SHOULD PRIVATE VENTURE CAPITAL FUND MANAGERS IMPORT THE MUTUAL FUND'S AND HEDGE FUND'S OPEN-ENDED STRUCTURE?

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Abstract

This research attempts to demonstrate that closed-ended funds are not the optimal venture capital fund structure to support entrepreneurs. Their structure bring venture capital fund managers to analyze the fund's investments with a short term view, which forces entrepreneurs to maintain a high risk growth strategy to attract venture capital financing. These entrepreneurs must also allow these funds to achieve their desired exit within a very short investment horizon to avoid being treated as an irrelevant investment. The result is that many of these entrepreneurs do not receive from such funds all the support they would need. By applying the empirical data gathered on closed-ended funds to a hypothetical open-ended structure and based on interviews conducted with private equity fund managers, investors and target companies, we are showing how such an open-ended structure would address these issues. Such structure would create incentives to adopt a long-term view and provide long run value creation to entrepreneurs while addressing certain structural issues of the closed-ended structure. We demonstrate also how such a fund could be structured in such a way as to eliminate the anticipated problems associated with open-ended VC funds, being the exposure to potential liquidity shocks and the difficulty to value investments as a going concern (without the presence of arm's length transactions).

Cette recherche vise à démontrer que les fonds fermés n'offrent pas la structure de fonds de capital de risque optimale afin d'offrir du support aux entrepreneurs. Cette structure de fonds amène les gestionnaires de fonds de capital de risque à analyser les investissements effectués par le fonds avec une vision à court terme, ce qui force les entrepreneurs à maintenir une stratégie de croissance à haut risque afin d'attirer du capital de risque. Ces entrepreneurs doivent également permettre aux fonds de capital de risque qu'ils parviennent à attirer de réaliser une sortie à court terme afin d'éviter de devenir un investissement marginalisé. Cela fait en sorte que plusieurs

entrepreneurs ne reçoivent pas tout le support dont ils auraient besoin. En appliquant les données empiriques disponibles à l'égard des fonds fermés à une structure hypothétique de fonds ouvert et en se basant sur des entrevues réalisées auprès de gestionnaires de fonds de capital-investissement, d'investisseurs et de sociétés cibles, nous démontrons comment une structure de fonds ouvert permettrait de régler ces enjeux. Cette structure permettrait de créer des incitatifs afin de promouvoir une approche à plus long terme et de fournir de la création de valeur aux entrepreneurs sur une plus longue période tout en permettant de corriger certains problèmes structurels inhérents aux fonds fermés. Nous faisons la démonstration qu'un fonds peut être structuré de façon à éliminer les problèmes qui découlent d'une structure de fonds ouvert, soit l'exposition aux risques reliés aux chocs de liquidité et la difficulté d'évaluer les investissements en cours d'exploitation (sans transaction avec tiers).

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Over the last 50 years, private equity firms have demonstrated that they play a significant role in financial intermediation. Studies of the advantages of these firms as compared to other forms of financial intermediation demonstrate that private equity firms have the ability to generate returns for investors by creating operational value in the enterprises in which they invest through the sharing of their experience and relationships with the entrepreneurs who manage these enterprises (Florin, 2005 and Leleux, Sway and Megally, 2015). In this context, it becomes relevant to determine whether the current structure used by most private equity funds is the optimal one to achieve operational value creation. This paper hypothesizes that the current closed-ended structure is not optimal and that an open-ended structure would allow private equity fund managers to generate more operational value creation. This paper will focus its analysis on venture capital funds since the proposed structure is more likely to be problematic with such types of funds as a result of the illiquidity of the underlying assets and the difficulty in providing an objective valuation as a going concern of the Portfolio Companies owned by such funds. For purpose of this paper, we define "venture capital" ("VC") as the portion of private equity specializing in high-risk seed or early stage Portfolio Companies of which the true revenue potential has not yet been validated.

A. DIFFERENCES BETWEEN THE TRADITIONAL VC FUND STRUCTURE AND THE PROPOSED STRUCTURE

This paper analyses the impact of modifying one specific component of the typical VC fund structure: its term. By simply borrowing one component of the mutual funds' and of the hedge funds' structure, i.e. the open-ended term, we hypothesize that we could address some of the structural flaws inherent to VC funds. To fully understand how an open-ended term might impact these flaws, it is relevant to briefly describe how these funds are typically structured and how they would be structured in an open-ended model.

1. Current Standard Closed-Ended Structure of VC Funds

The Term of the Typical VC Fund

The typical VC fund is a limited partnership having a finite lifetime, resulting in such fund being referred to as a "closed-ended" fund. The organizational document of the fund (the limited partnership agreement) sets the term of the fund (i.e. the "life" of the fund). Such life consists typically of a period of 10 years from its formation (or from the first closing), with possible extensions by the manager of up to two additional one-year periods. At the end of the term of the VC fund, the manager must liquidate and dissolve the fund (resulting in such funds being sometimes referred to as being "self-liquidating" funds). The liquidation of the VC fund generally implies that the manager must have previously disposed of all the investments of the fund (all of the securities it owns in all of the Portfolio Companies)[1].

[1] The limited partnership agreement of the fund will normally prohibit or limit distributions *in specie*, i.e. distributions made by the VC fund of the securities it owns in the Portfolio Companies, and require managers to rather sell those securities and distribute the proceeds of such disposition in the form of cash.

The two one-year extension options granted to the manager allowing it to extend the term of the fund referred to above are typically meant to ensure that the manager will have some flexibility in planning the timing of the exits from the VC fund's investments to prevent it from having to dispose of an investment at a discounted value, if market conditions at the end of the initial 10 year period are not favourable. However, beyond such 12 year period, the manager is typically considered in breach of its obligations and may be subject to legal recourses if it has not completed the liquidation process in a timely fashion[2].

The Commitment Period

Typically, timing restrictions are imposed on the activities of the VC fund to ensure that the economic incentives of the fund are aligned with the VC fund's 10 year term. In particular, the manager is usually forced to complete the fundraising within a limited period of time (the "commitment period"). This commitment period is typically limited to 12 to 24 months from the first closing. Despite the fact that the investors are admitted as limited partners[3] at different closings during the commitment period, they are generally treated for the purposes of the VC fund's economics as if they all had been admitted on the fund's first closing. When a closing occurs, the limited partner does not disburse all of its investment in the capital of the fund right away. The limited partner simply commits to disburse an aggregate amount of capital (a capital commitment) through different drawdowns, the frequency and amount of which are determined by the manager, who will make capital calls (sometimes referred to as "cash calls") pursuant to which limited partners have typically 10 days to wire the requested funds. Once all of the capital

[2] See however our discussions in the subsection under the heading "Conventional extension beyond the 12 year period" in the section entitled "Alternatives Solution to the Fire Sale Problem" in Section 4.

[3] Referred to as special partners in the *Civil Code of Québec*.

committed by an investor has been called by the manager, then the limited partner no longer has any funding obligations towards the VC fund[4].

The Investment Period

Once the commitment period is over and the manager of the VC fund has raised the desired amount of capital from limited partners, the manager then has generally between four to five years from the final closing (referred to as the "investment period") to select Portfolio Companies and invest the capital raised by the fund, which is often referred to as the "deployment" of the fund's capital. The manager must then manage the said investments and determine the timing of the exits from the different Portfolio Companies.

Restrictions on the Recycling of Capital

The manager of a closed-end fund is generally not entitled to reinvest the cash received from the disposal of a Portfolio Company. Even if the manager disposes of an asset years before the end of the term of the fund, it must immediately distribute the proceeds of such disposal of the assets to the investors of the fund.

Absence of Redemption Rights

Another important aspect of closed-ended funds is the fact that the limited partners of these VC funds are not entitled to withdraw their capital from the VC fund during its term. They are required to wait until the VC fund is liquidated to get back their capital. During the 10 to 12 year term, their only way of disposing of their investment in the fund is by selling their interest on the secondary market (to a third party). Given that most VC funds are private issuers, the

[4] The capital committed by an investor that is still available for future cash calls or drawdowns is called the "undrawn capital commitment" of such investor. The expression "dry powder" is also commonly used to describe the aggregate amount of undrawn capital commitment that is available in an investment fund to be called as part of a cash call by its manager.

transfer of such interest is restricted under securities legislation[5]. Further, the limited partnership agreement of the fund may impose additional conditions on a limited partner's ability to validly transfer its interest to a third party. While the secondary market for transfers of interests in VC funds has developed over the last few years and is now more significant, the restrictions imposed by securities legislation and by limited partnership agreements still result in such market remaining limited in scope.

2. Main Characteristics of the Proposed Open-Ended Structure

The structure that we propose consists of a limited partnership structured as an open-ended fund, being a fund with an unlimited term. Open-ended funds are the dominant form for mutual funds and are also very frequent among hedge funds. More recently, such structure has also been borrowed by certain private equity funds specialized in assets that provide the fund with fixed and stable income and the manager with standard and relatively reliable methods of valuation, such as infrastructure or real estate assets[6], or which hold a significant portion of their investments in more liquid assets[7]. The private equity funds that have decided to adopt this structure remain however extremely rare. Our proposed open-ended VC fund structure is inspired by the structure used by open-ended infrastructure private equity funds.

[5] The transfer must be made pursuant to a valid prospectus exemption (i.e., typically to a person who qualify as an accredited investor).

[6] See for example CF Macquarie Global Infrastructure Securities Fund (a U.K.-based open-ended infrastructure private equity fund), IFM Australian Infrastructure Fund (an Australia-based open-ended infrastructure private equity fund) and Axium Infrastructure Canada II LP (a Canada-based open-ended infrastructure private equity fund). Numerous real estate investment trusts are also structured as open-ended funds (e.g. Cominar Real Estate Investment Trust).

[7] See for example Blackstone Alternative Multi-Manager, an open-ended private equity mutual fund (see our discussion on the structure of such fund in Section 11).

The Life Cycle and Capital Raising under the Proposed Structure

Open-ended funds are structured to stay in operations until the manager (or a sufficient number of limited partners[8]) decide to force the liquidation and dissolution of the fund. As a result of the absence of a specific term, these funds do not have a commitment nor an investment period. While the manager may identify a specific target size for the fund, it normally is permitted to raise capital on a continuous basis. The manager will accept limited partners during the entire life of the fund (through multiple closings). Given that, in such a context, the amount of time between the admission of the first limited partner and the admission of the subsequent limited partners can be substantial, the economics of the fund will not attempt to "equalize" the limited partners so as to treat them as if they had all been admitted at the first closing. To take into account the different entry times in the capital of the fund, the subscription price paid by each limited partner for its interest or the limited partnership units issued to it is usually determined based on the aggregate net asset value ("NAV") of the VC fund's assets and liabilities at the time of such issuance.

The Investment and Reinvestment Process

In the absence of a specific investment period, the manager can "deploy" the capital at any time during the life of the VC Fund[9]. Given that the VC fund is raising money on a continuous basis, the VC fund is always able to invest capital unless it is no longer able to attract new investors. In addition, the manager typically also has the ability to reinvest the proceeds of any disposition of a Portfolio Company by the fund (this process is referred to in the industry as the "recycling" of capital). Given, however, that the investments made by a VC fund do not

[8] As provided in the limited partnership agreement.
[9] Subject however to any expiry of the commitments made by limited partners.

provide investors with stable income (as is the case for open-ended infrastructure private equity funds), our proposed open-ended VC fund structure would provide that the manager be required to distribute to the limited partners a small portion of the proceeds when disposing of any Portfolio Company (between 5% to 10% of such proceeds).

The Redemption Mechanism

Given that there is no specific period after which the fund is liquidated in an open-ended structure, managers of open-end funds must provide a redemption mechanism entitling limited partners to be redeemed and effectively exit during the life of the fund. The redemption mechanism is very flexible in a mutual fund; it entitles investors to be redeemed on demand or within a specified period after demand. Hedge funds, on their end, typically provide annual, semi-annual or quarterly redemptions to occur at specific dates (redemption dates).[10] Existing open-ended infrastructure private equity funds typically only entitle limited partners to yearly redemptions. In those private equity funds, an investor who wants to be redeemed must transmit a notice to the manager and must then wait until the next redemption date to receive its capital and its proportionate share of the returns of the fund. In the meantime, the limited partner assumes the risk of any decrease in the value of the fund's assets prior to the redemption of its interest. The organizational document of the fund will typically provide that if certain so-called "redemption restrictions" occur on any given redemption date, the manager will be entitled to postpone or suspend the right of investors to be redeemed. Such redemption restrictions can include situations where the manager would be forced to dispose of a number of its invested

[10] Stein (2004) cites a 1999 report from Cerulli Associates which found that 43.6% of hedge funds in their sample provided quarterly redemptions, 25.7% provided annual redemptions and 15.7% provided monthly redemptions.

assets beyond a certain threshold in order to finance the payment of the redemption price. As a result, in such a structure, the limited partner may have to wait for months or even years before being redeemed. If the waiting period becomes too long, the manager will then be forced to implement certain measures such as the sale of certain assets[11]. If the manager has not been able to redeem the limited partner that has made a redemption request after a certain period of time, the manager would usually have to liquidate the fund.

Given the lack of liquidity of the assets of a VC fund (this will be described further in section 11 below), the proposed structure would resemble the structure of those open-ended private equity funds. For the reasons described in Section 11, we propose however to limit redemptions in our proposed structure to once every three years (rather than annually).

3. Alternative Open-Ended Structure

It is also possible to structure an open-ended VC fund as a closed-ended fund (as a limited partnership with investment and commitment periods), but provide for additional subscription tranches later during the life of the fund (the "SST Model"). In such a structure, the manager has a certain amount of time to raise funds and invest such funds in Portfolio Companies as in a closed-ended fund. After the initial "term" of 10 to 12 years, a second subscription tranche is opened to allow additional investors to enter the fund. Initial investors can typically remain in the fund. Depending on the structure, the investors of the new subscription tranche can either benefit from the return on the investments made during the initial term, or alternatively, the return of such investments are distributed to the initial investors and the new

[11] Whether redemption restrictions exist or not.

investors can only benefit from the new Portfolio Investments. We believe that, if the terms and conditions of the organizational document of the fund structured under the SST Model provides that the new investors will only benefit from the new Portfolio Investments, such a VC fund does not fundamentally differ from a closed-ended structure with respect to its advantages and disadvantages. The economics and characteristics are basically the same as a closed-ended fund. If on the contrary, the organizational document of the fund structured under the SST Model provides that new investors will benefit from the Portfolio Investments made during the initial term, such a model could be a viable alternative to our proposed structure. We will demonstrate, however, as part of this paper that it has certain disadvantages when compared to our proposed structure.

B. ADVANTAGES OF THE PROPOSED OPEN-ENDED STRUCTURE

We believe that our proposed open-ended structure would constitute in certain cases a superior structure to the closed-ended structure for the following reasons: 1) the open-ended structure would eliminate the "fire-sale" problem that occurs near the end of the 10- to 12-year term; 2) the VC fund would be able to benefit from a stronger post-IPO performance of the Portfolio Companies who are successful in completing an IPO prior to the VC fund exiting its investment; 3) the structure would allow the VC fund manager to always access additional capital, providing the manager with additional investment opportunities and decreasing opportunity costs with respect to investments; 4) the structure would create incentives to exit certain poorly performing investments sooner, 5) the open-ended structure would provide a built-in monitoring mechanism for limited partners, 6) the open-ended structure would promote a long-term view with respect to investment horizons, allowing a larger number of entrepreneurs to

have access to VC funding, and 7) the manager of the fund would be able to provide long-term operational value creation to the different Portfolio Companies. These advantages will be analyzed below.

4. Advantage #1: Elimination of the Fire-Sale Problem

Description of the Fire-Sale Problem in a Closed-Ended Fund

Adequately timing the exit of an investment by a VC fund in a Portfolio Company is an important aspect of the VC business. The timing and method of such exit may vary. Cumming & MacIntosh (2003, p.516) and Espenlaub, Khurshed and Mohamed (2015, p.216) established that given the role of the VC fund manager as operational value creator, it should exit from an investment when the projected marginal value added to the Portfolio Company as a result of the manager's efforts, at any given measurement interval, is less than the projected costs of these efforts. Cumming & MacIntosh (2003) recognize however that the pressure to convert the VC fund's assets into a liquid form as the end of its term approaches may cause the VC fund manager to dispose of an asset before the optimal time. This precipitated exit results in the VC fund manager not accomplishing its operational value creator role in an optimal manner and possibly results in reduced returns for the VC fund. This is called the "fire-sale" problem.

Time Constraints in the Closed-Ended Structure

The fire-sale problem is what led to the creation of the open-ended infrastructure private equity funds. Having to dispose of long term assets after only 10 years did not make sense in the infrastructure industry. One might think however that, given the relatively short-term investment horizon of VC funds, the fire-sale problem would not constitute a real issue with respect to VC funds. Empirical data suggests however otherwise as more fully explained below.

Average Investment Durations. We have gathered the data collected by different authors on investment durations in the VC industry. This data is summarized in Table 1 to this paper and shows the average duration for each type of exit[12] as well as the total average investment durations. The average durations for all types of exit gathered by the different authors as shown in Table 1 indicate an average duration per investment of 5.5299 years in Canada, 3.7 years in Europe and between 3 to 4.75 years in the United States. Such data is however limited to the exits that occurred between 1990 and 2000, a period during which the value of the stock market increased rather constantly[13]. This is relevant when analyzing the data found in Table 1 to the extent that Espenlaub, Khurshed and Mohamed (2015) demonstrated that higher aggregate stock market valuations and more liquid stock markets speed up IPO exits and acquisition exits, resulting in shorter investment durations. The context has been significantly different since 2008 with notably a sharp decrease in the quantity of IPO activity on a global level, and particularly in Canada[14]. As a result of such decrease of the IPO activity, Espenlaub, Khurshed and Mohamed (2015) found that their data showed comparatively longer times to exit by VC funds during the period 2007-2010[15]. Unfortunately, Espenlaub, Khurshed and Mohamed (2015) do not provide the specific investment durations for such period. We note however that their average investment duration for a sample of 1304 VC funds located in the United States and Canada for the period

[12] Categorized as IPOs, acquisitions, secondary sales, buybacks and write-offs.

