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SURVEY OF THE RECENT LITERATURE

VENTURE CAPITAL SYNDICATION

Sanjiv R. Das[a,*], *Hoje Jo*[a] *and Yongtae Kim*[a]

Syndication changes the essential nature of an investment project. It imposes a mediating influence—that of liability structure on asset performance. The pervasive influence of financing structure on new ventures has recently become of interest and importance; in this review, we characterize the state of this literature and its trajectory.

While there is a large literature on bank syndication, there is a relative paucity of papers on venture capital (VC) syndication. As it stands, the working papers today comprise three broad areas of interest:

1. *Financing*: Syndication is a specialized financing structure, and the decision to syndicate implies a preference for financing by a group as opposed to a single investor. The decision to opt for group financing versus individualized funding is based on various benefits, which have been postulated as hypotheses in the literature (for an early foray into this area, see Lerner, 1994). In the first section below, we explore the rationale for syndication and how it translates into the financing structure of syndicated firms. This examination of the *liabilities* side of the new venture balance-sheet gives us theoretical insights and a look at the empirical support for syndication of new ventures.
2. *Asset performance*: The first section of our review described above deals with the entry stage of a syndicated venture and its *financing*, and the second section below deals with the evolution of the venture to its exit, and focuses more on the *asset side* of the new venture balance-sheet. This section looks at recent work on the performance of syndicated ventures.
3. *Incentive issues*: The third section examines theoretical and empirical work that looks at the incentive issues that arise in syndicated VC investments. Issues of asymmetric information and agency problems such as moral hazard are likely to be acute in syndicated settings with multiple principals involved. Hence, there is a growing literature on how these problems arise, are tackled via contracting, and how they affect the structure of the syndicate.

1 Syndicated financing of new ventures

This section first reviews some of the arguments for VC syndication and assesses the liabilities

[a]Leavey School of Business, Santa Clara University, Santa Clara, CA, USA.

*Corresponding author.

(financing) side of the syndication question. This includes early-stage, expansion-stage, and late-stage financing. We also review the empirical evidence on the specific hypotheses for syndication and the structure and form of financing.

Using survey data, Manigart *et al.* (2002) look at the arguments for VC syndication and suggest that the motives for syndicating a deal are driven much more by financial considerations than by the exchange of firm specific resources or deal flow. Using five countries (Belgium, France, The Netherlands, Sweden, and the United Kingdom), they find that *risk-sharing* and *portfolio diversification* are more important drivers of syndication than resource expansion or deal flow. They also argue that syndication practices are more crucial for young VC firms and those with wider portfolios. In addition, they claim that VC syndication provides additional access to deal flow and additional resources, thereby avoiding the problem of information monopolies or hold up problems. Different approaches are adopted by VC firms depending on the investment stage they are focusing on, with both financial and resource-based motives being more important for early-stage investors, thereby confirming the finding of previous studies (Bygrave and Timmons, 1992).

Cumming (2001) claims that the decision to stage and syndicate is *endogenous* and derives optimal conditions under which lead VCs select straight preferred stock and other VCs use convertible debt. He argues that this optimal contract is robust to problems of entrepreneurial moral hazard and bankruptcy. This finding is supported by Canadian VC financing data in which convertible preferred stock is little used. Fixed fraction shares are optimal amongst syndicated VCs in Canada, in contrast to the US practice, with its wide use of convertible preferred stock. Therefore, even though the usage of convertible preferred stock is optimal in the United States, financing practice in the United States may not be generalizable as the optimal form of VC structured finance.

The dependence of financing structure on the country in which the venture resides is indicative of the influence of economic and market environments on the liability structure of VC syndicates. One important factor that matters would be the legal environment in which new ventures operate, connoted as the *legality* of the economy. Cumming *et al.* (2004) argue that differences in legality have a significant effect on the governance structure of investments in the VC industry. They claim that a better legal system results in faster deal screening and origination, a higher likelihood of syndication, and more board representation for investors. Because sound legal frameworks have crucial implications for solving agency and control problems inherent in young, innovative firms, they conclude that legality is an important prerequisite for sustained VC development in a country.

