Mutual Funds that Invest in Private Equity?

An Analysis of Labour-Sponsored Investment Funds*

Douglas J. Cumming
School of Banking and Finance
University of New South Wales
Sydney, NSW 2052
Australia
Tel: +61 (0)2 9385 5709
Fax: +61 (0)2 9385 6347
Email: Douglas.Cumming@unsw.edu.au
Web: http://banking.web.unsw.edu.au/staff/profiles/dcumming/index.shtml

Jeffrey G. MacIntosh
Toronto Stock Exchange Professor of Capital Markets
Faculty of Law
University of Toronto
78 Queen's Park
Toronto, Ontario
Canada M5S 2C5
Tel: (416) 978-5785
Fax: (416) 978-6020
E-mail: j.macintosh@utoronto.ca

This Draft: 15 April 2005

* We are grateful for comments from Mark Huson, Aditya Kaul, Janet Payne, Corrine Sellars, Wolfgang Stummer and the seminar participants at the Canadian Law and Economics Association Annual Conference (Toronto, September 2001, 2002), Eastern Finance Association (Baltimore, April 2002), Academy of Entrepreneurial Finance and Business Ventures Conference (New York, April 2002), Tilburg University Conference on Regulatory Competition (The Netherlands, September 2001), Northern Finance Association (Banff, September 2002), Financial Management Association (San Antonio, October 2002), the CESifo Conference on Venture Capital and Public Policy (Munich, November 2002), the 2003 American Law and Economics Association Annual Conference (Toronto, September 2003), and the Schulich Financial Services Conference (Toronto, April 2004). The Schulich School of Business National Research Program in Financial Services and Public Policy provided generous financial support.

Mutual Funds that Invest in Private Equity?

An Analysis of Labour-Sponsored Investment Funds

Abstract

This paper considers the structure, governance and performance of a unique class of mutual funds that receives capital only from individuals, and reinvests this contributed capital in *private* companies, as opposed to traditional mutual funds that invest in *publicly traded* companies. We consider the particular class of mutual funds known as Canadian Labour-Sponsored Investment Funds (LSIFs). In contrast to expectations, we show that LSIFs have artificially low betas (the average beta is 0.10), returns that have significantly underperformed industry benchmarks (including risk-free 30-day T-bills), average management expense ratios ("MERs", or management expenses / assets) greater than 4%, and have collectively accumulated $Can10 billion (£4.3 billion) to 2005 since their statutory inception in various Canadian jurisdictions in the 1980s and 1990s. We show that these incongruous data are directly attributable to the LSIF statutory structure. LSIF legislation mandates episodic valuations that determine share prices, an 8-year investor lock-in period, and onerous constraints on capital reinvestment. LSIFs also afford to their investors tax-generated returns in excess of 100%. We point out that government subsidized venture capital funds with a similar governance structure and returns have been introduced in the UK; as well, it has been argued that the Canadian LSIF structure should be introduced in the US. The LSIF structure provides generalizable insights into the relation between organizational governance and performance, and the unsuitability of mutual fund structures for private equity investment.

Key words: Mutual Funds, Venture Capital, Government Sponsorship, Risk, Return, Fundraising

JEL classification: G23, G24, G28, G32, G38, K22

1. Introduction

Mutual funds traditionally aggregate the capital contributions of individual investors and reinvest their contributed capital mainly in publicly traded companies (see, e.g., Massa, 2003; Pastor and Stambaugh, 2002; Wermers, 2000, Chen *et al*., 2000, Khorana, 2001, Carhart, 1997; Droms and Walker, 1996; Buttimer *et al.*, 2001). Venture capital funds aggregate the contributions of institutional investors (primarily pension funds), corporations, and wealthy individuals and invest these contributions in the equity of private and potentially high growth technology firms (see, e.g., Armour, 2004; Keuschnigg, 2002, 2003, 2004; Wright *et al.*, 2001, Wright and Lockett, 2003; Schwienbacher, 2003; Neus and Walz, 2003; Hege *et al*., 2003; Manigart *et al*., 1996, 2000, 2002a,b,c; Mayer *et al*., 2004). In some countries, including Canada, the US and the UK, a new type of mutual fund has emerged that is essentially a hybrid between a traditional mutual fund and a traditional venture capital fund. These funds collect the capital contributions of individual investors, regardless of their net worth (as does a mutual fund), but invest in private equity (as does a venture capital fund). The balance of portfolio firms ranges from investments in mostly traditional sectors to mostly or entirely high tech. This paper examines one such fund: the Canadian Labour Sponsored Investment Fund (LSIF). This paper relates the governance structure of this hybrid mutual fund / venture capital fund to its performance.[1]

Mutual funds that invest in private equity are increasing in importance across countries. In the US venture capital market after the Internet bubble crash, US venture capital funds are adopting mutual fund-like structures as an alternative to limited partnerships structures in order to facilitate fundraising.[2] It has also been argued that the Canadian LSIF mutual fund - private equity model should be adopted in the US (see, e.g., Hebb, 2001). As well, a close variant of the Canadian LSIF model has been adopted in the UK, and the tax subsidies to such funds in the UK are massive and growing.[3]

---

[1] In related work, Martin and Petty (1983) study the returns to publicly traded venture capital companies. Kleim (1998) considers the case of mutual funds that invest in small-cap stocks; see also Nanda and Singh (1998). Previous research on LSIFs has considered a fairly narrow range of issues, including governmental tax expenditures of LSIFs, the performance of LSIF entrepreneurial firms, and the impact of LSIFs on the market for private equity. In particular, Osbourne and Sandler (1998) compute the direct costs of LSIFs to the Canadian taxpayers (see also Vaillancourt, 1997), Halpern (1997), Brander *et al.* (2002), and Cumming and MacIntosh (2003) show that LSIF entrepreneurial firm investments underperform entrepreneurial investments from other Canadian private equity investments (see Anderson and Tian, 2003, for a Monte Carlo experiment). Cumming and MacIntosh (2005) present evidence that LSIFs have crowded out traditional venture capital funds, and Cumming (2004) presents evidence consistent with the view that LSIFs add less value to their investee companies relative to limited partnership funds.

[2] This recent phenomenon is best summarized in The Economist, "Barbarians at the Stockmarket" (April 22, 2004).

[3] The funds in the UK are known as Venture Capital Trusts (VCTs); see Cumming (2003) for a discussion. The scope of

Despite their growing importance in practice, mutual funds that invest in private equity have received scant academic attention. At the highest level of generality, this paper engages two important issues. First, what is the linkage between organizational structure and fund risk and return? Second, is a tax-advantaged mutual fund structure vehicle a target-efficient means of re-directing investment dollars into private entrepreneurial companies? In respect of the first of these questions, we suggest that the unique organizational structure of the LSIF funds is a primary reason for their extremely poor performance. In respect of the second, we suggest that the statutory design of the LSIF fund programs is such as to frustrate, rather than contribute to achievement of their primary objective.

LSIF data present a puzzling picture. Since LSIFs invest in comparatively risky small (and private) entrepreneurial firms, we would naturally expect to observe average betas in excess of one, in addition to risk-adjusted returns in excess of standard market benchmarks (Gompers and Lerner, 1997; Astebro, 2003; Cochrane, 2005). Surprisingly, the data indicate the exact opposite: all LSIFs have betas less than 1 (with an average 3-year beta of 0.097), and LSIF returns are consistently lower than all industry-wide benchmarks over a 10-year horizon, including 30-day risk-free t-bills. Despite gross underperformance, LSIF MERs are as high as 12%, and the average management expense ratio ("MER", or management expenses / assets) is greater than 4% (nearly twice as high as the average Canadian mutual fund MER). Equally astonishing, given their poor performance and high MERs, is that over a 10-year period LSIF assets under administration have grown from $Can1 billion to $Can10 billion.

The analysis of LSIF betas, returns and asset accumulation presents some rather unique challenges. LSIF share prices are not determined in the market, but by periodic evaluations of net asset values per share as determined by the board of directors (for interim reporting periods) and by an independent valuer (for year-end reporting), with some variation in the frequency of these valuations. Therefore, LSIF returns are not driven by CAPM-type assumptions and/or the Fama and French (1993, 1995) factors, etc. For this reason, we refer to LSIF betas as "pseudo-betas". These pseudo-betas are not an accurate measure of systematic risk, but at best constitute a measure of the *relative* risk across the different LSIFs. As well, because share prices are determined by periodic valuations, they are not

---

the tax subsidy provided to those funds was doubled in 2004, thereby increasing the UK tax subsidy to the tens of billions of pounds; see http://www.chamberonline.co.uk/cmn/viewdoc.jsp?cat=all&docid=BEP1_Feature_0000063655 <accessed January 2003>. VCTs were first introduced in the UK in 1995. Section 8 of this paper provides further details.

amenable to time-series analysis. We thus analyze LSIF returns using a cross-sectional analysis over 1-month, 3-month, 6-month, 1-year, 3-year, and 5-year horizons. In the cross-sectional analysis, we show LSIF pseudo-betas are *unrelated* to returns (in contrast to the standard positively sloped security market line), over measurement horizons up to (and including) 5-years.

We suggest that the extremely low LSIF returns are a product of statutory constraints that inefficiently constrain managerial choice and investment choice. In particular (depending on the province of incorporation), LSIFs must reinvest up to 80% of their contributed capital within a 1 to 3-year period of the contribution date, and pay severe penalties for non-compliance. This constraint can adversely affect returns in two ways – first, by forcing managers to commit capital to inferior investment projects; and second, by attenuating the due diligence process that lies at the heart of equity investing (Gompers and Lerner, 1999a) and adversely impacting the quality of the deal forged with various of a LSIF's portfolio companies. Further statutory constraints exacerbate this problem by limiting the allowable types of investments in entrepreneurial firms, imposing constraints on the structuring of investments and the size of an investment in any given firm, and limiting the geographical *situs* of investee firms. In addition, in contrast to their private venture fund counterparts, LSIF funds must be structured as corporations, sacrificing the various advantages associated with limited partnership form.

We show that, like private venture capital funds (Gompers and Lerner, 1999b), LSIF management remuneration consists of a combination of fixed fees (ostensibly to cover out-of-pocket costs) and carried interest (i.e., a percentage of the appreciation in the value of the fund's investment portfolio, typically paid after certain performance hurdles are met). Unlike either mutual funds or venture capital funds, however, LSIF funds typically split the functions performed by the manager between the "investment manager" and the "advisor". The former either invests the funds' assets, or advises the fund's board of directors on the investment of assets, and the latter performs a variety of other administrative and marketing functions. Both LSIF managers and advisors are typically well compensated compared to both mutual funds that invest in publicly-traded securities and private venture capital funds that invest in private equity (with an average MER in excess of 4%). We argue that the statutory generated dearth of competition among LSIFs likely accounts for the excessively high compensation to LSIF managers and advisors. In a cross-sectional analysis across the 123 LSIFs formed as at March 2005, we find higher fixed fees (and higher overall MERs) tend to be associated with lower fund returns. By contrast, incentive fees are statistically unrelated to LSIF performance, unlike the case of mutual funds that invest in public companies (see, e.g., Elton *et al.*, 2001).

The tax generous tax incentive for individual investors to contribute capital to LSIFs insulates LSIF managers from scrutiny with their fee structures, and incentivizes the managers to maximize the number of funds that they manage. Private venture capital fund managers typically finance only a few investee companies at any one time (Kanniainen and Keuschnigg, 2003, 2004; Keuschnigg, 2004; Cumming, 2004). In this paper we show LSIFs fund managers, by contrast, tend to operate as many funds as private venture capital fund managers manage investee companies. In short, the LSIF structure does not facilitate the provision of advice by fund managers to entrepreneurial investee firms. Overall, it is therefore not surprising that the returns to LSIFs have significantly lagged behind that of 30-day t-bills.

It is noteworthy that LSIFs often invest or hold much of their contributed capital in the form of either debt investments, as opposed to equity investments. Many LSIFs hold a significant percentage of their contributed in cash and short-term liquid assets. We show the performance of LSIFs has been worse among funds that typically invest a greater proportion of contributed capital in equity investments; conversely, performance has been better among funds that have invested a greater proportion of the fund's holdings as straight debt investments.

Finally, despite extremely low LSIF returns, we show that a significant amount of capital has being contributed to LSIFs. Despite earning rates of return lower than most bond indices, by March 2005 LSIFs had collectively accumulated $Can 10 billion (£ 4.3 billion) of capital. Capital contributions have been sufficiently robust that, in the face of an inability to invest contributed capital within statutory constraints, Canada's two largest LSIF funds have both at one time or another suspended or limited capital contributions. We show that LSIF asset accumulation is related to fund returns in a statistically significant way, but this effect is economically very small. A 5% difference in performance over a three-year period, for example, is estimated to generate only an extra $Can 1.3 million in funds raised over that period. By contrast, mutual funds that invest in publicly traded equity (that of course do not face such statutory constraints) have fund flows that are much more sensitive to performance (see e.g. Baks *et al.*, 2001; Chevalier and Ellison, 1997, 1999a,b).

While we focus on a unique institutional setting, we nonetheless believe that our results have general implications for the efficacy of focused government subsidization of venture capital. We have noted that tax subsidized venture capital organizations similar to Canadian LSIF – UK Venture Capital Trusts (VCTs) – have been introduced in other countries, such as the UK (Cumming, 2003). In this paper

we show UK VCTs performance characteristics are strikingly similar to that of Canadian LSIFs. Further, even without tax subsidies, in the US venture capitalists are using mutual fund structures for fundraising efforts in the post-Internet bubble environment.[4] In response to the perceived importance of venture capital to the funding of entrepreneurial firms, many governments have mounted programs that seek to foster venture capital financing. Such programs have been the subject of previous scholarly examination (Cressy, 2002; DeMeza, 2002; Lerner, 1999, 2002; Gompers and Lerner, 2001a,b; Kanniainen and Keuschnigg, 2003, 2004; Keuschnigg, 2003, 2004; Keuschnigg and Nielsen, 2001, 2003a,b, 2004a,b,c). Prior work, however, has not considered the financial market properties of tax-advantaged mutual funds that invest in private equity; our analyses seek to fill this gap in the academic literature.

This paper is organized as follows. Section 2 reviews the context of government sponsorship programs in venture capital. Section 3 explains in detail the Canadian government's LSIF program and the institutional context. Tax incentives to invest in LSIFs are also explicitly detailed in section 3. Sections 4 and 5 describe the LSIF data pertaining to risk, betas, returns, compensation, and fundraising. The determinants of LSIF returns and asset accumulation are evaluated in section 6 and 7, respectively. Section 8 presents a comparison of the Canadian LSIF program with the UK VCT program. Section 9 discusses limitations and future research. Concluding remarks follow.