[13] The S&P 500 increased from 339.94 to 1498.58 points and the S&P TSX Composite increased from 3704.40 to 11247.90 points during the period between 1990 and 2000.

[14] According to the data gathered by PricewaterhouseCoopers, the number of IPOs in Canada per year between 2004 and 2006 was between 87 and 119 with an aggregate deal value between CAN$5.8 billion and CAN$7.0 billion, while the number of IPOs in Canada per year between 2011 and 2014 was between 14 and 64 and the aggregate deal value between CAN$1.8 billion and CAN$3.5 billion. See PricewaterhouseCoopers LLP (2010), *The Canadian IPO Market: Decade in Review (2000-2010)*, available at: http://www.pwc.com/ca/en/ipo/publications/ipo-decade-in-review-2010-en.pdf and PricewaterhouseCoopers LLP (2015), *Red Light Green Light: Canada IPO's Market 2010-2014*, available at: http://www.pwc.com/en_CA/ca/ipo/publications/pwc-canadas-ipo-market-2010-2014-en.pdf.

[15] Their data does not go beyond 2010.

from 1990 to 2010 shows a higher average duration (8.93 years) than the data gathered in Table 1.

Time to Entry. When looking at the average duration of VC fund investments in Canada to determine if investments are exited near the end of the life of the fund, one must take into account the fact that not all investments are made by VC funds in their first year. Closed-ended VC funds will often have limited capital available to deploy before the end of their commitment period. This means that the typical closed-ended VC fund will start making most of its investments only after one year from its formation. Certain investments will be made during the third, fourth and fifth years of the VC fund[16]. Certain follow-on investments will also be made even later during the life of the fund[17]. Mr. David Brassard, Associate at Persistence Capital Partners, a Montreal-based private equity fund, considers that while certain investments are sometimes made on the third or fourth year from the creation of the fund, on average, investments are made in the second year of its formation (within the first year that follows the final closing)[18].

Maximum Investment Durations. The data gathered by Cumming and Johan (2010) (see Table 2 of this paper) shows that investments exited through an IPO have a duration of up to 6.9678 years in Canada and up to 12.4189 years in the United Sates and investments exited through acquisitions, secondary sales and buybacks have a duration of up to 13.0021 years in Canada and 11.4278 years in the United States.

[16] For example, Novacap Technologies III (a Longueuil-based VC fund) acquired Host.net on January 4, 2013, almost five years after its creation (the closing of Novacap Technologies III had been announced on February 7, 2008). iNovia Investment Fund III (a Montreal-based VC fund) closed an investment in Clearpath Robotics in March 2015 during its fourth year (having closed its first closing on December 16, 2011). This information is based on our analysis of publicly available information and has not been validated by the managers of these VC funds.

[17] The VC fund manager will typically keep a portion of its capital available for follow-on investments.

[18] Based on the interview conducted with Mr. Brassard on October 29, 2015.

Conclusion on Timing of Exits. If we look at the average investment durations, we can conclude that investment exits in Canada between 1990 and 2000 occurred on average during the seventh year of the fund (taking into account an average entry time of two years from the creation of the fund and an average investment duration of 5.5299 years). From 1990 to 2010, investments exits in Canada occurred on average during the 10th year of the fund (taking into account an average entry time of two years from the creation of the fund and an average investment duration of 8.93 years). If we also take into account the maximum investment durations in Canada of 13.0021 for acquisitions, secondary sales and buybacks, we believe we can conclude that most VC funds exit their investments in Portfolio Companies (and more so in the recent years) near or at the very end of the life of the VC fund (based on a typical term of 10 years, subject to the standard two extension options of one year). While the timing of the exits of such investments does not necessarily indicate that the VC funds disposed of such investments because of the timing of the liquidation of the fund, it certainly suggests that the current term of closed-ended VC funds did not give the possibility to the VC fund managers to keep such investments longer if they had wished to do so. In addition, as will be discussed below, VC fund managers sometimes use alternative solutions to address the fire-sale problem, which demonstrates that VC fund managers are sometimes pressured to sell Portfolio Companies earlier than they would wish[19].

[19] We analyze in Section 7 the mirror effect of the ability to maintain investments for a longer period of time in the open-ended structure, by showing that such ability does not result in the creation of an incentive to maintain investments longer than what would be desired.

Alternative Solutions to the Fire-Sale Problem

Transfers within the VC fund group. One method used by VC fund managers to partly resolve the fire-sale problem is the transfer, as part of the liquidation process of a VC fund, of the interest of such fund held in those Portfolio Companies that are performing well to a follow-on fund. The VC fund managers that we interviewed confirmed that these types of transactions are occasionally used to prevent a precipitated sale as a result of the fire-sale problem. This type of inter-fund transfer allows the VC fund manager to be able to continue being involved in the management of the Portfolio Company and help in the generation of operational value for such company and to continue benefit from such company's growth. There are however considerable disadvantages to proceeding this way. The transfer of the interest held by the VC fund in the Portfolio Company to the follow-on fund involves transactional costs to complete the transaction. These transactional costs include legal fees as well as the costs to put in place a formal valuation by an independent third party. The requirement for this valuation originates from the fact that the VC fund manager is negotiating on both sides of the table as both buyer and seller in such a transaction, since the VC fund manager manages both the initial fund and the follow-on fund[20]. The organizational documents of VC funds typically provide rules in case of conflict of interest situations such as in the case of a transfer between two VC funds managed by the same manager. The application of those rules leads to the requirement for the VC fund manager to hire an independent valuator to value the Portfolio Company being transferred in order to ensure that such transfer will occur at fair market value. In those instances, the fees of the independent valuator must be added to the other transactional costs. Further, based on our

[20] Limited partners of the VC funds do not typically want to be involved in such negotiations both for business reasons and also because they risk losing the limited liability afforded to limited partners by this structure.

interviews with VC fund managers' representatives that have been involved in such a transaction in the past, we believe that these types of transactions can sometimes create conflicts between the VC fund manager and its limited partners in connection with the determination of the value at which such transfer of interest should occur. Finally, while proceeding with such a transfer may resolve the fire-sale problem for the VC fund manager, the reality is that it does not solve it for the limited partners. The limited partners of the initial fund will not benefit from the future returns of the Portfolio Company unless they are also limited partners in the follow-on fund[21] and the limited partners of the follow-on fund do not benefit from the previous returns of the Portfolio Company given that the follow-on fund will pay for the interest in such Portfolio Company at its fair market value. As a result, we believe that transferring the interest of the VC fund in the Portfolio Company to a follow-on fund does not constitute a real alternative solution to the fire-sale problem.

Conventional extension beyond the 12 year period. A second method that is used by VC fund managers to partly resolve the fire-sale problem is to enter into discussions with limited partners to agree to further extensions of the life of the fund to prevent it from having to dispose of the Portfolio Companies that the VC fund manager wishes to keep for a longer period. Mr. David Brassard, from Persistence Capital Partners, confirmed during our interview that this solution is sometimes used by VC fund managers. The problem with this solution is that such an extension is not contemplated by the organizational documents of the VC fund. This necessarily entails that the VC fund manager must enter into negotiations with the limited partners and convince them that extending the term of the fund is necessary and in their best interest. Such

[21] Limited partners of a previous fund will often invest in the follow-on fund, but it is not necessarily the case.

process can discourage the VC fund manager from requesting extensions, except when keeping the Portfolio Companies is clearly in the best interest of all limited partners and can be easily demonstrated. In other instances where the advantage of keeping an investment exists but is not as significant or cannot be easily demonstrated, the VC fund manager will potentially be discouraged from seeking such a solution. Further, while this solution can allow the manager to extend the duration of the fund for one year or two, it cannot realistically be used for significant extensions of time to keep investments over a long period of time.

Conclusion regarding alternative solutions. We understand from our interviews that closed-ended VC fund managers will desperately avoid to fall victim from the fire-sale problem by using one of the two alternative solutions described above. This supports our conclusion with respect to the existence of such fire-sale problem. We also demonstrated that these solutions provide disadvantages and may result in difficult negotiations and complications with respect to the relationship between the VC fund manager and the limited partners.

Reduction of the Fire-Sale Problem in an Open-Ended Structure

Given that the life of the VC fund is perpetual in an open-ended structure, there is no termination date to pressure the manager into a "fire sale". The fire-sale problem is however not eliminated. It is simply postponed, given that nothing is purely indefinite, including the term of an open-ended fund; the manager or the limited partners will eventually force the liquidation and dissolution of the VC fund, which may then pressure the manager to conclude a fire-sale of the remaining assets. Unless the VC fund has not been performing well and its life has been shortened abruptly, this should however occur a large number of years after the 10-12 year typical closed-end fund life, providing the manager with total flexibility in the timing of the exits from the VC fund's investments during the life of the fund and therefore considerably reducing

the impact of any potential fire-sale problem. For this reason, we conclude that the open-ended structure remains the best way to address the fire-sale problem and that this represent an advantage of the open-ended structure over the closed-ended one.

5. Advantage #2: Better Post-IPO Performance of Portfolio Companies

Hypothesized Advantage

The ability of the VC fund to maintain its investments for a longer period of time in an open-ended structure provides an additional advantage of allowing the Portfolio Companies exited through an IPO exit to benefit from a stronger performance following an IPO[22]. The Portfolio Company will be able to experience such stronger performance as a result of the "certification effect" provided by the VC fund remaining invested in the capital of the Portfolio Company for a longer period of time and as a result of the elimination of the grandstanding sometimes shown by newly established managers.

Description of the Certification Effect in the Academic Literature

The "certification effect" has been demonstrated by Megginson and Weiss (1991). They found that the fact of having a VC fund in its capital prior to an IPO will positively affect the valuation of a Portfolio Company going to the public market, given that the presence of the VC fund is seen as an assurance of the quality of the Portfolio Company and as an implicit "certification" that the offering price of the IPO reflects all available and relevant inside

[22] An IPO involves the sale of the securities of the Portfolio Company to the public. Those sales consist in new issuances of securities; as a result, a VC fund would not technically exit through the IPO directly. However, the IPO results in all the securities of the Portfolio Company becoming much more liquid, notably as a result of the fact that the IPO will typically be accompanied by a listing on a stock exchange of the category of securities being offered to the public. The VC fund will, as a result, be able to easily sell the securities of the Portfolio Company it holds in the months or years following the closing of the IPO.

information. Megginson and Weiss (1991) demonstrate that this assurance comes from the fact that the market will typically consider that the VC fund, contrarily to the other insiders of the Portfolio Company, has an interest to ensure that there are no false signals sent to the market regarding the valuation of the Portfolio Company in the context of an IPO. The frequency with which VC fund managers bring companies in their portfolio to the public market[23] causes them to have a lot of reputational capital at stake and forces them to ensure that all accurate information about the valuation of the Portfolio Company has been properly disclosed[24] and to deter management from cutbacks in capital expenditures or other attempts to window-dress the accounting numbers prior to going public in the hope of securing higher valuations (Jain and Kini, 1995).

Impact of the Investment Duration on the Certification Effect

Anticipated Impact. Megginson and Weiss (1991) describe that the certification effect is increased when a VC fund does not appear to be after a quick exit after an IPO in order to take advantage of the market. By undertaking to maintain large post-offering holdings for a long period of time, VC fund managers are perceived as having foregone the opportunity to profit directly from falsely signaling the valuation of the Portfolio Company. The results found by Megginson and Weiss (1991) are consistent with those of Wang, Wang and Lu (2003) who found that in Singapore, the VC certification effect exists mainly among VCs with longer investment durations. As a result, by maintaining their investment in a Portfolio Company for a longer period of time after the IPO, VC funds should be able to improve the performance of the

[23] They demonstrated that many VC fund managers are frequent participants in the IPO market. From a sample of 320 VC funds, they found that 53 brought five or more issues to the market over the time period from 1983 to 1987 (Megginson and Weiss, 1991, pp.887 and 890).

[24] Beyond what is required by securities legislation.

Portfolio Company. Further, even without the increased certification effect resulting from a VC fund maintaining its investment in a Portfolio Company, the fact that such Portfolio Company is able to raise larger proceeds from its IPO as a result of the certification effect should result in the Portfolio Company being better endowed for growth in the years that follow the IPO, allowing the VC fund to generate better returns if it keeps its investment for a sufficient period of time after the IPO.

Existing Evidence. Empirical studies show however mixed results regarding the post-IPO performance of venture-backed Portfolio Companies. On the positive side, Brav and Gompers (1997) found that venture-backed companies outperformed on average non-venture backed companies over a period of five years following the IPO. Florin (2005)'s data, however, demonstrates that while the backing of Portfolio Companies by VC funds is related to higher levels of funding as part of the IPOs of such Portfolio Companies, it does not result in such Portfolio Companies' ability to grow and be more profitable after the offering. These mixed results suggest that while the certification effect allows a Portfolio Company to raise larger amount of proceeds at better costs, this does not necessarily translate into better performance of such Portfolio Company over the long term.

Alternative Explanation: Impact of Grandstanding

Description of Grandstanding in the Academic Literature. Wang, Wang and Lu (2003) demonstrate that one of the reasons behind the lack of better post-IPO performance by venture-backed Portfolio Companies is the grandstanding effected by young venture capital firms. The notion of "grandstanding" in VC funds has been first proposed by Gompers (1996) who demonstrated that newly established VC fund managers, who must periodically raise follow-on VC funds to remain active in the VC market, have an incentive to bring at least certain of the

Portfolio Companies in which they invested to the public sooner than they would have normally in order to signal to the potential investors of their follow-on VC fund their ability to create value in Portfolio Companies. This signal desired by managers comes from the fact that successful IPOs provide a good track record which improves the public image of the VC fund manager and as a result its ability to raise funds for its follow-on VC fund. The consequence of such VC fund managers bringing their Portfolio Companies public sooner is that many of these Portfolio Companies go public prematurely and perform poorly after the IPO, thus resulting in worst post-IPO performance by firms backed by VC funds with newly established managers[25]. Gompers (1996) demonstrated the existence of the grandstanding by showing notably that managers who are managing their first VC fund bring their Portfolio Companies public much sooner than more established VC fund managers. Wang, Wang and Lu (2003) pushed the analysis further by looking at the impact of grandstanding on the post-IPO performance of venture-backed firms. They concluded that there is a significant difference in the operating performance of Portfolio Companies backed by experienced managers after an IPO when compared to the performance of those backed by a younger manager. The older VC fund group's Portfolio Companies showed a significantly better operating return on assets and operating return on sales in the years that followed the IPO than the Portfolio Companies backed by the younger VC fund group. Wang, Wang and Lu (2003) concluded that the positive effect on market performance of certification by VC funds is offset in the long-term by the grandstanding effect.

[25] The VC fund is not affected by those poor performances, given that they will typically affect the Portfolio Companies only after the VC fund has disposed of its investment.

Elimination of Grandstanding in the context of an Open-Ended Fund

The impact of grandstanding in the context of an open-ended VC fund has not been studied or measured given the absence of sufficient historical data. We believe, however, for the following reasons, that the pressure felt by newly-established VC fund managers will be diminished in the context of an open-ended fund.

Fundraising not subject to time pressure. The manager of our open-ended VC fund structure would constantly be in fundraising mode and would always look for new investors to invest capital in the VC fund. It will therefore attempt to benefit from a strong track record to attract investors in the same way the manager of a closed-ended VC fund would when raising capital for a follow-on VC fund. One could think, as a result, that the grandstanding effect would also occur in the context of an open-ended VC fund. One significant difference however is that the time constraints applicable to the fundraising in the context of the setting up of a follow-on VC fund is not present in the context of our proposed open-ended VC fund[26]. Given that the manager of such fund can always raise capital, it is not forced to achieve completion of such fundraising within a specific period of time. As a result, there is no reputational impact if it does not raise all of the desired capital within a certain period of time. The VC fund manager also knows that, even if it does not rush the Portfolio Companies towards an IPO, when the Portfolio Companies will be ready to complete such IPO, it will then be able to benefit from an improved public image, allowing it then to increase its fundraising at that time. The only consequence of not doing any grandstanding could be a small delay in the closing of certain investments from

[26] There may be an exception in the case where redemption requests have been submitted and an IPO is imminent if the VC fund manager no longer has any dry powder and is hoping to obtain additional capital commitments (or use the proceeds of the IPO) to fund the redemption price payable with respect to such redemption requests. In those very specific circumstances, which should remain rare unless the fund is not performing well, a certain level of grandstanding effect might occur in an open-ended VC fund.

potential investors. But in the absence of time pressure in the open-ended structure, as discussed before, this will not be a major concern for the manager.

Imminence of an IPO is attractive for investors. The manager of an open-ended VC fund has an incentive not to rush its Portfolio Company towards an IPO, given that the imminence of an IPO with respect to one of the Portfolio Companies allows the manager to attract investors more easily. In a closed-ended VC fund, the manager will have an incentive to establish a strong track record for the fundraising of its follow-on fund. The imminence of an IPO cannot however be used to attract investors for the follow-on fund given that such investors will not benefit from the performance of the Portfolio Companies of the first VC fund. In the context of an open-ended VC fund, however, all investors are investing in the same fund. There is no need for a follow-on fund. The new investor will therefore benefit from all of the existing investments of the VC fund. The manager can therefore attract investors by marketing the fact that a Portfolio Company is about to achieve an IPO. The attractiveness of the imminence of an IPO results from the fact that the IPO normally allows the valuation of the company to suddenly increase as a result of the demonstrated interest of the public market in said company and of the newly acquired liquidity of its securities (Lind, 2008, pp. 345-346). By entering the VC fund prior to the IPO, the investor will benefit from such sudden increase. The incentive to bring the Portfolio Company public prematurely to build a track record is therefore diminished if not entirely eliminated by the circumstances surrounding an IPO in an open-ended VC fund. Limiting the fundraising in our open-ended structure to specific commitment periods, as is the case in the SST Model that we described in Section 3, would eliminate such advantage. For this reason, we believe that fundraising should not be restricted to specific subscription tranches as it is the case in the SST Model and should be continuous as in our proposed structure.

