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The Evolution of Initial Co-investment Syndications in an Emerging Venture Capital Market☆

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ABSTRACT

Prior research highlights the importance of co-investments among foreign and domestic investors in an emerging VC market. Yet, the question of how domestic and foreign VC syndicate partners select each other for their *initial co-investment* remains an open one. The question is important because uncertainty in emerging markets exposes participants to risks associated with higher levels of agency, problems of adverse selection, and potential opportunism. Building on agency theory, we hypothesize and test the risk mitigating effects of economic and social signals on the choice of initial co-investment ties among domestic and foreign VCs in an emerging market. Our work has implications for international management research, the practice of international VC investing, and public policy that tries to stimulate venture driven ecosystems.

1. Introduction

Venture capital (VC) investing is globalizing at an increasing rate (Guller and Guillén, 2010; Meuleman and Wright, 2011; Aizenman and Kendall, 2012). North American, European, and Asian venture capitalists (VCs) now routinely invest across national borders either directly or in partnership with each other. In fact, over the last two decades, many VCs have leveraged their home country prominence to build cross-regional investment networks (Jääskeläinen and Maula, 2014; Dai et al., 2012). Using these networks, they look to access higher investment returns and broader diversification opportunities in the emerging economies of Asia, Latin America, Africa, and the Middle East. Governments welcome such private capital flows because a robust venture capital market in an emerging economy fosters an entrepreneurial culture and attracts further foreign capital and expertise (Tykvova and Schertler, 2011). Co-investment by domestic and foreign VCs not only helps to establish the domestic venture capital industry but also increases the rate of success among ventures from emerging economies as they seek global markets (Rosiello et al., 2011).

Although prior research does inform what we know about the internationalization of established VCs from developed economies, it falls short in explaining how VC actors step into an emerging venture capital market. *In this paper, we specifically ask: how do domestic and foreign venture capital syndicate partners select each other for their initial co-investment partnership*? The question is significant because internationalization to emerging markets increases risks for VCs venturing abroad and the initial co-investment syndication partnership maybe the most challenging and path dependent step. In emerging venture capital markets,

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standards of practice could be uncertain, legal contracting idiosyncratic, and cultural norms distinctly different from those in the country of origin. Moreover, in their early stages, emerging VC markets also lack the dense investment networks on which VC firms from developed markets typically rely to source opportunities, monitor ventures, and select and monitor co-investors (Hochberg et al., 2007; Jääskeläinen and Maula, 2014). Given that VCs already operate in a risky corner of finance, undertaking investments in an emerging VC market exposes them to additional levels of agency risks—the most immediate of which are problems of adverse selection and opportunism by investment partners. At the same time, internationalization stretches VCs' existing capabilities in selection, monitoring, and value creation. To successfully venture into emerging markets, VCs need to draw on mechanisms that mitigate risks, particularly as they form initial co-investment partnerships.

Building on agency theory, we examine the effects of observable economic and social signals on the choice of syndicate partners among domestic and foreign VCs in an emerging market (Hopp and Lukas, 2014). We test our hypotheses using a decade-long observation window at the dawn of the establishment of the VC industry in Israel (1992–2002). During this period, investors created over 5700 initial dyadic co-investment ties of which 80% involved one or more foreign investors from across the world. Notably, the emergence and sustainability of venture capital markets and, more broadly, the successful growth of venture-driven ecosystems clearly depend on attracting foreign investors and international private capital flows. Because Israel's VC industry is widely considered one of the most successful to ever emerge, we see it as a highly appropriate and vastly under-explored setting for a study that probes the core of how new cross-border syndication partnerships become established in a new venture capital market.

As we move through the paper, first, we describe the Israeli VC context, next provide theoretical development of testable hypotheses, then move to present our methodology and analytic results, and finally discuss their implications and the study's conclusions.

2. Creation of a venture capital financed entrepreneurial ecosystem

For all intents and purposes, the opportunity for foreign investors to participate systematically in the financing of entrepreneurial technology firms in Israel was born as a result of proactive public policy. With itself as a co-investor, the Israeli government established the Yozma Program and helped to create a series of structured VC limited partnership funds. The government invited an initial set of skilled international partners to co-invest in the funds thus launching a formalized and internationally embedded VC industry. The objective of the government's policy was to encourage foreign VC firms not only to enter Israel and contribute to the development of a local VC industry but also to underpin the entry into international markets of Israeli high technology firms. In 1993, immediately after our study's observation period opens, the first ten VC funds established through the Yozma Program came into existence. Prior to that, Israel had fewer than ten professional VC funds with a total of approximately $150 million under management. Between 1993 and 1997, the Israeli government invested close to $250 million in an effort to create a VC industry. By 2002, the point at which we close the observation window on our study, the government had exited its investments in the VC funds it helped create and largely successfully privatized the Yozma fund itself. However, Israel's VC community had grown to include more than 150 funds, which had raised close to $10 billion US dollars for investment in high-technology firms (Khavul, 2001, 2005; Avnimelech and Teubal, 2006).

The vast majority of the capital that flowed into the Israeli VC industry came from limited partners based outside of Israel. Moreover, international VC funds, as well as VC arms of corporations, and banks, were active direct participants in VC-led syndication partnerships. For example, after Canada and the UK, Israel was the third most favored destination for US VC investments (Guler and Guillen, 2004; Guler, 2007) and routinely a target destination for scores of other international technology giants in search of research and development, investment, and acquisition opportunities. Our focus on Israeli VC syndication, in the first decade that constituted its period of early emergence, allows us to examine simultaneously the creation of a domestic VC industry through public policy and its subsequent exploitation through private initiative.

New VC firms often face limited deal flow as well as challenges in finding suitable investment opportunities. In addition, they need to assemble sufficient capital to meet a particular investee firm's capital requirements. Therefore, in the early stages, nascent Israeli VC firms and other institutional investors in Israel faced liabilities of newness that created powerful incentives to syndicate with other investors at home and abroad.

Examining our research question in the context of both an emerging and a rapidly growing market afforded us a chance to build a rich, original longitudinal dataset that yields insights into the pattern of VC co-investment ties that arise and evolve over time. We believe that our results can generalize beyond the present empirical setting as they offer insights about the interplay between foreign and domestic investors for international business researchers, venture capital practitioners, and public policy makers.