2. Government Policy Towards Venture Capital

Venture capitalists are often viewed as the primary source of capital for inventive high-tech start-up companies (Gompers and Lerner, 1999, 2001). As small high-tech firms are reported to contribute disproportionately to innovation and economic growth (Cosh and Hughes, 2003), policy makers around the world have become increasingly concerned about the success of their high-tech sectors, and the availability of venture capital. It is further widely believed that the social rate of return to venture capital exceeds the private rate of return as the returns to innovation are not fully internalized by the innovating parties (i.e., there exists broader returns to the development of an innovative society) (Gompers and Lerner, 2001). As such, may policy makers around the world have established government support programs to stimulate venture capital financing of innovative ideas and thereby foster economic growth. Governmental programs ideally increase the aggregate pool of capital for entrepreneurs (i.e., not displacing private investors), and

[4] See *supra*, notes 2 and 3 and accompanying text.

provide support networks from which entrepreneurs receive value-added assistance for financing and growing their firm.

Broadly classified, public policies towards venture capital come in one of two primary forms: (1) law, and (2) direct government investment schemes. Capital gains taxes are widely recognized as being one of the most important legal instruments for stimulating venture capital markets (Poterba, 1989a,b; Gompers and Lerner, 1998; Jeng and Wells, 2000) (but there are other legal instruments for VC markets[5]). Poterba (1989a,b) shows U.S venture capital fundraising increased from $68.2 million in 1977 to $2.1 billion in 1982 as there was a reduction in the capital gains tax rate from 35% in 1977 to 20% in 1982. Venture capitalists invest with a view to exit. As entrepreneurial firms typically do not have cash flows to pay interest on debt and dividends on equity, venture capitalists invariably invest with a view towards an exit and the ensuing capital gains. The most profitable forms of exit for high quality entrepreneurial firms are typically IPO and acquisitions (Gompers and Lerner, 1999; Cumming and MacIntosh, 2003; Cochrane, 2005). Therefore, tax policy in the area of capital gains taxation is particularly important for venture capital finance (see theoretical work on tax policy, venture capital and entrepreneurship, see Kanniainen and Keuschnigg, 2004; Keuschnigg, 2003, 2004; Keuschnigg and Nielsen, 2001, 2003a,b, 2004a,b,c).

A second form of government support is via direct government created venture capital funds. Lerner (1999, 2002b) discusses the ways in which government funds can be successful implemented to work alongside private venture capitalists. One of the most important items identified by Lerner (2002b) is the need for government funds to partner with, and not compete with, private venture capital funds. It is also important for government funds to work towards areas in the market where there exists a clear and identifiable market failure in the financing of companies due to, for example, structural impediments in the market that have given rise to a comparative dearth of capital. Further, Lerner (2002b) suggests it is useful for government funds to be structured in ways that minimize agency costs associated with the financing of small and high-tech firms. For example, it is useful for fund managers to have covenants controlling investment mandates and compensation incentives to add value to all of their investee companies; such covenants and compensation mechanisms have worked extremely well in mitigating agency problems among private limited partnership venture capital funds (Gompers and Lerner, 1996, 1999).

---

[5] We do not review these various other instruments in section 2, primarily for reasons of space. Other legal instruments that have stimulated VC markets include, for example, changes to legislation in the US in 1979 which increased the scope for pension funds to contribute capital to VC funds (Gompers and Lerner, 1998). As another example, in 2002 Australia introduced legislation allowing venture capital limited partnerships to facilitate VC fundraising (Cumming *et al*., 2005).

Countries around the world have adopted different forms of direct government investment programs in venture capital and private equity. Policy makers in Canada have adopted a unique form of government venture capital fund known as the Labour Sponsored Investment Fund (LSIF) (also known as a Labour Sponsored Venture Capital Corporation, or LSVCC). The UK has adopted an extremely similar type of fund known as the Venture Capital Trust (VCT). Both the Canadian LSIF and the UK VCT are mutual funds listed on stock exchanges. The LSIF and VCT investors are individuals, and they receive substantial tax incentives to contribute capital to this class of funds. In exchange for the tax subsidy, LSIF and VCT managers agree to adhere to a set of statutory covenants that constrain their investment decisions and activities. The purpose of this paper is to investigate the properties of this type of fund structure, with a particular attention to capital accumulation and returns. Our focus in this paper is on the Canadian LSIF. We begin by analyzing the LSIF institutional structure in more detail in section 3. Sections 4-7 provide empirical evidence on the LSIFs with a new unique dataset introduced in this paper. Thereafter in section 8 of this paper we provide a direct comparison of the Canadian LSIFs with the UK VCTs.

3. LSIF Institutional Structure and Tax Subsidies

3.1. LSIF Mandate, Structure, and Governance

A LSIF fund may be incorporated in any province that has passed legislation specifically allowing for the creation of a LSIF. It may also be incorporated under similar federal legislation, in which case it may operate in any province that has passed legislation specifically authorizing *federal* LSIFs to operate in that jurisdiction. Provincial funds are permitted in all provinces except Alberta and Newfoundland (due to an unwillingness to provide tax subsidies to business in Alberta, and financial constraints in Newfoundland). Federal funds are permitted to operate in the Provinces of New Brunswick, Nova Scotia, Ontario, Prince Edward Island and Saskatchewan (but not the other provinces due to provincial rules with respect to competition with provincial funds). Of the 123 LSIFs in Canada in existence in 2005, 16 are federally incorporated and 67 are incorporated in Ontario, 7 in British Columbia, 2 in each of Saskatchewan and Manitoba, 1 in Quebec and 28 in the Atlantic Provinces.

Only individuals may invest in LSIFs,[6] and minimum investment requirements are modest (typically

[6] While precise data is not available, it would appear that, in Canada, corporations are the largest contributors to *private*

less than or equal to $Can 1000). Most LSIF contributions are made through the vehicle of a registered retirement savings plan ("RRSP", which roughly corresponds with a 401k plan in the United States, and is a tax exempt retirement savings plan). All LSIF investments up to a certain amount (typically $Can 5,000) receive generous federal and provincial tax credits, and contributions made through an RRSP receive additional tax benefits. These tax benefits are described below in subsection 3.2.

LSIF legislation typically specifies multiple fund objectives, including regional development, enhancing financing for small firms, creating jobs, furthering worker education, and in some cases advancing the cause of unionised enterprise. Many of the LSIF funds, however, have stated that they principal or even sole objective is the pursuit of profits (although in Quebec, non-profit objectives are pursued with some vigour). An LSIF must have a labour union sponsor, whose only participation in practice is to "rent" its name to the fund in return for a small portion of net assets, or a fixed annual fee.

LSIFs legislation requires that LSIFs be formed as corporations, in contrast to the limited partnership form usually favoured by private venture capital funds. Mandatory use of the corporate form potentially gives rise to a number of adverse consequences. In particular, the use of corporate form sacrifices the discipline that the limited life span of a partnership imposes on management. The use of corporate form also diminishes contractual flexibility in constructing the nexus of contracts that underlies LSIF operation. While in theory use of the corporate form imposes a more exacting disciplinary structure on LSIF management than we observe in the case of private limited partnership (since shareholders directly elect the directors of the fund), the atomization of share ownership sacrifices most if not all of these benefits, since collective action and free rider problems ensure that few if any shareholders have the appropriate incentives to monitor or discipline fund manages. Moreover, LSIF legislation invariably requires that the sponsoring labour union receive a class of shares which, while not participating in dividends or assets on winding up, is entitled to appoint a majority of the directors. Few unions have shown any interest in exercising their powers of control, and many have contractually delegated their power to appoint directors to the management company that is contractually engaged to manage the fund. This results in a pure separation of ownership from fund control.

---

funds, followed by pension funds and individuals. The balance between these different types of investors varies substantially from one year to the next. This contrasts somewhat with the situation in the United States, in which pension funds are the largest contributors of capital, followed by corporations and individuals (Gompers and Lerner, 1998, 1999a; Smith and Smith, 2000).

Further exacerbating the shareholders lack of control, many LSIFs contract with external parties for the supply of vital functions such as investment management. Because purely contractual duties are not as easily policed or enforced as duties performed internally under a command and control system, this contracting out has the effect of creating additional slack in the investor-manager relationship.

LSIFs are subject to a number of statutory constraints (see Osbourne and Sandler, 1998, for particulars), including: (1) all LSIFs are constrained to invest in the sponsoring jurisdiction (as determined by the location of the investee firm's assets, employment, or other similar factors), (2) an 8-year investor lock-in period, (3) restrictions on the number of allowable funds in certain jurisdictions, (4) statutory penalties for failure to reinvest fixed percentages of contributed capital in private entrepreneurial firms within a stated period of time (typically 1 to 3 years, and (5) constraints on the size and nature of investment in any given entrepreneurial firm. These constraints can have the effect of forcing investments to be made in inferior firms and/or without adequate due diligence, limiting competition across LSIFs, and limiting investor discipline through threat of withdrawal of capital contributions. These constraints are discussed in more detail below in conjunction with the analysis of the effect on betas, risk, returns and asset accumulation.

Many covenants suitably designed to mitigate opportunistic behavior among limited partnership venture funds are *completely absent* among LSIFs, including restrictions on the use of debt, restrictions on co-investment by the organizations earlier or later funds, restrictions on coinvestment by VC managers (general partners), restrictions on fundraising by VC managers, and restrictions on other actions of VC managers, among other things (Gompers and Lerner, 1996, 1999a). Gompers and Lerner (1996) show that the use of these covenants vary depending on the characteristics of fund managers and economic conditions, and attribute this flexibility to one of the major factors leading to the success of the US VC industry. By contrast, LSIF covenants are inflexible across fund managers and invariant over time (subject to statutory changes).

In sum, the governance structure of the LSIF funds is inferior to that of private funds in a number of significant dimensions. LSIFs are required to be formed as corporations, obviating some of the advantages of the limited partnership vehicle. Ownership and control are separated by statute, so that the sponsoring union controls the fund despite the fact that its economic interest in the fund is limited to collecting an annual fee for "renting" its name to the fund. Ownership is highly atomized, resulting in free rider and collective action problems that greatly impair the incentive of the owners to monitor the managers. The common practice of

contracting with external parties to supply various services (frequently including investment management) creates additional slack in the governance relationship. LSIF funds operate under a variety of statutory constraints summarized above that do not apply to private funds. Likewise, the typical privately negotiated limited partnership covenants (summarized in Gompers and Lerner, 1996) are not found among LSIF. The constraints faced by LSIFs limit both the initial investment and follow-on investment options of LSIF funds. In addition, pursuant to statutory mandates, some of the LSIF funds pursue objectives other than profit maximization.

The inefficient statutory governance structure of LSIFs gives rise to two primary consequences. First, we would predict that LSIF funds will perform more poorly than their private sector counterparts. This first consequence is investigated further in section 4 below. Second, we would predict that the LSIF structure and generous tax subsidies underlying the LSIF programs lower the LSIFs' required rate of return, allowing LSIFs to out-bid other types of funds (even those with tax-exempt investors), drive up deal prices and lower the overall returns in the market. Regardless of the level of LSIF returns, we nevertheless expect the generous tax incentives for LSIF investors (described in subsection 3.2) to give rise to substantial asset accumulation. These issues are empirically examined in the next sections of this paper.

3.2. The Tax Position of LSIF Investors

Many individuals contributing to LSIFs have no other investments (Vaillancourt, 1997), and thus risk serious underdiversification. Given their inefficient structure, and the risks and illiquidity associated with private equity investments, why would underdiversified investors ever contribute their savings to the LSIF class of mutual funds? The answer lies in the federal provincial and federal tax relies given to LSIF investors. Combining the tax credit and tax deductibility features of LSIF investments, and (depending on the tax bracket of the individual investor), the after-tax cost of a $Can 5,000 LSIF investment made through the vehicle of an RRSP (subsection 3.1) ranges from $Can 1180 to $Can 2390, or roughly 27 to 48 percent of the nominal dollar cost of the investment. These details are provided in Table 1. The governmental sponsors effectively pay the balance of the cost. An individual investor holding for the required hold period (typically eight years[7]) will reap a return on investment in excess of 100%, even if the LSIF generates no profits at all (Osbourne and Sandler, 1998, provide complete tax details, and a comparison that shows LSIF

[7] Early withdrawal of contributed funds makes all tax credits repayable. In addition, most funds have levy a fee on the order of 6% of the individual's holding for early withdrawal.

investors receive a considerable tax advantage relative to other types of funds in Canada).

[TABLE 1 ABOUT HERE]

Investors are concerned about after-tax, rather than before-tax returns (Bergstresser and Poterba, 2000, re mutual funds; see also Barclay *et al.*, 1998, re open-ended mutual funds and capital gains taxes). The tax subsidies accorded LSIF investors thus result in LSIFs having a substantially lower required rate of return than either mutual funds or private venture capital funds (Cumming and MacIntosh, 2003).

The tax-expenditure cost of LSIFs to the various Canadian governments is extremely large. Combined federal and provincial tax credit expenditures for the period 1992-2005 were approximately $Can 3.77 billion.[8] This amounts to 40% of all contributions made to LSIFs during this period of time. It is likely that this understates the total tax cost, insofar as there is evidence (Vaillancourt, 1997) that most LSIF investors invest through tax-deductible RRSPs, and that a non-trivial number of these investors would not otherwise have made an RRSP investment. For these investors, the additional tax expenditures associated with the deductibility of their RRSP contributions also count as a relevant tax cost.

The tax generous tax incentive for individual investors to contribute capital to LSIFs insulates LSIF managers from scrutiny with their fee structures, and incentivizes the managers to maximize the number of funds that they manage. For instance, the fund "Return on Innovation (ROI)" has fixed management and advisor fees of 5.1%, a carried interest for managers and advisors of 25%, and states in their prospectus that "The ROI Fund will not invest in speculative business models, early stage high-tech businesses or start-ups". The fund managers have in fact opened three ROI funds, each of which have achieved approximately a return of -0.5% since their inception (October 2002 – March 2005) and collectively accumulated $Can 44.7 million. Perhaps even most shockingly, some LSIF managers have adopted a strategy of opening up a very large number of funds. For instance, two managers started 23 new funds (all part of "Growthworks" group of funds, formerly managed under "Working Ventures") in the two months around December 2003 – January 2004. Private venture capital fund managers typically

[8] This figure was computed from various annual "Tax Expenditures and Evaluations" reports for the pertinent years. See e.g. Tax Expenditures and Evaluations 2002 (Ottawa: Her Majesty the Queen in Right of Canada (Dept. of Finance), 2002) (Cat. No. F1-27/2002E), Table 2, at http://www.fin.gc.ca/taxexp/2002/taxexp02_e.pdf <accessed 15 June 2002>. See also Tax Expenditures and Evaluations 2004 (Ottawa: Her Majesty the Queen in Right of Canada (Dept. of Finance) Cat No.: F1-27/2004E), Table 1, at http://www.fin.gc.ca/taxexp/2004/TaxExp04_e.pdf <accessed 15 March 2005>.

finance only a few investee companies at any one time in order to provide value-added advice to their investees (Kanniainen and Keuschnigg, 2003, 2004; Keuschnigg, 2004; Cumming, 2004). As shown in the data below, LSIFs fund managers tend to operate as many different funds as private venture capital fund managers manage investee companies; this clearly shows that LSIF managers add very little value to their investee firms. In short, the LSIF governance and tax structure does not facilitate the provision of value-added advice by fund managers to entrepreneurial investee firms.