The *nontradeability* of VC investments is an issue that impinges on financing structure. Syndication is one approach to the diversification of this risk. Cumming *et al.* (2004) argue that liquidity (the issue of nontradeability, ease of exit) is one of the important factors in VC financing. They posit that when liquidity risk is low, investment risk is low, and therefore, VCs will have a weak incentive to syndicate. However, when liquidity risk is relatively high, VCs prefer to syndicate with more prominent partners to reduce investment risk, better screen their projects, and provide complementary value-added assistance across projects. Using the `VentureXpert` dataset, they find that when exit markets become less liquid, VCs invest proportionately more in early-stage projects to postpone exit urgency. In contrast, when exit markets become more liquid, VCs invest more in expansion- and later-stage projects where the time until exit is shorter.

One might conjecture that *spatial distance* amongst investors matters more when the information sensitivity of the project is high. Thus, VC syndication offers an ideal laboratory for exploring this aspect of the investor profile. Sorenson and Stuart (1999) show empirically that syndication networks and spatial distribution of VC investments connecting the members of the VC community through syndication makes easier the dissemination of information across geographical and industrial boundaries, thereby increasing the likelihood of more distant (i.e., geographically far-flung) exchange. Although they suspect that rational preferences for geographical proximity and localized investing continue to operate, the network of inter-firm contacts facilitates information movement across these boundaries.

In contrast to the spatial profile of VC syndicates, another dimension is that of investor quality and reputation. Seppa (2003a) examines the effect of VC prominence on the valuations of privately held firms in financing rounds. Based on the assumption that information asymmetries are a significant factor affecting investment decision-making by VCs, he shows that the cost of credible signaling to the venture is materialized in the form of lower entry valuations for prominent VCs largely due to their bargaining power. Outside investors acknowledge the value of certification and are inclined to pay for higher valuations in follow-up rounds with reputable VCs in the venture investment pool. He claims that VC syndication, through its reputation, certification, and bargaining power, provides more diversification, more completed projects, and a greater number of firms going public.

Financing structure determines a trade-off between risk diversification and moral hazard amongst investors. Deli and Santhanakrishnan (2003) examine the relevance of the hypothesis that a VC firm that invests with other VC firms faces agency costs associated with its human capital investment. VCs provide both human capital and financial capital, and, thus, an important motivation for syndication. A VC firm that invests alone, however, forgoes the risk-bearing benefits associated with syndication. They further maintain that solo investments by a single VC firm or syndicated investment by multiple VC firms can both add value contingent on the potential gains from diversification or reduced agency costs. Using `VentureXpert` data on private equity US firms, they find that investments in firms with higher growth opportunities are more inclined to be syndicated than are investments in firms with fewer growth opportunities; this is based upon the assertion that high technology firms have greater growth opportunities than nonhigh technology counterparts. VCs tend to syndicate more for firms with higher growth opportunities, precisely when human capital plays a bigger role. From their sample period of 1980–2001, they find that larger VC investments or investments in firms at the earliest stage of development and at the last stage of development are more likely to be syndicated than smaller investments or investments in the middle stage of their development. This suggests that risk diversification may be of greater concern to VCs than agency issues.

In summary, a liabilities-side examination of VC syndication results in a categorization of issues that determine financing structure. These are as follows:

- *Motives*, such as achieving risk sharing, resource amplification, increased deal flow, etc.
- The *form* of the financing, i.e., straight preferred equity, convertible debt, convertible preferred, etc.
- *Legality* of the country, impacting the fluidity of the VC financing market.
- The "marketability" problem, i.e., the *nontradeability* of VC investments, and the ease of exit (hot versus cold IPO markets).

- The *spatial distance* between VCs determines the structure of the syndicate and flow of information within and across syndicates.
- The *quality* of the syndicate, i.e., the reputations and prominence of the conclave of VCs.
- *Incentive problems*, i.e., typical agency problems.

In the next section, we look at the assets side of syndicated ventures, namely the performance of funded firms.

2 The performance of syndicated ventures

Though research examining the relative performance of VC-backed ventures is abundant, work focusing on the performance of VC syndication is nascent. Due to the limited amount of research contrasting the performance of VC syndication and standalone VC investments, we also review recent papers that address the heterogeneous performance across different types of VC structure, other than syndication. The evidence on the relative performance of VC-syndicated ventures is inconclusive. The results differ across different economies, i.e., bank-backed versus stock-market driven economies, across different countries, and across different VC structures. Moreover, researchers face many difficulties, such as selection bias, small sample problems, generalization problems, and shortcomings of the survey method, that naturally arise from the nature of VC data.