3. Theory and hypotheses

3.1. VC syndication partnerships: Experience and status

VC syndications, one method of financing high technology start-ups, are voluntary arrangements that involve more than a simple arms-length transaction. In syndication partnerships, multiple investors ally to contribute not only capital but also tangible and intangible resources that a portfolio company requires as it develops and commercializes its innovations. Such partnership generally exists for a set period of years during which the partners take on a number of tasks with the goal of maximizing their return on the investment (Markowitz, 1952). Striking a deal among a syndicate of investors and a portfolio company involves sharing due diligence, structuring the deal, and establishing incentive and compensation systems and ownership positions. Thereafter, once the investment has been made, one or more members of a syndication partnership typically serve as the lead

investor acting as a liaison between the partners in the syndicate and the company in which they invested. Investors provide mentoring and strategic advice, monitor the company and its progress, and generate contacts and other forms of value to the enterprise (Bygrave and Timmons, 1992; Sapienza et al., 1996; Hellmann and Puri, 2002; Manigart and Wright, 2013; Tian, 2011; Ma et al., 2013). Ultimately, investors play an active role in exit decisions such as trade sales, initial public offerings, or liquidation. In all these roles, the syndicate partners share in the tangible and intangible contributions made to the investment, as well as the risks and rewards that arise from the investment.

However, VC investing poses key challenges. First, where to obtain the technical and market knowledge to evaluate investment opportunities and second, how to mitigate risk inherent in each investment. Co-investing with others can solve both of these problems, yet syndication partners also bring potential pitfalls with them. Investment partners bring complementary knowledge and experience but also risks of adverse selection and opportunism. Adverse selection results from information asymmetry between potential partners, which allows partners to overstate the quality of their capabilities and potential contribution. Opportunism results from partners seeking to expropriate knowledge, skills, information, and capabilities from partners by imitation, predatory hiring, and numerous other potential acts that allow a partner to seek benefits at the expense of their partner.

In mature VC markets, it is dense local networks of investors, established over decades that serve as a strong source of soft information about the quality, reliability, and capabilities of potential new syndicate partners (Lerner, 1994; Hochberg et al., 2015; Peterson, 2004). Much of this soft information transmits informally within the network. Dense local networks also provide a means of disciplining bad actors by damaging reputations and excluding them from high potential deals in the future (Hochberg et al., 2010). These potential *ex-post* sanctions create strong incentives for *ex-ante* good behavior.

In geographies where the VC market is just emerging, there are many new entrants. Investors have limited soft data particularly about new entrants and face even higher risks of adverse selection and opportunism. This puts a premium on any given VC firm's ability to understand and evaluate their potential co-investment partners. We argue that experience and status can serve as substitute mechanisms for dense ties. Prior literature clearly shows that learning by doing builds capabilities. The more experience potential syndicate partners have investing in the same emerging market, the more sensitive they will be when evaluating the nuances of a new potential partner. Moreover, the greater the overlap in the potential co-investors' prior industry investment experience, the greater will be the ability of VCs to assess one another. An overlap in industry knowledge allows for more accurate communication and transfer of information between the potential co-investors about their prior investing behavior. Likewise, commonality of industry investment experience suggests a larger, shared industry network, which can be powerful in disseminating information through non-investment channels (Cox Pahnke et al., 2015). Thus, the probability of two firms co-investing should increase the more experience they have together and the greater the overlap in their prior industry-specific experience.

Finally, social status of a potential co-investor can also serve as a mechanism for picking partners for an initial co-investment. Status is a socially constructed resource which can "generate privilege or discrimination"(Washington and Zajac, 2005: 283). A firm's status is influenced by the status of the entities with whom the firm affiliates and reflects the firm's perceived position in society based on an observed pattern of affiliations (Sauder et al., 2012). Status is distinct from reputation in that it is generally conferred on the firm by others whereas reputation is best understood as broad public recognition of the quality of a firm's activities and outputs (Rindova et al., 2005). Status serves as a quality signal when uncertainty is high (Lynn et al., 2009). Given these advantages, high status actors become desirable co-investors, thus, the probability of two firms co-investing will be higher if one is of high status.

In the next section, we offer three sets of hypotheses which show that the contingent effects of experience and status on the likelihood of co-investment depend on whether investors are co-located. Foreign and domestic VCs face significantly different challenges when deciding with whom to invest. We argue that experience and status are more important when the investment partnership is between foreign and domestic VC or between two foreign VC but less important when between two domestic VCs.

3.2. Contingent effects of experience and status on the co-investment decisions between foreign and domestic VCs

3.2.1. Industry investment experience

The effect of similarity of industry investment experience on the likelihood of an initial co-investment partnership is likely to diverge based on whether investment partners are co-located. Geographic proximity influences group composition and network tie formation at both the individual and group levels (Goffman, 1963; Granovetter, 1973; Powell et al., 2005; Sorenson and Stuart, 2006). In the VC industry, these ties serve to transfer information about investor behavior, potential opportunities, pricing, and venture performance between firms (Hochberg et al., 2007; Lerner, 1994). Proximate organizations, such as two domestic VCs, are likely to share local knowledge and social networks, which decreases the potential for value of similar industry experience in increasing the likelihood of domestic–domestic partnership

Moreover, for domestic investors, the VC market is a locally competitive, and, when domestic VCs also share an industry focus, competition can be intense (Hochberg et al., 2015). Competition stems from the battle for foreign VCs as co-investors and lead positions in high potential investment opportunities. Domestic VCs that are able to successfully find and lead investments increase their reputations and become more desirable potential investors and investment partners. Research finds that entrepreneurs will accept a lower valuation in order to work with more prominent VCs (Hsu, 2004). As such, since domestic VCs strive to become the destination for both entrepreneurs and foreign investors, two domestic VCs are less likely to partner if they also have similar industry investment experience.

On the other hand, foreign VCs entering an emerging market face the liability of foreignness (Sauder et al., 2012). They may lack familiarity with the domestic institutions and cultural norms and resources on the ground to monitor and govern host country investments. This increases the risks of investing in an emerging VC market and incentivizes foreign VCs to seek trusted co-

investors. However, when a VC market is just emerging, a cadre of young domestic VCs with limited track-record increases the risks of adverse selection and opportunism for the foreign VC. Under these circumstances, overlapping industry experiences provide enhanced network monitoring and discipline. Shared industry experience also leads to overlapping knowledge and a shared language. These enhance the ability to judge the quality of a potential partner and subsequent communication between partners.