In short, LSIFs are an inferior organizational form that exhibits high agency costs and low returns (Osbourne and Sandler, 1998; see also subsection 3.1). The generous tax subsidies underlying the LSIF programs lower the LSIFs' required rate of return, allowing LSIFs to out-bid other types of funds (even those with tax-exempt investors), drive up deal prices and lower returns in the market. If institutional investors are risk averse and commit capital prior to knowing the increase in LSIF fundraising in any given year, then institutional investors overestimate the extent LSIF funding, and reduce their commitments to private venture capital funds. As a result, government sponsorship through the particular tax breaks exclusively to LSIFs may paradoxically decrease the overall supply of venture funds. Using aggregate industry data, Cumming and MacIntosh (2005) find evidence that is highly consistent with the view that LSIFs have crowded out other private forms of venture capital in Canada.

In short, there is ample theoretical and empirical evidence that LSIFs have not achieved the governmental objective of increasing the aggregate pool of value-added venture capital in terms of providing both money and value-added support to investee firms. The following sections of this paper examine for the first time detailed fund-specific LSIF data in order to develop an understanding of LSIF returns and fundraising, and the distortions created from providing tax-subsidies to only one type of venture capital fund.

4. LSIF Capital Under Administration and the "Overhang" of Uninvested Capital

LSIFs have accumulated more capital that the aggregate of all other types of private equity funds in Canada (including private limited partnerships, corporate funds, etc.). By March 2005, LSIFs had accumulated $Can 10 billion (£4.3 billion) of capital under management (in 2005 dollars). Figure 1

indicates the growth of LSIF capital over the 1992 – 2005 period (the years for which the Canadian Venture Capital Association (CVCA) has reported this information) relative to all other types of venture capital.[9]

[FIGURE 1 ABOUT HERE]

Figure 2 presents CVCA data for aggregate capital under management in the venture capital industry, capital available for investment, and new capital contributions in each year over 1992-2005. "Capital available for investment" indicates funds that have been contributed but not invested; it reflects the extent to which contributions to venture capital funds have outstripped the funds' ability to invest these contributions. It can be seen from Figure 2 that, historically, there has been a large "overhang" of uninvested capital in Canada, much of which has accumulated in the LSIFs. In fact, CVCA data underestimates the overhang by approximately 30%.[10] By the end of 1996, the overhang amounted to approximately three years of venture capital investments (Department of Finance (Canada), 1996). The problem of overhang forced one of Canada's largest LSIFs (known as "Working Ventures" at that time, now managed by "GrowthWorks") to suspend new capital raising for two and a half years (from mid-1996 to the end of 1998). At the time of suspension, Working Ventures had only 19% of its contributed capital invested in eligible businesses.[11] More recently, because it failed to meet its statutory requirement to have invested 60% of capital contributions in qualifying businesses, Solidarity (the largest LSIF) has limited capital contributions for the 2002-2003 year.[12]

[FIGURE 2 ABOUT HERE]

Because of this problem of "overhang", LSIF legislation now typically requires LSIFs to invest their capital contributions within 1-3 years following receipt (or to have invested a certain proportion of their capital in eligible entrepreneurial ventures by year's end). If an investment deadline looms, this can force the

---

[9] See www.cvca.ca and www.canadavc.com <accessed 1 March 2005>. The other types of venture capital investors are described on these association webpages, as well as in Halpern (1997), Cumming (2004), and Cumming and MacIntosh (2005).

[10] The CVCA data are based on the faulty assumption that LSIF legislation *requires* that certain percentages (20-40%) of contributed capital *not* be invested in entrepreneurial firms. This amount of capital is removed from the CVCA's overhang calculation. In fact, the legislation merely limits the types of instruments that non-invested capital be invested in.

[11] See "Working Ventures Puts Capital Raising on Hold" www.newswire.ca...June996/05/c0564.html <accessed 11 January 1998>.

[12] See Fonds de Solidarite Annual Report, 2002, available at http://www.sedar.com/ <accessed 5 May 2003>.

fund to make improvident investment choices in order to avoid severe penalties.

The tax-driven structure of the LSIFs tends to exacerbate the problem of overhang. In contrast to contributions to private funds, most contributions to LSIFs are made through RRSPs (see section 3), with the consequence that the vast proportion of contributions are made in the final three months of the tax year (February-April). Moreover, unlike private funds, in order to secure the tax benefits associated with investing in an LSIF, investors must commit their funds up front, rather than making contractual commitments that are subsequently drawn as needed. This makes LSIF fundraising extremely "lumpy" (again worsening the overhang problem).

5. LSIF Characteristics and Performance: Univariate Data Analysis

Figure 3 presents the performance of LSIFs over the 1992 – 2005 period. Figure 3 clearly indicates that a LSIF index has underperformed comparable indices, even a 30-day risk-free bond index.[13] This underperformance is generally consistent with recently developed theoretical work (Kanniainen and Keuschnigg, 2003; Keuschnigg, 2004; Keuschnigg and Nielsen, 2001, 2003a,b, 2004a,b,c) on the effect on the venture capital market of providing tax subsidies to a subset of venture funds (Lerner, 1999, provides seminal empirical work; see also Lerner, 2002b). That LSIFs have seriously underperformed other types of funds while attracting substantially more capital (Figure 1) strongly suggests an inefficient allocation of capital.[14]

[FIGURE 3 ABOUT HERE]

Table 2 defines each of the variables used in this paper. Table 3 presents summary statistics for the

[13] Canadian data sources for Figure 3: www.globefund.com, www.morningstar.ca <accessed 1 March 2005>. The data do not exhibit survivorship bias because there has not been an LSIF that has been wound up (the tax benefits provided to these funds tend to ensure that capital inflows will occur regardless of performance). The US VC Index value from Peng (2001) is not available for 2000 and 2001. Peng's data are from Venture Economics. Venture Economics has posted on their web page (www.ventureeconomics.com <accessed 1 March 2005>) a value of their own index for the date 06/28/2002 (only) of 361.36 that is based over a similar horizon used by Peng. The authors owe thanks to Peng for directing us to the Venture Economics cite for a recent comparable value for the US index. It is noteworthy that Peng's index calculations are more economically and statistically rigorous than that posted by Venture Economics.

[14] Moreover, Cumming and MacIntosh (2005) show that LSIFs have crowded out other forms of private equity investment in Canada, further exacerbating the problem of inefficient allocation of capital.

gross returns and the various other characteristics of each of the 123 LSIFs.[15] Consistent with Figure 3, the returns data for all the horizons from 1 month to 10 years indicate LSIFs generate returns that are far from impressive. In fact, most all LSIFs do not earn returns that could come close to justifying their management expense ratios.

[TABLES 1 AND 2 ABOUT HERE]

A surprising aspect of the data is that the reported "beta" for each fund is quite low. The LSIF betas are calculated in a consistent manner by Globe Funds (in the standard way by regressing LSIF returns on the market return) only for funds with 3 of more years of returns and reported by Globe Funds www.globefund.com <accessed 1 March 2005>. Note that a LSIF beta is not a real beta, in the sense that it does not reflect market-driven price volatility. Rather, it reflects the volatility of assessments of value made periodically (usually quarterly) by the board of directors, and at year's end by nominally independent valuers. We argue below the betas are most useful in comparing the *relative* riskiness of different types of funds, rather than as absolute measures of systematic risk. It is important to understand that LSIF betas are artificially low (the average beta is 0.097) for three reasons. First, valuations are not made continuously, as in the public market, but only at periodic intervals (typically monthly and/or quarterly, and yearly). Interim (i.e., quarterly) valuations are typically made by the board of directors on the advice of a valuation sub-committee. Legislation requires that an independent valuer make year-end valuations. Episodic reporting of values produces a downward bias in betas (Fowler *et al*., 1979). Second, valuations of private companies (and especially technology firms and firms in the early stages of development) are made in the face of extreme uncertainty, and are thus subject to large confidence internals. For this reason, unlike firms in the public markets, revaluations are typically made only in the face of large changes in the firm's circumstances (again biasing "beta" downwards). Third, LSIF managers have an incentive to smooth portfolio company valuations in order to reduce apparent risk, facilitating marketing efforts to retail investors. The key importance of low risk in marketing efforts is suggested by even a casual scrutiny of LSIF web sites (which, in almost every case, base their marketing efforts on low risk and generous tax credits, rather than returns[16]).

---

[15] Note that none of the LSIFs have been wound up (although some have undergone management changes); therefore there is no issue of survivorship bias in our data.

[16] See e.g. "Not Just a Pretty Tax Credit" at http://www.crocusfund.com/advisor/printconcept14.html <accessed 11 June 2002>. In its promotional material, the Crocus Fund indicates that in the period following September 11, 2001, its returns have fallen less than the public market. This is highly misleading in at least two respects. First, as indicated earlier, LSIF companies are valued not by the market, but by the fund (interim reporting periods) and an independent valuator (year end reporting period).

LSIF web pages and mutual fund reporting services routinely fail to explain to investors that LSIF betas are artificially low.[17]

The risk aversion of LSIF managers provides a supporting incentive to smooth the valuation stream. LSIF managers collect most of their remuneration in the form of fixed fees (Table 2). They therefore have an incentive to limit the extent of revaluations in order to smooth reported net asset values, maintaining a steady collection of fixed fees, and ultimately the managers' personal income streams. While in theory the independent valuer acts as a brake on the extent to which management can 'fix' valuations to effect this end, the fund managers have virtually unfettered control over the identity of the fund's valuer. Because of LSIF organizational structure, managerial choices are virtually immune from challenge by investors, who lack the power of control. While control resides in the Labour fund sponsor, its compensation takes the form of either a fixed annual fee or a small percentage of net asset value (typically 0.25%). Where it collects a portion of net asset value, its incentive is clearly to maximize net asset value rather than profitability. Even in cases in which it collects a fixed fee, its only interest is to ensure the survival of the fund – which (particularly since the managers are fixed fee collectors) is better served by maximizing net asset value than by high returns. While the natural assumption (for which there is empirical support in the case of mutual funds that invest in public companies) is that fund profitability and the ability to attract capital contributions are closely related, our empirical analysis of asset accumulation (below) suggests a virtually complete disjunction between annual returns and fund raising for LSIFs. In short, the Labour union has little incentive to question management's selection of a valuer; in fact, it *shares* management's incentive to reduce apparent risk in the interest of attracting capital contributions. With virtually unchecked management power to appoint a valuer, the nominally independent valuer is thus closely dependent upon the goodwill of management, and likely to produce valuations that are congenial to management. For these reasons, we suggest that reported "pseudo-betas" are more useful as an indicator of the *comparative* than the *absolute* systematic risk of LSIFs.

Because of the inherent difficulty of valuing private companies and the skewed incentives of the board and the independent valuer, valuations tend to be "sticky" and subject to less fluctuation than public market prices, regardless of the underlying fundamentals. Moreover, the web site fails to present information relating to returns for periods prior to September 11, 2001, during which the Crocus Fund significantly underperformed the market.

[17] Despite intensive searches over a 2-year period, the authors still have yet to find a single source that explains why LSIF betas are artificially low. We may infer that a casual or unsophisticated investor is likely to infer that widely reported LSIF betas accurately represent fund risk. More generally, see e.g., Elton and Gruber (2000), and Elton *et al*. (2002).

Unlike mutual funds or private venture capital funds, LSIFs have both *managers* and *advisors*. Unfortunately, there is no perfectly consistent definition of either manager or advisor, nor are reported managerial or advisory charges broken down *between* the various functions that a manager or advisor might perform. In order to be as consistent in our classification as possible, we designated an entity as the "manager" (no matter what the designation in the prospectus) if it handled investments or advised the board on investments (although a "manager" may *also* perform advisory services). The advisor category includes entities performing other administrative functions (such as cash administration and other back office functions, and in some cases marketing).

The correlation matrix in Table 4 indicates some further interesting aspects of funds. First, note that LSIFs with greater proportions of their portfolios invested in equity (as opposed to bonds or cash) have not achieved superior returns, in contrast to the premium typically associated with equity (note that the bond and equity proportions used herein are the typical holdings by the fund over a 3-year horizon, as reported by www.globefund.com <accessed 1 March 2005>). Second, LSIF performance has not improved with age. This runs counter to both theory and evidence suggesting that the greater the experience of private venture fund managers, the greater the return (e.g., Chan *et al*., 1990; Bergmann and Hege, 1998; Gompers and Lerner, 1999; Kanniainen and Keuschnigg, 2003, 3004; Keuschnigg, 2004; Keuschnigg and Nielsen, 2001, 2003a,b, 2004a,b,c). Third, LSIF MERs are very high relative to other mutual funds. The sum of the fixed fees paid to managers and to advisors averages 3.17%, which is only slightly less than the average MER of 4.24% in 2005.[18] By contrast, the average MER for all Canadian mutual funds is 2.29% (and 1.50% in the US; see Ruckman, 2003). Despite the fact that LSIF funds have had returns that grossly lag pertinent market indices (and mutual funds, whose returns roughly track the broad market index), and in the face of extremely high MERs, LSIFs have collectively attracted approximately $Can 9 billion from investors over the 1992-2005 period.

[TABLE 4 ABOUT HERE]

The following sections explore these puzzling aspects of the LSIF data in a multivariate analysis of returns (section 6), and asset accumulation (section 7). Thereafter in section 8 we briefly compare Canadian LSIFs to UK Venture Capital Trusts, which are a very similar class of tax-subsidized mutual

[18] This indicates that most of the fees earned by LSIF managers are paid in the form of fixed fees rather than carried interest.

funds that invests in private equity, and which show very similar properties in regards to poor returns and significant asset accumulation.