Lehmann and Boschker (2002) analyze the performance of VC syndication in Germany, a typical bank-backed investment environment. The dataset consists of 341 venture-backed firms listed on the Germany's Neuer Market from 1997 until 2002. They contrast the *selection hypothesis* suggested by Lerner (1994) and the *value-added hypothesis* introduced by Brander *et al.* (2002). According to Lerner (1994), VC syndication exists primarily for venture selection. If estimated project quality is in the intermediate range, VCs pursue syndication to seek a valuable second opinion. If the lead VC finds the project promising, there is no incentive to include a second opinion. This leads to the argument that a standalone project should, on average, have higher returns. Brander *et al.* (2002) assume that VCs may add value to ventures rather than simply try to select the best investment. In their model, the performance should be higher for syndicated projects.

The empirical evidence is inconclusive. Though firms with VC syndication differ from that of standalone investments in such characteristics as firm size and age, Lehmann and Boschker (2002) find that firms with VC syndication neither outperform standalone investments as suggested by Brander *et al.* (2002) nor under-perform as proposed by Lerner (1994). In contrast, Brander *et al.* (2002) find superior performance for Canadian firms backed by VC syndication. By focusing on firms listed in the Neuer market, Lehmann and Boschker (2002) limit their sample to firms that exited through IPOs. By eliminating other exit routes such as trade sales and management buy-outs from the sample, their sample and empirical results require qualification. Moreover, of their three performance measures (growth of the number of employees, the amount of funds raised, and the survival probability on the Neuer Market) the first and the third measures are conditional on an exit through IPO. However, this study sets the stage for an examination of performance up to the point of exit, an interesting complementary question.

The influence of VC backing on the performance of firms going public is examined in the paper by Rindermann (2003). He compares firms backed by VCs and firms with non-VC backing, and provides evidence for three European countries. As the performance of early stage firms might differ

across countries, existing evidence in the United States is that venture-backed IPOs outperform non-venture-backed issues in terms of operating and long-run performance (Jain and Kini, 1995; Brav and Gompers, 1997). This line of research calls for a finer examination of syndicated ventures, an open line of research that is beginning to be explored in recent literature.

Based on data from 154 VC-backed and 149 non-VC-backed IPOs at the French Nouveau Marche, the German Neuer Market, and the British techMARK between 1996 and 1999, Rindermann (2003) finds substantial heterogeneity of VCs in the European market. The influence of VCs on the operating and market performance of IPO firms is examined after controlling for a number of variables, such as the representation of venture capitalists on the board of directors and pre- and postissue equity shares held by venture investors, that might cause the differences in the effectiveness of venture backing. The result suggests that not all the VC-backed IPOs outperform non-VC-backed counterparts. Firms backed by nationally operating VCs do not outperform non-VC-backed firms. Only a subgroup of internationally operating VCs has positive effects on the performance of firms going public. These international VCs are older, back more IPOs, are more often represented on the board, invest with more partners in the syndication, and hold larger equity positions in portfolio firms.

By focusing only on IPO firms, this paper is similar in approach to that of Lehmann and Boschker (2002). It does not consider other exit routes and ignores those remaining private, being sold in a trade sale, or failing. IPO firms are not representative of all venture firms. Gompers (1995) and Gompers and Lerner (1997) suggest that most successful ones tend to go public. Hence, this imposes a selection bias. It remains for future research to determine whether the likelihood of exit via an IPO is different for syndicated firms versus those that are not syndicated. Assessment of this may result in better econometric specifications that correct for this form of selection bias.

Schwienbacher (2002) focuses on the exit choices of VCs. This expands the set of outcomes for VC investments, and complements earlier work very nicely. He analyzes the impact of VC firm characteristics and the use of different monitoring devices (staged financing, board representation, use of convertible securities, and reporting of activities) on the exit route. The paper focuses on three common and important exit routes: IPO, trade sales, and liquidation. VCs in six European countries are compared to VCs in the United States. Most of his hypotheses stem from the assumptions: (1) IPO and trade sales require successful development of a viable product and the entrepreneur's effort positively affects the probability of success. If there is no success, then the VC will liquidate the venture. (2) Control benefits for the entrepreneur are greater under an IPO than under a trade sale, so the VC will exert more efforts for an IPO. (3) Ventures with higher valuations are listed relatively more often than less profitable ventures. (4) Any measure that increases the incentives of the entrepreneur to exert higher effort will increase the *ex ante* probability of an IPO, and decrease the *ex ante* probability of liquidation. With 104 questionnaires collected from Europe and 67 from the United States, the paper utilizes VC level data, not firm level data. It finds that the replacement of management increases the probability of an IPO, and reporting requirements and early-stage financing decrease the probability of an IPO in the United States. The duration to the exit stage is shorter, the use of convertible securities is more extensive, the replacement of management is more common, and syndication is more common for VCs in the United States. The differences between continents can be ascribed to a common denominator, namely that European VCs face a less liquid market.