Further, we argue that for two foreign VCs, similarity of industry experience works to increase the likelihood of co-investment. Since they are not investing in their home markets, competition among foreign VCs with similar industry foci is likely to be tempered. At least initially, investments abroad are not as visible to their competitors in the home country market nor are two foreign VCs competing directly to maintain or enhance their position in their respective local market. With shared industry investment experience, foreign VCs are more likely to have information on each other as potential partners. In addition, as members of the same industry network, they put their reputation at risk when they partner with another member of the same industry network. Through these mechanisms vetting and disciplining is enhanced, which in turn mitigates the risks of adverse selection and opportunism. Thus, a foreign VC with similar industry experience may be a more attractive co-investor then an unknown domestic VC in an uncertain emerging VC market. This leads to Hypotheses 1a and 1b:

Hypothesis 1a. *In an emerging VC market, the likelihood of domestic VCs and foreign VCs entering into an initial co-investment will increase as the similarity of their industry investment experience increases.*

Hypothesis 1b. *In an emerging VC market, the likelihood of two Foreign VCs entering an initial co-investment will increase as the similarity of their industry investment experience increases.*

3.2.2. Emerging market investment experience

Prior investing experience is also likely to influence co-investment decisions. Behavioral internationalization models (Johanson and Valhne, 1977, Madhok, 1997) posit that internationalization is a cumulative, path-dependent process, in which investment abroad adds to the firm's knowledge. Path dependence reflects a firm's incremental patterns of behavior that are contingent on and a function of its prior experience. The knowledge accumulated in the past sets a trajectory for the internationalization of the firm in the future. Empirical evidence suggests that experiential knowledge that firms gain in the early years of internationalization is extremely important for their subsequent resource commitments in the international market (Bilkey, 1978; Naidu and Rao, 1993). In fact, managers' perceptions of barriers to entry and the attractiveness of future international investments are contingent on their experience (Sullivan and Bauerschmidt, 1990), so path dependency may have a strong effect on resource commitment of VCs in foreign markets

In fact, a pattern of path dependence in the internationalization of VC investment has been demonstrated empirically (Aizenman and Kendall, 2012). Undertaking an investment in a new international market requires a substantial commitment on the part of organizations (Khavul et al., 2010a; Wood et al., 2011; Yamakawa et al., 2013). VCs must invest time and money traveling, learning the market, creating a network of advisors in host countries. They must promote their firm among entrepreneurs and establish relationships with potential co-investors. Once initial investments are made, VCs embark on a path along which they are likely to continue unless they receive a strong negative signal (Aizenman and Kendall, 2012). However, as foreign VCs continue on their path in an emerging VC market, their understanding of the institutions, cultural norms, and dynamics of the emerging market improves as does their connectivity to the local investment community. Acquired knowledge builds capabilities and reduces some of the risk of investing in foreign VC markets (Khavul et al., 2010b). In addition, connectivity to local investment networks decreases information asymmetry between the foreign VCs and potential co-investment partner and lowers risks of adverse selection that result from inevitable information asymmetry between local and foreign actors (Akerlof, 1970). For the domestic VCs, who are potential partners, increased connectivity of foreign VCs raises the reputation costs of opportunistic behavior. In fact, as the investing experience of domestic VCs increases, the reputation they establish becomes a highly valuable intangible asset, which they put at risk when they enter into co-investments. This puts a further damper on potential for adverse selection and opportunism in the co-investment process.

For a foreign VC considering entering an emerging market, co-investing with another foreign VC with experience in the same market reduces the costs of both finding and evaluating a partner. The sourcing challenge is diminished by the experienced foreign VCs network in the emerging VC market. The partner selection issue is mitigated by the ability to evaluate the experienced foreign VCs through an existing experience network. This increases the desirability of one foreign VC as a co-investor for other foreign VCs seeking to invest in the emerging VC market. In essence, VCs become local guides for other foreign investors. This leads to Hypotheses 2a and 2b:

Hypothesis 2a. *In an emerging VC market, the likelihood of Domestic VCs and Foreign VCs entering an initial co-investment will increase as the combined number of prior investments in the emerging markets increases.*

Hypothesis 2b. *In an emerging VC market, the likelihood of two Foreign VCs initiating co-investment will increase as the combined number of prior investments in the emerging markets by these potential co-investors increases.*

3.2.3. Status in the emerging market

VC firms located in the same emerging domestic market will be able to closely observe the actions and behaviors of their co-located competitors. While it takes many years for the objective outcome of most VC investments to be realized, the domestic VCs in an emerging market will be able to observe the behaviors of other actors. Quality players will be more easily recognized

because of their observed behaviors, and reputation effects will be readily transferred through the developing network among co-located participants. Under these conditions, reputation will begin to supplement or supplant status in co-investing decisions among domestic VCs seeking to co-invest with each other

By contrast, foreign VCs will be unable to easily observe potential domestic co-investors' prior actions. They are also less likely to have a central role in the developing local network. Moreover, as domestic VCs rapidly become protective of their markets, they are likely to be wary and less willing to share information with foreign VCs (Hochberg et al., 2010). Under these circumstances, foreign VCs will have less access to reputational information on domestic VCs and will rely more heavily on a VCs status in the emerging VC market. As noted above, foreign VCs considering entering an emerging VC market face an opaque market place with unknown actors and evolving institutions, norms, and values. They will seek co-investors who have in-depth knowledge of the emerging market. Although reputation based on outcomes from investing in the emerging VC market is nascent at best, status, particularly where it is conferred by an outside body, is observable. The high degree of uncertainty will make high status VCs desirable co-investors and drive foreign VCs to seek them out as co-investors. This leads to our final set of hypotheses:

Hypothesis 3a. *In an emerging VC market, the likelihood of Domestic VCs and Foreign VCs entering an initial co-investment will increase if one or more of the VCs is high status in the emerging market.*

Hypothesis 3b. *In an emerging VC market, the likelihood of two Foreign VCs entering an initial co-investment will increase if one or more of the VCs is high status in the emerging market.*

4. Method

4.1. Empirical context and data

We test our hypotheses in the context of syndicated VC investments by domestic and foreign VC investors in the emerging Israeli high-technology venture capital market between 1992 and 2002. The Israeli VC industry offers a unique opportunity to observe the formation of new co-investment partnerships between domestic and foreign VC investors focused on exploiting the rapid growth of new technology venture opportunities in Israel.

To analyze the evolution of new partnerships in this industry, we constructed a dataset that incorporates substantially all syndicated high-technology VC investments in Israel over the first decade (from 1992 through 2002) of the industry's existence. Given our interest in studying the strategic partnership between organizations rather than individuals, we restricted our dataset to syndicated investments made by institutional VC investors. Our data specifically exclude angel investors or individuals but include VC arms of corporations and banks.

The research frame for the analysis is based on 933 high-technology firms that received 1670 rounds of equity capital from 1992 and 2002. Our study examined the likelihood of new partnership formation between two institutional VC investors. To this end, we defined a new co-investment partnership as one in which a pair of partnership partners had *not* previously syndicated an investment together in Israel.[1] The 5736 new (dyad) partnerships we identified involved institutional investment in the final 596 investee firms over 937 rounds of financing and included 1295 unique investors.[2]

Our goal was to obtain a research frame at the population level on VC investments in technology-based firms in Israel. Because a single, complete, and validated source of data on VC syndication in Israel does not exist, we used multiple sources of data, which included the Israel VC Association yearbooks (1996–2003) as well as the association's on-line database, especially for earlier years. We supplemented these sources with multiple years of the D&A High Technology Directory (2000–2004), Venture Economics, Venture Source, proprietary investment banking directories, and archival press searches.