6. LSIF Returns

6.1. Model Specification

In this section we present cross-sectional regressions for the determinants of fund returns. The independent variables that we include are (these variables are all defined in Table 2):

- LSIF pseudo beta,
- The percentage of equity and bond holdings in entrepreneurial firms (we would expect a premium associated with higher equity holdings),
- Fund age, and a dummy variable for organizations that market more than 1 LSIF (we would expect both of these factors to proxy for fund experience, which can in turn affect returns),[19]
- Fixed fees and carried interest percentages (we would expect lower fixed fees and higher carried interest to be associated with greater managerial incentives and higher returns),
- Dummy variables for general technology funds that invest across the spectrum of technology sectors, funds that focus specifically on early stage firms (a dummy for funds without a stage focus is suppressed), and funds with a specific technology focus (a dummy for funds without a sector focus is suppressed).
- Human capital variables, including a variable for the number of funds that the VC manager runs, and education of the managers (MBA, Chartered Accountant, Science and Engineering, Certified Business Valuer, and Chartered Financial Analyst).
- Dummy variables for various jurisdictions (the less significant jurisdictions are excluded to avoid collinearity). Note that the jurisdiction dummy variables are important for the following reasons. Different LSIFs operate in different competitive environments, given that the number of LSIFs incorporated in each province varies dramatically. LSIFs registered in different provinces do not compete with one another: residents in a province can only purchase shares of a LSIF located in their province of residence (which must in turn make investments in entrepreneurial firms based in that

[19] Pseudo-betas are included in the regressions to proxy for fund risk. Recall that for reasons discussed in section 5, this is not an actual beta. Diagnostic tests did not indicate problems associated with endogeneity. Note, however, that we do not include assets under administration, as this is (potentially) endogenous to returns. See section 7 below.

province). Thus, in Ontario, for example, investors wishing to invest in a LSIF may choose between 43 funds (including the 29 funds incorporated in Ontario and 14 funds incorporated federally), allowing investors a wide range of choice. By contrast, in the smaller jurisdictions like Manitoba (and similarly for the others that were suppressed to avoid collinearity), investors may only invest in 2 LSIFs. While federally incorporated LSIFs are allowed to operate in Saskatchewan, Ontario, New Brunswick, Nova Scotia and Prince Edward Island, most focus their marketing activities on Ontario; some do not even maintain offices outside of Ontario. This heightens the extent to which funds in the smaller provinces (in which few funds are typically incorporated) may exercise market power.[20]

6.2. Regression Estimates

Table 5 provides cross-sectional regressions for the determinants of returns across LSIFs for the 1-month, 3-month, 6-month, 1-year, 3-year and 5-year periods. Logs of the returns are used primarily to mitigate any influence of outliers in returns, and to account for diminishing effects on the factors that affect the cross-sectional differences in returns across funds. The results are robust for a variety of other specifications not presented but available upon request.

[TABLE 5 ABOUT HERE]

First, note that one of the puzzling results in Table 5 (see also the correlations reported in Table 4) is the consistently insignificant relationship between fund returns and beta across different horizons.[21] We had argued in section 5 above that uncertainty in valuing private companies, the infrequency of LSIF reassessments of value, and perverse incentives of the fund and its valuer all conspire to make valuations "sticky", resulting in an artificial lowering of reported "betas" (which average 0.097; see Table 3). Betas are thus not useful predictors of comparative returns across different LSIFs.

---

[20] In an earlier draft of this paper with data up to June 2002 we included the sales terms for minimum and subsequent purchases (described more fully in section 7), in order to proxy the degree of market power of the fund. We did not find this to be a material factor in the updated draft with data up to March 2005.

[21] For funds with less than 3-years of data for the returns regressions in models (1) – (4) in Table 5 (for horizons of less than 3 years) the beta was not used as it is undefined. Various alternative specifications did not materially affect the estimates. As well, note that for an earlier version of the paper with data up to June 2002, the data indicated a negative relationship between fund returns and beta.

Further, note in Table 5 that funds with a greater proportion of equity in their portfolios experienced statistically *lower* returns in all horizons from 3 months to 5 years (a 10% increase in equity holdings is associated with a 1% lowering in annualized returns in most horizons, except for the one-year horizon where the lowering of returns is by 2%). Similarly, a 10% increase in bond holdings is associated with *greater* annualized returns by 1% in the 1-year horizon, and by 2% in the 3-year and 5-year horizons. Overall, these results suggest that LSIF management is at best value-neutral (if not value-destructive) with respect to its equity investing activities.

Over investment horizons up to and including six months, older LSIFs experienced *lower* returns than younger funds. In the one, three and five year performance periods, older funds did not experience either higher or lower returns. That LSIF returns for older funds are either lower or at best no higher than other funds refutes one of the most common defenses of the LSIF programs among practitioners and policy makers. A common refrain begins with the observation that in venture capital investing, "the lemons ripen quickly, while the plums ripen slowly" (e.g., Gompers and Lerner, 1999a). The apology concludes with the assertion that the LSIF programs are still too young for the plums to have been brought to fruition. However, the data do not indicate superior performance among the older funds.

With respect to fixed fees, we would expect that funds that charge higher fixed fees will have a greater incentive to purchase conservative investments in order to generate a reasonably constant stream of fixed fees and reduce the variance of managers' remuneration. This will reduce returns. Over longer time horizons (three and five year returns) there appears to be no systematic relationship between fixed fees and returns (with the exception of Model 11, but the estimated coefficient is marginally significant and sensitive to the specification). Over shorter horizons up to and including one year, higher manager fixed fees appear to be associated with lower returns. There is some evidence that higher *advisor* fixed fees are associated with *higher* returns (although these later results are sensitive to the econometric specification). The function of carried interest is to align manager interests with those of shareholders, and to motivate managers to produce profits (Gompers and Lerner, 1999b; Elton *et al*., 2001). On this basis, higher manager carried interest payments should be associated with higher returns. There is no evidence that this is the case.

We would generally expect risk to increase for funds that focus either on a relatively narrow part of the industrial spectrum (i.e. general technology and specific technology funds) or on early stage firms. Consequently, standard asset pricing theory suggests that these funds will exhibit higher returns. While

the results vary for the horizons up to and including one year, over the three and five year intervals the evidence is supportive that specific technology focused funds have higher returns, but early stage focused funds have lower returns. That earlier stage focused LSIFs have performed worse over longer horizons again suggests a comparative lack of value-added support by LSIF managers in bringing young entrepreneurial investee companies to fruition.

The average number of funds managed by the LSIF managers, and the manager educational background, are somewhat correlated with fund returns. Surprisingly, over most horizons, funds managed by MBA graduates tend to do worse over most horizons. Fund managers with a Chartered Accountancy or Chartered Financial Analyst background tend to perform better over some of the horizons, but not consistently so over each of the horizons. Fund managers with scientific or engineering backgrounds have performed neither better nor worse over the different horizons. (Note that these results are quite robust to sensitivity checks for collinearity among the included variables). Finally, there is weak statistical evidence that fund managers who manage more funds perform better over the one- and three-year horizons. Each of these results is generally consistent with a view that LSIF investment success is more about fund portfolio management, and less about the value-added advice provided to investee firms. By contrast, traditional venture capitalist managers that invest in significantly fewer entrepreneurial firms and provide more advice and support to their investees have much greater successes with bringing their investments to fruition and earning higher returns (for theoretical work, see, e.g., Kanniainen and Keuschnigg, 2003, 2004; for supportive evidence, see, e.g., Cumming and Walz, 2004).

In sum, a few puzzling findings stand out from the regression on the cross-sectional determinants of LSIF returns. First, there is the systematically insignificant relationship between pseudo-betas and fund returns over all horizons. Second, older funds do not produce higher returns. This evidence runs contrary to U.S. evidence suggesting that older private venture capital funds have experienced higher returns. It also belies one of the most persistent defenses of the LSIF programs – that insufficient time has elapsed to conduct a meaningful review of LSIF profitability. Third, funds investing in earlier stage investees, and funds making more equity investments, tend to earn lower rates of return.

These findings (along with in Figure 3 showing underperformance) are suggestive of low LSIF managerial skill. Alternatively, they evidence the adverse effect of the statutory constraints on managerial behavior as described in section 3.

7. LSIF Asset Accumulation

7.1. Model Specification

In this section we present cross-section regressions for the determinants of assets under administration. Similar to the specifications in section 6, logs of assets are used primarily to mitigate any influence of outliers in asset accumulation, and to account for diminishing effects on the factors that affect the cross-sectional differences in assets across funds. The variables considered include:

- LSIF returns since fund inception (other horizons are not considered simultaneously to avoid collinearity). There is strong evidence that, in general, fund performance is a strong determinant of assets under administration (in the mutual fund literature, see, e.g., Baks *et al.*, 2001; Chevalier and Ellison, 1997, 1999a,b; in the venture capital literature, see Gompers and Lerner, 1998),
- LSIF age, and a dummy for organizations with more than 1 LSIF (we expect these factors to be associated with greater accumulation of assets, due, respectively, to greater time to accumulate assets and heightened investor recognition),
- Dummy variables for back end fees and no load fees (a dummy for front end fees is suppressed), and for the minimum RRSP and subsequent RRSP purchase levels (since fee structures could naturally be expected to affect investor incentives to invest),
- Fixed fees and carried interest percentages (we would expect lower fixed fees and higher carried interest to be associated with a greater alignment of investor and manager incentives, resulting in greater accumulation of assets under administration),
- Dummy variables for LSIFs that focus on early stage entrepreneurial firms (a dummy for funds without a stage focus is suppressed), general technology sector entrepreneurial firms, and specific technology entrepreneurial firms (a dummy for funds without a sector focus is suppressed) (we include these variables to account for sectoral investment preferences among investors),
- Dummy variables for the various jurisdictions sponsoring LSIF funds (dummy variables for the smaller jurisdictions have been excluded to avoid collinearity), and
- Variable that account for the human capital associated with managing the fund (the number of funds run by the senior fund managers, and the educational background of the senior fund managers, as enumerated in Table 2).

7.2. Regression Estimates

Table 6 presents regressions on the cross-sectional determinants of LSIF assets under administration for funds that have been in existence for at least 1 year, 3 years and 5 years. The data indicate LSIF asset accumulation is related to fund returns in a statistically significant way, but this effect is economically small. A 5% difference in performance over a three-year period, for example, is estimated to generate an extra $Can 1.3 million in funds raised over that period. By contrast, mutual funds that invest in publicly traded equity (that of course do not face such statutory constraints) have fund flows that are much more sensitive to performance (see e.g. Baks *et al.*, 2001; Chevalier and Ellison, 1997, 1999a,b). It is noteworthy that in an earlier version of this paper with data ending in June 2002, we found that the quantum of assets under administration was unrelated to fund rates of return for the funds that have been in existence for more than 3- and 5-years. The economically small relationship between returns and asset growth is very potent evidence of the importance of tax incentives in inducing investment into LSIFs.

[TABLE 6 ABOUT HERE]

The economically small relationship between fund returns and asset accumulation may also be a product of statutory constraints placed both on investors that limit investor choice. As noted earlier (see sections 2 and 3), for provincially incorporated funds, provincial tax credits are available only to residents of the province in which the fund is incorporated (and some provinces like Quebec and Manitoba have only had one and two funds, respectively).[22] Moreover, once a LSIF investment is made, LSIF investors are locked into their investments for a period of 8 years. Early withdrawal results not only in a penalty fee levied by the fund (which is typically 6% of the individual's stake), but in the retroactive loss of all tax credits (see note 4 and accompanying text). This severely constraints investor mobility once an investment is made, and hence the ability to switch from a less profitable to a more profitable fund. The regulatory structure therefore effectively drives a wedge between returns and asset accumulation across different LSIFs. We also note that LSIFs typically market their product not on the basis of a complete picture of fund returns (see notes 13 and 14), but on the generous tax benefits available, artificially

[22] Note that Quebec's Solidarity fund, the oldest LSIF, is an outlier with roughly $4.6 billion in assets. As such, we also considered regressions without the Solidarity fund; for those regressions, the coefficients were not materially different and details are available upon request.

generated claims of low risk, and selectively presented returns data. We believe that this also accounts, in part, for the weak of a relation between returns and asset accumulation.

Greater asset accumulation took place over a five-year horizon if the fund managers managed more funds (as well, note that an alternative specification without dividing the number of funds by the number of fund managers yielded a very similar positive relation between the number of funds and fund asset accumulation over 5 or more years). This latter result reinforces the view that economies of scale exist in fund marketing and in achieving enhanced investor recognition (see, e.g., Dermine and Roller, 1992). Similarly, over the horizon of more than 5 years, funds managed by MBA graduates have accumulate more assets (Model 20). For the shorter more recent horizons, by contrast, funds managed by science and engineering educated managers have accumulated more assets (Models 14 and 16).

Table 6 contains further evidence that tax incentives drive asset accumulation. If tax savings are the primary determinant of LSIF investing, then fund age should be a predominant statistically significant predictor of asset growth. Table 6 suggests that this is the case; fund age is positively associated with asset growth (note, however, that this effect is statistically significant only in Models 13 – 17, and not Models 18 – 20, due to the reduction in the number of observations for longer horizons since fewer funds have been in existence over longer horizons.) Similarly, Table 4 indicates a statistically significant positive correlation of 0.42 between fund assets and age. By contrast, the evidence in Table 6 relating minimum purchase levels for individual investors and LSIF managerial compensation structures tends to be insignificant and/or not robust to the specification.[23] The insignificance of these latter variables provides further support for the view that taxes are a primary factor in driving asset accumulation.

The interpretation of the evidence in this section that taxes are a primary determinant of asset accumulation among LSIFs is also consistent with the broad picture of the data (Figures 1 and 3 described above in sections 4 and 5). That is, LSIFs have collectively accumulated a massive amount of capital (Figure 1) despite the extremely low returns generated by the asset class (Figure 3). In the next section we present a broad picture of very similar evidence in the UK with a very similar type of government sponsorship program.

---

[23] The correlation in Table 4 between minimum purchase levels and assets is insignificant. As well, the correlation between carried interest and assets in Table 4 is negative and significant, which is in contrast to expectations (higher carried interest aligns managerial interests with investors, which should encourage investors to contribute capital).

8. Comparison of Canadian LSIFs with UK VCTs

In the autumn of 1995, Venture Capital Trusts (VCTs) were introduced to increase the pool of venture capital in the UK.[24] VCTs are publicly traded companies (listed on the London Stock Exchange) that invest in small private companies, and companies listed on the UK Alternative Investment Market (AIM). The VCT investment vehicle is similar in structure to that of other UK investment trusts.[25] The main difference is that the individuals who invest in VCTs receive special tax breaks (detailed in Table 7; see also Cumming, 2003). In exchange for their tax status, VCTs face a number of statutory restrictions on their investment activities (these covenants are explained in detail by Cumming, 2003).

[TABLE 7 ABOUT HERE]

Overall, UK VCTs are extremely similar to Canadian LSIFs: VCTs and LSIFs are government created funds that exist because of generous tax incentives offered to investors; investors are individuals; VCTs and LSIFs mutual funds that invest in private equity; VCTs and LSIFs face statutory covenants governing their behaviour in exchange for their tax subsidies. There are differences in the statutory governing mechanisms between VCTs and LSIFs. Broadly speaking, LSIFs covenants do tend to be more onerous than VCT covenants (for details see Cumming, 2003), but the general effect is similar. The tax incentives to invest are also slightly different: LSIFs have a smaller limit for tax deductible investments, but the tax breaks are larger (as outlined in Table 7). The British Venture Capital Association (BVCA) successfully lobbied UK government regulators in 2002 to further facilitate VCT fundraising efforts through the expansion of tax subsidies and tax-exempt contributions (again, see Table 7).

The similar structure of VCTs and LSIFs provides a unique natural experiment from which one can infer the generalizability of the results in this paper. From the comparable data available (summarized in Table 7), two things are immediately apparent. First, as with LSIFs, VCTs appear to have very smooth earnings streams. The Riskmetrics risk ranking for VCTs (described in Table 3) shows VCTs as having a level of risk that is comparable to government bond. This low risk ranking is

---

[24] VCTs were introduced by legislation in Sections 70 - 73 and Schedules 14 - 16 of the Finance Act 1995.