The examination of performance of VC funded projects seems to lead to questions of interpretation of extant results, as well as concerns about methodology:

1. Much of VC level data is self-reported. The usual problems of the questionnaire method crop up, and is acknowledged by researchers in their papers. Reliance on the willingness to respond and the consequently low response rate makes it hard to derive general conclusions about the true population from the sample. Samples predominantly consist of recently established (and younger) VCs.
2. Not all papers utilize VC level data; some use firm level data. It might be problematic to equate the proportion of ventures exited through IPOs to the successful impact of VC involvement.
3. It is usually assumed that an IPO is the preferred exit route, but exit multiples may be greater for other exit routes, and therefore VCs achieve more returns by taking the venture to other exit choices, leading to a conditioning problem.
4. Exit markets tend to be very cyclical, and therefore an exit route preferred at a certain point in time may not be the preferred exit route at another time. Therefore, it is important to research the evidence on performance differences within each exit route, and little such exploration exists in the literature.

An open question for future research is whether these methodological problems are exacerbated in the presence of syndicated new ventures. Are syndicated ventures more likely to be self-reported? Are syndicated ventures more likely to prefer IPOs? How does syndication vary with the exit cycle?

Seppa (2003b), in the third essay of his dissertation, examines (1) whether VC syndication (frequency and diversity) exerts positive impact on the VC firms' efficiency, and (2) how uncertainty affects the potential impact of syndication. He focuses on the efficiency of VCs in creating public companies (IPOs), and in completing investment. Frequency is defined as the likelihood of having syndication partners in deals, and diversity is measured as the number of different syndication partners, or the promiscuity of the VC community. The paper also provides a nice summary of motivations (in six main groups) for VC syndication.

He predicts that syndication (frequency and diversity) allows VCs to be more efficient in creating public companies, since it leads to better investment decisions, improves the probability of an IPO, and provides complementary value-adding capabilities. He hypothesizes that the more uncertain the VC's portfolio, the greater impact syndication has on the VC portfolio firm's efficiency in creating public companies, and that the potential benefit of decision-making is highest under high uncertainty and VC value-addition is particularly evident in the most uncertain (early-stage) ventures. To test these predictions, he compares the ratio of companies that ultimately reached IPO as well as the number of new company investments per general partner, between VC syndications and nonsyndicated VCs. The dataset comprises over 50 000 VC investments of the 100 largest US VCs between 1986 and 2000 (SDC Venture Economics (`VentureXpert`) data), and IPO data on portfolio firms. Only investments backed by independent US VCs are included. A higher frequency of syndicating investments accelerates the process of investing in new portfolio companies and increasing diversity of syndication relationships improves the VC's ability to create public companies. More uncertain venture portfolios (early-stage investments) benefit more from engaging in syndication relationships.

Syndication often takes mixed form. One common example arises in the case of bank-affiliated VCs that partner with financial institutions. This is an informal syndication, analogous to a partnership model with silent partners. Wang *et al.* (2002) examine the

differences between independent VCs and finance (financial institution)-affiliated VCs. They suggest that, though VCs have been successful in the US, and have contributed significantly to the growth of high-technology sectors, many countries have failed to build dynamic VC markets to support their high-technology industries. In these settings, informal syndication is more likely to prevail. Wang *et al.* (2002) thus look at the micro-mechanism of the VC market: the affiliation of VCs. In the United States, most VCs are independent. They argue that independent VCs tend to have a technical background or industrial experience, and provide nonfinancial advice, while finance-affiliated VCs lack experience in selecting and monitoring their investment portfolio.