Conclusion on Existence of Advantage #2

While the absence of existing open-ended VC funds prevents us from gathering empirical evidence to that effect, we believe that the existing data gathered in the context of closed-ended funds supports our hypothesis that our open-ended fund structure would eliminate the grandstanding effect and would have a positive impact on the potential certification effect. We also believe that such data supports the hypothesis that in the absence of grandstanding, the certification effect should result in VC-backed Portfolio Companies experiencing better post-IPO performance. We conclude that there is therefore indirect evidence that an open-ended structure would lead on average to a better post-IPO performance of Portfolio Companies exited through IPOs.

6. Advantage #3: Elimination of Opportunity Costs

Description of the Impact of Opportunity Costs in the Closed-Ended Structure

Opportunity Costs Resulting from the Interim Period. As mentioned in Section 1, in a typical closed-ended VC fund, the manager must generally have deployed all of the capital raised by the fund (while keeping only a small portion of capital available for follow-on investments) during a four to five year investment period. Beyond such investment period, the VC fund manager cannot invest in any new investment opportunity unless he has created a follow-on fund. The organizational documents of a VC fund will typically prevent a VC fund manager from creating a follow-on fund until the VC fund has invested most of the capital that was raised[27], which will typically be the case only near the end of the investment period. Further, it takes

[27] To prevent the manager from being in conflict by having to choose between two of its funds to complete an investment in a given Portfolio Company.

approximately one year to solicit money and close a new VC fund. As a result, there may be a gap between the end of the investment period of an initial fund and the moment at which the follow-on fund is able to invest in Portfolio Companies (the "interim period"). During such interim period, the VC fund manager will likely have to pass on certain investment opportunities. Mr. David Brassard, from Persistence Capital Partners, confirmed that, in his experience, there are opportunities that are being missed by managers during said period. He clarified however than as the manager matures and becomes more experienced, it will develop the ability to raise a follow-on fund more rapidly, therefore reducing (but not eliminating) the length of time of the interim period and the impact of these opportunity costs.

Opportunity Costs resulting from the Absence of Recycling. Even if no opportunity cost arise from the interim period, if a VC fund exits a Portfolio Company after a short investment duration, there will always be opportunity costs resulting from the fact that the VC fund will have to distribute the proceeds from the exit to its investors. This obligation to distribute proceeds prevents the manager from being able to reinvest the cash in other investment opportunities that would enhance returns for the remaining term of the fund. This results in an opportunity cost for the VC fund manager who is both unable to reinvest such proceeds and to benefit from the carried interest it would otherwise be entitled to with respect to the returns that would have been generated during the remaining term. The limited partners, on their end, theoretically do not suffer any opportunity cost given that once the cash is distributed back to them, they have the ability to reinvest it somewhere else. Manigart et al. (2002) found however that VC companies require greater annual returns for shorter time horizons because of the fact that a shorter investment horizon increases the risk for an investor of being left with idle cash for a certain period of time if it is not able to immediately reinvest such cash in another investment

that produces an equal rate of return. These findings support the conclusion that limited partners are not necessarily able to immediately reinvest the distributions they receive from the VC fund and that the aforementioned situation may also result in opportunity costs for them as well.

Alternative Solution: Recycling of Capital

If the organizational documents of the closed-ended VC fund provide its manager with the ability to recycle capital, the manager will benefit from an alternative solution to prevent the opportunity costs described above from occurring when a new investment opportunity is presented to the manager. Such solution consists in allowing the manager to dispose of an existing investment to use the proceeds to invest in the new investment opportunity being presented to it[28]. Such alternative solution might however have a negative impact. Cumming and Joan (2010) found that VC fund managers who are able to recycle their capital will sometimes sell Portfolio Companies sooner than what would otherwise be optimal for the fund in order to diminish the opportunity costs described earlier, therefore resulting in decreased returns with respect to the Portfolio Companies that are sold prematurely[29]. As a result, we believe that the recycling of capital does not represent an interesting solution to the opportunity cost problem, given that even when it is available, it is likely to result in decreased returns for the VC fund.

Elimination of the Opportunity Costs in the Open-Ended Structure

Our hypothesis is that our proposed open-ended structure naturally eliminates most of the aforementioned opportunity costs. In such an open-ended fund, there is no commitment nor investment period. The VC fund manager is entitled to raise capital on a continuous basis and is

[28] As described in Section 1, under "Restrictions on the Recycling of Capital", this alternative solution is not available for all VC fund managers.

[29] Except if the optimal time of exit of a Portfolio Company coincidentally matches the timing of the investment opportunity being presented.

also therefore always completing investments. As a result, unless the VC fund manager is encountering difficulties in raising capital (e.g. during an economic cycle of low fundraising) and has used all of its dry powder, it will always be able to benefit from an investment opportunity given that it is not restricted by a specific investment period. Further, even if it has used all of its dry powder and is encountering difficulties in raising further capital, the VC fund manager of an open-ended fund will necessarily benefit from the ability to recycle the proceeds of a disposition of a Portfolio Company[30] by investing them into another Portfolio Company. If the impact of exiting an existing investment sooner is significant (and would result in decreased returns), in an open-ended fund, the VC fund manager will have alternatives to explore, such as inviting the current investors to increase their commitment (therefore providing the manager with new dry powder).

The foregoing demonstrates that the VC fund manager would have more flexibility in preventing opportunity costs in an open-ended structure than in a closed-ended one. This suggests that the open-ended structure provides a third advantage consisting in the elimination of certain important opportunity costs that can arise in a closed-ended structure. This is another advantage of our structure over the SST Model. In a SST model, the manager is not able to take advantage of investments opportunities between the time when all of the subscriptions of a tranche have been invested and the closing of the subscriptions of the subsequent tranche, therefore causing the SST Model to suffer from the same opportunity costs as in a closed-ended structure.

[30] Except for the portion required to be distributed under our structure as described in Section 2.

7. Advantage #4: Creation of an Incentive to Exit Poorly Performing Investments Sooner

Characteristics of Living Dead Investments

A living dead investment is described by Ruhnka, Feldman and Dean (1992) as a Portfolio Company that is economically self-sustaining in the near term but that has limited growth and inadequate profitability that restrain the possibility of a successful exit by the VC fund that has invested in it. As part of their survey of VC funds, they found that some living dead investments demonstrate negative cash flows and are not likely to remain self-sustaining for a long period of time. Thus, some of these investments might be characterized as "dying" living dead investments[31].

Impact of Recycling of Capital on Living Dead Investments

Ruhnka, Feldman and Dean (1992) found that the primary strategy in dealing with living dead investments is to attempt to sell or merge the Portfolio Company. In contrast, letting the company go or forcing a cash out are among the last three strategies considered by VC fund managers. This preference is encouraged by the current closed-ended structure used by most VC funds who typically do not provide the managers with the ability to reinvest the proceeds once they exit their capital from an investment. Even if the manager of the closed-ended fund is not prevented from recycling its capital, the reasons why such restrictions are typically found in closed-ended funds still remain. The restrictions on the ability to recycle capital contained in the organizational documents of certain VC funds are designed, in part, to ensure that the manager does not re-invest late in the VC fund's expected life, which could result in the manager not

[31] Others achieve important amounts of revenues and are qualified as "living dead" only because they do not show the high growth and profitability that is required for a high investment multiple exit (these "living dead" investments will be analyzed in Section 9).

being able to dispose of such investment at the end of the term of the VC fund and being forced to seek an extension of the fund, sell the Portfolio Company in disadvantageous terms or distribute illiquid securities (i.e. the securities held by the fund in the Portfolio Company) to its investors (Cumming & MacIntosh, 2000, p.139). This reality exists whether the manager is submitted to contractual restrictions or not. As a result, even when the manager has the liberty to recycle capital, it may be prevented from doing so in order to avoid these consequences.

As a result, in closed-ended funds, whether there is contractual restrictions on the recycling of capital or not, such recycling remains limited in practical terms and there is therefore no incentive for managers to cash out their investment even if they are "dying" living dead investments.

Recycling of Capital and Open-Ended Funds

In an open-ended structure, the recycling of capital is not normally subject to contractual restrictions and would not be subject to such timing restrictions. Thus, the VC fund manager of an open-ended structure can fully exercise its ability to recycle capital (subject to our proposed requirement to distribute a portion of 5% to 10% of such proceeds). This recycling of capital creates an incentive for VC fund managers to determine whether the living dead investment is one that is likely to be "saved" by another strategy (merger, change of management, etc.) or likely to achieve high profitability in the future or whether it is truly a dying living dead investment. It forces the VC fund manager to take the appropriate actions rather than simply maintaining the investment in the Portfolio Company on the basis that it has no better alternative. By using such second chance or second life that it is able to give to its capital, the VC fund manager is able to enhance returns before distributing the proceeds to limited partners.

We conclude as a result that the incentive to exit dying living dead investments in an open-ended fund is greater than in a closed-ended fund resulting in a greater ability of the VC fund manager to enhance returns in the open-ended structure.

8. Advantage #5: Built-in Manager Monitoring Mechanism in the Open-Ended Structure

Agency Problems of the Closed-Ended Structure

Asymmetrical Information. Typical closed-ended VC fund structures involve a certain level of agency costs, as documented by Sahlman (1990). The limited partners of the VC fund (the principals) mandate the manager (the agent) to invest their funds in Portfolio Companies. The agency costs arise from the fact that there is a high degree of information asymmetry between the manager and those limited partners. The limited partners are prevented by the limited partnership structure (which is generally used by VC funds for tax reasons) to be involved in the management of the fund[32] and must therefore rely on the information provided by the manager. As a result, they cannot monitor the different Portfolio Companies closely, resulting in such information asymmetry.

Adverse Selection. An additional problem arising from the agency problem is the adverse selection problem which results from the fact that the manager can falsely represent its management skills at the inception of the fund (Osnabrugge, 2000). This agency problem arises from the fact that the limited partners cannot completely verify these skills or abilities during the life of the fund as a result of the aforementioned asymmetrical information[33].

[32] Further, many such investors simply do not have the expertise to be involved in the management of the fund's assets.

[33] They are forced to rely only on the track record of the manager.

Enhanced Effect in Closed-Ended Structure. All of these agency problems are exacerbated, in a closed-ended structure, by the fact that the investors are prevented from withdrawing their capital during the life of the fund. They have a limited ability to discipline the manager if it takes advantage of the asymmetrical information or if its skills do not match those that were represented during the fundraising process.

Existing Protection Measures. The typical closed-ended VC fund model has evolved to provide protection measures against such agency costs. One of these measures is the creation of the carried interest: the manager is typically entitled to receive 20% of the profits generated by the fund which aligns its interest with those of the limited partners[34]. This compensation mechanism can lead however the manager to take more risky investments with a higher mean return rather than safer investments (Osnabrugge, 2000). The limited partnership agreement will also typically provide for rules addressing conflicts of interest and for the creation of a partnership advisory committee composed of representatives of limited partners who will be entitled to vote on certain issues with respect to which the interest of the manager and those of the limited partners might not be aligned. These measures however do not entirely eliminate the agency problems. Notwithstanding all of these measures, given their inability to discipline the manager in a closed-ended structure, the agency problem remains given that the recourses of the limited partners are extremely limited.[35]

[34] Kaplan & Schoar (2005) reported findings to the effect that the carried interest or profit share for VC fund managers is almost always 20%.

[35] Most VC funds provide limited partners with the ability to force the removal and replacement of the manager. The exercise of such right typically requires however the concerted action of a very high number of limited partners (holding typically between 80% and 95% of outstanding limited partnership units) and is therefore extremely difficult to implement in practice.

Built-In Monitoring Mechanism in the Open-Ended Structure

Many of the agency problems described in the previous section would still exist in an open-ended structure. Limited partners benefit however from a significant advantage in the open-ended structure from the fact that they benefit from redemption rights and from the ability to commit additional capital during the entire life of the fund allowing them to discipline the manager negatively if it does not act in their best interest or if it does not have the skills and ability that it represented during the solicitation of capital. Even if the asymmetrical information still exists in the open-ended structure, the manager will be more prudent given the ability of investors to withdraw or invest more money as new information arrives about its managerial ability or about the conduct of the manager. This advantage is obviously reduced by the restrictions on the ability to redeem inherent to our proposed structure that are described in details in Section 11. Nevertheless, the ability of transmitting a redemption request (whether it is honored rapidly or not in the context of the existence of redemption restrictions) will by itself discipline in part the manager (it may force the manager to take certain immediate actions and may, depending on the provisions of the limited partnership agreement, force the manager to disclose to the other limited partners the fact that a redemption request was received which can have a negative effect on the perception of other investors). Further, notwithstanding the existence of restrictions allowing the manager to postpone the redemption, the manager will eventually, after a few years, have to find ways to honor such redemption request or liquidate the fund, therefore ensuring that such redemption rights remain an effective way for the limited partners to discipline the manager (even if the impact is not necessarily immediate). The significance of this advantage is such that Nanda, Narayanan and Warther (2000) believe that this

ability is what led to the creation of a new competitive equilibrium in the mutual fund market where most funds are open-ended.

9. Advantage #6: Incentives to Maintain a Long Term Investment Horizon

We believe that one of the problems with the closed-ended structure is that it provides incentives for manager to maintain a short-term investment horizon. In this section, we will demonstrate how this short term investment horizon has negative consequences and how an open-ended structure would on the contrary provide incentives to maintain a long term view with respect to investments in Portfolio Companies, therefore resolving this problem.

Short Term Investment Horizon of Closed-Ended VC Fund Managers

Short Term Horizon in the Private Equity Industry. The notion of short-term view is often associated with the private equity industry in general. Private equity funds are often perceived as being focused on the short term and a widely-spread belief is that their decisions are not necessarily aligned with the long term best interests of the Portfolio Companies in which they invest. They are sometimes perceived as cost cutters who cut costs to improve profits in order to resell the Portfolio Company a few years later at a high return even if their cost cutting exercise may have hurt the Portfolio Company over the long term:

> *"PE firms don't specifically set out to damage the companies they buy. But because they are most interested in the short term than the long term, they often cripple them for the future by squeezing them too hard to deliver in the present. Often the result of the squeezing is that the quality of goods and services that once attracted customers, […] begins to decline. Reducing quality doesn't always hurt a company. If a reduction in quality is accompanied by a lowering of prices, it can result in a strategic repositioning into a new sector of the marketplace. But reducing quality without lowering price cuts into competitiveness. It may take a while for customers to*

> *notice the decline in quality, but eventually they do, and when they do, they start looking around for alternatives."* (Kosman, 2009, p.56).

This criticism is justified with respect to certain private equity funds who unfortunately apply these kinds of strategy. For example, Vista Equity Partners, a U.S.-based private equity fund, acquired TIBCO Software Inc. on December 5, 2014. According to Mr. Alexander Jeong[36], former Program Manager at TIBCO Software Inc., Vista Equity Partners laid off entire departments in order to reduce costs shortly after the acquisition[37]. This resulted in a short term increase in profits, but in a significant diminution of the quality of the services provided by TIBCO Software Inc. to its clients. At the same time, instead of reducing prices, Vista Equity Partners caused TIBCO Software Inc. to increase the costs of certain services provided to its clients. Mr. Jeong is convinced that these decisions, who already caused TIBCO Software to loose certain clients, will hurt the long-term future of the company and perhaps in an irreparable manner[38].

This does not mean that the majority of private equity funds have this kind of attitude. Leleux, Swaay and Megally (2015) describe how a 2002 study from the EVCA showed that private equity investors are not in general "blind cost cutters". The study shows that investments in areas conducive to higher profits, such as selective research and development, marketing,

[36] Based on an interview conducted with Mr. Alexander Jeong on October 27, 2015.

[37] According to Mr. Alexander Jeong, within 90 days from the closing of the acquisition of TIBCO Software Inc., Vista Equity Partners had laid-off all personnel from the legal department, the human resources, the technical support and the product development departments. The legal work and human resources were transferred to Vista Equity Partners' internal staff and the technical support and product development were moved to the teams of TIBCO Software located in China and India. Within six months, a quarter of the worldwide employees of TIBCO Software had either been laid-off or had resigned (in part because in the reduction in the compensation of certain categories of employees).

[38] Mr. Alexander Jeong has resigned on September 30, 2015 from his position at TIBCO Software Inc. as a result of his disagreement with the decisions taken by Vista Equity Partners and their impact on the future of the company.

capital expenditure or training, on average tend to increase after buyouts. Thus, while private equity funds might bring Portfolio Companies to cut non-necessary costs, the EVCA study suggests that in general, they do not sacrifice long-run investments by the entrepreneurs of the Portfolio Companies.

Short Term Horizon in the VC Industry. In the VC industry, the manager will usually not be focused on cutting costs. Early-stage companies need to grow fast to become self-sustaining. Cutting costs in a drastic way would prevent such growth. This does not mean however that VC funds do not suffer from the same short term view as other types of private equity funds. The notion of living dead investments is a good example of the short term view of VC funds. As mentioned in Section 6, a living dead investment is an investment that is economically self-sustaining in the near term but that has limited growth and inadequate profitability that restrain the ability of the VC fund to proceed to a successful exit. Ruhnka, Feldman and Dean (1992) highlight the fact that many so-called "living dead" investments are not really dead. As part of their survey, they reported that a number of respondents had indicated that living dead companies can reach US$5 million to US$15 million in revenues, suggesting that they are very much alive. They may also be producing positive cash flow resulting in profits at the end of the year. Their only flaw is simply that they do not have a sufficient level of growth to allow the VC fund to exit with sufficient returns within a certain number of years.

This demonstrates the necessity for standards VC funds to be provided with high short term growth by their Portfolio Companies. A Portfolio Company that decides to grow slowly, even if it intends to achieve the same ultimate goal (and eventually provide the same internal rate of return ("IRR") to its investors), is not a good investment for a typical closed-ended VC fund. The fact that it must liquidate after 10 years (which, as we have seen in Section 4, leads to the

fire-sale problem), prevents the VC fund from being able to wait for the entrepreneur to achieve its long term objective. As a result, it becomes a bad investment for the VC fund; a "living dead" investment that is still very much alive, but that does not allow the VC fund to achieve its targeted return within the expected timeframe.