In a young and dynamically evolving industry, such comprehensive data are notoriously difficult to obtain. However, following the National Venture Capital Association model in the US, the Israel Venture Capital Association collects voluntarily reported investment information from its members. It is reasonable to assume that, as the VC industry evolved and became more formalized, compliance with voluntary reporting increased. As with most other data that try to be comprehensive and especially in the case of privately held firms based in countries with no publicly available corporate accounts, our dataset may not be exhaustive. In particular, in the early years, the data may understate the level of syndication present. However, we believe that our dataset does capture the substantive population of Israeli high-technology firms that received syndicated VC investments over the period under observation.

[1] It is possible that some pairs of investors could have previously invested together outside Israel or invested in non-venture capital syndicates in Israel. We cannot rule out this possibility but believe that it is not a serious confounding factor either theoretically or empirically. On theoretical grounds, we are interested in understanding how new partnerships are formed in a nascent industry (Israeli venture capital finance) and, in the case of foreign investors, in a new geography. Our dataset is comprehensive on this point. On empirical grounds, we believe that if prior partnerships in venture capital syndication existed, they most likely occurred between pairs of foreign venture capital firms. These represent only 18% of partnership pairs in our data.

[2] Note that if four investors that had not previously joined syndications together participated in a round, the four would have created eight new pair-wise partnerships in that round All analysis is at the dyad level.

4.2. Estimation procedures

In order to test our hypotheses about initial partnerships, it was necessary to examine not only the 5736 new (dyad) partnerships that appeared in our dataset but also the instances where partnerships did not materialize. Logistic regression, the traditional estimation method used in the study of partnerships, is suitable for this purpose. The dependent variable in the logistic regression indicates the formation of a partnership between two institutional VCs to invest in a particular company in a particular round of finance.[3] For our purposes, we were interested in all new partnerships, regardless of the round in which they occurred.[4]

Adapting the methodology used by previous researchers in this arena (Gulati, 1995; Gulati and Gargiulo, 1999; Podolny, 1993; Stuart, 1998), we coded instances of a new partnership between a pair of actors as 1 and 0 otherwise. The logistic regression estimates the effect of the independent variables on the probability that two parties will enter a partnership. The traditional logit model is $\text{Prob}(Yijt = 1) = \Lambda(\alpha + \beta' Xijt)$ where $\text{Prob}(Yijt = 1)$ is the probability of an investment partnership (dyad)[5] between two institutional investors i and j at time t; Λ is the logistic cumulative distribution; $Xijt$ is a vector of time-variant explanatory variables; and α and β are the coefficients to be estimated.

Sorenson and Stuart (2001) raise two concerns regarding this approach. The first concern is methodological. Making a list of all possible partnerships that a firm could enter introduces the firm many times into the dataset. Thus, if there are n actors, each actor enters $n - 1$ times, since the partnerships are symmetric and the total possible number of pairings could be $(n^*(n - 1)/2)$. The large number of repeat occurrences of each firm can systematically underestimate the standard errors for firm attributes that do not change over time. The second concern is a pragmatic one. If we included all pairs of investors, we would have 837,865 pairs of investors at each investment round, that is (1295*1294/2). This leads to a substantial computation burden, but sampling randomly from the data offers a way to overcome the computational problem. However, random sampling falls short of the ideal. New partnerships are relatively rare events in the overall dataset, and we wanted to include all of them in our study. In rare-event logistic regression, ones are more informative than zeros, and for most rare events, the probability of a relationship yields very small estimates (King and Zeng, 2001).

In order to deal with these challenges, we decided to follow the approach of Sorenson and Stuart (2001) and include in our study all the realized new partnerships and a matched sample of non-realized partnerships: partnerships that might have occurred, but did not. Including all the realized partnerships and a random sample of non-realized partnerships imposes a different problem on the estimation method, however. Logistic regression is open to bias when the proportion of positive outcomes does not match the proportion of positive outcomes in the population. This problem is not restricted to the constant term but may include coefficient estimates, since logistic regression is a multiplicative model (King and Zeng, 2001). It is possible to correct for this difference using a weighted exogenous sampling maximum likelihood estimator (WESMLE) that maximizes the weighted log likelihood function. King and Zeng (2001) show that, in the case of rare-event logistic regression, even the WESMLE estimators can be open to bias. They recommend using a weighted least squares approach to estimate the bias. Following King and Zeng (2001) and Sorenson and Stuart (2001), we implemented this procedure in STATA 13 as a RELOGIT estimation function as follows: $\text{Bias}(\beta) = (\chi'\omega\chi)^{-1}\chi' W\xi$, where $\xi = 0.5Q_{ii}[(1+\omega_1)\Pi_i - \omega_1]$, the Q are the diagonal elements of $Q = X(X'WX)^{-1}X'$, $W = \text{diag}\{\Pi_i\ (1 - \Pi_i)W_i\}$, and W_1 represents the fraction of ones (events) in the sample relative to the fraction in the population. We use robust clustering on the investor firm to control for any residual non-independence (King and Zeng, 2001).

To create a matched sample of non-realized partnerships, we drew an equivalent size random sample of non-realized initial partnerships pairs between two investors, quarter by quarter for the 11 years spanned in our dataset. We did so by drawing at random, for each realized partnership in a given quarter and stage (early or late stage[6]), a pair of investors each of whom made one or more investments in that quarter,[7] at the same investment stage (early or late), and who had not currently or previously allied with one another. Thus, in drawing the matched sample, we exercised special care to ensure that the potential pairings of investors could have resulted in a new partnership, but did not.

4.3. Dependent variables

The dependent variable for our analysis is the likelihood of an initial syndication co-investment between two institutional VC investors. To construct the likelihood of an initial co-investment, we used a two-stage process. First, we constructed for each quarter over the 11 years spanned by our dataset a two-dimensional matrix of investors organized by the start-up firms in which they invested in that particular quarter. Investors were the row headers and investee companies were the column headers.

[3] In venture capital investing, it is common for investors to stage their investment, contributing successive rounds of capital as the investee firm reaches various milestones. This approach mitigates risk for the investor by investing funds only after some of the inevitable uncertainties have been eliminated (technology proven, prototype built, market test completed, first customers won, and so on). It also benefits the entrepreneurial team, who, based on the progress they make in developing the business, are often able to raise later rounds of capital at more attractive valuations, thereby limiting the dilution of their ownership stake in the firm (Gompers, 1995).

[4] It is common in venture capital investing for venture capital investors that participate in early rounds to invite new investors to join an investment syndicate as later rounds are raised (Gompers and Lerner, 1999).

[5] Some syndicated rounds contained three or more investors, in which case each pair of investors in the syndicate was treated and coded as a dyad.

[6] The first and second rounds of institutional capital received by a given firm were classified as early stage and all later rounds were classified as late stage investments. In the Israeli venture capital context during the period of study, investing activity was focused on new and early stage firms, so we are confident that the first and second rounds of investment were consistently made in young firms.

[7] In five cases, it was not possible to match the realized partnership with non-realized pairs drawn from the same quarter's investments, as no (or not enough) investors in our sample had been active in that quarter and at that stage of investment. In these cases, we drew the matched pair from the immediately preceding quarter.