They use 64 VC-backed (33 independent VCs and 31 finance-affiliated VCs) companies listed in Singapore between 1987 and 1999. Singapore enjoys equal weighting for both independent and finance-affiliated VCs and the presence of VCs from many countries generates a mixed market of VCs. The analyses show that independent VCs add more value to their portfolio and differences in international management mechanisms and staff backgrounds lead to external performance differences. Specifically, independent VCs are more likely to invest in high-technology industries and prefer to invest in start-up companies—hence the length of time between their first investment and the IPO is longer. Independent VCs also are more likely to engage other VCs in syndication, thus spreading high risks from early-stage investments. They demonstrate a propensity to participate in the management of the venture, and take a higher number and percentage of board seats. This is characterized by smaller initial returns (smaller underpricing) and greater long-term after-market returns.

Wright and Lockett (2003) focus on the structuring and management of syndicated VC investments, rather than performance. They use a three-way methodological approach to collecting data, i.e., a two-stage survey of VC firms, an examination of venture capitalists' documentation relating to syndication, and discussion with venture capitalists. Based on 58 surveys undertaken in the United Kingdom on syndication structure, they find that the lead VC typically has larger equity stakes than others in the syndicate. Thus, the performance of syndicated ventures is likely to be appreciably impacted by the performance of the lead investor, which is a domain for further research.

In summary, the performance of syndicated new ventures allows an investigation of important hypotheses regarding the motivations for syndication. If syndicated ventures are found to outperform others, then it would be supportive of the value-add hypothesis for syndication. If the opposite result occurs, then it would support the fact that syndication is used by an initiating VC to help with project selection. The evidence on these issues is thin at best. Most research also tends to be based on performance metrics related to IPO exits. By focusing on other forms of exit, as well as other metrics, more will be learned about the efficacy of syndication in future research. More research also remains to be done on whether the organizational form of the syndicate is a moderating factor, i.e., the frequency and diversity of VC relationships, affiliations to financial and nonfinancial institutions, and the role of lead investors.

3 Information and incentive issues

Financing contracts inevitably involve incentive problems. In some (not all) venture finance settings, we take the VC as principal and the entrepreneur as agent, and the contracting relationship determines the effort expended, gains shared, and overall success of the venture. Syndication complicates the agency problem as it results in a setting with

multiple principals. This injects both information and incentive problems into the many-to-many VC relationship. The following is a brief list of some of the problems that arise in the VC setting:

1. Incompatibility between VC and entrepreneur is natural and takes many forms: (1) The entrepreneur may not expend sufficient effort on the project, and may withhold relevant information from the VC. (2) The risk-sharing agreement may not be first-best. (3) The VC's horizon may not coincide with that of the entrepreneur; this usually takes the form of the VC wanting to drive the venture to premature exit, resulting in a failure to optimize the value of the project.
2. Incompatibilities between VCs in a syndicate. Disagreement and control issues across all the VCs in a syndicate may arise naturally if contractual understandings deviate from optimal. Too many cooks may spoil the broth.
3. Incentive issues arise between incumbent VCs and potential new VCs in subsequent financing rounds in syndicated settings. The information asymmetry in these situations requires careful contracting both on valuation as well as on the future relationship between the various VCs.
4. Protecting intellectual property. Competition may be better managed by a syndicated relationship in which intellectual property is bound up. Passive non-syndicated financing relationships do not usually disincentivize rogue projects by some of the investors. Syndication may also help in preventing venture fund investors from buying into too many similar projects (reduced risk, but correspondingly low returns), since the informational gains make single projects less risky, without giving up return via diversification.
5. Information and hold-up problems. This may take many forms: (1) Entrepreneurs worry that a single VC may hold up the project by withholding financing at critical moments by exercising control without a full understanding of the project. (2) In a syndicated setting, one VC may possess an information monopoly to the detriment of the other VCs. (3) Syndicates may also run into hold-up problems in which one VC is able to exert excessive influence by withholding a commitment so as to extract concessions.
6. Managerial interference. VCs are known to wield influence on projects outside their sphere of expertise, a constant source of frustration to entrepreneurs. This problem may be compounded (or mitigated) in a syndicate.
7. Transparency of the environment and enforceability of contracts. The optimality of contracts is a function of how freely information is shared and the willingness of contracting parties to abide by the terms of their agreements. This encompasses the notion of "legality" reviewed in the previous section, which is a moderating factor for incentive and information problems.
8. Harmful co-investment and conflicts of interest. Co-investment has many benefits but it may also be harmful, as it may result in free-rider problems. Investors may also be burdened with conflicts of interest, especially in settings where the project conflicts with other investments in the VC portfolio.