[25] See, e.g., http://www.trustnet.com/vct/ <accessed 1 March 2005>. See also Cosh and Hughes (1994, 2003) for further information on small and medium sized enterprises in the UK.

attributable to the valuation of VCT portfolios, which is quite similar to the LSIF portfolio valuations described in this paper. These valuations that give rise to the appearance of low risk among mutual funds that invest in private equity is completely artificial, and has adverse consequences, as described in section 5 among other parts of this paper.

Second, with the exception of the average UK VCT returns in the one-year horizon to March 2005, both VCT and LSIF returns have been extremely low. In the five-year horizon to March 2005, median VCT returns were -40.3%, and median LSIF returns were -5% (Table 7). In the one-year horizon to March 2005, median VCT returns were +5.8% and median LSIF returns were -4.1%. The more recent improved one-year VCT performance appears to be directly attributable to an improvement in portfolio valuations from the years immediately prior to the March 2004 – March 2005 period (i.e., portfolio valuations were reduced immediately prior to the most recent year, so the improvement in returns may or may not be persistent in coming years).

Given the policy objective of stimulating venture capital investment (described in section 2 above), have LSIFs and/or VCTs achieved their mandate? The similarity of evidence of VCTs and LSIFs indicates that if policy makers adopt LSIFs and/or VCTs in other countries, the effect is likely to be the same. The tax expenditure is extremely large, and the economic benefits from such expenditures do not appear to match the costs. The weak statutory governance structure is consistent with underperformance (see section 3 for LSIFs, and see Cumming, 2003 for VCTs). Further, the tax subsidization to just one type of venture capital fund in the market creates distortions in the market that have the tendency to displace other forms of private venture capital, at least in the Canadian case (Cumming and MacIntosh, 2005) (further work is warranted in other countries). Other forms of private venture capital finance foster sustainable and successful entrepreneurial firms that contribute to innovation and economic growth (Gompers and Lerner, 1999, 2001); the evidence from the tax subsidized funds examined in this paper does not show the existence of such benefits. The social benefits of using tax monies to create governmental venture capital funds of the form described in this paper are wanting.

We do note that further insights about VCTs may be gleaned from additional years of data, with a more in depth analysis of fund-specific VCT details and an evaluation of the effect of the recent 2004 tax changes expanding their scope. Further research on this issue, among other issues discussed in the next section, is warranted.

9. Limitations and Future Research

Our cross-sectional regression analyses are primarily limited by the degrees of freedom available in our data, in that there are only 123 LSIFs, and many have not been in existence for very long. As discussed, time series analyses were not appropriate, as LSIF returns and betas (etc.) are based on periodic portfolio valuations that determine fund price (as reported by Globe Funds www.globefund.com) and there is no fund market price in the traditional sense. As noted earlier, some have suggested that because many of the LSIFs have been formed in the past three or four years, it is premature to evaluate performance. Our results do not support this criticism. LSIF funds have underperformed 30-day risk free T-bills over almost all of the 1992 – 2005 period, and older funds do not have higher returns. Nonetheless, it will obviously be instructive to re-evaluate LSIF performance at points in the future. It would also be worthwhile to examine the financial market properties of mutual fund structures that invest in private equity for such funds that have been more recently introduced in the UK and US (as described in notes 2 and 3 and accompanying text, and in section 8), when those funds have a sufficiently long operating history and disaggregated data for each fund are assembled along the lines of the data introduced in this paper.

Our analysis of LSIFs focused on their risk, returns and asset accumulation, with consideration to specific details of the fund characteristics and their managers. LSIFs do have a dual statutory mandate of job creation alongside profit maximization (Osbourne and Sandler, 1998; Cumming and MacIntosh, 2005). We have shown in this paper that LSIFs have not succeeded in objective of profit maximization, despite the fact many funds advertise the fact that they operate on a purely for-profit basis (Osbourne and Sandler, 1998; Cumming and MacIntosh, 2005), suggesting that profitability is the main criterion by which they should be evaluated. Regardless, the second mandate of job creation is meaningful only when compared to the job creation that would have resulted had the government foregone the tax revenue needed to fund the LSVCCs, thus reducing taxation and enhancing private sector job creation. Between 1992 and 2005 these expenditures totaled approximately $Can 3.77 billion. Furthermore, given the comparative dearth of successful LSIF investments (see the LSIF returns in Figure 3 and Table 3), LSIFs have created comparatively few companies that can sustain employment growth over the long term. Moreover, Cumming and MacIntosh (2005) show that LSIFs have crowded out other forms of private venture capital in Canada, thereby frustrating the objective of employment creation (see also section 3 above). While our evidence in this paper is also suggestive that LSIFs have not benefited employment

creation in Canada, future research could examine more specifically empirically examine the jobs created (or lost) in conjunction with the LSIF programs.

10. Summary and Concluding Remarks

Labour Sponsored Investment Funds (LSIFs) were created with the intention of promoting investment in small and medium-sized entrepreneurial firms, with an emphasis on the technology sectors. The mechanism for promoting such investment was to create what is essentially a hybrid between a mutual fund (capitalized by retail investors and investing mainly in public companies), and a venture capital fund (capitalized by institutional investors, corporations and high net worth individuals, and investing primarily in private entrepreneurial companies). Only retail investors may invest in a LSIF, and minimum contributions are low, facilitating the capture of investments from low net worth individuals. Investors are generously subsidized via tax credits and, when the investment is made through an RRSP retirement vehicle, deductibility from income. Aggregate tax expenditures on LSIF tax credits (but not deductibility) for 1992-2005 were roughly $Can 3.77 billion, amounting to 40% of all contributions made to LSIFs during this period of time.

An examination of LSIFs serves as an object lesson in the effects of organizational design on firm performance. The governance structure of LSIFs is established not by the market, but by statute. This statutory structure sacrifices many of the organizational advantages of the private venture capital limited partnership. It also drives a wedge between ownership and control, creating sub-optimal managerial incentives. It also imposes statutory constraints on the investment activities of LSIFs that are not shared either by mutual funds or by private venture capital funds, and directs LSIFs to pursue goals other than profit maximization (which, however, appear to be observed only by a small minority of funds). Further statutory constraints limit investor choice at the time when the initial investment is made by conferring tax credits only on investors who are resident in the province of incorporation. Moreover, the eight year mandatory hold period, coupled with the recapture of tax credits for premature withdrawal, make it impossible as a practical matter for investors to shift their capital between competing funds once the investment has been made. These statutory constraints severely limit the extent of competition between LSIF funds, allowing them to charge management fees that are well in excess of those charged by either mutual funds or private venture capital funds. These high fees, coupled with the inferior returns of LSIF shareholders suggest that LSIF managers are the primary, if not the exclusive beneficiaries of the government tax subsidies.

The gross return of the LSIF index over the 1992 – 2005 period was 12%, compared to 205% for the TSE/TSX 300 Index, 278% for the Globe Canadian Small Cap Peer Index, and 558% for the US Venture Capital Index. While LSIF betas are extremely low (averaging 0.097), consistent with returns that lag a broad market index, we suggest that there are a number of reason why these LSIF "pseudo-betas" cannot be taken as a true measure of LSIF risk. These include the fact that valuations are not conducted in an open market, are made infrequently, and are distorted by managerial (and valuer) incentives to understate portfolio risk.

The evidence presented in this paper is at odds with LSIF managerial learning, whereby managers at older funds develop their skills and generate superior returns. In our data, older funds did not generate higher returns over any horizon, and evidence over certain horizons indicated older funds experienced statistically lower returns. This counters a common defence of LSIFs, which is that insufficient time has passed to evaluate the performance of LSIFs, many of which are recent entrants to the field and have thus not had time to generate returns over a full investment cycle. The inability of more experienced managers to generate superior returns may also be reflective of the vast capital inflows into LSIF funds (generated by the generous tax incentives), coupled with statutory constraints that not only limit the geographical scope (and type) of investments that may be considered, but force managers to invest contributed capital within mandated time periods ranging from one to three years of receipt.

Surprisingly, we found strong evidence that fund pseudo-betas are unrelated to returns (unlike the standard positively sloped security market line), over all horizons up to 5-years. Allied with evidence suggesting that funds that invest more in entrepreneurial equity do not generate higher returns, this suggests that LSIF managers are do not exhibit a high degree of skill in selecting entrepreneurial investees. This calls into question the primary motivation behind the creation of the LSIF programs, which has been to foster equity investment in fledgling entrepreneurial enterprises.

Despite their low returns compared to other asset classes, and MERs averaging over 4% (and as high as 12.78%), LSIFs have attracted aggregate capital inflows on the order of almost $Can 9 billion in 13 years. We found only a very weak economic relation in the cross-sectional analysis of particular LSIF returns and asset accumulation, unlike widespread evidence that returns are a primary determinant of capital flows among mutual funds that invest in public companies. We feel confident in suggesting that, but for their tax generated returns, LSIFs would not exist.

It has been strenuously argued that the Canadian LSIF model should be adopted in the US in order to further stimulate investment in entrepreneurial companies (see, e.g., Hebb, 2001). Mutual funds that invest in private equity have emerged in the US in the post-Internet bubble environment as a significant and growing alternative structure to the more traditional limited partnerships (see note 2 and accompanying text). Policymakers have recently doubled the scope of tax concessions to UK Venture Capital Trusts, which have a very similar structure to Canadian LSIFs (see note 3, section 8 and Table 7). The Canadian experience with LSIFs indicates that similar tax subsidized mutual fund structures should not be adopted or fostered in other countries for the purpose of facilitating the development of venture capital markets. Further research on other government policy instruments in venture capital and other countries is warranted as data become available.

References

Armour, J., "Law, Innovation and Finance," in J.A. McCahery and L. Renneboog, eds., Venture Capital Contracting and the Valuation of High Technology Firms (Oxford Univ. Press, pp. 133-161).

Astebro, T. (2003). "The Return to Independent Invention: Evidence of Unrealistic Optimism, Risk Seeking or Skewness Loving?" Economic Journal 113, 226-239.

Anderson, S., and Y.S. Tian (2003). "Incentive Fees, Valuation and Performance of Labour Sponsored Investment Funds," Working Paper, Ryerson University.

Baks, K., A. Metrick, and J.A. Wachter (2001). "Should Investors Avoid All Actively Managed Mutual Funds? A Study in Bayesian Performance Evaluation," Journal of Finance 56, 45-86.

Barclay, M.J., N.D. Pearson, and M.S. Weisbach (1998). "Open-End Mutual Funds and Capital-Gains Taxes," Journal of Financial Economics 49, 3-43.

Berger and Udell (1998). "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle," Journal of Banking and Finance 22, 613-673.

Berger, A.N., and G.F. Udell (2002). "Small Business Credit Availability and Relationship Lending: The Importance of Bank Organizational Structure," Economic Journal 112, F32-F53.

Bergmann, D., and U. Hege (1998). "Venture Capital Financing, Moral Hazard, and Learning," Journal of Banking & Finance 22, 703-735.

Bergstresser, D.B., and J.M. Poterba (2000). "Do After-Tax Returns Affect Mutual Fund Inflows?" Working Paper, Massachusetts Institute of Technology.

Brander, J.A., R. Amit, and W. Antweiler (2002). "Venture Capital Syndication: Improved Venture Selection versus the Value-Added Hypothesis," Journal of Economics and Management Strategy 11, 423-452.

Buttimer, R.J., D.C. Hyland and A.B. Saunders (2001). "IPOs and Mutual Fund Returns," Working Paper, University of Texas at Arlington, University of Texas at Arlington, and Ohio State University.

Carhart, M.M. (1997). "On Persistence in Mutual Fund Performance" Journal of Finance 52, 57-82.

Carpenter, R.E., and B.C. Petersen (2002). "Capital Market Imperfections, High-Tech Investment, and New Equity Investment," Economic Journal, 112, F54-F72.

Chan, Y-S, D.R. Siegel, and A.V. Thakor (1990). "Learning, Corporate Control and Performance Requirements in Venture Capital Contracts," International Economic Review 31, 365-382.

Chen, H.-L., and Jegadeesh, and R. Wermers (2000) "The Value of Active Mutual Fund Management: An Examination of the Stockholdings and Trades of Fund Managers" Journal of Financial and Quantative Analysis, 343-368.

Chevalier, J. and G. Ellison (1997). "Risk Taking by Mutual Funds as a Response to Incentives" Journal of Political Economy 114, 389-432.

Chevalier, J. and G. Ellison (1999a). "Career Concerns of Mutual Fund Managers," Quarterly Journal of Economics 105, 1167-1200.

Chevalier, J. and G. Ellison (1999b). "Are Some Mutual Fund Managers Better than Others? Cross-Sectional Patterns in Behavior and Performance," Journal of Finance 54 875-899.

Cressy, R. (1996). "Are Business Startups Debt-Rationed?" Economic Journal 106, 1253-1270.

Cressy, R. (2002). "Funding Gaps: A Symposium," Economic Journal 112, F1-F16.

Cumming, D.J. (2003). "The Structure, Governance and Performance of U.K. Venture Capital Trusts," Journal of Corporate Law Studies 3, 401-427.

Cumming, D.J. (2004). "The Determinants of Venture Capital Portfolio Size: Empirical Evidence," Journal of Business, forthcoming.

Cumming, D.J., and J.G. MacIntosh (2003). "A Cross-Country Comparison of Full and Partial Venture Capital Exits," Journal of Banking and Finance 27, 511-548.

Cumming, D.J. and J.G. MacIntosh (2005). "Crowding Out Private Equity: Canadian Evidence" Journal of Business Venturing, forthcoming.

Cumming, D.J., G. Fleming and J. Suchard (2005). ""Venture Capitalist Value Added Activities, Fundraising and Drawdowns" Journal of Banking and Finance 29, 295-331

Cumming, D.J., and U. Walz (2004). "Private Equity Returns and Disclosure Around the World" Working Paper, Center for Financial Studies, Frankfurt.

Cochrane, J. (2005). "The Risk and Return of Venture Capital," Journal of Financial Economics, forthcoming.

Cosh, A., and A. Hughes (2003). Enterprise Challenged. ESRC Center for Business Research, University of Cambridge.

Cosh, A. and A. Hughes (1994). "Size, Financial Structure and Profitability: UK Companies in the 1980s.' In Hughes, A. and D.J. Storey, eds, *Finance and the small firm.* London: Routledge, pp.18-63

DeMeza, D. (2002). "Overlending?" Economic Journal 112, F17-F31.

Dermine, J., and L.-H. Roller (1992). "Economies of Scale and Scope in French Mutual Funds," Journal of Financial Intermediation 2, 83-93.

Droms, W.G., and D.A. Walker (1996). "Mutual Fund Investment Performance," Quarterly Review of Economics and Finance 36, 347-363.