The value in the cell is 1 if an investor firm invested in that company, 0 if it did not. This matrix was then transformed into an affiliation matrix of realized co-investments with VC firms as both the row (Investor 1) and column (Investor 2) headers, where the value in each cell is 1 if two firms invested in the same company in the same quarter and 0 if they did not. This process was repeated 44 times to yield 44 matrices (11years * 4 quarters = 44 matrices). Finally, as our focus in this study is on new co-investments, only the first time a pair of investors co-invests was included; all subsequent co-investments by the same pair of investors were eliminated from this variable. We then constructed a matching set of non-realized co-investments by the process described earlier, wherein all cells were coded zero. This procedure resulted in a dataset containing 5736 realized and 5736 unrealized initial (dyad) partnerships.

4.4. Independent variables

4.4.1. Industry investment experience

We measured the degree to which a pair of VC investors share industry expertise based on their *prior* investment portfolios in the VC market in Israel. Two investors that invest heavily in, say, computer software companies, are more similar than another pair of investors, one of which has a portfolio of computer software investments and the other a biotechnology portfolio. Based on their primary line of business, the investee firms in the dataset were assigned to one of four investee categories: information technology/software (35.1%), communications/wireless (37.9%), biomedical (16.8%), and semiconductor-hardware materials (9.3%).

To construct our measure of similarity in the industry expertise of two investors, we calculated the proportion of each investor's prior investments[8] that had occurred in each of the four investee categories. Difference scores were calculated as the sum (across all four investee categories) of the absolute differences between a pair of investors' proportions. Hence, the range for the similarity of industry expertise variable is between (0) and (2), with (0) representing a pair of investors with identical proportions in *all* four investee categories, and (2) representing a pair of investors who made no investments in a common investee category. In the analysis, the investment industry experience variable is mean centered.

4.4.2. Syndication investment experience

Some VC investors have more experience than others. In addition, they may have deeper insights into the merits of particular deals based on their experience, and their presence in a deal may provide a signal of the investee company's merit, thus enhancing the investee's chances of being successful. These factors may influence the syndication activity of investors on both sides of the co-investment partnership dyad. We control for partner syndication experience using the accumulated number of previous Israeli investment rounds[9] by each investor in our dataset. In the analysis, syndication investment experience is mean centered.

4.4.3. Founding network investor

Whereas, the industry investment experience and syndication investment experience variables above reflect the contingent economic effects on the likelihood that two VC investors will form an initial alliance, founding network investor captures the social status of VC investors within Israel's VC market. Founding network investor variable reflects ascribed status; that is, a demographic characteristic of an organization which is conferred by an external body (or more typically at birth). It is distinguishable from achieved status which is the result of activities and accomplishments over the lifecycle (Merton, 1968). To this end, we categorized the twenty VC investors who were part of the original government program to set up the VC market in Israel and the Yozma fund itself are designated at 1 and others as zero.

4.4.4. Co-investor geographic location

Our dataset includes both Israeli investors and investors from other countries, the latter typically from Europe, North America, and Asia. Israel is a small country and all cities within Israel are within a couple of hours driving time of one another, so we deemed the exact distance between domestic investors not sufficiently meaningful in this context to differentiate it (Bygrave and Timmons, 1992; Sahlman, 1990). Thus, our measure of co-investor geographic location is based on whether syndicate investors form domestic only co-investment partnerships, domestic–foreign partnerships, or foreign–foreign partnerships.[10]

4.5. Control variables

The dyad structure of our dataset and the matched sample of unrealized initial alliances constraints of the rare-event logistic analysis force a parsimonious choice of control variables at the level of the partnership dyad. Our regression model includes controls that account for (a) the stage of investment and (b) the organizational form of the partnership, and (c) year cohorts. Here, we present the control variable definitions but discuss alternative robustness tests for controls in the results section.

[8] We calculated these proportions for each investor's investments made in years prior to the investment in a given round in our study.

[9] We use investments in our dataset made in the years prior to a given investment round for this purpose.

[10] It is possible that some pairs of foreign investors could be geographically close to one another, perhaps even in the same city (e.g., two foreign investors from Boston investing together in an Israeli firm). Across the entire dataset, however, such partnership pairs are not systematically as close as partnerships between a domestic–domestic pair of firms in Israel.

4.5.1. Stage of investment

We controlled for the stage of financing the firms raising money were seeking from their VC investors. If the round for which VC investors were syndicating was either seed or start-up stage, it was coded as (1) and all later rounds were coded (0).

4.5.2. Organizational form

VC investors in our data represent venture capital firms as well as the VC arms of banks and corporations. We control for this factor using differences in the organizational type of VC investors. Co-investment pairs in which both investors are of the same type (venture capital, bank, or corporate investor) are coded (1), while pairs consisting of different types of investor are coded (0).

4.5.3. Year cohorts

We use four cohort year fixed effects to take care of any unobserved heterogeneity that is specific to a period in the evolution of investing in the emergence of the VC market. These are grouped as follows: year 1 cohort (1992–1995), year 2 cohort (1996–1999), year 3 cohort (2000–2001), year 4 cohort (2002). Our objective was to demarcate a cohort at points that are meaningful in the history of the emergence of the VC market.

Finally, each pair of investors forming a new initial co-investment in our dataset is unique. However, an investor may form more than one new co-investment tie within a single syndicated investment round as well as in other rounds over the 11 years we study. To control for the fact that the investor may appear more than once in the analysis, we use the cluster function in STATA13 to estimate standard errors that are conditional on the fact that the investors are repeated (White, 1980).

5. Results

Of the 5736 initial partnerships in our data, 20.5% occurred between two domestic Israeli investors, 42.8% between domestic and foreign investors, and 37.7% between two foreign investors. Where more than two investors participated in an investment, each pair that was "new" was treated as a co-investment tie. The evolution of the initial VC investment network is both dramatic and at the same time entirely in line with the evolution of the high technology sector. In 1992, there were six new co-investment ties reported in the archives. In 2000, the number of new co-investment ties reached a peak of 2405, and then began to taper off to 825 in 2002. Eighty percent of the new co-investment ties involved one or more foreign investors. Such descriptive data support the commonly acknowledged reality that historically the syndication of VC investments in the Israeli high-technology sector has been about attracting foreign investors to bring in their financial resources and their industry expertise (Avnimelech and Schwartz, 2009; Engel and del-Palacio, 2011; Khavul, 2005).

Table 1
Descriptive statistics.