Impact of the VC Short Term Horizon. This short term approach of VC funds has a negative impact on the ability of entrepreneurs to access VC financing and the operational value creation effected by VC fund managers.

First, it reduces the categories of entrepreneurs who will be able to access funding from VC funds. Florin (2005) found by analyzing 277 firms that conducted an IPO in 1996 that VC funds favour high-risk ventures because of their inherent potential for faster high gains rather than more established and profitable firms that are better positioned for successful growth. He found that non-VC-backed firms had accumulated less funding before the IPO and were looking for less equity from the IPO while being more profitable when going public, suggesting according to Florin (2005) that these firms had a more conservative growth strategy. These results show that those firms that have a more conservative growth strategy have a reduced access to funding from VC funds.

The short term view of VC fund managers also impacts the stages of development during which firms will be able to access capital from VC funds (at least in Canada). In an article published in the National Post in February 2015, Mr. Tom Houston, national spokesman for VC funding on the leadership council for the Canadian Advanced Technology Alliance, mentioned

the existence of certain gaps in VC funding in Canada for firms at mid-stage level of growth[39]. He highlighted that VC funds invest in early-stage companies but do not support these companies through later rounds, thus creating a gap at such level, where firms require more cash input and more support of VC funds. A report released by PricewaterhouseCoopers on December 8, 2015[40] to certain Québec institutional investors also shows that enterprises in the province of Québec in the stage of development that they refer to in French as the "*post-démarrage*" stage (the mid-stage between early-stage and growth stage) receive in the aggregate a much small amount than businesses in other stages of development[41]. This gap is not without consequence given that, as we will demonstrate in the section below entitled "Long-Run Operational Value Creation and the Long-Term Investment Horizon", the operational value creator role of VC fund managers is needed by entrepreneurs not only in the seed or start-up stages, but also in the growth stage and later stage.

The foregoing results in certain entrepreneurs not receiving from VC funds all of the operational value creation that they would need once they reach the mid-stage and in certain entrepreneurs not being able to obtain VC fund support at all and having to rely solely on traditional methods of financing. From a public policy standpoint, this is problematic.

[39] Danny Bradbury, "Canadian tech firms are getting funded, but gaps remain", *Financial Post*, February 8, 2015, available at http://business.financialpost.com/entrepreneur/canadian-tech-firms-are-getting-funded-but-gaps-remain.

[40] The report entitled "*Portrait de l'offre en capital d'investissement au Québec*" was not available publicly at the time of the writing of this paper. The information contained in this paper is therefore based only on a presentation of the highlights of the report presented by Réseau Capital and available at: http://www.reseaucapital.com/docs/2015_12_08___pwc___portrait_de_loffre_en_capital_dinvestissement___pr_sentation_r_seau_capital_final.pdf.

[41] In the aggregate, investments in Québec in businesses at this stage of development was of approximately CAN$285,000,000 compared to approximately CAN$400,000,000 for early stage businesses and approximately CAN$1,346,000,000 for growth-stage businesses.

Analysis of the Investment Horizon in an Open-Ended Structure

We hypothesize that an open-ended structure would incentivize VC fund managers to have and maintain a long term investment horizon with respect to most of their investments.

Ability to Maintain Investments for a Long Period of Time. The first factor in support of this hypothesis is the fact that the open-ended structure offers the managers the ability to keep an investment for a longer period of time. As demonstrated in Section 4, the open-ended structure would allow them to maintain an investment in their portfolio until the marginal value added to such investment as a result of the manager's efforts is less than the projected costs of these efforts, as it should be the case according to Cumming & MacIntosh (2003, p.516) and Espenlaub, Khurshed and Mohamed (2015, p.216), even if that means that they must dispose of an investment only after 15 years or even longer. This does not mean that the VC fund manager would not be allowed to maintain a short term horizon with respect to some of its investments. In fact, during the first few years of the open-ended structure, the manager may (and will likely) act in the same manner as the manager of a closed-ended fund would. Nevertheless, as its portfolio grows over the years, it then has the liberty of keeping certain investments who show a higher long-term potential for a longer period of time, even if the Portfolio Company is not growing fast.

Reduction of the Incentives to Dispose of their Investments Sooner. We discussed in Section 5 how the grandstanding effect created an incentive to bring Portfolio Companies to public sooner than they should have and how our proposed open-ended structure would eliminate the incentives that lead to the grandstanding phenomenon. We then emphasized the effect this would have on the post-IPO performance of the open-ended VC funds. However, another advantage of the elimination of the grandstanding effect in the open-ended structure is that VC

fund managers will tend in these circumstances to maintain their investment longer than in a closed-ended context. Rather than rushing the Portfolio Company towards an IPO, they will take the time to ensure it is ready to go public resulting in a longer term investment horizon with respect to these investments.

Potential Impact of Redemption Rights on Investment Horizon. One component of the open-ended structure that could however decrease the incentive of VC fund managers to have and maintain a long term investment horizon is the ability of the limited partners to request to be redeemed and to withdraw their investment from the fund at any time. Rappaport (2005) believes that the ability of the investors to withdraw their investments in mutual funds forces managers to have a short term focus given that if they perform poorly in the short term, they face potential large withdrawals by investors. The ability to withdraw capital in mutual funds is however more flexible than what we propose for the open-ended VC fund structure. As described in Section 2, the ability of limited partners to withdraw from the VC fund would be restricted to once every three years and could be postponed to up to five years if certain conditions are met. We will also analyze in Section 11 how the open-ended VC fund should be structured in such a way as to limit liquidity shocks by providing important restrictions on the redemption rights of limited partners (such as penalties applicable for early withdrawals). In addition to the protection such measures provide against liquidity problems (as will be discussed in Section 11), they are also important to ensure that the open-ended VC fund manager will be able to maintain a long term approach. They protect against limited partners' potential reaction to short term variations in the fund's value and will greatly diminish the potential negative impact described by Rappaport (2005) that arises as a result of redemption rights.

Nonetheless, poor short term performance of Portfolio Companies could still lead an open-ended VC fund manager to dispose of such investments to prevent any limited partner from making redemption requests as a result of such performance. One must remember however that the nature of a VC fund investment is very different than that of a mutual fund. VC funds invest in early-stage businesses that often have no revenues during the first years of investments and provide therefore no return during such period. Investors in VC funds (contrarily perhaps to investors in mutual funds or hedge funds) would be expected to better understand that these types of Portfolio Companies may require time to provide the necessary returns. One must also take into account that the VC fund manager who would decide to put in place an open-ended structure would do so in order to be able to offer investors a new VC investment approach less focused on short-term rewards and more so on long term growth. We can therefore expect that the mindset of the manager will be aligned with a more long-term approach and would be expected to market the fund as such when doing its fundraising. As a result, we would anticipate that most limited partners that would have decided to invest in such a fund would themselves expect it to favour a longer-term approach and would be analyzing the fund's portfolio in the context of such an investment horizon and would not be expected to react as quickly to short term fluctuations in value as would other types of investors.

We therefore believe that the fact that certain investments are performing poorly over the short term should not necessarily lead investors to immediately request redemptions of their interest in the fund. Notwithstanding the hypothesized long-term mindset of limited partners, the fact that they have more limited information on the Portfolio Companies may lead them to misunderstand the objectives of certain Portfolio Companies and not perceive how certain decisions are intended to create long-term value. They may also react negatively if the cash flows

of a Portfolio Company are not meeting the objectives that were identified by the entrepreneurs of such Portfolio Companies at the time of the initial investment by the VC fund. These elements might lead them to react nevertheless to short term fluctuations resulting from certain decisions made by the entrepreneurs of such Portfolio Companies. Jensen (2001) describes how the financial markets do not always understand the full implications of a firm's policies and how the long-term value maximization of a business requires that an entrepreneur communicates to its investors the management policies' anticipated effect on value, and then wait for the market to catch up and recognize the real value of its decisions. To ensure that the existence of redemption rights in the open-ended structure does not generate any form of incentive to adopt a short term approach with respect to Portfolio Companies, the VC fund manager will need to do with the limited partners of the fund what Jensen (2001) describes entrepreneurs should do with their investors in general. It will be necessary for the manager to clearly explain its investment strategy (and its Portfolio Companies' business strategies) on a regular basis to its investors to ensure that their expectations match such investment and business strategies. It should describe in its annual and quarterly reports why it believes that its investments will eventually provide returns[42]. The manager of the VC fund will, as a result of its presence on the board of its Portfolio Companies, benefit from a deep level of understanding of such Portfolio Companies' policies and their anticipated effect on long-term value. However, it will need to ensure that it communicates such understanding to the VC fund's investors in order to ensure that said investors also understand the full implications of the Portfolio Companies' policies and that

[42] While providing the warnings with respect to forward-looking statements that are typically found in these types of documents and which are prescribed in certain regulated marketing documents pursuant to securities legislation.

depressed short term values for these Portfolio Companies do not trigger sudden redemption requests.

Conclusion on Investment Horizon in the Open-Ended Structure.

We believe that the open-ended term of such funds would lead to a longer term approach as a result of the flexibility to maintain investments over a long period of time and of the general mindset of all parties deciding to be involved in such fund (the manager and the limited partners). Given the presence of redemption restrictions and the nature of the VC fund investments, we believe that the redemption rights should not discourage such long-term approach. This long-term horizon will fill the financing gap identified by the Canadian Advanced Technology Alliance[43] (and by other sources) with respect to the companies at the mid-level stage of development by allowing VC funds to maintain their investment in such companies beyond the early stages of growth. We also believe that this long-term investment horizon will allow firms with a more conservative growth strategy (which are nevertheless profitable firms well positioned for successful growth) to become more attractive for VC fund managers, therefore also filling the gap that exists whereby those firms are currently forced to rely only on traditional sources of financing. Those firms, who normally would not have been perceived as attractive or would have become living dead investments, could, with our proposed structure, be part of a balanced investment portfolio strategy.

[43] *Supra*, note 39.

10. Advantage #7: Long-Run Operational Value Creation

Another potential important advantage of the open-ended structure is the fact that the long-term investment horizon favoured by it would allow the VC fund manager to accomplish its role of value creator in the long run and therefore generate long-term value. Our introduction to this paper emphasized the pivotal role that private equity plays with respect to the operational value creation with entrepreneurs. This value creator role is even more important with respect to VC funds given that they invest in early-stage businesses that lack the necessary experience and who need more than any other entrepreneur the help and advice of the VC fund manager.

Description of the Operational Value Creation Effected by VC Fund Managers

Access to a Network of Valuable Contacts. As mentioned in our introduction, the operational value provided by the VC fund comes partly from the fact that the VC fund manager shares with the entrepreneurs behind the Portfolio Companies, not only its experience, but also its relationships. The entrepreneur who welcomes a VC fund in its capital is often looking for this support as much as the actual financing being provided by the fund. Cumming and Johan (2010) highlight that the VC fund manager typically has access to a large network of contacts across technology experts, intellectual property consultants, suppliers, purchasers, investment banks, and legal and accounting advisors which will be very valuable for the entrepreneur. Megginson and Weiss (1991) emphasize how the manager has typically been involved with IPOs in the past and will be able to connect the management of the Portfolio Company hoping to achieve an IPO with underwriters, auditors and institutional shareholders.

Oversight of the Portfolio Companies' Operations. When negotiating its initial investment in the Portfolio Company, the VC fund will typically require that the organizational or contractual documents of the Portfolio Company provide that the VC fund will be able to

designate at least one representative to sit on the board of directors of the Portfolio Company[44]. If the VC fund is not able to have one representative on the board (for example if it is not the lead investor), it will at least ensure that it can appoint an observer, who will not be entitled to vote on any resolution, but will be present at board meetings and more importantly will be able to share its views (even if only informally). The director or the observer appointed by the VC fund will typically play an active role in advising the entrepreneur and in providing operational value to the Portfolio Company. Studies from the EVCA have concluded that the average private equity non-executive board member spends three times as much time on their role as the average public company director (Leleux, Sway and Megally, 2015, p.80). Lerner (1995) mentions that the involvement of the VC fund director includes frequent informal visits, meetings with customers and suppliers and active involvement in key personnel and strategic decisions[45].

Long-Run Operational Value Creation and the Long-Term Investment Horizon

We demonstrated in Section 9 why we believe that managers of open-ended VC funds should be expected to have a longer term approach than their closed-ended counterparts. But in order to confirm our hypothesis that an open-ended structure would allow these managers to better accomplish their role of value creator, we must also analyze whether a long term view would allow this role to be accomplished through all the stages of development of a Portfolio Company.

[44] Based on Lerner (1995)'s research, VC funds control on average 1.40 board member after the first round of financing of a Portfolio Company and 2.12 board members after the fourth and subsequent rounds of financing.

[45] Based on our own experience as counsel to VC fund managers, we noticed that those managers look for entrepreneurs with whom they can develop trust and a solid relationship. This will typically be an important factor in their due diligence when deciding to invest or not in a Portfolio Company to the extent that, if they feel that such trust or relationship is not present, they may forego a valuable opportunity on the basis that there is no "fit". This reinforces the fact that the VC fund manager typically considers that it is able to generate good returns to its own investors if it is able to generate operational value for its Portfolio Companies.

Operational Value Creation and the Stages of Development of Portfolio Companies. The individuals that we have interviewed remained skeptical that a long-term investment horizon would necessarily lead to a better operational value creation with respect to entrepreneurs. The main reason for their skepticism was the idea that the value creation provided by VC fund managers decreases with time, as the Portfolio Company achieves later stages of development. Empirical evidence gathered by academic literature has demonstrated however that the monitoring and access to the network being provided by the VC fund remains useful for any Portfolio Company as it grows over the years. Manigart et al. (2002) have demonstrated that, while VC funds will provide a heavier level of monitoring with early-stage ventures, there is no relationship between the stages of development of a Portfolio Company and the type of monitoring involvement being done by VC fund managers. The operational value creator role has been found by Macmillan et al. (1988) to occur as much in the growth stage and later stage than in the seed or start-up stages. This demonstrates that, notwithstanding the general belief, the VC fund manager still has a role to play in monitoring the Portfolio Company during later stages of growth and development of such company.

Cumming & MacIntosh (2000) submit however that if the Portfolio Company proceeds to an IPO, the VC fund's ability to supply useful monitoring after the IPO will be more limited notably as a result of the VC fund typically not being able to maintain all of its veto rights and other contractual levers once the Portfolio Company becomes public. Thus, while the VC fund still has a key operational value creator role to play with growth and later stages companies, it may have a decreased ability to accomplish such role with a company that has completed an IPO.

Conclusion on the Impact of Investment Horizon on Operational Value Creation. Based on the data found by the academic literature cited in the previous sections, the open-ended VC

fund manager should not maintain a long term view with all of its investments. The Portfolio Companies that go through an IPO should be maintained by the VC fund manager only for an amount of time sufficient to maximize the certification effect and benefit from the post-IPO performance as demonstrated in Section 5 and then dispose of such investments. This means that once they are public, Portfolio Companies should no longer form part of the long-term strategy of the VC fund manager. By disposing of such companies, the VC fund will also be able to achieve the track record that is still needed by the manager in the open-ended structure[46].

On the other hand, the manager should apply a long-term investment horizon and strategy with respect to other Portfolio Companies that have not yet proceeded (and may never will) to an IPO. In particular with respect to those so-called "living dead" investments (except those we described in Section 6 as being "dying" living dead investments), the VC fund should strongly consider opting for a long term value creation approach that will maximize the growth of the Portfolio Company over the long term (even if such growth occurs more slowly). By maintaining such investments longer, the VC fund manager will be able to serve longer on the board of directors of the Portfolio Company and will have greater ability to monitor and influence the actions taken by it (Jain and Kini, 1995) and will be able to generate operational value over the long-run and ultimately achieve or even exceed the strategic objectives of the entrepreneurs of such Portfolio Companies.

Potential Impact of the Devotion of Time to Investors

Potential Impact of the Open-Ended Structure. There are however certain elements inherent to our open-ended structure which could negatively impact the operational value creator

[46] As discussed in Section 5.

role of the VC fund manager. One of these elements is the fact that the additional level of complexity with respect to the management of investor relations and fundraising activities that is inherent to an open-ended structure could impact the ability of the manager to focus on value creation. An open-ended structure, by allowing investors to request to be redeemed during the life of the fund and providing for continuous fundraising activities, can draw some of the attention of the VC fund manager away from the Portfolio Companies. In the open-ended structure, the investment professionals and employees of the manager can be required to devote a significant portion of their time and attention to process redemption requests[47] and in the identification and solicitation of new investors for the fund. Attending to such matters rather than solely to the management of the Portfolio Companies could prevent such individuals from devoting to such companies all the time they would normally devote, which could result in a decrease of the operational value creation being performed by the VC fund manager. This situation would represent a disadvantage, as compared to the closed-ended structure, where the VC fund manager will devote most of its time to the identification of new investments and the management of the Portfolio Companies after the end of the commitment period (which, as seen in Section 1, is typically limited to 12 to 24 months from the first closing).

Impact of Follow-on Funds in Closed-Ended Structures. While, in a closed-ended structure, the VC fund manager would allocate most of its time to the identification and the management of the Portfolio Companies once the commitment period is over, the reality is that this lasts only until the VC fund manager starts working on the establishment of a follow-on fund. In practice, once the VC fund manager has invested most of the fund's commitments

[47] Notably in order to find ways to finance the payment of the redemption price.

(typically around 75%), it will start working on the establishment of a follow-on fund and on the fundraising activities to be able to obtain funding for such fund. Gompers (1996) showed that experienced VC fund managers raise new funds every five or six years while young VC funds managers raise new funds every two to four years. The time devoted to the follow-on fund during each such period may have a similar impact than the time spend in connection with the continuous fundraising in the open-ended structure. As mentioned in Section 6, it takes approximately one year to solicit money and close a new VC fund. The VC fund manager can spend an additional year to raise further capital and get to the final closing and the end of the commitment period. The distraction provoked by the follow-on fund therefore lasts for two years. Such distraction remains however reduced when compared to our proposed open-ended structure, in which the diverted attention resulting from the situation described in the previous section occurs on a continuous basis.