Elton, E., M.J. Gruber (2000). "The Rationality of Asset Allocation Recommendations," Journal of Financial and Quantitative Analysis 35, 27-41.

Elton, E., M.J. Gruber, and C.R. Blake (2001). "Incentive Fees and Mutual Funds," Journal of Finance, forthcoming.

Elton, E., M.J. Gruber, and J.A. Busse (2002). "Are Investors Rational? Choices Among Index Funds," Journal of Finance, forthcoming.

Fama, E.F., and K.R. French (1993). "Common Risk Factors in the Returns on Stocks and Bonds," Journal of Financial Economics 33, 3-56.

Fama, E.F., and K.R. French (1995). "Size and Book-to-Market Factors in Earnings and Returns," Journal of Finance 50, 131-156.

Fowler, D.J., H.C. Rourke, V.M. Jog (1979). "Heteroscedasticity, R-square and Thin Trading on the Toronto Stock Exchange," Journal of Finance 34, 1201-1210.

Gompers, P.A. (1998). "Venture Capital Growing Pains: Should the Market Diet?" Journal of Banking and Finance 22, 1089-1102.

Gompers, P.A., and J. Lerner (1996). "The Use of Covenants: An Empirical Analysis of Venture Partnership Agreements," Journal of Law and Economics 39, 463-98.

Gompers, P.A., and J. Lerner (1997). "Risk and Reward in Private Equity Investments: The Challenge of Performance Assessment," Journal of Private Equity, Winter, 5-12.

Gompers, P.A., and J. Lerner (1998). "What Drives Venture Fundraising?" Brookings Proceedings on Economic Activity – Microeconomics, 149-192.

Gompers, P.A. and J. Lerner (1999a). The Venture Capital Cycle. Cambridge: MIT Press.

Gompers, P.A., and J. Lerner (1999b). "An Analysis of Compensation in the U.S. Venture Capital Partnership," Journal of Financial Economics 51, 3-44.

Gompers, P.A., and J. Lerner (2000). "Money Chasing Deals? The Impact of Fund Inflows on the Valuation of Private Equity Investments," Journal of Financial Economics 55, 281-325.

Gompers, P.A. and J. Lerner (2001a). "The Venture Capital Revolution," Journal of Economic Perspectives 15, 145-168.

Gompers, P.A., and J. Lerner (2001b). The Money of Invention: How Venture Capital Creates New Wealth. Boston: Harvard Business School Press.

Halpern, P. (1997). Financing Growth in Canada, (editor) University of Calgary Press.

Hebb, T. (2001). "Canadian Labour Sponsored Investment Funds: A Model for U.S. Economically Targeted Investments," in F. Archon, T. Hebb and J. Rogers, eds., *Working Capital: The Power of Labor's Pensions*, Ithica: Cornell University Press.

Hege, U., F. Palomino and A. Schwienbacher (2003). "Determinants of Venture Capital Performance: Europe and the United States," Working Paper, HEC School of Management, Tilburg University and the University of Amsterdam.

James, C., and J. Karceski (2001). "Captured Money? Differences in the Performance Characteristics of Retail and Institutional Mutual Funds," Working Paper, University of Florida.

Jeng, L.A., and P.C. Wells (2000). "The Determinants of Venture Capital Funding: Evidence Across Countries,: Journal of Corporate Finance, 6, 241-289.

Kanniainen, V., and C. Keuschnigg, (2003). "The Optimal Portfolio of Start-up Firms in Venture Capital finance," Journal of Corporate Finance 9, 521-534

Kanniainen, V., and C. Keuschnigg (2004). "Start-up Investment with Scarce Venture Capital Support," CESifo Working Paper No. 439. Journal of Banking and Finance 28, 1935-1959.

Keuschnigg, C. (2002). "Venture Capital Backed Growth," Journal of Economic Growth 9, 239 – 261.

Keuschnigg, C. (2003). "Optimal Public Policy for Venture Capital Backed Innovation," CEPR Working Paper No. 3850.

Keuschnigg, C. (2004). "Taxation of a Venture Capitalist with a Portfolio of Firms," Oxford Economic Papers 56, 285-306.

Keuschnigg, C., and S.B. Nielsen (2001). "Public Policy for Venture Capital," International Tax and Public Finance 8, 557-572.

Keuschnigg, C., and S.B. Nielsen (2003). "Tax Policy, Venture Capital and Entrepreneurship," Journal of Public Economics, 87, 175-203.

Keuschnigg, C., and S.B. Nielsen (2003b). "Taxes and Venture Capital Support," Review of Finance 7, 515 -539.

Keuschnigg, C., and Nielsen, S.B. (2004a). Progressive taxation, moral hazard, and entrepreneurship. Journal of Public Economic Theory 6, 471 – 490.

Keuschnigg, C., and S.B. Nielsen (2004b). "Start-ups, Venture Capitalists and the Capital Gains Tax," Journal of Public Economics, 88, 1011-1042.

Keuschnigg, C., and S.B. Nielsen (2004c). "Public Policy for Start-up Entrepreneurship with Venture Capital and Bank Finance." Working Paper, University of St. Gallen and Copenhagen Business School.

Khorana, A. (2001). "Performance Changes Following Top Management Turnover: Evidence from Open-End Mutual Funds," Journal of Financial and Quantative Analysis 36, 371-393.

Lerner, J. (1994). "The Syndication of Venture Capital Investments," Financial Management 23, 16-27.

Lerner, J. (1995). "Venture Capitalists and the Oversight of Private Firms," Journal of Finance 50, 301-318.

Lerner, J. (1999). "The Government as Venture Capitalist: The Long-run Effects of the SBIR Program," Journal of Business 72, 285-318.

Lerner, J. (2002a). "Boom and Bust in the Venture Capital Industry and the Impact on Innovation," Federal Reserve Bank of Atlanta Economic Review 2002(4), 25-39.

Lerner, J. (2002b). "When Bureaucrats Meet Entrepreneurs: The Design of Effective 'Public Venture Capital' Programmes," Economic Journal 112, F73-F84.

Lerner, J. and A. Schoar (2002). "The Illiquidity Puzzle: Theory and Evidence from Private Equity," Journal of Financial Economics, forthcoming.

Lerner, J., and A. Schoar (2003). "Does Legal Enforcement Affect Financial Transactions? The Contractual Channel in Private Equity," Quarterly Journal of Economics, forthcoming.

Manigart, S., H. Sapienza, and W. Vermeir (1996). Venture capital governance and value-added in four countries. Journal of Business Venturing 11, 439-469.

Maginart, S., K, De Waele, M. Wright, K. Robbie, P. Desbrières, H. Sapienza, and A. Beekman (2000). Venture capital, investment appraisal, and accounting information: a comparative study of the US, UK, France, Belgium and Holland, European Financial Management 6, 380-404.

Manigart, S., M. A. Korsgaard, R. Folger, H. Sapienza, and K. Baeyens (2002a). The impact of trust on private equity contracts. Working Paper, Vlerick Leuven Gent Management School.

Manigart, S., A. Lockett, M. Meuleman, M. Wright, H. Landstrom, H. Bruining, P. Desbrieres, U. Hommel (2002b). Why do European venture capital companies syndicate? Working Paper, Vlerick Leuven Gent Management School.

Manigart, S., K. DeWaele, M. Wright, K. Robbie, P. Desbrieres, H.J. Sapienza, and A. Beekman (2002c). The determinants of the required returns in venture capital investments: a five-country study. Journal of Business Venturing 17, 291-312.

Martin, J.D., and W. Petty (1983). "An Analysis of the Performance of Publicly Traded Venture Capital Companies," Journal of Financial and Quantitative Analysis 18, 401-410.

Massa, M. (2003). "How do Family Strategies Affect Fund Performance? When Performance-Maximization is not the Only Game in Town," Journal of Financial Economics 67, 249-304.

Mayer, C., K. Schoors and Y. Yafeh (2004). "Sources of Funds and Investment Activities of Venture Capital Funds: Evidence from Germany, Israel, Japan and the UK." Journal of Corporate Finance, forthcoming.

Nanda, V.K., and R. Singh (1998) "Mutual Fund Structures and the Pricing of Liquidity," Working Paper, University of Michigan and University of Minnesota.

Neus, W., and U. Walz (2004). "Exit Timing of Venture Capitalists in the Course of an Initial Public Offering," Journal of Financial Intermediation, forthcoming.

Osborne, D., and D. Sandler (1998). "A Tax Expenditure Analysis of Labour-Sponsored Venture Capital Corporations," Canadian Tax Journal 46, 499-574.

Peng, L. (2001). "Building A Venture Capital Index," Yale Center for International Finance Working Paper.

Pastor, L., and R.F. Stambaugh (2002). "Investing in Equity Mutual Funds," Journal of Financial Economics 63, 351-380.

Poterba, J. (1989a). "Capital Gains Tax Policy Towards Entrepreneurship," National Tax Journal 42, 375 – 389.

Poterba, J. (1989b). "Venture Capital and Capital Gains Taxation," In: Lawrance H. Summers (ed.), Tax Policy and the Economy 3, Cambridge: MIT Press, 47-67.

Rea, J.D., and B.K. Reid (1998). "Trends in the Ownership Cost of Equity Mutual Funds," Investment Company Institute Perspective 4 (3), 1-16.

Ruckman, K. (2003). "Expense Ratios of North American Mutual Funds," Canadian Journal of Economics 36, 192-223.

Sahlman, W.A. (1990). "The Structure and Governance of Venture Capital Organizations," Journal of Financial Economics 27, 473-524.

Schwienbacher, A. (2003). "Venture Capital Exits in Europe and the United States," Working Paper, University of Amsterdam.

Vaillancourt, F. (1997). "Labour-Sponsored Venture Capital Funds in Canada: Institutional Aspects, Tax Expenditure and Employment Creation". In P. Halpern, ed., Financing Innovative Enterprise in Canada, University of Calgary Press, 571-592.

Wermers, R. (2000). "Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transaction Costs and Expenses," Journal of Finance 54, 1655-1703.

Wright, M., R.E. Hoskisson, L.W. Busenitz and J. Dial (2001). "Finance and Management Buyouts: Agency versus Entrepreneurship Perspectives." Venture Capital: An International Journal of Entrepreneurial Finance 3, 239-262.

Wright, M., and A. Lockett (2003). "The Structure and Management of Alliances: Syndication in the Venture Capital Industry." Journal of Management Studies 40, 2073-2102.