		M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1	Initial partnership	0.500	(0.500)												
2	Year cohort 1 (1992–1995)	0.011	(0.103)	0.000											
3	Year cohort 2 (1996–1999)	0.225	(0.420)	0.000	−0.056										
4	Year cohort 3 (2000–2001)	0.620	(0.490)	0.000	−0.132	−0.689									
5	Year cohort 4 (2002)	0.144	(0.350)	0.000	−0.043	−0.221	−0.524								
6	Same organization form	0.624	(0.485)	0.055	−0.002	0.029	−0.062	0.052							
7	Stage of investment	0.310	(0.460)	0.000	0.114	0.305	−0.148	−0.192	−0.001						
8	Domestic–domestic partnership	0.203	(0.403)	0.004	0.030	0.154	−0.114	−0.035	0.083	0.159					
9	Foreign–foreign partnership	0.343	(0.480)	0.052	−0.032	−0.139	0.111	0.021	−0.060	−0.154	−0.365				
10	Domestic–foreign partnership	0.454	(0.497)	−0.053	0.006	0.008	−0.014	0.008	−0.009	0.019	−0.461	−0.658			
11	Investment industry experience	0.848	(0.525)	−0.033	−0.078	−0.016	−0.023	0.074	0.045	−0.058	0.064	−0.188	0.127		
12	Syndication investment experience	12.050	(17.000)	0.043	−0.065	−0.173	−0.027	0.263	0.158	−0.102	0.198	−0.314	0.139	0.157	
13	Founding network investor	0.100	(0.310)	0.037	0.093	0.115	−0.105	−0.020	0.078	0.019	0.105	−0.154	0.062	0.065	0.331

Notes: Obs = 11,472; $p < .05$ if $r > .018$.
Continuous variables uncentered and unlogged; domestic–domestic partnerships as base; investment industry experience range 0–2 where 0 = full similarity 2 = completely dissimilar.

5.1. Hypotheses tests

In Table 1, we provide the descriptive statistics and pair-wise correlations for the variables included in the analysis of the probability of forming an initial co-investment partnership between two VC investors who had previously not co-invested in Israel. Several points are noteworthy. The dependent variable *initial co-investment ties* shows a mean of 0.50. This comes as a result of the match sample design used in the rare-events logistic regression estimation. Sixty-two percent of the time in our data, investors share the *same organizational form*; 10 % of the initial co-investment ties between 1992 and 2002 involved at least one of the twenty original *founding network investors*; thirty 1 % of the initial co-investment ties were to raise early stage financing for firms. The correlation table further shows that the independent variables exhibit low correlation levels. Indeed, in the regression analysis, VIF tests show that multicollinearity is not an issue.

In Table 2, we present the analysis of the probability of forming an initial co-investment. We estimated a series of seven models. Model 1 includes all of the control variables but none of the variables of interest in our hypotheses. In Model 1, the control variables are year cohort, stage of investment, and organizational form. Margins plots for interactions are presented in Fig. 1a–c (Ai and Norton, 2003; Hoetker, 2007).

In Table 2, Model 2, we introduce the main effects of co-investor geographic location. The base captures domestic–domestic partnerships. Model 3 shows the main effects of investment industry experience, syndication industry experience, and founding network member. Model 3 is the main effects model for the independent variables. In Models 4–6, we add the interactions between investment industry experience, syndication industry experience, and founding network investor and co-investor

Table 2
Rare-event logistic regression predicting initial partnership between investors.

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
Constant	−0.140	−0.146	−0.187	−0.193	−0.171	−0.131	−0.141
	(0.214)	(0.220)	(0.219)	(0.222)	(0.218)	(0.222)	(0.224)
Year cohort 2 (1996–1999)	−0.00777	−0.00864	0.0360	0.0247	0.0449	0.0347	0.0331
	(0.206)	(0.207)	(0.207)	(0.210)	(0.207)	(0.210)	(0.213)
Year cohort 3 (2000–2001)	0.00375	−0.0182	−0.00815	−0.0159	0.00616	−0.0125	−0.00555
	(0.209)	(0.211)	(0.209)	(0.213)	(0.211)	(0.213)	(0.217)
Year cohort 4 (2002)	−0.0154	−0.0299	−0.0829	−0.0872	−0.0725	−0.0875	−0.0801
	(0.216)	(0.217)	(0.218)	(0.222)	(0.220)	(0.221)	(0.225)
Organization form partnership	0.226***	0.235***	0.203***	0.205***	0.204***	0.206***	0.209***
	(0.0447)	(0.0450)	(0.0455)	(0.0457)	(0.0455)	(0.0458)	(0.0460)
Stage of investment	0.000820	0.0241	0.0385	0.0375	0.0355	0.0350	0.0326
	(0.0540)	(0.0526)	(0.0521)	(0.0520)	(0.0525)	(0.0520)	(0.0519)
Domestic–foreign partnership		−0.106*	−0.0653	−0.0556	−0.0876+	−0.132**	−0.121*
		(0.0451)	(0.0465)	(0.0464)	(0.0466)	(0.0498)	(0.0503)
Foreign–foreign partnership		0.168**	0.274***	0.275***	0.256**	0.210**	0.206*
		(0.0621)	(0.0672)	(0.0679)	(0.0931)	(0.0683)	(0.0942)
Investment industry experience			−0.118**	0.0383	−0.135**	−0.123**	0.0123
			(0.0451)	(0.0999)	(0.0450)	(0.0447)	(0.0992)
Syndication investment experience			0.00713***	0.00726***	0.000167	0.00700***	0.00142
			(0.00165)	(0.00165)	(0.00234)	(0.00166)	(0.00242)
Founding network investor			0.167*	0.168*	0.157*	−0.146	−0.0691
			(0.0688)	(0.0698)	(0.0657)	(0.0946)	(0.0960)
Investment industry experience*domestic–foreign partnership				−0.115			−0.111
				(0.112)			(0.113)
Investment industry experience*foreign–foreign partnership				−0.266*			−0.251*
				(0.121)			(0.119)
Syndication investment experience*domestic–foreign partnership					0.0110***		0.00914**
					(0.00268)		(0.00280)
Syndication investment experience*foreign–foreign partnership					0.00815		0.00636
					(0.00611)		(0.00629)
Founding network investor*domestic–foreign partnership						0.429***	0.292*
						(0.127)	(0.125)
Founding network investor*foreign–foreign partnership						0.572*	0.515
						(0.285)	(0.318)
Wald Chi-squared	26.28***	54.48***	97.23***	106.6***	113.9***	113.6***	129.3***
Log likelihood	−7934.6	−7917.2	−7886.1	−7882.4	−7876.9	−7880.1	−7870.2

Notes: Obs = 11,472.
Year cohort 1 (1992–1995); domestic–domestic partnerships as base; investment industry experience range 0–2 where 0 = full similarity 2 = completely dissimilar.
+ $p < 0.1$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < .001$.