Syndication of VC investments makes these incentive problems more complicated, but also introduces degrees of freedom that do not exist in single-VC settings, and the additional flexibility might be useful in mitigating these difficulties. Both the theoretical and empirical literature is far from realizing an understanding of these issues in a syndicated setting, and here, we explore some early forays into this area of inquiry.

At a macro-level, issues of legality (information availability and contracting fluidity) are explored in the paper by Cumming *et al.* (2004). This paper looks at how differing legality changes venture

governance in 39 countries, which is by far the widest ranging study of venture investment in the literature. The study covers 3848 venture portfolio firms over the period 1971–2003. Higher legality in the form of better laws makes things easier for both investors and entrepreneurs, which is to be expected. They find that the comfort level of investors is sufficiently enhanced so as to make them agreeable to postponing cashflows, as opposed to lower legality environments in which investors prefer to receive periodic intermediate payments. Therefore, high-technology and R&D intensive projects, which have longer gestation periods, are more likely in high legality domiciles. Higher legality has positive performance effects, such as faster deal generation, and also increases the likelihood of syndication, from which we may infer that syndication possibly increases the level of information and incentive problems *ex ante*.

The ramifications of the incentive problems in a project when there is asymmetric information between "inside" (i.e., incumbent) investors and "outside" investors has been analyzed theoretically by Bigus (2004). The essential problems are as follows: (1) Since the inside investor has information that the outside investor does not, the outside investor offers only an information discounted price (i.e., higher financing cost) at which he is willing to contribute to the project. This results in a less than optimal valuation for the entrepreneur. (2) It is also clear that if the inside investor knows that the entrepreneur is of high quality he is less likely to seek outside funding, and is inclined to extract rents for himself. Therefore, the fact that outside funding is being sought signals lesser than high quality of the entrepreneur. (3) When the entrepreneur is of high quality, he may also not be able to switch to a higher paying outside investor if the cost of switching from the existing inside investor is too high. All these moral hazard issues result in less than optimal outcomes for the entrepreneur and the outside investor. Hence, the entrepreneur is disincetivized and chooses a lower effort level. This model is consistent with the presence of up-front contracts on conditions for future capital infusions. Thus, syndication prevents this situation from playing out too drastically and provides an ameliorative effect on the problem. Bigus argues that this problem is mitigated when debt or mixed financing is used, as opposed to equity financing. This is because the financing cost imposed by the inside investor on the entrepreneur is capped by legal strictures on interest rates. Mixed financing may be more likely to occur in syndicated settings, mitigating the inside investor incentive problem.

The inside investor moral hazard problem is further analyzed in Cumming (2001). This paper looks at the optimal contracting mechanism in the presence of moral hazard and other agency costs such as hold-up and adverse selection, in the presence of differential priority in bankruptcy. A particularly nice feature of the model is that it does not make specific functional assumptions and is therefore very general, and is inclusive of a wide range of contracting scenarios.

We detail the model briefly here. For conformity, the notation used in his paper is preserved. The model is in two periods, and in the first, entrepreneur E contracts with VC_1 for the initial financing of the venture. At this point in time, E knows his quality type, but VC_1 does not. The total financing required for the life of the project is I, and VC_1 negotiates how much will be provided of this in the first period, and in what form. After contracting, E decides his effort level, and resolution of uncertainty occurs at the end of period 1, at which point VC_1 also discovers the quality type of E.

In the second period, the entry of a VC_2 is also considered, and may be initiated by VC_1. A syndication contract that determines the financing mode

is written and E once again decides his effort. At the end of period 2, the venture is sold, and shares are apportioned as per the security structure of the venture.