Figure 1. Venture Capital Under Management by Investor Type in Canada: 1992-2004

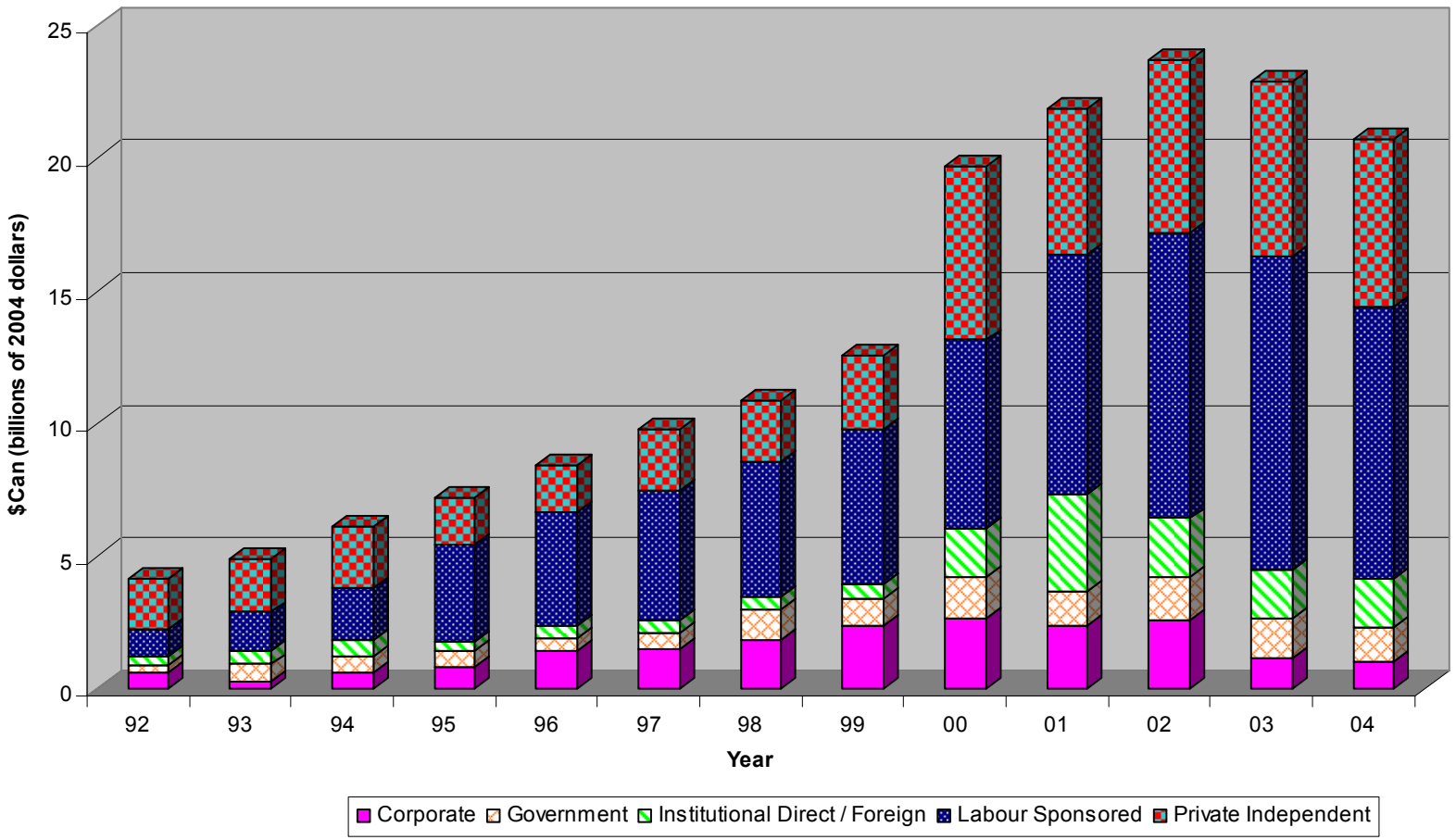

Figure 2. Capital for Investment in Canada: 1988-2004

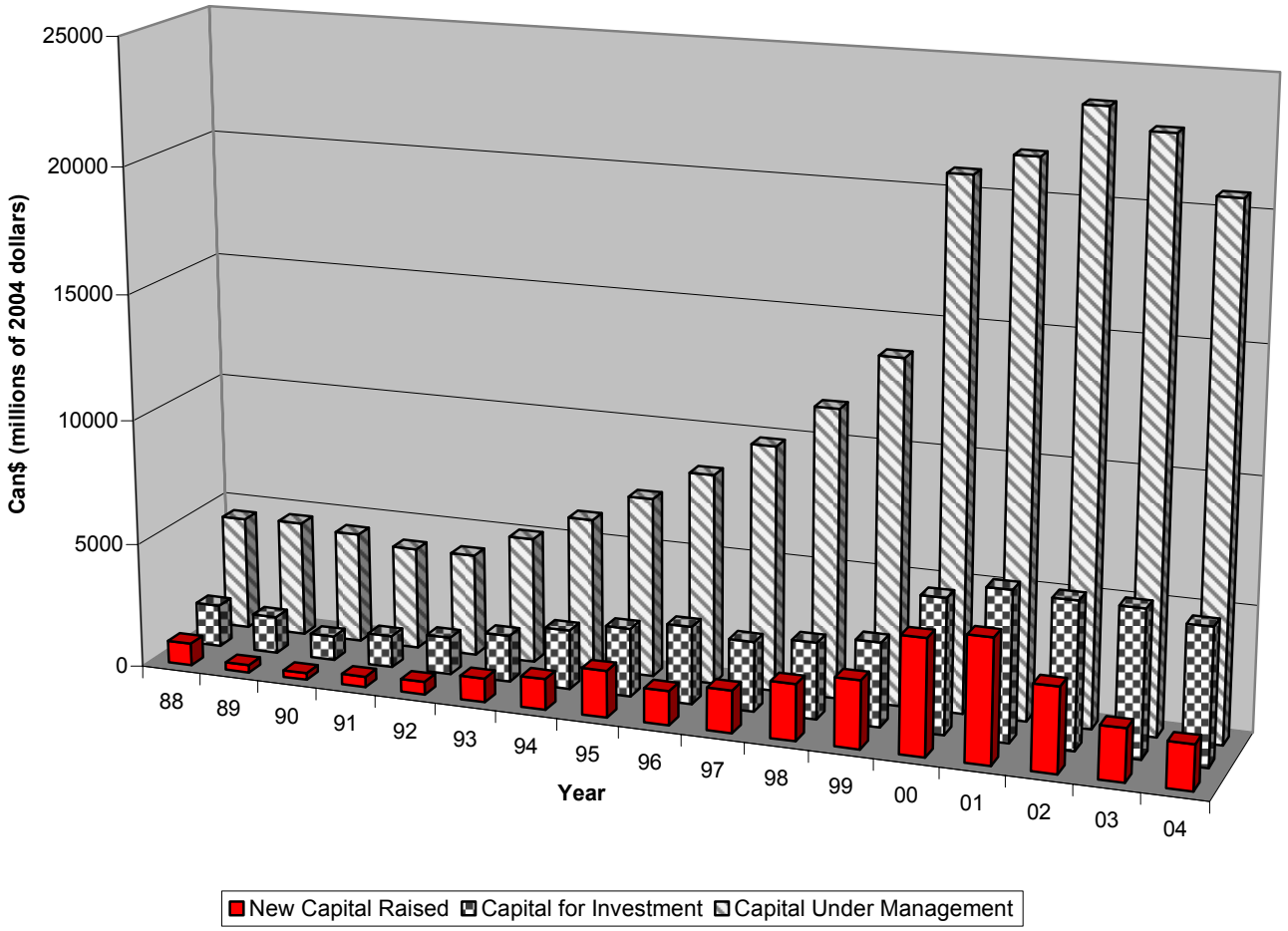

Figure 3. Selected Indices 1992 - 2005

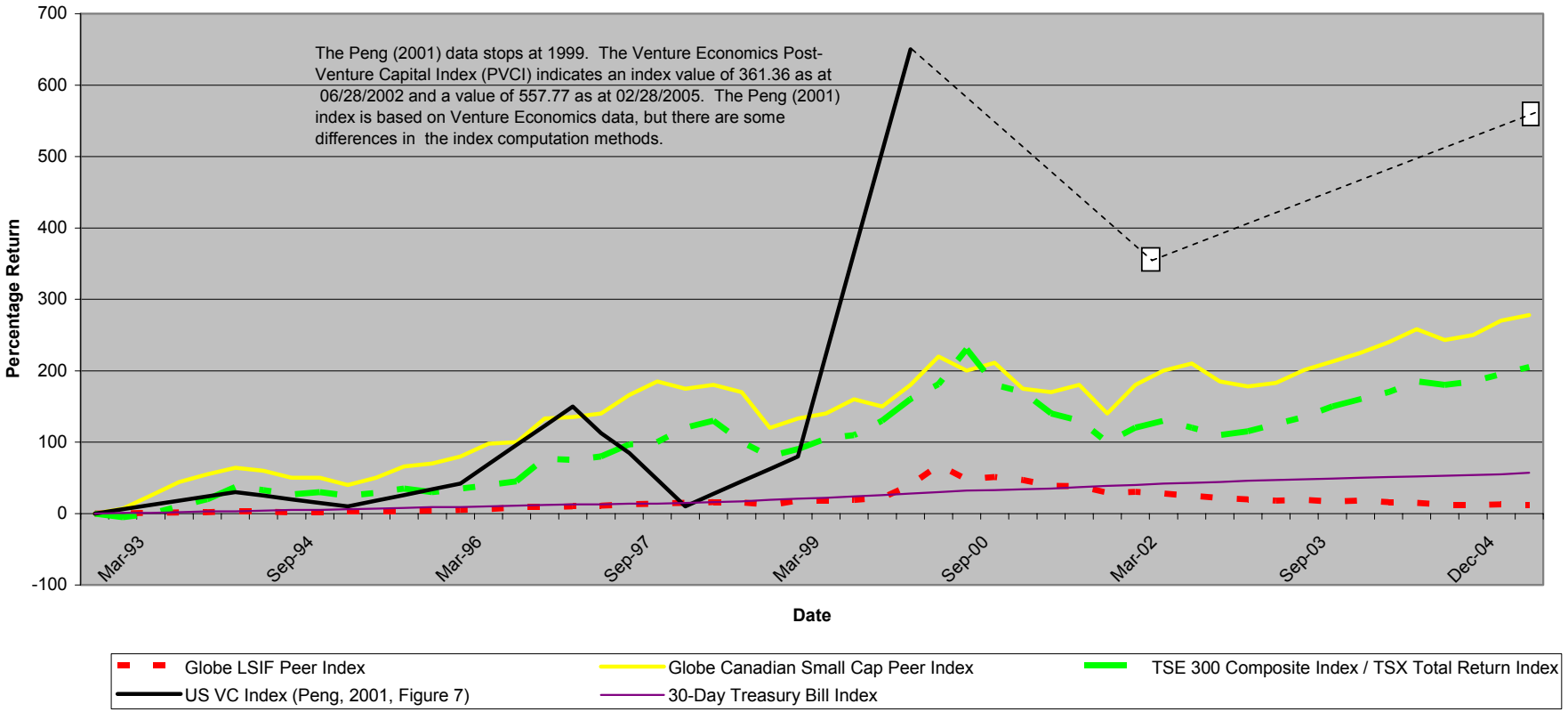

Table 1. Labour Sponsored Investment Fund (LSIF) Tax Savings Chart

This table presents the tax savings associated with an individual LSIF investment of $Can 5,000. The table shows that returns vary from at least 109.21% to up to 323.73% from the tax savings only, before any gains or losses on the net asset value of the LSIF.

Taxable Income ($Can):	Up to $20,753	$30,754 - $30,813	$30,813 - $53,811	$53,812 - $61,508	$61,509 - $61,628	$61,629 - $63,505	$63,505 - $100,000	Over $100,000
Registered Retirement Savings Plan (RRSP) Investment	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Federal Tax Credit	$750	$750	$750	$750	$750	$750	$750	$750
Provincial Tax Credit*	$750	$750	$750	$750	$750	$750	$750	$750
Combined Federal and Provincial Tax Credit	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500
RRSP Tax Savings	$1,110	$1,410	$1,560	$1,655	$1,855	$1,970	$2,170	$2,320
Combined Federal and Provincial Income Tax Rates	Up to 22.20%	28.20%	31.20%	33.10%	37.10%	39.40%	43.40%	46.40%
Total Tax Credits and Tax Savings	Up to $2,610	$2,910	$3,060	$3,155	$3,355	$3,470	$3,670	$3,820
Net Out of Pocket Cost on $5,000 Investment	At least $2,390	$2,090	$1,940	$1,845	$1,645	$1,530	$1,330	$1,180
Initial Return** = ($5,000 - Out of Pocket Cost) / Out of Pocket Cost	109.21%	139.23%	157.73%	171.00%	203.95%	226.80%	275.94%	323.73%

* Ontario provincial rates are used in this chart. For other provincial rates, see http://www.bestcapital.ca/why_invest.htm <accessed 1 June 2002>, and Department of Finance, Canada.

** Initial Return calculation does not account for any returns (losses) that may or may not be generated by a LSIFs' investment activities.

Source: http://www.bestcapital.ca/why_invest.htm <accessed 1 June 2002>, and Department of Finance, Canada.

Table 2. Definition of Variables	
Notion and Variable Name	Definition
LSIF	LSIF stands for "Labour Sponsored Investment Fund". In practice, LSIFs are also sometimes referred to as "LSVCCs", which stands for "Labour Sponsored Venture Capital Corporations".
Fund Returns	The returns to the fund over each of the following horizons are considered: 1-month, 3-months, 6-months, 1-year, 3-year, 5-year, 10 year, and since inception.
3-Year Beta	The fund's beta is actually a "Pseudo Beta", in that the beta is calculated relative to the Toronto Stock Exchange market index, but the fund returns are based on periodic valuations (typically quarterly); hence the betas are artificially low (hence the term "Pseudo"). Betas are calculated with a minimum of three years worth of data in the standard way based on the correlation between the LSIF return and the market return divided by the variance of the market return.
Percentage of Equity Investments, Debt Investments and Cash/Short-Term Securities	Separate variables that measure the fund's typical percentage of equity investments in investee companies, debt investments, and cash/short-term securities (reported values as at March 1, 2005, which were quite similar to reported values as at June 1, 2002). A category of "other" is excluded to avoid collinearity. The median values from all other funds were used for a few funds for which this information was not reported.
Assets	The total assets raised by the fund as at March 1, 2005, in millions of 2005 Canadian dollars.
Fund Age	The number of months the fund has been in existence, up to March 1, 2005.
Back End Sales Fee; No Load Sales	Loads charges (fees charged to investors for the privilege of investing) are often either charged on the date of the investment – a "front-end load" – or upon exiting the investment – a "back end load". Dummy variables equal to one are used for back end and no load sales; a dummy for front end loads has been excluded for reasons of collinearity.
Minimum Initial Purchase; Minimum Subsequent Purchase	Separate variables for the minimum amount for which an investor must invest in the fund in the initial instance, and for subsequent purchases. (This is for investors contributing to the fund, and not the size of LSIF investments made into entrepreneurial investee firms). In 2005 Canadian dollars.
Fixed Manager Fee %; Fixed Advisor Fee %	The fund manager's fixed fee as a percentage of assets raised. If fees are graduated, then the largest part of the fixed fee is used (and robustness was considered for graduated fees). A separate variable is used for the advisor's fixed fee.
Carried Interest Manager %; Carried Interest Advisor %	The fund manager's carried interest (percentage of annual profits earned by the fund). (Robustness was considered for hurdles for achieving the carried interest.) A separate variable is used for the advisor's carried interest.
Management Expense Ratio	The total fees paid to the managers and other expenses to run the fund as a percentage of the assets of the fund.
Federal Fund	A dummy variable equal to 1 if the fund was incorporated under the federal Canadian LSIF legislation.
Ontario Fund	A dummy variable equal to 1 if the fund was incorporated under the Ontario LSIF legislation. Dummy variables for other Canadian provinces are excluded for reasons of collinearity.
Early Stage Focus	A dummy variable equal to 1 if the fund has an investment strategy focus on early stage companies that have not achieved profitability levels.
General Technology Focus	A dummy variable equal to 1 if the fund has an investment strategy focus on high-tech companies but without any specific area of technology.
Specific Technology Focus	A dummy variable equal to 1 if the fund has an investment strategy focus on high-tech companies with a specific area of technology.
# Funds in LSIF Organization / # Managers	The number of different funds raised by the same senior LSIF managers, divided by the number of senior managers responsible for such funds.
# MBA, # CFA, # CA, # CBV, # Managers with Science and Engineering Degree	Separate variables for each of the number of senior managers of the fund that have MBA, CFA (Chartered Financial Analyst), CA (Chartered Accountancy), CBV (Certified Business Valuation), or Science and Engineering degrees

Table 3. Summary Statistics

This table presents descriptive statistics for selected variables as defined in Table 2. Note that one of the LSIFs was established one month prior to data collection (March 2005), and as such the average management expense ratio is slightly biased downwards since that fund has not yet charged expenses out of its asset base. For funds more than 15 months old as at March 2005, the average MER is 4.4 and median MER is 4.2. The return statistics are presented for all funds which have been in existence for the indicated time horizon. Sources: http://www.globefund.com and http://ww.morningstar.ca <accessed 1 March 2005>.