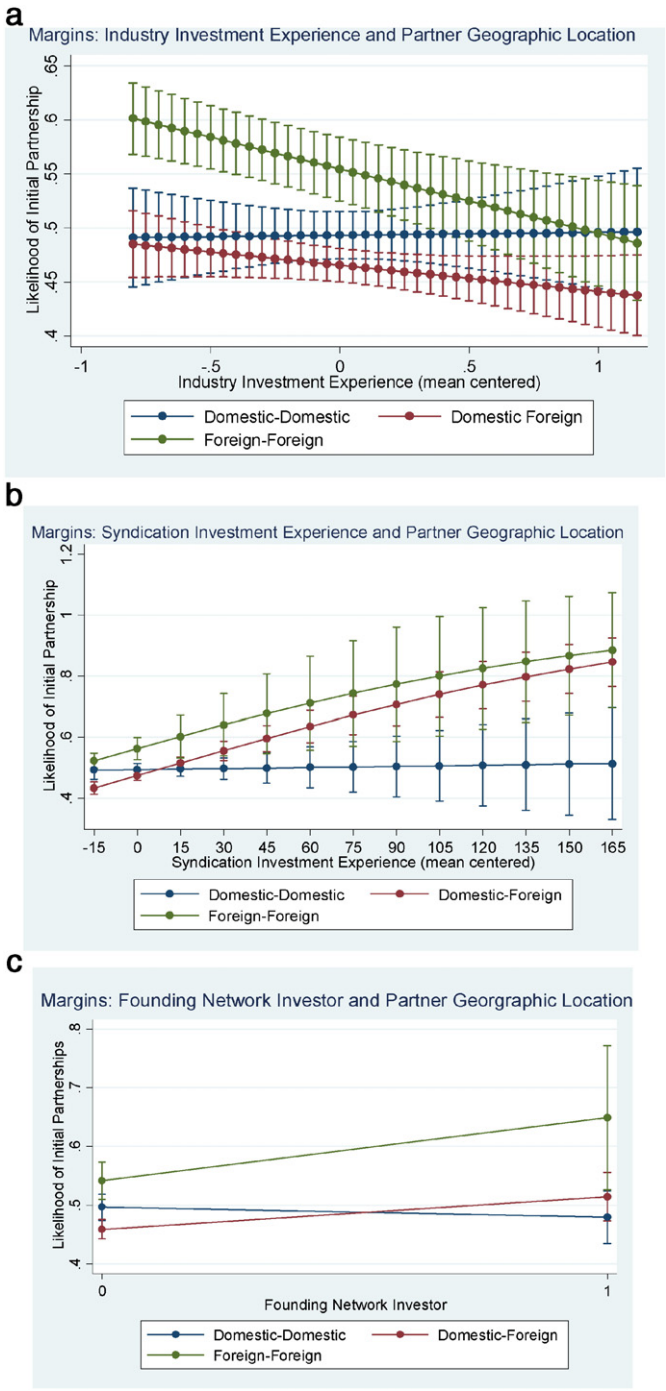

Fig. 1. Margins plots for international effects.

geographic location. Model 7 presents the full model with all controls, main effects and interaction effects. Each of the models 2–7 shows a significant increase in the Wald Chi-Square over the control model.

The regression shows that similarity of investment industry experience increases the likelihood of co-investment. The investment industry experience ranges from identical industry investment portfolios (0) to completely different industry investment portfolios (2). The variable is mean centered giving it a range between −0.85 and 1.15. The coefficient of investment industry experience is negative and significant, which indicates that, as the industry investment experience of potential co-investors diverges, the likelihood of co-investment goes down. Likewise, we can see that investments in the market by potential partners

increase, so will the likelihood of co-investment. Finally, status in an emerging VC market increases the likelihood of co-investment. Founding network member status significantly increases initial co-investment tie formation.

Hypotheses 1–3 capture the contingent effects of experience and status on the co-investment decisions of foreign and domestic VCs. Table 2 Model 4 shows the interaction effects of Hypotheses 1a and 1b, Model 5 shows the effects of Hypotheses 2a and 2b, and Model 6 the effects of Hypotheses 3a and 3b. Model 7 is the fully specified model with all interaction effects included. In each model, the likelihood of co-investment by (a) domestic–foreign VCs and (b) foreign–foreign VCs is compared to that of a domestic–domestic VC co-investment.

Hypotheses 1a and 1b state that as the similarity of industry investment experience increases the likelihood of a co-investment between a foreign and a domestic VC (H1a) increases as does the likelihood of co-investment between two foreign VCs (H1b). The results are nuanced. Hypothesis 1a is not supported while Hypothesis 1b is. Compared to domestic–domestic VC partnerships, the similarity of investment industry experience enhances the likelihood of co-investment by two foreign VCs. Fig. 1a provides the margins plots for the interactions in Hypotheses 1a and 1b. Hypotheses 2a and 2b state that as the combined syndication investment experience of the potential co-investors increases, the likelihood of domestic-foreign co-investment (H2a) and foreign–foreign co-investment (H2b) will also increase. In this case, Hypothesis 2a is supported while Hypothesis 2b is not. That is, syndication investment experience enhances the likelihood of co-investment between foreign and domestic VCs in the market. Fig. 1b provides the margins plots for the interactions in Hypotheses 2a and 2b. Finally, Hypotheses 3a and 3b state that if one or more of the VCs are high status, this will increase the likelihood of both a domestic–foreign (H3a) and a foreign–foreign (H3b) co-investment. Model 6 shows that both hypotheses are supported, but in the fully specified regression in Model 7, only Hypothesis 3a retains its explanatory power. The presence of a high status investor enhances the likelihood of co-investments between domestic and foreign VCs. Fig. 1c provides the margins plots for the interactions in Hypotheses 3a and 3b. In sum, the vast majority of our hypothesized effects (7 out of 11) are supported and those which are not provide a more nuanced understanding of the emergence of a VC market which we address in the discussion section.

5.2. Robustness tests

Our results are robust to alternative specification. In separate analysis, we tested alternate measures of industry investment experience which produced nearly identical results. Likewise, we tested a measure of the syndication investment experience between investors in a dyad. We omitted these additional control variables in the analysis presented here because they were highly correlated with the investment industry experience variable.

We included additional control variables that captured, in addition to binary classification in the stage of the investment a more expansive one, and we found that the results were the same. Running the regression with year fixed effects dummies did not produce major differences. We opted for four year cohorts in order to capture the substantive changes in the VC market. Moving from a binary measure of same organization form to a categorical measure which captures the individual differences across forms maintains the results much as they are. Finally, controlling for the total amount of the round and number of syndicate partners did not change the results. The dataset is large and results are stable.

6. Discussion

Understanding the development of industry structures in a new market is critical to fostering the emergence of entrepreneurial economies and the evolution of VC markets (Kogut et al., 2007). In this article, we examine contingent effects of experience and status on the initial co-investment selection decisions of syndication partners between foreign and domestic VCs during the first decade of Israel's emerging VC market. Our findings are nuanced and intriguing. They stimulate future research directions as well as offer implications for practice and public policy.