Decreased Impact Resulting from Redemption Restrictions. The important restrictions on the ability for investors to redeem (as will be described in more details in Section 11) will greatly limit the impact of the redemption rights on the amount of time devoted by the manager to the Portfolio Companies. In particular, the fact that redemptions will be restricted to once every three years will ensure that the manager remains focused on the Portfolio Companies during each such three year period.

Investment Professional Team. The main solution to the devotion of time problem will remain however in adequately staffing the manager's team of investment professionals. Open-ended funds will tend to have a dedicated team responsible of the raising of money from investors and of investor relations. This allows certain individuals to spend the main portion of their time in attending to the affairs of the limited partners, allowing other investment

professionals to work closely with Portfolio Companies. While certain key personnel may however remain involved in all aspects of the management of the fund (particularly in strategic aspects, such as dealing with redemption requests), we believe that the adequate structuring of the investment professional team will allow the VC fund manager to avoid reducing the operational value creation being effected by the VC fund. The salary expenses of the additional professionals required to deal with the fundraising and investor relations will increase the expenses of the VC fund manager. But given that an open-ended VC fund should be expected to increase its size further than a closed-ended fund as a result of the fact that it is continuously raising money, the resulting increase in expenses should not be a problem given that additional personnel will necessarily be required in any case as the size of the VC fund increases. These additional expenses should be compensated by the increased amount of management fee that will be payable as a result of the increase in size of the VC fund.

Conclusion. For all of the above reasons, we believe that, generally speaking (except at certain specific occasions), the impact of the open-ended structure on the devotion of time to the Portfolio Companies should not be significant enough to negatively impact the operational value creation effected by the open-ended VC fund.

Conclusion on the Long-Run Value Creation Advantage

Given that the value creation role of VC fund managers has been demonstrated to be as important for a later-stage enterprise than an early-stage company, we conclude that an open-ended structure would allow VC fund managers to exercise such operational value creation role with Portfolio Companies for a longer period of time in a context where the long-term interests of the VC funds are aligned with the long-term interests of the Portfolio Companies. The focus in an open-ended structure is therefore no longer only on short term growth, and long-term growth

ceases to be perceived as negative. This should lead to a new investment approach based on the long-term value creation approach described in this Section 9 which should represent a differentiation factor and perhaps even a competitive advantage that may attract investors to invest in such a VC fund rather than investing in a typical closed-ended fund.

C. POTENTIAL ISSUES WITH RESPECT TO THE OPEN-ENDED STRUCTURE

Notwithstanding the advantages described in the previous section, the open-ended structure can be a viable option only if all of the potential new issues that arise as a result of this structure can be addressed and dealt with. Based on our analysis and our discussions with VC fund managers, we have identified three main issues arising with the proposed structure: 1) the lack of liquidity of the underlying assets of the VC funds in the context of the redemption rights, 2) the difficulty to obtain a reliable valuation of Portfolio Companies to determine the redemption price, and 3) the fact that the open-ended structure will cause VC fund managers to lose the stage specialization they typically have. We will address these issues below and show how they can be potentially resolved.

11. Issue #1: Lack of Liquidity

One difficulty that arises in the context of an open-ended structure is the necessity for the VC fund manager to be able to honor redemption requests made by limited partners. As described in Section 2, given that there is no specific period after which the fund is liquidated in an open-ended structure, managers of open-end funds are forced to include redemption rights. Those redemption rights entitle limited partners to transmit a notice (a "redemption request") to the VC fund manager pursuant to which they can request to be redeemed (whether in part or in

full). In order to honor any such redemption request, the VC fund manager must pay to the limited partner making such request an amount corresponding to the portion of the current value of the VC fund's assets (the NAV of the VC fund) that is attributable to the limited partnership units or interest held by the limited partner. In the organizational documents of the open-ended infrastructure private equity funds that inspired our proposed structure, the VC fund manager is usually entitled to use various mechanisms to obtain the financing required to pay the redemption price. It can use proceeds received from existing Portfolio Companies. It can also make a capital call to the other limited partners if these limited partners still have undrawn capital commitments. If the amount of the redemption price payable is higher than the amount of proceeds or dry powder available, then the VC fund manager would be forced to sell some of its investments in Portfolio Companies. A problem could then arise given the illiquidity of such portfolio investments. This could therefore result in potential "liquidity shocks" as will be further analyzed below.

Potential Liquidity Shocks

Typical Forms of VC Fund Investments. The investments of VC funds in Portfolio Companies typically take the form of equity or quasi-equity investments. One of the most common form of investment by VC fund is the preferred equity (Kaplan and Strömberg, 2001)[48]. The preferred shares is often convertible into common shares upon occurrence of certain events. The preferred shares and convertible debentures issued to the VC fund sometimes have a redemption feature entitling the VC fund to demand that the Portfolio Company redeem its

[48] Kaplan and Strömberg (2001) found, based on a sample of 213 VC investments made by 14 VC funds in 119 Portfolio Companies between 1996 and 1999, that in the United States, VC funds use convertible preferred stocks in 79.8% of financing rounds for their equity investments.

shares or debenture typically at liquidation value (or occasionally, at the maximum of the liquidation value and the fair market value)[49]. Notwithstanding the existence of such redemption right as part of the terms of the preferred shares or convertible debentures, the ability of the VC fund to exercise any redemption right depends in practice on the ability of the Portfolio Company to honour said rights. Unless the Portfolio Company has liquid assets (such as an important amount of cash in its bank account), the Portfolio Company will likely not be able to honor the redemption rights of the VC fund. Further, even if the Portfolio Company is able to honor the redemption right, if it has not had a liquidity event or a substantial increase in revenues that allowed it to increase its value, it may not be beneficial at all for the VC fund to exit through redemptions. This is supported by the fact that a buyback exit is the exit least favored by VC fund managers (Giot and Schwienbacher, 2007). This reality results in a high level of illiquidity of the investments held by VC funds.

Impact of Illiquidity of Portfolio Companies on Open-Ended Structure. The illiquidity of VC funds' investments can be extremely problematic to an open-ended VC fund in a situation where it has to sell some of its portfolio investments. First, if the VC fund does not benefit from redemption rights, it will have to find a third party to buy its securities of the Portfolio Company. However, the timing of such a disposition may not be appropriate and it may be impossible for the VC fund to find such a purchaser unless it offers an important discount on the price of such securities. As a result, if the VC fund does not benefit from redemption rights or is in a situation where exercising such rights might not allow the VC fund to exit at an interesting exit value (as described in the previous subsection), the VC fund manager may, in the absence of alternatives

[49] According to Kaplan and Strömberg (2001), redemption rights are successfully negotiated by VC fund managers in 78.7% of the financings.

sources of funding (such as the undrawn capital commitment of other investors), not be able to honour a redemption request made by a limited partner. This could result in an escalation of the illiquidity all the way up to the limited partners. This is what we refer to as being a "liquidity shock". The shock affects the limited partner who is not redeemed when desired and who will then places a relatively low value on future income compared to current income (resulting in such limited partner having a high discount factor) (Nanda, Narayannan and Warther, 2000). These shocks are stochastic and may not be prevented easily. They may appear notably when events that adversely affect the VC fund may lead many investors to wish to withdraw their funds at the same time. They may also occur if an important investor is asking to be redeemed at an inopportune time for the VC fund manager.

Impact of the Illiquidity on Alternative Structures

The high level of illiquidity of the investments made by VC funds is the reason why we did not propose a structure entirely based on the mutual fund structure where investors can be redeemed on demand, such as the private equity fund that has been put in place in 2012 by the Blackstone Group (a New York-based private equity fund manager), Blackstone Alternative Multi-Manager. One of the main advantages of such fund when compared to our proposed structure is the fact that its manager can attract investors with high liquidity needs such as high net worth individuals and even the public in general[50]. Blackstone was able however to structure the said fund in this manner as a result of the liquidity of the fund's investments. Blackstone Alternative Multi-Manager invests only 15% of its portfolio in illiquid securities[51]. A VC fund

[50] Given that Blackstone Alternative Multi-Manager fund had its securities registered with the U.S. Securities and Exchange Commission.

[51] Based on the registration statement on Form N-1A that was filed by Blackstone Alternative Investment Advisors LLC with the U.S. Securities and Exchange Commission on July 15, 2013.

providing for the right to be redeemed on demand as in a mutual fund or as Blackstone Alternative Multi-Manager, would, on the other hand, be constantly facing liquidity shocks as a result of the illiquidity of its investments, making such a structure not being a viable option for a VC fund.

Proposed Solution: Screening for Long-Term Investors

Redemption Restrictions. As mentioned in Section 2, the organizational documents of the infrastructure open-ended private equity funds that inspire our structure will typically include redemption restrictions entitling the manager to suspend the redemption rights and thus delay any redemption if the redemption price payable represents more than a certain percentage of the NAV of the fund. They also sometimes provide that if the manager determines that the redemption would create an unacceptable level of risk for the fund or materially adverse the fund, the manager is also entitled to suspend redemption rights and delay such redemptions. These restrictions provide a protection against potential liquidity shocks by discouraging limited partners with high liquidity needs to invest in the fund and by ensuring that the manager will remain in control of the redemption process. These redemption restrictions would be included in our proposed open-ended VC fund structure in order to screen investors to ensure that only long-term investors will invest in the VC fund. They will allow the VC fund manager to postpone the redemption for months or even years, if the applicable situation that gave rise to the redemption restriction lasts for a long period of time. In such a context, investors who have short term liquidity needs (such as certain high net worth individuals or family offices) will avoid investing in such a VC fund. Our proposed open-ended structure would nevertheless remain more liquid than typical closed-ended funds, meaning that notwithstanding the foregoing, the VC fund

should nevertheless be able to attract more liquid investors that a closed-ended fund does[52].

Exit Fee. Another method to discourage investors with high liquidity need is to charge an exit fee on withdrawals. Such fee usually operates as a fee payable when the investor withdraw money from the fund earlier than a certain period from its initial contribution or commitment[53]. Hedge funds will typically charge such fee upon withdrawals within a 6-, 12- or 18- month period. In the context of a VC fund however, such fee should be applicable upon redemption before the end of a five-year period after their initial capital contribution and should decrease gradually until the end of such five-year period. Such an exit fee will also have the effect of deterring high-liquidity investors from investing in the open-ended VC fund. Nanda, Narayannan and Warther (2000) submit that the greater the IRR provided by the VC fund to investors, the greater the minimum exit fee will need to be to discourage such high-liquidity investors from investing in the fund.

Initial Standstill Period. Notwithstanding the existence of redemption restrictions and the presence of exit fees (and the resulting screening of long-term investors), certain investors may nevertheless choose to submit redemption requests. This could still be problematic if the open-ended VC fund has not achieved a sufficient size, given the extremely high level of illiquidity of the assets of a VC fund. For this reason, we believe that the manager of an open-ended VC fund should consider going further than what is found in existing infrastructure private equity funds and insert provisions in the VC fund's limited partnership agreement providing for a standstill period of a certain number of years at the beginning of the life of the fund (we would suggest

[52] See our discussion in Section 17 of the impact of such ability on the management fee.

[53] It can alternatively be constructed as a discount reducing the redemption price limited partners will be entitled to receive.

between five to six years to correspond to the average duration of investments made by VC funds in Portfolio Companies) during which the limited partners of the fund would not be entitled to submit redemption requests. This would ensure that the manager is able to bring at least certain investments at a greater level of maturity and to increase the size of the fund to a sufficient size before certain investors can request to be redeemed. Such period must be of a reasonable length[54], otherwise it would result in a high number of redemptions requests being submitted simultaneously once such standstill period would be over.

Cycles of Redemption Periods. Hedge funds and infrastructure private equity open-ended funds generally provide for annual rights of redemptions, as discussed in Section 2. This means that no matter when a redemption request is being transmitted by a limited partner, it cannot be redeemed before the next annual redemption date. Given the extremely illiquid aspects of a VC fund's investments, we believe that redemption dates in VC funds should occur only once every three years (even in the absence of redemption restrictions). This effectively makes the redemption cycle of our open-ended structure resemble the exit cycle found in the SST Model described in Section 3, but ensures that redemptions are still frequent enough to prevent the frequency of redemption periods from creating a strong incentive for limited partners to request to be redeemed earlier than they would otherwise (by fear of not being able to do so when desired). The objective of this three-year redemption cycle is similar to the objective of the initial standstill period, being to give the manager flexibility in being able to bring at least certain investments to a greater level of maturity to finance redemptions if it does not have sufficient dry powder.

[54] One of the persons that we interviewed suggested that such standstill period should be of eight years.

Transfer Restrictions. While imposing severe transfer restrictions would be an additional mechanism allowing the VC fund manager to screen long-term investors[55], we do not believe that an open-ended VC fund should include such severe restrictions. We believe that imposing redemption restrictions, a three-year redemption cycle, an initial standstill period and an exit fee upon early redemptions are sufficient mechanisms to achieve that goal. The VC fund manager should promote a secondary market for limited partners' interests in the VC fund to provide for a viable alternative to those limited partners who have higher liquidity needs and wish to withdraw their capital. This being said, as a result of securities laws, the organizational documents of the VC fund must necessarily provide a certain level of restrictions (the alternative would result in the VC fund becoming a reporting issuer, which would have negative effects, as described below under the heading "Alternative Solution : Provide for a Liquid Secondary Market").

Sub-Portfolio of Liquid Assets

To reduce the possibility of occurrence of liquidity shocks, the VC fund manager could also consider providing in its investment policy that it shall be entitled to invest a small percentage of its capital (between 5% to 10%) in a liquid portfolio consisting of money market instruments and fixed income securities (or other types of liquid assets) to enhance the general liquidity of the assets of the fund. The downside of having such a sub-portfolio of liquid assets is that these assets will not generate the same level of returns as the Portfolio Companies and will therefore reduce the total returns of the fund. Further, we recognize that providing for such a sub-portfolio would be highly unusual for a VC fund and may be perceived negatively in the VC community and harm the fundraising of such fund. We consider however that adopting such a

[55] Gompers and Lerner (2004) believe that the screening of long-term investors is the reason why certain VC funds contain very restrictive transfer restrictions.

sub-portfolio is not required for an open-ended structure to decrease the likelihood of being subject to liquidity shocks and that the screening of long-term investors and the mechanism of redemption restrictions and redemption cycles provide sufficient protections against liquidity shocks. We therefore do not recommend the inclusion in the open-ended structure of such a sub-portfolio of liquid assets.

Alternative Solution: Provide for a Liquid Secondary Market

We are not proposing to resolve the liquidity shock problem by providing for a liquid secondary market. To have a liquid secondary market, a manager would have to complete an IPO and list the securities of the VC fund on an exchange or allow them to be traded over-the-counter. This would result in the interests of the investors of the fund being freely tradeable, but would result in the VC fund becoming a reporting issuer for purposes of securities laws. Such types of funds already exist in the private equity industry[56]. While this would provide enhanced liquidity and would probably solve the liquidity shock problem[57], it would trigger requirements that are costly and which would require lengthy disclosure and impose investment restrictions which would be difficult to manage given the early stage of the Portfolio Companies held by the VC fund[58]. Further, the long-term nature of the investments made by a VC fund would not be well-suited for the short term focus and sensitivity of the capital markets. For this reason, we do

[56] An example of open-ended fund that offers freely tradeable securities is Covington Venture Fund Inc., an Ontario-based labour-sponsored private equity mutual fund which is a reporting issuer in all provinces of Canada (except Saskatchewan). Another example is Blackstone Alternative Multi-Manager (which was previously discussed), which had its securities registered under the *U.S. Securities Act of 1933*.

[57] It is not clear whether a liquid secondary market would entirely solve the liquidity shock problem. In theory, it should. But we note however that the open-ended funds that are reporting issuers or are registered with the U.S. Securities and Exchange Commission that we have identified are funds which hold investments more liquid than what is found in a typical VC fund, suggesting that a liquid secondary market does not entirely solve the problem and that managers of such funds must nevertheless invest in somewhat liquid investments to avoid liquidity shocks while having investors with higher liquidity needs invest in their capital.

[58] In Canada, it would render such VC fund being notably subject to the requirements of National Instrument 81-102 – *Investment Funds* (*Regulation 81-102 respecting Investment Funds* in Québec).

not believe that the liquidity shock problem with respect to VC funds can be resolved by providing a liquid secondary market.

12. Issue #2: Difficulty in the Valuation of the Underlying Assets

Another difficulty that arises in the context of the redemption mechanism of open-ended VC funds is the fact that the VC fund manager must have a predetermined method of valuation for determining at what price the investor will be redeemed. In a closed-ended fund, such valuation is easily determined. The investors receive their capital back and their return when the fund is liquidated. The mechanic is therefore simple: the VC fund simply distributes the proceeds of the sale of all of its assets which occurs as part of the liquidation process. When redeeming a limited partner in an open-ended fund structure, a VC fund manager does not necessarily want to sell any Portfolio Company[59] and even if it did, that would only help determine the value of such Portfolio Company but not that of the other ones. As a result, the VC fund manager must then determine the value of its investments at the time of the redemption as a going concern given that there is no transaction at the asset level to help determine the NAV of these assets.

In the context of the open-ended infrastructure private equity funds which inspired our model, the method of valuation is simple given that these funds specialize in assets which provide the fund with fixed and stable income. The income from these types of assets being fixed and stable, the valuation can be determined using a simple discounted cash flow ("DCF") method given that there is almost no potential debate about future cash flows. With respect to early-stage investments, however, future cash flows are highly uncertain making their valuation

[59] For the reasons described in Section 11.

more difficult. This section therefore addresses how we can use the traditional methods of valuation of early-stage investments to establish how the limited partnership agreement could address this issue in a marketable manner while preventing any problem when the redemption mechanism will be enforced.

Certain Traditional Methods of Valuation by VC Funds

The stage of the businesses in which VC funds typically invest (being early-stage) makes it difficult to have a clear and objective method of valuation. Traditional valuation methods are extremely difficult to apply to those businesses given that they often have no revenue and sometimes no immediate prospect for positive cash flow. The difficulty in valuing such investments has been identified as the main challenge of our proposed structure by all individuals that we have interviewed.

