mean	Model 28 Above Mean
Founder industry specific international experience	.85* (.34)	-.10* (.05)	.86* (.36)	-.15* (.08)	.83* (.41)	-.12* (.06)	.84* (.37)	-.11* (.05)	.83* (.39)	-.11* (.05)
Founder industry related international experience	.55* (.20)	-.06* (.03)	.53* (.23)	-.05* (.02)	.52* (.25)	-.04* (.02)	.53* (.22)	-.06** (.02)	.50* (.24)	-.07* (.03)
Founder industry unrelated international experience	.27* (.13)	.09 (.06)	.25* (.11)	.10 (.12)	.26* (.12)	.11 (.14)	.23* (.10)	.09 (.07)	.28* (.13)	.08 (.13)
Founder study abroad international experience	.15* (.06)	.10 (.09)	.13* (.05)	.08 (.07)	.14* (.07)	.09 (.07)	.12* (.05)	.08 (.06)	.16* (.06)	.06 (.07)
Founder international experience diversity X Founder industry specific international experience			.03 (.04)	.06* (.02)	.02 (.03)	.05* (.02)	.04 (.05)	.07* (.03)	.01 (.01)	.03** (.01)
Founder international experience diversity X Founder industry related international experience					.02 (.02)	.03** (.01)	.03 (.03)	.05* (.02)	.01 (.02)	.02* (.01)
Founder international experience diversity X Founder industry unrelated international experience							.03** (.01)	.02 (.03)	.04** (.02)	.01 (.01)
Founder international experience diversity X Founder study abroad international experience									.08* (.03)	.01 (.04)
Ln Foreign sales(t-1)	.65*** (.09)	.72*** (.09)	.66*** (.06)	.68*** (.05)	.66*** (.05)	.69*** (.07)	.68*** (.04)	.63*** (.07)	.62*** (.06)	.65*** (.07)
Founder international experience diversity	.24* (.11)	.22* (.09)	.19* (.09)	.21* (.08)	.26* (.12)	.22* (.09)	.21* (.08)	.23* (.11)	.20* (.10)	.19* (.07)
Firm international experience	.15* (.06)	.06* (.03)	.14* (.06)	.15* (.06)	.14* (.07)	.15* (.07)	.15* (.07)	.16* (.08)	.12* (.06)	.15* (.08)
TMT industry specific international experience	.04* (.02)	.06* (.03)	.05* (.02)	.05* (.02)	.06* (.03)	.07* (.03)	.04* (.02)	.05* (.02)	.05* (.02)	.07* (.03)
TMT industry related international experience	.02* (.01)	.02* (.01)	.03** (.01)	.03** (.01)	.04* (.02)	.02* (.01)	.03** (.01)	.02* (.01)	.04* (.02)	.02* (.01)
TMT industry unrelated international experience	.04 (.06)	.08 (.09)	.06 (.08)	.07 (.08)	.08 (.07)	.05 (.03)	.07 (.06)	.04 (.03)	.05 (.04)	.07 (.09)
TMT study abroad international experience	.02 (.05)	.04 (.03)	.06 (.06)	.05 (.04)	.03 (.04)	.07 (.08)	.05 (.04)	.03 (.03)	.04 (.06)	.03 (.05)
Product scope	.12 (.08)	.15* (.07)	.15 (.08)	.20* (.09)	.17 (.09)	.19* (.08)	.16 (.08)	.12* (.06)	.15 (.09)	.18* (.09)
Exploration level	.16 (.09)	.14 (.08)	.15 (.09)	.17 (.09)	.17 (.10)	.15 (.09)	.15 (.08)	.15 (.09)	.14 (.08)	.16 (.09)
R&D intensity	.25* (.10)	.28* (.12)	.26* (.12)	.29* (.14)	.28* (.13)	.31* (.10)	.30* (.13)	.24* (.10)	.26* (.12)	.25* (.11)
Investments	.18* (.09)	.11 (.16)	.15* (.07)	.12 (.15)	.20* (.10)	.19 (.16)	.15* (.07)	.18 (.13)	.11* (.06)	.15 (.17)
Market size	.03 (.02)	.05 (.04)	.05 (.03)	.03 (.04)	.03 (.05)	.05 (.03)	.04 (.03)	.03 (.02)	.05 (.03)	.03 (.04)
Year	+	+	+	+	+	+	+	+	+	+
Number of firm-year observations	486	282	486	282	486	282	486	282	486	282
Adjusted R Squared	.23	.22	.24	.25	.26	.27	.27	.28	.26	.27

*- significant at 5%, **- significant at 1%, significant at 0.1%.

Standard errors in brackets.