The equilibrium that is obtained in this paper may be summarized as follows. By working backwards from the second period, the model is solved stage by stage:

1. Cumming (2001) shows that VC_2's optimal contract will be convertible debt. (1) Because convertible debt sets a baseline level of return that the entrepreneur has to meet before he starts receiving payoffs, it reduces entrepreneurial slack. (2) The convertible structure also protects against risk-shifting, as VC_2 shares in the upside, and does not leave all gains to E and VC_1. (3) The convertible structure also mitigates window dressing by E.
2. It is also shown that the best contract for VC_1 is straight preferred equity. (1) Such a contract induces entrepreneurial effort to meet dividend requirements. (2) With straight debt, covenants result in hold-up if a bad state outcome transpires, even if E is of high quality. Since this is avoided with a preferred equity structure, the entrepreneur is less worried about hold-up and correspondingly exerts greater effort. (3) If VC_1's contract were equity (as for the entrepreneur) or convertible debt (as for VC_2), it would disincentivize VC_2 from joining the syndicate, because when VC_1 shares in the upside, he is less induced to reveal truthfully the quality of E to VC_2.
3. Finally, the model also shows that syndication is a natural outcome, as is staged investment. Staging need not result in a syndication, however, as the second round may also be financed by the initial "inside" VC_1. There are many factors that induce staging and syndication. (1) Risk shifting in period 1 is avoided by staging, i.e., by not providing all the financing I required for the project. (2) By not providing all the capital at once, greater monitoring to assess the second round investment is induced. (3) To reach a second round, the entrepreneur is induced to exert more effort. (4) There is also greater effort induced from reputation effects. The entrepreneur is always concerned that if VC_1 backs off from a second round, then it will reveal him as a bad quality type to the market.

This parsimonious model explains very nicely why, in Canadian data, we see exactly the syndicated financing structure predicted by the model. Therefore, from this paper we learn that syndicated financing structure will be a function of (1) the type of VCs involved, (2) the characteristics of the project (assets, staging), and (3) the regulatory environment.

There remains much to be done on optimal contracting. However, in the papers that have looked at the problem, the complexity of multiple agents leads to interesting ramifications for the evolution of syndicated ventures. It also remains to be seen to what extent the lessons learnt from syndicated bank financing carry over to that of syndicated venture financing.

4 Discussion and summary

Syndication is a phenomenon that is gaining increasing attention in VC research. It is now 10 years since Lerner's 1994 paper on syndication, and as this brief review has shown, one classification of the literature is to break it down into *motives*, *performance*, *information*, and *incentives*. These continue to be theoretically and empirically explored.

There are, of course, many interesting questions that we may still ask in the syndication realm. First, how is new venture syndication different from the syndication of financing for seasoned firms?

No doubt, there are differences in information availability in these two cases. In the venture setting, information is far less available, given the absence of an entrepreneurial track record. Therefore, a comparison of financing structures across these two institutional settings is likely to reveal the extent to which information matters in syndicated financing. The motives for syndication will also likely be quite different, and assessment of firms' choices to syndicate or not would reveal these differences. We may also undertake a comparison of the performance of syndicated firms versus nonsyndicated ones, both in venture settings and for seasoned firms. This will inform us as to when syndication works best. And finally, the manner in which incentive problems arise and are resolved will also differ across the two alternative settings of syndicated finance.

Second, these same questions may also be asked in a comparison of venture-backed versus bank-backed syndications. Banks have different horizons and risk–return objectives than VC firms, and this may be a determinant of differences in the syndication structure of new ventures.

Third, empirical work in this area is beset with many technical problems. No doubt, the coming literature will address many of these and enrich the results we obtain, drilling down into the data with finer instruments, and sifting out more interesting realities. One aspect of the data being addressed is that much of it tends to be self-reported and, hence, is likely to suffer from selection bias. As Cochrane (2000) has pointed out, returns are significantly different once this has been corrected for. It would be interesting to know if syndicated ventures suffer from this bias or not: Are syndicated ventures more likely to self-report?

At the macro-level, the frequency and form of syndication is also worth exploring. While there are papers that examine the types of firms that are syndicated in hot and cold IPO markets (essentially that cold IPO markets foster early-stage syndication and hot IPO markets seem to encourage late-stage investing), see Cumming *et al.* (2004), reviewed earlier in this article; yet, there remains more to be done on this topic. We are not aware of any study of syndication "waves" nor are there studies of the relationship of syndicate financing structure to macro-economic factors, such as term-structure shape and level, inflation, political conditions, and comparative investment alternatives.

Finally, more needs to be done on how the endogeneity of the syndication decision matters when assessing the results from syndication. In addition, this leads to treatment effects. The literature that examines the difference in performance between syndicated and nonsyndicated ventures uses regressions that fail to account for the fact that there are truncation effects in the sample on both sides. There is a vast econometric literature on limited-dependent variables that awaits application to venture syndication data.

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