According to Bruner (2004), to address the difficulty in valuing early-stage investments, certain VC fund managers use an adaptation of the DCF method to estimate the value of a business in which they are looking to invest; this method is often referred to as the "venture capital method" (the "VC method")[60]. The adaptation made to the DCF method is meant to address the lack of available information on an early-stage business. As described by Bruner (2004), the VC fund simplifies most of the data used to calculate the DCF of the business by making assumptions. One of such assumptions consists in assuming that there will be no distribution of cash (such as dividends) by the Portfolio Company to the VC fund between the time of its investment and its exit[61]. The VC fund then uses the cash flow forecasts provided by

[60] While according to the academic literature, it would appear that this method of valuation is frequently used by U.S.–based VC fund managers, based on our interviews conducted with Montreal-based VC fund managers, it would seem that this method is not frequently used in the Province of Québec.

[61] Given that early-stage businesses typically do not have sufficient cash flow to distribute dividends, making such an assumption is realistic.

the entrepreneur in order to estimate the potential cash flow to the start-up between the timing of the investment by the VC fund and the targeted exit (and the resulting dilution of the VC fund), such as ulterior rounds of financing and the anticipated revenues of the business (Keeley, Punjabi and Turki, 1996). Under the VC method, the VC fund does not apply probabilities to these cash flows (even if they are highly uncertain) and simply assumes that they are determined (that the company will achieve all of its goals). They also assume that the contemplated exit timing proposed by the entrepreneur will occur as expected[62]. Even if the VC fund, as part of its due diligence, questions the forecasts and projections made by the entrepreneur, it typically assumes these forecasts accurately reflect the future for purposes of its valuation[63].

The VC fund manager obviously does not believe these forecasts to be necessarily representative of the future, but taking an overly optimistic approach allows it to simplify the calculation by having to ignore the probabilities of such hypothesis. But in order to compensate the overly optimistic view used with respect to cash flows, the VC fund manager uses an arbitrarily high discount rate (between 40% and 75%) to discount the future cash flows rather than applying the cost of capital methods to determine the appropriate discount rate (Brunet, 2004). Such high discount rate allows it to incorporate the risks associated with start-up and the high uncertainty attached to the anticipated cash flows.

Given that the cash flows are calculated over a limited period of time, the VC fund must determine a terminal value to either reflect all of the cash flows occurring thereafter or simply the return that will be received by the VC fund if it is successful in exiting at such time. To

[62] The entrepreneur will often propose an exit through an IPO or an acquisition in a relatively short time horizon of three to five years to meet the expectations of the VC fund.

[63] Some adjustments can sometimes be made based on management inquiries – for example the VC fund may consider that a greater amount of capital will need to be raised in future rounds for the entrepreneur to achieve its goals.

estimate such terminal value, the VC fund typically uses an exit multiple and calculates the terminal value based on expected earnings at the time of exit (based on the multiple of earnings method).

Issues with the VC Method in the Context of an Open-ended VC Fund

Data Gathering Difficult. The VC method is currently being used by VC funds when determining the pre-money and post-money valuations of a business to determine at what price per securities the VC fund will acquire its interest in the business. In this context, the VC fund establishes such value by working in collaboration with the entrepreneur who provides it with all of the necessary information. The entrepreneur at such time is trying to get the investment from the VC fund. It will therefore be very active in providing all the necessary information to the VC fund and will also have determined what its future plans and forecasts are as part of its preparation for the "pitch" that he or she will be making to the different VC fund managers as part of its fundraising. The VC fund is therefore provided in these circumstances with all the forecasts necessary to apply the VC method. In the context of the determination of the value of a Portfolio Company for purposes of assessing the NAV of the VC fund in order to allow one of its limited partners to be redeemed, the situation is quite different. In this context, the VC fund will normally not be simultaneously involved in any transaction with the Portfolio Companies. Obtaining the active cooperation of the entrepreneurs behind such Portfolio Companies might therefore be more difficult. According to Mr. Jean-François Marcoux, Partner at White Star Capital[64], a VC fund manager based in the Island of Guernsey, if the assessment of the NAV is done annually in connection with the preparation of the financial statements, the entrepreneur

[64] Based on an interview conducted with Mr. Jean-François Marcoux on October 20, 2015.

would normally cooperate and provide most of the information needed by the VC fund. The VC fund's involvement with the management of the company (notably through its board seat) will also allow it to have access to a lot of information[65]. Mr. Marcoux indicates however that certain types of information that require entrepreneurs to update their business plan and their forecasts over the long-term is more difficult to do on an annual basis, as it requires a very serious exercise by the entrepreneur. As a result, Mr. Marcoux experienced that such forecasts for the future can be harder to obtain from the entrepreneurs outside of a financing context. Further, given that the limited partner generally does not have the opportunity to discuss with the entrepreneurs such plans and forecasts even if they are obtained from the VC fund manager, it is extremely difficult for the limited partner of the VC fund to challenge the VC fund manager's valuation.

Level of Flexibility. A second issue is the fact that such method provides great flexibility[66]. The problem with having flexibility in modifying the relevant parameters is that it gives the VC fund manager a lot of discretion in its determination of the value of a Portfolio Company. In the context where such value is to be used to determine the redemption price of the limited partnership units or interest of a limited partner who wants to exit the VC fund, limited partners will not accept to invest in the VC fund, if the manager holds such a large discretion in determining such value. This is notably because of the fact that, at the time of redemption, the interests of the manager and of the limited partner are not aligned. The limited partner wants to

[65] According to Mr. David Brassard from Persistence Capital Partners (based on the interview conducted on October 29, 2015), the VC fund manager will have at that time even more information than it did at the time of the initial investment as a result of its involvement in the operations of the Portfolio Company.

[66] For example, Beaton (2010) listed as factors that drive the valuation of early-stage businesses the assessment of the management team, the compelling nature of the value proposition, the evaluation of intellectual property, the expected time to market, the expected path to profitability, the estimated capital needs and burn rate, the industry sector volatility and the deal structure. These are actually only a few of the items that can affect the parameters to be used to determine the value of a Portfolio Company with the VC method.

have the highest redemption price possible while the manager is incentivized to find the lowest redemption price possible to be able to maintain additional cash in the fund or to prevent the fund from having to use other sources of funding, the whole in order to maximize its carried interest. In this context, flexibility can lead to conflicts and even lawsuits if an investor who is being redeemed considers that the valuation method used by the manager decreased the amount of cash that it should have received. An example occurred recently with the lawsuit that was launched by Canada's Public Sector Pension Investment Board against Saba Capital Management LP (an hedge fund based in the Cayman Islands), in the course of which Canada's Public Sector Pension Investment Board alleges that Saba Capital Management LP voluntarily depressed the value of certain securities to reduce the redemption price paid to it[67]. The level of flexibility of the VC method therefore becomes an obstacle to use it as a valuation mechanism that would be acceptable in an open-ended fund context.

Multiple of Earnings Method

A method also used to value investments is the multiple of earnings model or the multiple of EBITDA method[68]. Mr. David Brassard, from Persistence Capital Partners, mentioned that this method of valuation is widely used in Québec by private equity fund managers to value Portfolio Companies. The difficulty of such valuation method is that the Portfolio Companies in which VC funds typically invest may not have stable earnings, rendering such approach difficult. This method of valuation therefore works more efficiently once the Portfolio Company has achieve a

[67] *Public Sector Pension Investment Board v. Saba Capital Management LP*, 653216/2015, New York State Supreme Court, New York County (Manhattan).

[68] This approach consists in assessing a company's valuation by applying the valuation multiples of peer firms. One look at a public company that is in the same industry as the company valued and at the ratio of the valuation of such comparable public company over its earnings or over its EBITDA (depending on the variation of the method being used).[68] Then, such multiple is applied to the earnings or EBITDA of the company being valued in order to determine the value of such company. Other variations exist.

certain stage of maturity. According to Mr. Brassard, this method provides only a vague estimation of cash flows, but is widely used by the financial industry and, according to him, its wide acceptance is actually the main reason why it is widely used (even if it is not necessarily the most accurate method of valuation).

Proposed Method: the Option-Pricing Model

Another method used by VC funds is the option valuation approach (see Brunet (2004), Beaton (2010) and Carver (2012)). Such approach consists in treating the interest in the Portfolio Company as if it was a call option on the asset value of such Portfolio Company. This valuation method is based on the notion that the VC fund, in its capacity as shareholder of the Portfolio Company who typically benefits from preferential liquidation rights, will be able to retrieve its investment and make a return on it if, at the time of the exit, the value of the assets of the Portfolio Company is higher than the debt outstanding and the equity of the investors holding liquidity preferential rights ranking above those of the VC fund. This reality resembles an option that will allow the option holder to make a profit on the exercise of the option, if it is "in-the-money"[69]. In most cases, it resembles a European option which can be exercised only at maturity. This approach therefore considers that the "exercise price" of such notional call option is the amount of money that is required to repay the debts and to distribute to the investors that have preferential rights above those of the VC fund the preferential amount to which they are entitled. As a result, a VC fund may simply calculate the value of a Portfolio Company using the Black-Scholes formula replacing the different variables of the formula by their equivalent in our analogy.

[69] If the stock price of the underlying option is higher than the option exercise price.

Time to Expiry (T- t). In our analogy, the expiry of the option would refer to the maturity of the debt outstanding or the timing of the liquidity event pursuant to which the investors who own preferential rights above those of the VC fund will be repaid. Given that, in the context of an early-stage firm, the company will often not be able to repay its outstanding debt and preferential shareholders before a long period of time, the VC fund should simply assume that the repayment will be part of the liquidity event allowing the VC fund to exit. To limit the discretion of the VC fund manager in using the timing of the exit to vary the valuation of a Portfolio Company, the limited partnership agreement should fix in advance the period of time to be used, which should be based on the average investment duration by VC funds (such as 5 or 6 years) minus the amount of time during which the VC fund has held the relevant investment.

Stock Price (S). In an early-stage valuation context, the stock price would refer to the value of the business in which the VC fund is investing at the time the valuation is being determined[70]. One possible way to determine such value is to apply a method sometimes used in the VC industry, which consists in using the DCF method to back-solve the enterprise value based on the most recent round of financing of such enterprise in a way that reconciles to the pricing of such financing round (Beaton, 2010). Given that this valuation process will always be done after the VC fund has invested in the Portfolio Company[71], there will always be at least one previous round of financing from which to make such back-solving calculation (i.e. the one the VC fund participated in). Even if the calculation must be made based on the VC fund's own

[70] This could seem counter-intuitive, considering that the value of the business is precisely what this application of the Black-Scholes formula is attempting to achieve. For purposes of this variable (contrarily to a valuation done outside of the Black-Scholes context), we can however ignore the illiquid nature of the underlying asset to determine such enterprise value, given that the Black-Scholes formula provides that an option will be valuable even when it is "out-of-the-money" because of its time value (Bruner, 2004).

[71] The determination of the value of a Portfolio Company will be necessary for purposes of assessing the NAV of the VC fund only once such Portfolio Company forms part of the assets of the fund.

investment, the limited partner can rely on this valuation given that it was the one used by the VC fund to invest in the Portfolio Company and has therefore been validated by arm's length negotiations between the VC fund and the entrepreneur, which compensates for the lack of access to information by the limited partner. There could still be a disagreement between the limited partner and the VC fund manager on the appropriate discount rate to be used to apply the back-solving from the previous financing. The limited partnership agreement of the VC fund should therefore provide in advance which discount rate is to be used for purposes of the determination of such variable to prevent any disagreement between the manager and the limited partners[72]. Alternatively, if the Portfolio Company has stable earnings, the multiple of earnings or multiple of EBITDA method could also be used.

Exercise Price (K). In the context of the valuation of a Portfolio Company, as mentioned earlier, the exercise price is perceived to be the amount of money required to repay the debt and to distribute to the investors having preferential rights above those of the VC fund the preferential amount to which they are entitled. These amounts can be determined usually easily. The preferential rights are often found in the Portfolio Company's articles of incorporation or in an investors' or shareholders' agreement. In either case, these are documents that can be obtained easily by the limited partner of the VC fund for validation purposes and which should not raise any debate. Some level of uncertainty can arise however from the level of expected debt that the Portfolio Company will contract during the term and also the number and sizes of equity financings that it intends to complete and the resulting dilution on the VC fund. These information might affect the portion of the liquidation proceeds that the VC fund will receive.

[72] The limited partnership agreement could also simply specify the parameters to set the said discount rate.

Given that these information will need to come from the entrepreneur, we are encountering in part the same issue as with the VC method, being that the limited partner must have access to information difficult for it to obtain in order to assess the VC fund manager's valuation. This being said, we believe that in the case of this method of valuation, this impact will be limited. First, because the ability of a Portfolio Company to contract debt (except for convertible debt) is limited given the general lack of assets to give as guarantee to a financial institution. Second, because it is easier for an entrepreneur to anticipate its equity financing needs than other types of forecasts (such as revenues) and as a result, the information provided by the entrepreneur should be more reliable and not require as much the involvement of the VC fund manager or of the limited partner in challenging such forecasts.

Volatility (б). Mr. David Brassard from Persistence Capital Partners believes that the determination of the volatility variable of the Black-Scholes formula in the context of a Portfolio Company may be difficult given that typical VC fund investments typically have a very low volatility during the first few years of their life. Beaton (2010) and Bruner (2004) suggest however to determine such variable based on the historical volatility of guidelines companies without taking into account the low volatility of the Portfolio Company resulting from its early stage. For this purpose, one can simply use the historical volatility of the stock of a company listed on a stock exchange and operating in the same industry, as published by investment banks and statistical services. Obviously, in this case, it would not be possible to provide in advance in the limited partnership agreement which volatility percentage to be applied by the VC fund, given that such variable will vary over time for any reference company. Further, from one Portfolio Company to another, the guidelines companies will also change. Nevertheless, given that the comparison used and the reasonableness of such comparison can be easily assessed, we

do not believe that in this case, the fact that the VC fund manager will have flexibility in determining this variable is likely to result in disagreements to the extent of making the open-ended structure unattractive.

The Advantages and Disadvantages of the Option-Pricing Model

The main flaw of the option-pricing model results from the fact that it was not created for the valuation of early-stage companies. As such, it makes assumptions that are not necessarily applicable to an early-stage company. The more considerable one is that the option-pricing model assumes that the future values of the underlying asset will be lognormally distributed around the "exercise price", which is unlikely to be the case with respect to an early-stage business (Beaton, 2010). The point submitted in this paper is not that the option-pricing model is necessarily perfect. The proposition made in this section is that the option-pricing model represents a valuation method that is often presented by the literature as being one of the most reliable methods to value early-stage businesses (see Brunet (2004), Beaton (2010) and Carver (2012)) and which offers an objective way to come to a number for such value that will prevent conflicts in an open-ended structure and will make such structure viable and attractive for investors. The previous section shows that it is possible to determine the variables necessary to implement the Black-Scholes formula without requiring a subjective determination by the VC fund manager of several different factors regarding the Portfolio Company. As particular facts or situations that will require deviating from the rigidity of our proposed calculation method may occur from time to time, the limited partnership agreement should however provide some flexibility in allowing the VC fund manager to adjust the general method of calculation set forth in the said limited partnership agreement (or literally deciding to adopt another method). But to the extent this flexibility will be structured as exceptions to the general rule, the burden of proof

will be on the VC fund manager to justify such deviation if there is a dispute on the NAV of the VC fund so determined, which will provide the limited partners with some level of comfort on the valuation mechanism.

Another important point is that, while the Black-Scholes formula may seem complex and provoke resistance from certain investors, the common use of this formula resulted in many calculator software or Excel spreadsheets being available on the Internet whereby one can simply input the data and the software or spreadsheet will automatically calculate the valuation based on such data. The limited partnership agreement can therefore refer to any such software or Excel spreadsheet (or simply attach it as an exhibit to the agreement (whether in paper or electronic format)).

Case Study: Stingray Digital

We have applied the option-pricing model to an example company to determine its valuation a few years prior to it completing an IPO to try to assess whether such method of valuation would give interesting and useful results. We chose a company that completed an IPO recently and that was VC-backed prior to its IPO, being Stingray Digital Group Inc. ("Stingray") which completed an IPO in 2015. The details of our calculations for purposes of such valuation is reproduced in Appendix A. What is interesting with respect to Stingray is that we know that it completed a private placement on July 28, 2014 whereby Novacap Technologies and other buyers acquired in the aggregate 7,938 class A common shares of the capital of Stingray at a price of CAN$2.85 per share[73], providing us with some historical information on the evolution of its valuation prior to the IPO. Based on the total number of issued and outstanding shares, this

[73] Based on the final long form prospectus of Stingray dated May 26, 2015.

transaction reflected a total valuation for Stingray of CAN$96,846,100.80. The aggregate capitalization right after the IPO of Stingray in May 26, 2015 was of CAN$295,613,675[74]. Based on the TMX Money website, at the close of business on November 12, 2015, the aggregate capitalization of Stingray was of CAN$235,474,786. If we apply a multiple of EBITDA approach, we obtain a valuation as at March 31, 2014 of CAN$192,757,227.91 as at March 31, 2014 and CAN$130,210,284.05 as March 31, 2015. By applying the option-pricing model, we obtain a valuation as at March 31, 2014 of CAN$186,323,751.19 and as at March 31, 2015 of CAN$108,078,020.51[75]. We can see that there can be differences from one method of valuation to another. The differences when compared to the post-IPO valuations are however substantial[76]. This is not necessarily surprising given that, as mentioned in Section 5, the valuation of a company suddenly increases as a result of the demonstrated interest of the public market and the newly acquired liquidity of its securities[77]. Certain authors also believe that behavioural analysis demonstrate that a firm's pricing shortly after an IPO will necessarily reflect a very optimistic expectation regarding the valuation of a firm resulting in a higher pricing in the period that immediately follows an IPO[78]. While this can partly explain why the valuation of Stingray following the IPO was higher than the valuations we calculated, it remains that the valuation

[74] Based on press releases issued by Stingray upon closing of the IPO.

[75] Resulting in a variation between the two methods of valuation of CAN$6,433,476.72 (3.34%) for the valuation as at March 31, 2014 and a variation of CAN$22,132,263.54 (17.00%) for the valuation as at March 31, 2015.