Although we did not hypothesize on the main effects of experience and status, the results are in the direction our reasoning implied. Specifically, similarity of industry investment experience is significantly related to the probability of an initial co-investment tie formation between two VC investors who have not previously syndicated together. This suggests that industry-focused networks and overlapping knowledge bases are important in selecting initial co-investment syndication partners. Moreover, there is evidence for path dependence after VCs enter into an emerging VC market. Prior investment experience in the emerging VC market is positive and significantly related to the probability of the formation of other, new, initial co-investment ties. Thus, once VCs get started investing in an emerging market, they appear to keep investing and forming syndication alliances with new partners. Finally, the presence of high status VCs is also positively significantly related to probability of formation of initial co-investment ties. Status is clearly an important and valuable signal of quality in an emerging VC market.

Foreign VCs entering the emerging Israeli market appear to be using different strategies when considering whether to form new co-investments with domestic VCs or foreign VCs. The decision to co-invest with a domestic VC is significantly positively influenced by the syndication investment experience in the emerging market and high status of at least one partner in the dyad. Investment experience and status are both visible signals of quality in an uncertain and risky environment. This allows the foreign VC to minimize the risks of adverse selection and opportunism. As syndication investment experience in the country mounts the track-record of potential co-investors becomes more observable, providing real insight into how these potential co-investors do business. Likewise, status provides both a quality signal and hostage to guarantee against future bad acts. However, the similarity of industry experience has no impact on the co-investment decisions of foreign VCs regarding selection of domestic

VCs with whom to co-invest. This seems to indicate the limits of industry based networks as a substitute for dense local networks as firms internationalize.

On the other hand, foreign VCs entering the emerging Israeli VC market appear to rely on similarity of industry investment experience to select other foreign VCs with whom to co-invest. They had a significantly higher probability of co-investing with other foreign VCs with whom they had overlapping industry experience. Lacking a dense domestic networks, foreign VCs appear to draw on their industry focused network to select co-investors from among other foreign VCs looking to invest in Israeli ventures. Finally, status does appear to have a marginal positive impact on the selection of foreign co-investors.

To understand our findings and their implications, it is important to contextualize them. The 1992–2002 timeframe captures the emergence of Israel's VC industry. It begins with a government initiative and evolves into a fully fledged independent market that attracted a remarkable inflow of foreign investment. Such private capital flows tracked multiple waves of vigorous innovations as excitement about them rose and eventually subsided. The heavy reliance on foreign investment both through the limited partners in the funds and the syndicate partners, many of whom invested directly, created a deep pool of potential initial co-investment opportunities. Although Israel is a small country with relatively dense personal, professional, and military networks, few in the population had direct experience in VC investing. That is, until they started competing for and investing in venture capital deals, individuals could not observe the behavior of potential partners in this arena, even if they knew them in other social and economic contexts. Moreover, the sheer number of foreign investors who came to Israel to try their hand at investing in its technologies meant that the vast majority of investors were as yet untested, either directly or by reputation, as desirable and reliable co-investment partners in this emerging environment. Such asymmetries of information put VC investors on a potential collision course with risks of adverse selection and opportunism, which firms have to mitigate as they build their portfolios. When taken from the perspective of foreign VCs, experience and status prove to be powerful contingent effects in predicting the likelihood of selecting an initial co-investment partner in this international context.

6.1. Managerial and policy implications

For VC practitioners, especially those new to this rapidly growing industry and seeking to enhance their deal flow by building syndication networks, our study provides guidance on where and how to look for syndication partners. Our results show that in an emerging VC market, visible quality signals become important when reputations are not established, networks are new, and performance outcomes are far in the future. Status, as conferred by credible actors, drives the initiation of new co-investor ties. Thus, for VCs entering an emerging market seeking out credible actors who can confer status will enhance their attractiveness in the market for co-investors. Establishing an industry focus, expertise and network also appears to be important in positioning the firm as an attractive co-investor.

It is clear that public policy had a catalyzing role in developing the initial structure of VC syndications in Israeli high technology. Our findings suggest that over the long-term, the co-investing ties that emerged were driven by status and experience. We see several possible public policy implications of our findings which may be useful to other governments attempting to replicate Israel's experience (Cumming, 2007). First, a government can help catalyze an emerging VC market, by lending its status and credibility to create high status actors in the emerging markets. The ‘founding members’ In Israel's Yozma program became important actors in the emergence of the VC market. They were able to attract foreign VCs and get them started investing in Israel. Second, as our finding regarding experience in the emerging VC market indicates, getting VCs to initially invest in the emerging market puts them on a path that leads to them initiating more co-investment ties. Finally, foreign VCs entering an emerging VC market prefer to co-invest with foreign VCs with a similar industry focus. The Israeli formula appeared to begin by creating high status credible actors, priming the pump with limited government capital, using the high status actors to attract foreign VCs into the emerging market and then relying on the path dependence of the investors to continue to expand their investments in Israel.

6.2. Limitations

Our study has several limitations. First, we examined only the *syndication* decisions of participants in VC syndication partnerships. It is possible that some investors may have engaged in partnership-like relationships in ways other than by syndicating deals. Some may have cooperated in due diligence, helped each other identify management talent, or engaged in other activities that might be mutually beneficial in the long term. We have no way of systematically identifying the existence of any such partnership-like activity. Second, we looked at only Israeli investment data. It is possible that some pairs of investors may have entered into prior partnership relationships outside Israel, and such prior relationships might have influenced their Israeli decisions. Third, it is possible that individual employees of the VC investor firms may have held pre-existing social ties that influenced their partnership decisions. Indeed, in a small country like Israel, the existence of such relationships is likely. Likewise, in future research and with more data, our measure of geographic distance could be improved to reflect not only the actual physical distance between partnership partners but also to permit the examination of the characteristics of the local geography or industry cluster in which they are embedded. Our study did not capture such differences and we leave this to more fine-grained work in the future. Finally, it is important to emphasize the our work here is at the dyad level and not at the level of the fully syndicated round. This was driven by theoretical framing and the research question at hand. Without a doubt, it is important to do additional research at the level of the syndicated round and rounds over time.

7. Future research directions and conclusions

We see multiple promising areas of future inquiry that follow from this study. To begin, a natural follow-on to our study would be to explore repeat co-investment ties and to ask whether initial co-investment partnerships create lasting investment relationships? Moreover, do the moderating effects of experience and status persist with follow-on investments? In addition, to what extent do the various initial and follow-on co-investment ties lead to successful exits? That is, are co-investment ties that bring together different types of investors more successful than others? Are co-investment ties formed in different combinations of industry and geography space relatively more or less successful? Finally, in the aftermath of the dot.com collapse, the VC industry in Israel went through several transformations. One of the most dramatic was the change in strategy by the major foreign VC funds: many funds opened and began operating direct offices in Israel and raised dedicated Israel investment funds. Follow-on research begs the question of how this change in strategy reshaped the likelihood of initial co-investment patterns between foreign and domestic VC investors and the contingent effects that amplified or attenuated them.

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