[76] A difference of CAN$132,850,819.94 (44.94%) with the multiple of EBITDA approach and of CAN$187,535,654.49 (63.44%) with the option-pricing model, when compared with the post-IPO valuation.

[77] This is reflected by the fact that the valuation given by Novacap Technologies and the other buyers on July 28, 2014 (as part of the private placement that occurred on such date) is even lower than the valuations that we obtained.

[78] They believe that while investors have heterogeneous expectations regarding the valuation of a firm, given that only the most optimistic ones will buy shares as part of an IPO, that the initial valuation of a firm following the IPO will be a more optimistic one and that over time, as lock-up periods end, the variance of opinions of investors will decrease and the marginal investors' valuation will converge towards the mean valuation and the firm's share price will decline (Ritter and Welch, 2002, p. 1821).

based on the option pricing model is a conservative one and that an investor in a VC fund that would have invested in Stingray and which would be redeemed based on our valuations would consider that it has not received a fair value for its interest if shortly after its redemption, it would witness the valuation of Stingray given by the public market. This is why we propose certain measures in the following sections to address this issue.

Independent Valuation Mechanism

We propose to insert in the limited partnership agreement a measure to reduce the impact of the VC fund limited partner's difficult access to information in the valuation context. Such measure, which is inspired from the existing open-ended infrastructure private equity funds and hedge funds, consists in the establishment of a process through which the VC fund manager must validate its valuation of the Portfolio Company with an independent third party valuator at least annually or at the request of a limited partner (or every time there is a redemption). The third party valuator can be an accounting firm appointed by the VC fund manager[79]. Alternatively, the limited partnership agreement of the VC fund may provide for the creation of a committee of the fund composed of independent members with the necessary skills to confirm the valuation of the manager. Given the time and efforts required for such a process, the use of an independent audit firm will likely be easier in practice to implement than a committee composed of individuals which will not have the necessary resources. The valuation committee can be created however to simply supervise the work done by the independent valuator and approve such valuation.

With this mechanism, even if the valuation method that has been determined does not allow the limited partner to effectively challenge the valuation made by the manager, it will

[79] Usually another firm that the one used by the VC fund manager for its own audits or for the audits of the fund.

allow it to rely on the fact that the methods and calculations made by the manager will have been independently validated[80]. It therefore reduces the impact of the lack of information of the limited partners. According to Mr. Jean-François Marcoux, Partner at White Star Capital[81], the fact of providing investors with an independent valuation would contribute greatly to ensure that investors can rely on the valuation measured by the manager but will not necessarily eliminate the necessity for the manager to be open to discuss with investors how the valuation was determined and to provide investors with the necessary supporting documents.

Clawback Mechanism

Notwithstanding the above, it remains that in the absence of transactions at the Portfolio Company level, the lack of liquidity results in the valuations obtained being purely theoretical. Further, our case study of Stingray showed that the occurrence of certain liquidity events may result in sudden increases of the value of a firm. For this reason, we suggest as part of our proposed structure, that the VC fund manager provides each limited partner with a clawback mechanism pursuant to which any liquidity event occurring with respect to a Portfolio Company[82] within a one-year period from a redemption by any such limited partner entitle such limited partner to request a new retroactive valuation of such Portfolio Company taking into account such liquidity event[83]. The new valuation would also be validated by the independent valuator. The VC fund manager would be entitled to justify differences in valuation between the

[80] Even if the valuation occurs only annually, it would provide a point of reference for other valuations done during the rest of the year.

[81] *Supra* note 64.

[82] Such liquidity events would include any arm's length transaction whereby any person acquires or dispose of securities of the Portfolio Company, including a buyback, an acquisition or an IPO.

[83] The VC fund manager would be under the obligation to notify all limited partners and all former limited partners that were redeemed during the previous year of the occurrence of any liquidity event with respect to any Portfolio Company.

time of redemption and the time of occurrence of the liquidity event, but if the time period between these two events is relatively short, major differences between the valuation done for purposes of the redemption and any revised valuation taking into account the liquidity event would be difficult to justify. If the revised valuation taking into account the liquidity event is higher than the valuation used for redemption purposes, the NAV of the limited partnership units or of the interest of the redeemed limited partner would be adjusted and the VC fund manager would have to pay to the limited partner the difference in the NAV. The payment made by the manager would be grossed-up by an interest rate that will have been fixed in the limited partnership agreement. If, on the contrary, the revised valuation taking into account the liquidity event is lower than the valuation used for redemption purposes, the limited partnership agreement could provide that the NAV of the limited partnership units or of the interest of the redeemed limited partner would be similarly adjusted and the limited partner would be obligated to reimburse the difference (with a similar interest rate). One person that we interviewed suggested however that a reimbursement by a limited partner resulting a reduction in the NAV would be more difficult to justify to limited partners. Given the asymmetrical information between the limited partners and the manager and the difficulty for the limited partner to have access to all of the information on the Portfolio Company necessary to establish that the decrease in valuation occurred as a result of other factors, we believe that allowing a downward adjustment of the redemption price could result in reduced confidence by the limited partners in our proposed open-ended structure and we therefore suggest that the mechanism be limited to upward adjustments of the NAV only.

We believe that such a clawback mechanism would provide an additional protection that partly addresses the risks related to sudden variations of valuations occurring in connection with liquidity events and will further reduce the impact of the valuation issue.

Conclusion on Issue #2

The right method of valuation to be used to value Portfolio Companies will be determined in the limited partnership agreement of the open-ended VC fund and will have to be agreed between the manager and the limited partners. We have demonstrated however that the option-pricing method represents a method that provide the manager and the limited partners with a relatively objective, reliable, predictable and simple method of valuation[84]. By adopting such an approach and providing in advance for the main parameters to be used, we allow the VC fund manager to apply a relatively objective method that can be relatively relied on by limited partners. By ensuring that an independent audit firm will at least annually validate the VC fund manager's assessment of the NAV of the fund, we ensure that the limited partners will feel that the valuation done by the VC fund manager has been independently validated, providing some level of reassurance. Further, by providing for a clawback mechanism, we also decrease the problem of any valuation occurring at a time period where the absence of sufficient transactions at the Portfolio Companies' level prevent the valuation from being sufficiently precise and the impact of sudden variations in value resulting from the occurrence of liquidity events. All of the foregoing should therefore sufficiently mitigate the valuation problem caused by the open-ended

[84] Except for Portfolio Companies which have completed an IPO, with respect to which no method of valuation will be needed given the day-to-day valuation provided by the trading occurring on the securities on the relevant market.

structure and allow limited partners to exit the fund pursuant to the redemption mechanism at a relatively objective and fair value.

13. Issue # 3: Loss of Stage Specialization by the Manager

Stage Specialization in the VC Industry

Empirical Data on Stage Specialization. VC funds are typically stage-specialized, meaning that they are typically specialized with respect to the stage of the different Portfolio Companies in which they invest. Manigart et al. (2002) analyzed the stage specialization of VC funds. They found in their sample that 172 VC funds were specialized in any particular investment stage while only 21 VC funds had no particular specialization[85].

Impact of the Open-Ended Structure on Stage Specialization

Potential Impact. In an open-ended structure, we expect, based on our analysis contained in Sections 4 and 9, that the VC fund will maintain its investments in Portfolio Companies on average longer than in a closed-ended VC fund. In Section 9, we even suggest that this should be the ultimate goal of adopting such a structure. This however necessarily entails that the VC fund will as a result hold investments that will eventually be more mature than a typical closed-ended VC fund as a result of its Portfolio Companies having had the time to mature further prior to the VC fund completing its exit. While the typical closed-ended VC fund will normally exit its investment shortly after the Portfolio Company has achieved breakthrough measures of financial success, the open-ended VC fund would be expected to remain in the capital of such Portfolio

[85] They categorized VC funds who had invested 50% or more of the capital in a particular investment stage as a specialized fund and those who had invested less than 50% in a particular stage, as a non-stage-specialized fund.

Company for a longer period[86]. This will cause the VC fund to lose some of the stage-specialization of its investments over time.

Mitigating Factor. This impact may not be substantial, however. One of the reasons is that VC fund managers would still be expected to exit sooner from investments in Portfolio Companies that were able to achieve high-speed growth to benefit from the high level of return resulting from such an investment. As we have seen in Section 9, open-ended VC funds would be expected to maintain their investment for a long period of time with respect to the "living dead" investments that will benefit from a more conservative growth strategy. Given their slower level of growth, these Portfolio Companies would therefore not necessarily be expected to become mature as quickly as other high-speed growth investments. This should mitigate the impact described above given that these Portfolio Companies will tend to remain at the same stage of maturity for longer period of time, allowing the VC fund manager from maintaining the benefits of stage specialization.

Motivation for Stage-Specialization

Analysis of the Motivation for Stage Specialization in Academic Literature. Manigart et al. (2002) concluded that stage diversification is not viewed by VC fund managers as a risk-reduction strategy. They found that a deeper knowledge of the investment stage allows VC fund managers to make better investment decisions and to select the appropriate companies to invest into. They also conclude that, when VC fund managers have insufficient knowledge about a particular investment stage, they perceive risk as being too high and prefer not to invest.

[86] See our discussions in Section 9 to that effect.

Impact of the Open-Ended Structure. The open-ended structure would not have any impact on the stage of the Portfolio Companies in which the VC fund will make its investment. The potential duration of the VC fund's investments or the structure of the VC fund will not impact the decision of the manager to invest solely in seed or early-stage Portfolio Companies if it so desires. As a result, any stage-specialization that results from the desire of the VC fund manager of benefiting from a higher level of expertise in the stage of the Portfolio Company during the due diligence phase, would not be impacted in an open-ended structure. The manager could keep investing only in enterprises that are at such stage and keep benefiting from the ability to better select the Portfolio Companies in which to invest.

The Impact of the Loss of Stage Specialization on the Risk/Return Characteristics of the Portfolio

Impact of the Open-Ended Structure on the Risk-Level of the Portfolio An additional potential explanation for the results found by Manigart et al. (2002) is the level of risk associated with a typical VC fund portfolio. VC fund managers may specialize by stage simply because Portfolio Companies at different stages of development have different levels of risks and different levels of potential returns. VC funds are perceived to generally invest in high-risk/high potential return investments. The manager of such a VC fund is therefore forced to identify investments that will meet the hurdle rate of the fund's investors (which is based on the perceived level of risk of the fund's investments). By investing in more mature companies, it may reduce the overall risk of the fund's investments but also decrease its overall returns. Because of the asymmetry of information between the fund's manager and its limited partners, the limited partners in the fund might not immediately perceive this decrease in the overall level of risk and might decide to invest instead in VC funds with respect to which the manager expects

to produce greater returns, even if such greater returns are solely the result of maintaining a stage-specialization focused on a higher risk stage. This could lead managers to specialize in early-stage companies to be able to submit a higher expected return and therefore attract a greater number of investors.

To the extent that the open-ended structure will potentially result in the VC fund holding investments that are at a later stage of development, this could affect the overall risk/return characteristics of the portfolio of the VC fund. More mature businesses will typically be less risky but provide lesser return. This is not *per se* a bad result given that it leads to a better diversification of the level of risk[87]. This therefore seems to be strictly an issue of perception resulting from the lack of information by limited partners. As a result, we believe that the problems relating to the impact that the open-ended structure can have on the risk/return profile of the portfolio of the VC fund could be addressed by the VC fund manager ensuring greater transparency and providing better reporting with respect to the risk and return levels of the fund when soliciting funds from potential investors. This issue can be therefore reduced to a marketing one that can be resolved with adequate marketing of the characteristics of the fund and increased transparency during the life of the fund with respect to the risk and maturity levels of the portfolio investments of the fund. The VC fund manager could ensure that the description of the risk and maturity levels of the investments held by it contained in the private placement or offering memorandum (or similar marketing document) is appropriate and allow investors to adequately understand it. The manager should further provide quarterly reports on the portfolio

[87] Even if this is not currently used as a risk-reduction strategy in current closed-ended structures, as described earlier.

investments held by the fund which should include description of the maturity and risk levels of such investments.

The Impact of the Loss of Stage Specialization on the Value Creation

Stage specialization is perceived as being important by Mr. David Brassard, from Persistence Capital Partners, who indicated that the skills necessary to bring a Portfolio Company from 0 to 50 employees are different than the skills necessary to bring the same Portfolio Company from 50 to 100 and from 100 to 1000 employees, and by another person that we interviewed who referred to stage-specialization as being the specific "DNA" of a VC fund manager, suggesting in each case that stage specialization does not only impact the VC fund manager skills in assessing potential investments, but also its ability to provide operational value to the Portfolio Company. This entails that if the open-ended structure truly results in the VC fund losing its stage-specialization, the VC fund manager should consider employing investment professionals having expertise with respect to different stages of maturity to be able to intervene with the Portfolio Companies at all relevant stages. That would also mean that, as a Portfolio Company matures and the challenges it faces change, the investment professional that has been sitting on the board of such Portfolio Company should give its seat to one of its colleagues with greater knowledge of the stage at which such Portfolio Company has now arrive and of the challenges encountered at such stage.

Conclusion on Issue #3

While we do not offer any solution *per se* with respect to any potential loss of stage specialization (except for the hiring of investment professionals having expertise with respect to different stages of investments), we submitted reasons why we believe that the impact of such issue might not be a great one. As seen in the previous subsection, the main motivation described

by academic literature to explain stage-specialization shows that the open-ended structure would actually have no impact on such motivation which could be maintained if desired by the VC fund manager. When we also take into account the fact that investments maintained for a longer period might have, in general, a slower growth, we could expect that the actual loss of stage-specialization in an open-ended structure should be minimal and should not represent a major issue that would prevent such structure from being an attractive one. The only remaining impact that we identified is relating to the risk/return profile of the fund, but we believe that this is only an issue of perception relating to the asymmetry of information which could be addressed by reducing to the extent possible such asymmetry and provide VC fund investors with more detailed information on the level of maturity and risk level of the portfolio investments held by the fund with potential and existing investors.

D. IMPACT OF OUR PROPOSED STRUCTURE ON THE FUND'S ECONOMICS

Notwithstanding the advantages provided by our proposed open-ended structure, if such structure would negatively affect the potential returns for investors, it would essentially remain an unattractive structure. VC funds remain fundamentally financial intermediates. As a result, even if the structure allows VC fund managers to create more long-run operational value creation, the value created with respect to the Portfolio Companies must translate into returns for their investors. VC funds must ultimately provide their own investors with an IRR that meets their hurdle rate. We will therefore address how our structure could impact the potential returns for such investors and for the manager.

14. Effect of Long-Run Operational Value Creation on Returns to Investors.

We have demonstrated in Section 10, that our proposed structure would favour long-run operational value creation. The question then arises whether the ability of the VC fund to maintain its operational value creator role over the long-run should result in better returns for the VC fund's investors. The empirical data found by academic literature is however inconclusive on this particular point. Jain and Kini (1995) found no relation in their studies between the operating performance of Portfolio Companies and the duration of board service by the representative of the VC fund. Wang, Wang and Lu (2003) found similarly that Portfolio Companies with long periods of VC support did not demonstrate a better return on assets in the years that followed their IPO than the Portfolio Companies that had benefited from short periods of VC support. Jain and Kini (1995) hypothesized however that these result are simply symptomatic of the fact that these Portfolio Companies received longer VC support as a result of the fact that they were marginal companies that needed extensive preparation before they could proceed to an IPO. As a result, while it is widely accepted that the operational value creation generated by VC funds can translate into higher returns for investors (see Manigart et al. (2002) for example), there is currently no empirical evidence supporting the idea that by providing their Portfolio Companies with operational value over the long-term, VC funds will necessarily be able to translate such long-term value in better returns for the VC fund's investors.

15. Impact of Longer Investment Durations on Investors' Expected Returns.

In Section 9, we have submitted that our structure should create incentives for managers to maintain their investments over a longer period of time. A question that arises from that conclusion is whether the longer investment durations that would result from our proposed

structure would impose on managers a requirement to identify investments that provide greater returns. The longer an investment is being held by a VC fund, the higher the absolute return will need to be to achieve the IRR that meets the investors' hurdle rate. This means that by having a longer-term approach, open-ended VC fund managers could be required to provide a higher absolute return than closed-ended VC funds. As mentioned in Section 6, Manigart et al. (2002) have found however that VC companies require greater annual returns for shorter time horizons. One of their hypothesis is that this is caused by the fact that a shorter investment horizon increases the risk for an investor of being left with idle cash for a certain period of time if it is not able to immediately reinvest such cash in another investment that produces an equally interesting return. This suggests that a longer term investment horizon could allow the VC fund manager to provide lower annual returns to the fund's limited partners and that the fact of being focused on long-term growth does not necessarily involve that the manager will be forced to provide a higher absolute return.

16. Impact of Long Term Investment Horizon on Entrepreneurs Performance.

Mr. Jean-François Marcoux, Partner at White Star Capital, and Mr. David Brassard, from Persistence Capital Partners, both mentioned during their interviews that the short term horizon of VC funds forces entrepreneurs to achieve a high growth for their Portfolio Companies more rapidly. They believe that the fact of knowing that the fund must be liquidated after a certain number of years brings the VC fund manager to put a certain level of pressure on entrepreneurs who are then forced to meet certain milestones more rapidly. While this pressure is likely what leads to the living dead investment characterization that we described earlier, it raises the question as to whether the highly performing Portfolio Companies would not provide the VC

fund with a lesser return in the absence of such pressure. The data analyzed in Section 5 with respect to the grandstanding phenomenon seems, however, to suggest that the pressure to rush investments to go public sooner does not result in better returns. Based on the studies conducted by Gompers (1996) and Wang, Wang and Lu (2003), it would appear that the pressure to achieve an IPO sooner tends to result in poorer post-IPO results. While the situation described by Messrs. Marcoux and Brassard is different from the grandstanding effect, the similarity in the pressure on entrepreneurs that results from both these situations, and the data collected by Gompers (1996) and Wang, Wang and Lu (2003) suggest that the long term investment horizon might not in fact negatively impacts investment returns.

17. Impact of the Open-Ended Structure on Management Fee.

Another important factor for the manager in deciding to adopt an open-ended structure would be the impact of such structure on the management fee that can be imposed by it. We believe that our proposed structure would allow the manager to impose a higher management fee, therefore increasing its remuneration. We described in Section 8 how the open-ended structure would increase the ability of limited partners to discipline the manager by withdrawing their capital. This factor is important as it represent a competitive advantage that allows it to attract more investors. Investors who are concerned about the agency problems or who have higher liquidity needs will perceive such ability as an important advantage. Nanda, Narayanan and Warther (2000) showed that VC fund manager attempting to attract only low liquidity investors will be forced to impose a lower management fee or provide higher investor returns as a result of the scarcity of investors with very low liquidity needs. They come to that conclusion while comparing load funds with no-load funds. But the same reasoning should prove true when

comparing open-ended funds and closed-ended funds, given that the reality is similar: the closed-ended fund can only attract investors with low liquidity needs who will be able to accept that they may not be able to discipline the manager by withdrawing their capital. As a result, the management fee of the manager of an open-ended fund can be higher than that of a manager in a closed-ended fund, given that it attracts investors with higher liquidity needs. The presence of the redemption restrictions described in Section 2 and the imposition of an exit fee to deter investors with high liquidity needs proposed in Section 11 will certainly greatly dilute this effect. But given that the VC fund manager will realistically never achieve the same level of deterrence on high-liquidity investors as the closed-ended structure does[88], we believe that the reasoning of Nanda, Narayanan and Warther (2000) should still apply to a certain extent to the open-ended fund structure. This means that the fact of offering investors the ability to withdraw their capital represents a competitive advantage that would allow the manager to increase the management fee imposed to such investors if it wishes to do so.

18. Conclusion

We therefore submit that our structure does not negatively affect the potential returns of the investments that will be made by VC funds. The returns will therefore entirely depend on the success of the investments identified by the VC funds. The other advantages that we have identified as part of this paper could however help achieving greater returns. It remains to be studied whether the long-run operational value creation provided by our structure will have a positive impact on such success and will allow our structure to result, in addition to all of the

[88] Investors in our proposed structure will remain able to redeem their investments generally every three years, while investors in a closed-end fund must wait until the end of the 10 to 12 year term.

advantages that have been identified as part of this research, in better returns for limited partners. For the manager, however, the open-ended structure should represent an advantage, whether the returns are positively affected or not, as a result of its ability to charge a higher management fee.

E. CONCLUSION

We believe that our research has demonstrated that an open-ended structure would change the short term view of VC financing. By allowing VC fund managers to maintain their investments over a long period of time, they could have an investment strategy based on long-term growth. It would represent a rare innovative approach to VC investments. In an industry where the structure of investments have been subject to very few changes over the last 50 years, such an innovative approach could constitute a competitive advantage to attract investors desiring to benefit from a new investment approach.

Our research has demonstrated that this innovation would not have to be done at the expense of investment returns for investors or of the VC fund manager's compensation. The research demonstrates that such structure would not force VC fund managers to achieve a higher absolute return for these investments given that the IRR required by investors for long-term investments would likely be lower. Further, VC fund managers would likely be able to require a higher management fee to take into account the additional liquidity provided to investors. It could also provide higher returns to investors resulting from notably the decrease of opportunity costs and the increased certification effect with respect to investments that completed an IPO.

But as is the case with every new approach or innovation, the first manager to put in place such a structure would have to present a convincing case to eliminate any skepticism on the part of the investors, as was reflected by the initial reactions to our structure of the individuals

that we interviewed. In addition to addressing the valuation problem and the liquidity issue in the organizational documents of the VC fund by adopting the measures proposed in this paper, the manager would, given the added complexity of our proposed structure, have to be composed of an experienced team of investment professionals (with different stage specializations and with a team dedicated to fundraising and investor relations) and be presenting a convincing investment strategy. We believe that such a manager could generate interest from investors in such a structure.

This approach could also be borrowed by any private equity fund manager (not only VC fund managers). As mentioned in the introduction, we have decided to study the applicability of our open-ended structure to VC funds as a result of the particular challenges that these types of funds presented to such a structure. To the extent that our research shows that our proposed structure would work with respect to such VC funds, we believe that it could easily be demonstrated that a similar open-ended structure could be applied to all types of private equity funds (not only VC funds). By adopting such a structure, the private equity industry would effectively address one of the more virulent reproach made to it and would widen its valuable role in the financial intermediation industry at large and would certainly provide benefit to its reputation as one of the most precious source of financial intermediation.

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Tables

Table 1 - *Average Duration of VC Funds' Investments per Region*

	Source of Data	Period Covered	Number of Respondents or of Portfolio Companies	Average Duration (years)
Canada				
IPO	Cumming & MacIntosh (2003)	1992-1995	36	5.8611
	Cumming & Johan (2010)	1991-2004	32	2.4441
Acquisition	Cumming & MacIntosh (2003)	1992-1995	16	6.9375
Secondary Sale[1]	Cumming & MacIntosh (2003)	1992-1995	12	3.0833
	Cumming & Johan (2010)	1991-2004	406	4.1047
Buyback	Cumming & MacIntosh (2003)	1992-1995	41	6.3415
Write-off	Cumming & MacIntosh (2003)	1992-1995	27	4.0741
	Cumming & Johan (2010)	1991-2004	109	3.1745
Other	Cumming & MacIntosh (2003)	1992-1995	2	6.0000
Total	Cumming & MacIntosh (2003)	1992-1995	134	5.5299
Europe[2]				
IPO	N/A	N/A	N/A	N/A
Acquisition	N/A	N/A	N/A	N/A
Secondary Sale	N/A	N/A	N/A	N/A
Buyback	N/A	N/A	N/A	N/A
Write-off	N/A	N/A	N/A	N/A
Other	N/A	N/A	N/A	N/A
Total	Schwienbacher (2005)	Prior to June-July 2001	104	3.7000
United States				
IPO	Cumming & MacIntosh (2003)	1992-1995	30	4.7000
	Giot & Schwienbacher (2007)	1980-2003	5,817	3.3374
	Cumming & Johan (2010)	1991-2004	573	2.9501
Acquisition	Cumming & MacIntosh (2003)	1992-1995	30	5.1667
Secondary Sale[1]	Cumming & MacIntosh (2003)	1992-1995	9	6.3333
	Giot & Schwienbacher (2007)	1980-2003	5,817	4.5613
	Cumming & Johan (2010)	1991-2004	878	3.1549
Buyback	Cumming & MacIntosh (2003)	1992-1995	6	4.0000
Write-off	Cumming & MacIntosh (2003)	1992-1995	33	4.3636
	Giot & Schwienbacher (2007)	1980-2003	5,817	3.2936
	Cumming & Johan (2010)	1991-2004	156	2.8805
Other	Cumming & MacIntosh (2003)	1992-1995	4	2.7500

Total	Cumming & MacIntosh (2003)	1992-1995	112	4.7500
	Schwienbacher (2005)	Prior to June-July 2001	67	3.0000

Notes:

1: The data from Giot & Schwienbacher (2007) reflects the duration for what they define as "trade sales", which includes secondary sale, acquisition and buybacks. The data from Cumming & Johan (2010) reflects the duration for what they define as "private exits", which includes secondary sale, acquisition and buybacks.

2: The data was gathered from 104 questionnaires received from Europe (Belgium, France, Germany, the Netherlands, Sweden and the United Kingdom) and 67 from the United States during the months of June and July 2001. The 104 questionnaires received from Europe include 19 questionnaires completed by 19 managers from Belgium and the Netherlands, 29 from managers located in Germany, 13 from managers located in France, 20 from managers located in Sweden and 23 from managers located in the United Kingdom.

Table 2 - *Maximum Duration of VC Funds' Investments per Region*

	Source of Data	Period Covered	Number of Respondents or of Portfolio Companies	Maximum Duration (years)
Canada				
IPO	Cumming & Johan (2010)	1991-2004	32	6.9678
Private Exits[1]	Cumming & Johan (2010)	1991-2004	406	13.0021
Write-off	Cumming & Johan (2010)	1991-2004	109	8.9144
United States				
IPO	Cumming & Johan (2010)	1991-2004	573	12.4189
Private Exits[1]	Cumming & Johan (2010)	1991-2004	878	11.4278
Write-off	Cumming & Johan (2010)	1991-2004	878	4.3636

Note:

1: Private exits include secondary sales, acquisitions and buybacks.

APPENDIX A

Valuation of Stingray Digital Group Inc.

Name of the Company:	Stingray Digital Group Inc. ("Stingray")
Corporate headquarter address:	730 Wellington Street, Montréal, Québec, H3C 1T4, Canada
Date of the IPO:	26-May-15
Is the company VC-backed?	Yes. Novacap Technologies ("Novacap"), a Longueuil (Quebec)-based private equity fund invested CAN$10,000,000 in Stingray in December 2007. The interest of Novacap was partly disposed as part of the IPO. The remaining interest of Novacap was disposed in June 2015.
Description of the business	Stingray is a leading B2B multi-platform music and in-store media solutions provider. Stingray broadcast high quality music and video content on a number of platforms including digital TV, satellite TV, the Internet, etc.

Period	Number of Shares Held by Novacap	Type fo securities	% of outstanding voting securities	Total Number of Outstanding Shares
Since July 28, 2014	14,310,965	Class A common shares (converted in Subordinate Voting Shares)	42.10%	34,003,150
Prior to July 28, 2014	14,303,027	Class A common shares (converted in Subordinate Voting Shares)	42.10%	34,011,088

Note: We do not have the information as to the previous dates of acquisition of shares of Stingray by Novacap

Authorized Capital of Stingray:	Stingray is authorized to issue an unlimited number of Multiple Voting Shares, Subordinate Voting Shares, Variable Subordinate Voting Shares, Special Shares and Preferred Shares.
Liquidation Rights:	Subordinate Voting Shares, Variable Subordinate Voting Shares and Multiple Voting Shares rank *pari passu*.
Issued and Outstanding Capital:	Prior to the IPO: 17,751,369 Class A common shares, 6,229,719 class B common shares and 10,000,000 class C common shares (converted in Subordinate Voting Shares as part of the IPO).

Financial Information of Stingray (Numbers are rounded to the thousands)

Date	Adjusted EBITDA	Outstanding Amount under Term Loan	Outstanding Amount under Revolving Facility	Outstanding Amount under Bridge Loan	Total Outstanding Debt
As at March 31, 2013	$ 19,956,000.00	$ 50,535,000.00	$600,000	$0.00	$ 51,135,000.00
As at March 31, 2014	$ 24,151,000.00	$ 67,041,000.00	$5,198,000.00	$0.00	$ 72,239,000.00
As at March 31, 2015	$ 27,054,000.00	$ 80,935,000.00	$7,902,000.00	$7,902,000.00	$ 96,739,000.00

Comparable Business (for purposes of valuation of Stingray)

Name of the Comparable Business:	Sirius XM Canada Holdings Inc. ("Sirius XM")
Corporate headquarter address:	135 Liberty Steet, 4th Floor, Toronto, Ontario, M6K 1A7, Canada
Date of the IPO:	05-Dec-05
Description of the business	Sirius XM operates a Canadian satellite radio service. It broadcasts music, sports, talk, etc. and provides content over the Internet on personal computers and mobile devices.

Financial Information of Sirius XM (Numbers are rounded to the thousands)

Date	Adjusted EBITDA	Outstanding Number of Shar	Stock Price	Capitalization	EBITDA Multiple
As at August 31, 2012	$ 46,600,000.00	247,074,187	$2.31	$570,741,371.97	12.25
As at August 31, 2013	$ 68,700,000.00	222,531,605	$3.08	$685,397,343.40	9.98
As at August 31, 2014	$ 79,000,000.00	148,525,467	$3.20	$475,281,494.40	6.02

Financial Variables of Sirius XM

Year	Risk-free interest rate	Expected share price volatility
2012	1.1%	68.9%
2013	1.2%	67.3%
2014	1.4%	97.1%
2015	1.6%	105.4%

VALUATION OF STINGRAY (MULTIPLE OF EBITDA METHOD)

Date	Valuation (Without Non-Liquidity Discount)	Valuation (With Non-Liquidity Discount)
As at March 31, 2013	**$ 244,414,481.10**	**$ 195,531,584.88**
As at March 31, 2014	**$ 240,946,597.39**	**$ 192,757,277.91**
As at March 31, 2015	**$ 162,762,855.06**	**$ 130,210,284.05**

VALUATION OF STINGRAY (OPTION-PRICING METHOD)

Input Data

	As at March 31, 2013	As at March 31, 2014	As at March 31, 2015
Stock Price now (P)	$ 244,414,481.10	$ 240,946,597.39	$ 162,762,855.06
Exercise Price of Option (EX)	$ 51,135,000.00	$ 72,239,000.00	$ 96,739,000.00
Number of periods to Exercise in years (t)	2.00	2.00	2.00
Compounded Risk-Free Interest Rate (rf)	1.2%	1.4%	1.6%
Volatility (annualized σ)	67.3%	97.1%	105.4%

Output Data

	As at March 31, 2013	As at March 31, 2014	As at March 31, 2015
Present Value of Exercise Price (PV(EX))	$ 49,922,369.77	$ 70,244,363.23	$ 93,692,358.24
s*t^.5	0.95	1.37	1.49
d1	2.14	1.58	1.12
d2	1.19	0.21	-0.37
Delta N(d1) Normal Cumulative Density Function	0.98	0.94	0.87
Bank Loan N(d2)*PV(EX)	$ 44,109,784.91	$ 40,991,720.18	$ 33,158,891.88
VALUATION:	**$ 196,397,647.90**	**$ 186,323,751.19**	**$ 108,078,020.51**

Notes:

The information on Stingray Digital Group Inc. contained in this appendix is taken from the final long form prospectus of Stingray Digital Group Inc. dated May 26, 2015 filed with the securities regulatory authorities of each of the provinces and territories of Canada (available on SEDAR at http://www.sedar.com).

The information on Sirius XM Canada Holdings Inc. contained in this appendix is taken from the audited consolidated annual financial statements and management discussion's and analysis of Sirius XM Canada Holdings Inc. for the financial years ended August 31, 2012, 2013 and 2014 (available on SEDAR at http://www.sedar.com), except for stock prices which have been taken from Yahoo Finance Canada's website.

The information contained in this Appendix A has not been validated by Stingray Digital Group Inc., Sirius XM Canada Holdings Inc. nor by Novacap Technologies. All dollar amounts in this Appendix A are in Canadian dollars.

GLOSSARY

"***acquisition exit***" means the acquisition of the assets or of the shares of the capital of the Portfolio Company or a merger of the Portfolio Company with an acquirer (or a subsidiary thereof) resulting in the securities of the Portfolio Company held by the VC fund being acquired by the acquirer in consideration for cash or a category of shares of the acquirer that is listed on a stock exchange.

"***buyback exit***" means the redemption or repurchase of the investment of the VC fund by the Portfolio Company, whether pursuant to a redemption mechanism contained in the rights attached to the equity issued, or pursuant to contractual arrangement, including a reimbursement of a debt investment in accordance with its terms.

"***carried interest***" means the share of the profits of the VC fund to which the manager is entitled pursuant to the VC fund's organizational documents (typically only after the limited partners have been provided with returns that match their hurdle rate).

"***EBITDA***" means earnings before interest, taxes, depreciation, and amortization.

"***EVCA***" means the European Venture Capital Association.

"***first closing***" means the first occasion on which investors are admitted as limited partners of a VC Fund.

"***follow-on fund***" means a subsequent VC fund that is created to succeed to a previously existing VC fund managed by the same manager; when the existing fund's term is coming to an end, the manager must raise a new follow-on fund in order to continue its operations. It is usually prevented from creating such a follow-on fund before it has invested all (or at least a substantial portion) of the commitments of the existing fund to ensure that the VC fund manager will not be managing competing VC funds, which would put him in constant conflict of interests situations.

"***general partner***" means with respect to a VC fund that is a limited partnership, the general partner of such limited partnership as defined in the *Civil Code of Québec* or any other similar legislation pursuant to which the VC fund has been created; the general partner is the sole person authorized to administer and bind the partnership (although it may delegate such functions to a third party) and its exposure to the partnership's liabilities is unlimited.

"***insider***" designates specific persons with respect to a specific issuer whose relationship with such issuer allows such persons to have access to private information on the said issuer; in the *Securities Act* (Québec), for example, are considered as insiders, the directors and officers of the issuer or of a subsidiary of the issuer, a person that exercises control over more than 10% of the voting rights attached to all outstanding voting securities of an issuer other than securities underwritten in the course of a distribution (most VC funds would fall within that category with respect to their Portfolio Companies) and a director or officer of an insider of the issuer.

"***IPO***" means an initial public offering, being the distribution of securities to the public pursuant to a prospectus, a registration statement or equivalent offering document under any applicable securities legislation.

"***IPO exit***" means any exit of the VC fund from a Portfolio Company resulting from the additional liquidity provided in the secondary market of the securities of such Portfolio Company as a result of an IPO.

"***manager***" means the entity representing the investment team which promotes and manages the VC fund (as well as any other functions delegated to it by the general partner of the VC fund) and makes investment on behalf of the fund, and shall include, for purposes of this paper, the general partner of the VC fund.

"***Portfolio Company***" shall refer to any entity in which a VC fund has invested or is contemplating to invest, whether through equity, quasi-equity or debt, and which will form part of its portfolio of investments in order to produce a return for its own investors.

"***private issuer***" means an issuer that has never offered any securities to the public through an IPO and whose securities (other than non-convertible debt securities) are beneficially owned, directly or indirectly, by not more than 50 persons (not including employees and former employees of the issuer or its affiliates); these types of issuer must maintain restrictions on transfers of their securities in their organizational documents order to maintain their status as private issuers.

"***secondary market***" means a market in which a person purchase securities from another investor rather than the issuing entity.

"***secondary sale***" means the sale by a VC fund of its shares in a Portfolio Company to a third party (whether a strategic investor or another VC fund). Contrarily to an acquisition exit, in a secondary sale, only the shares of the VC fund are sold to the third party.