	Mean	Median	Standard Deviation	Minimum	Maximum	# Observations
1-Month Return	0.319	0.000	1.947	-3.720	9.770	123
3-Month Return	0.073	0.200	3.675	-11.440	12.910	112
6-Month Return	-0.081	-0.300	6.275	-13.220	25.520	111
1-Year Return	-3.664	-4.130	9.880	-34.640	26.200	111
3-Year Return	-6.915	-6.370	7.701	-26.010	5.460	44
5-Year Return	-6.968	-5.010	6.738	-23.840	1.660	23
10-Year Return	0.783	1.340	2.587	-2.850	4.470	9
Return Since Inception	-1.723	-1.340	7.534	-22.700	24.420	123
3-Year Beta	0.097	0.090	0.081	-0.030	0.340	47
Percentage Equity Investments	34.999	34.000	21.471	0.000	82.320	123
Percentage Bond Investments	24.187	24.030	18.197	0.000	80.000	123
Percentage Cash & Short Term Securities	27.960	22.000	25.401	-0.430	103.610	122
Assets	77.009	6.000	481.866	0.000	5300.000	123
Fund Age	84.870	29.000	216.617	1.000	1155.000	123
Back End Sales Structure	0.789	1.000	0.410	0.000	1.000	123
Minimum Initial Purchase	626.423	500.00	360.687	0.000	1.000	123
Fixed Manager Fee %	2.156	2.000	0.993	1.000	8.000	123
Fixed Advisor Fee %	1.010	1.250	0.669	0.000	2.000	123
Carried Interest Manager %	20.551	20.000	5.927	0.000	30.000	123
Carried Interest Advisor %	0.821	0.000	1.732	0.000	5.000	123
Management Expense Ratio	4.238	3.990	1.948	0.000	12.780	123
Federal Fund	0.130	0.000	0.338	0.000	1.000	123
Ontario Fund	0.553	1.000	0.499	0.000	1.000	123
Early Stage Focus	0.472	0.000	0.501	0.000	1.000	123
General Technology Focus	0.382	0.000	0.488	0.000	1.000	123
Specific Technology Focus	0.154	0.000	0.363	0.000	1.000	123
# Funds in LSIF Organization	11.268	9.000	9.911	1.000	27.000	123
# Funds in LSIF Organization / # Managers	4.849	3.000	4.932	0.200	13.500	123
# MBA Degree	0.724	1.000	0.890	0	3	123
# Science and Engineering Degree	0.146	0.000	0.568	0	3	123

Table 4. Correlation Matrix

This table presents a correlation matrix for selected variables defined in Table 2. Correlation significant at the 5% level of significance are highlighted in bold and underline font.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1)	1-Year Return	1.00																			
(2)	3-Year Return	0.70	1.00																		
(3)	5-Year Return	0.35	0.87	1.00																	
(4)	10-Year Return	-0.15	0.27	0.74	1.00																
(5)	Return Since Inception	0.84	0.74	0.73	0.84	1.00															
(6)	3-Year Beta	-0.12	0.04	0.12	-0.33	-0.08	1.00														
(7)	Proportion Equity Investments	-0.18	-0.51	-0.34	0.01	-0.21	0.02	1.00													
(8)	Proportion Bond Investments	0.11	0.41	0.12	0.31	0.05	-0.01	-0.27	1.00												
(9)	Back End Load	0.00	-0.20	-0.35	-0.53	-0.07	-0.14	0.15	0.18	1.00											
(10)	Minimum Investment	-0.06	-0.12	-0.25	-0.42	-0.07	0.29	-0.07	-0.20	-0.24	1.00										
(11)	Assets	0.02	0.00	0.07	-0.20	0.07	0.08	-0.01	-0.01	-0.17	-0.13	1.00									
(12)	Fund Age	0.01	-0.12	-0.27	-0.10	0.01	-0.06	0.08	0.04	0.02	-0.10	0.42	1.00								
(13)	Fixed Manager Fee %	-0.05	0.32	0.47	-0.16	0.03	-0.14	-0.09	0.15	-0.17	0.03	0.14	0.06	1.00							
(14)	Carried Interest Manager %	0.09	-0.10	-0.18	0.11	0.11	0.19	-0.29	-0.07	0.09	0.25	-0.32	-0.22	-0.39	1.00						
(15)	Management Expense Ratio	-0.27	-0.31	-0.45	-0.69	-0.35	0.14	0.43	0.11	0.27	-0.10	-0.11	-0.06	-0.18	-0.06	1.00					
(16)	Early Stage Focus	-0.10	0.07	-0.12	-0.62	-0.04	0.16	-0.02	0.35	0.29	-0.12	-0.10	-0.12	-0.15	0.30	0.46	1.00				
(17)	General Technology Focus	0.31	-0.02	-0.04	-0.52	0.22	-0.03	-0.26	-0.23	0.08	0.07	-0.06	0.07	-0.17	0.53	0.05	0.20	1.00			
(18)	Specific Technology Focus	-0.20	0.16	-0.05	-0.30	-0.07	0.14	0.07	0.09	-0.11	0.12	-0.04	0.02	0.36	-0.10	-0.02	0.18	-0.29	1.00		
(19)	# Funds in LSIF Organization / # Managers	0.20	-0.03	-0.12	-0.49	0.13	0.05	-0.05	0.07	0.36	-0.21	-0.10	-0.17	-0.26	0.45	0.37	0.69	0.60	-0.29	1.00	
(20)	# MBA	-0.11	-0.18	-0.14	0.49	-0.12	0.11	-0.12	-0.10	-0.25	0.02	0.07	0.15	0.15	-0.19	-0.31	-0.61	-0.09	0.01	-0.54	1.00
(21)	# Science / Engineering	-0.11	-0.10	0.04	0.62	-0.06	0.26	0.06	-0.01	-0.29	-0.09	0.00	-0.03	0.13	-0.05	-0.17	-0.22	-0.20	-0.03	-0.16	0.53

Table 5. Fund Returns

This table presents OLS estimates of the determinants of the cross-sectional returns across funds to the period ending 3/1/2005 for 1 month, 3 months, 6 months, 1 year, 3 years, and 5 years. Variables are as defined in Table 2. HCCME estimated covariance matrix. *, **, *** Significant at the 10%, 5% and 1%% levels, respectively.

	Log(1 + 1 month return)				Log(1 + 3 month return)				Log(1 + 6 month return)			
	Model (1)		Model (2)		Model (3)		Model (4)		Model (5)		Model (6)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Constant	0.002	0.140	0.015	1.214	0.067	2.641***	0.077	2.765***	0.125	3.402***	0.113	2.752***
Proportion Equity Investments	-2.353E-06	-0.030	-1.651E-05	-0.174	-4.885E-04	-2.166**	-4.757E-04	-1.911*	-0.001	-2.890***	-0.001	-2.846***
Proportion Bond Investments			8.245E-05	0.640			3.284E-04	1.046			0.0002	0.547
Fund Age	-1.54E-05	-2.082**	-1.92E-05	-2.345**	-3.24E-05	-1.981**	-3.62E-05	-1.895*	-4.96E-05	-1.678*	-5.40E-05	-1.942*
Fixed Manager Fee %	-0.0001	-0.028	-0.002	-1.005	-0.011	-2.727***	-0.014	-2.863***	-0.023	-2.977***	-0.023	-2.537**
Fixed Advisor Fee %	-0.005	-0.802	-0.008	-1.417	-0.019	-2.044**	-0.014	-1.260	-0.061	-4.225***	-0.050	-3.386***
Carried Interest Manager %	0.0002	0.448	0.0002	0.393	-0.001	-1.088	-0.001	-1.113	-0.0001	-0.069	0.0002	0.204
Carried Interest Advisor %	-0.001	-0.903	-0.0002	-0.143	0.001	0.438	-0.001	-0.189	0.006	1.988**	0.004	1.060
Federal Fund	0.040	3.082***	0.036	3.373***	0.052	2.900***	0.041	2.356**	0.094	3.161***	0.077	3.059***
Ontario Fund	0.007	1.329	0.006	0.931	0.001	0.108	0.002	0.155	0.012	0.979	0.013	0.742
Quebec Fund			0.015	1.287			0.023	1.017			0.064	1.797*
Early Stage Focus	0.008	1.122	0.003	0.371	-0.006	-0.575	-0.027	-1.688*	0.016	1.081	-0.023	-1.078
General Technology Focus	-0.007	-1.624	-0.007	-0.780	0.027	3.842***	0.035	2.280**	0.031	2.501**	0.033	1.603
Specific Technology Focus	-0.032	-3.187***	-0.028	-3.029***	-0.008	-0.696	0.009	0.523	-0.056	-2.962***	-0.025	-0.994
# Funds in LSIF Organization / # Managers			-0.0001	-0.113			0.0001	0.028			0.002	0.819
# Managers with MBA			-0.010	-2.314**			-0.011	-1.575			-0.006	-0.619
# Managers with CFA			0.003	0.311			0.011	0.941			0.052	2.580**
# Managers with CA			0.014	2.557**			-0.003	-0.230			-0.024	-1.413
# Managers with CBV			-0.012	-1.355			-0.003	-0.119			0.029	0.841
# Managers with Science and Engineering Deg.			0.006	1.458			0.004	0.521			0.003	0.222
Number of Observations	123		123		112		112		111		111	
F Statistic	5.64***		4.61***		4.08***		2.80***		6.19***		4.68***	
Loglikelihood	341.259		351.797		231.969		236.709		181.864		190.654	
Akaike Information Statistic	-5.354		-5.395		-3.928		-3.870		-3.061		-3.075	
Adjusted R^2	0.295		0.360		0.234		0.235		0.341		0.389	

Table 4 continues on the following page…

Table 5. (Continued)

	Log(1 + 1 year return)				Log(1 + 3 year return)				Log(1 + 5 year return)			
	Model (7)		Model (8)		Model (9)		Model (10)		Model (11)		Model (12)	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Constant	0.155	2.047**	0.115	1.353	-0.037	-0.361	0.007	0.077	-0.172	-1.871	-0.001	-0.051
3-Year Beta					0.012	0.087	-0.025	-0.201	0.165	1.004	0.201	1.644
Proportion Equity Investments	-0.002	-2.886***	-0.002	-2.510**	-0.002	-3.338***	-0.001	-2.332**	-0.0002	-0.401	-0.001	-4.891***
Proportion Bond Investments			0.001	1.941*			0.002	3.674***			0.002	3.306***
Fund Age	-5.39E-05	-0.957	-5.74E-05	-1.306	-1.14E-05	-0.327	1.87E-05	0.807	4.49E-05	0.957	8.74E-06	0.718
Fixed Manager Fee %	-0.025	-2.008**	-0.025	-1.881*	0.013	0.697	0.004	0.264	0.027	1.786*		
Fixed Advisor Fee %	-0.059	-2.357**	-0.035	-1.159	0.012	0.409	-0.002	-0.848	0.007	0.200		
Carried Interest Manager %	-0.001	-0.808	-0.001	-0.763	0.001	0.338			0.001	0.533		
Carried Interest Advisor %	0.011	1.904*	0.005	0.681	0.009	1.022			-0.024	-1.505		
Federal Fund	0.086	1.673*	0.037	0.934	-0.111	-2.427**	-0.212	-5.871***	-0.051	-1.334	-0.313	-11.860***
Ontario Fund	-0.017	-0.720	-0.027	-0.972	-0.010	-0.375	-0.050	-2.838***			-0.068	-1.929*
Quebec Fund			0.095	1.719*								
Early Stage Focus	-0.008	-0.285	-0.111	-3.132***	-0.026	-0.625	-0.149	-3.490***	-0.030	-0.567	-0.375	-1.966*
General Technology Focus	0.075	2.756***	0.057	1.602	0.002	0.067	0.002	0.096				
Specific Technology Focus	-0.080	-2.616***	0.002	0.064	0.079	1.379	0.239	5.494***			0.532	2.793**
# Funds in LSIF Organization / # Managers			0.008	1.801*			0.007	1.848*			0.015	1.070
# Managers with MBA			-0.011	-0.544			-0.057	-4.046***			-0.023	-1.867*
# Managers with CFA			0.121	3.556***			0.002	0.128				
# Managers with CA			-0.032	-1.211			0.054	2.803***				
# Managers with CBV			0.043	0.808			-0.003	-0.081				
# Managers with Science and Engineering Deg.			-0.009	-0.431			0.026	1.499			-0.021	-1.080
Number of Observations	111		111		43		43		22		22	
F-Statistic	4.96***		5.44***		1.68		3.45***		1.21		2.99**	
Loglikelihood	117.137		134.920		55.752		70.645		33.023		41.952	
Akaike Information Statistic	-1.894		-2.071		-1.988		-2.449		-2.093		-2.723	
Adjusted R^2	0.284		0.434		0.163		0.498		0.082		0.511	

Table 6. Assets (Fundraising)

This table presents OLS estimates of the determinants of the cross-sectional asset levels (funds raised) across funds to the period ending 3/1/2005 for funds that have been in existence for more than 1 year (model 1), 3 years (model 2), and 5 years (model 3). HCCME estimated covariance matrix. *, **, *** Significant at the 10%, 5% and 1%% levels, respectively.

	Model (13)		Model (14)		Model (15)		Model (16)	
	Log (Assets (of all funds))		Log Assets (of all funds))		Log Assets (for funds >1 year))		Log Assets (for funds >1 year))	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Constant	0.715	0.692	0.794	0.563	0.779	0.763	0.466	0.278
Fund Return Since Inception	0.039	2.849***	0.038	2.325**	0.036	2.619***	0.034	2.071**
Fund Age	0.003	5.649***	0.002	4.864***	0.003	5.131***	0.002	3.877***
Proportion Equity Investments	0.010	1.482	0.019	2.400**	0.005	0.702	0.015	1.756*
Proportion Bond Investments			0.019	1.879*			0.014	1.479
Back End Load Fee	-0.291	-1.020	0.060	0.161	-0.741	-1.928*	0.248	0.436
No Load			0.170	0.360			0.556	0.589
Minimum Initial Purchase	0.0002	0.903	0.001	2.718***	0.0002	0.760	0.001	2.705***
Minimum Subsequent Purchase			-0.0003	-0.188			-0.003	-2.318**
Fixed Manager Fee %	0.596	3.055***	0.254	1.509	0.543	2.877***	0.354	2.024**
Fixed Advisor Fee %			0.025	0.049			-0.392	-0.753
Carried Interest Manager %	-0.009	-0.284	-0.065	-1.304	0.005	0.151	-0.035	-0.676
Carried Interest Advisor %			-0.216	-1.693*			-0.191	-1.389
Federal Fund	0.213	0.478	1.108	1.181	0.736	1.244	1.749	1.616
Ontario Fund	0.204	0.537	0.941	1.216	0.666	1.350	1.323	1.578
Quebec Fund			2.777	3.074***			2.698	2.710***
Early Stage Focus			-0.387	-0.576			-0.050	-0.069
General Technology Focus	-1.009	-2.447**	-0.269	-0.432	-0.771	-1.475	-0.068	-0.118
Specific Technology Focus			0.610	0.854			0.209	0.274
# Funds in LSIF Organization / # Managers			-0.007	-0.080			-0.051	-0.555
# Managers with MBA			-0.808	-2.313**			-0.859	-2.501**
# Managers with CFA			-1.174	-2.589**			-1.312	-3.076***
# Managers with CA			1.793	3.767***			1.961	4.186***
# Managers with CBV			-2.390	-2.672***			-2.333	-2.755***
# Managers with Science and Engineering Deg.			1.523	3.786***			1.540	3.315***
Number of Observations	123		123		111		111	
F Statistic	9.00***		5.92***		8.02***		5.97***	
Loglikelihood	-211.739		-192.934		-187.386		-165.669	
Akaike Information Statistic	3.622		3.544		3.575		3.435	
Adjusted R^2	0.396		0.492		0.390		0.520	

Table 5 continues on the following page…

Table 6. (Continued)

	Model (17)		Model (18)		Model (19)		Model (20)	
	Log Assets (for funds >3 years))		Log Assets (for funds >3 years))		Log Assets (for funds >5 years))		Log Assets (for funds >5 years))	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Constant	4.093	12.394***	3.766	8.627***	4.174	12.353***	2.782	4.462***
Fund Return Since Inception	0.079	2.580**	0.067	2.255**	0.027	0.364	0.075	1.215
Fund Age	0.002	1.833*	0.001	1.317	0.0004	0.962	0.0001	0.270
Minimum Initial Purchase			-0.0002	-0.410			-0.001	-1.316
Minimum Subsequent Purchase			-0.001	-0.779			0.001	1.008
Federal Fund	-0.306	-0.615						
Ontario Fund	-0.775	-1.914*						
Quebec Fund			3.821	6.983***	3.880	6.719***	4.225	6.141***
Early Stage Focus			-0.699	-1.921*			-2.683	-1.797*
General Technology Focus	0.355	0.531	0.750	1.477			-0.273	-0.470
Specific Technology Focus							4.428	2.551**
# Funds in LSIF Organization / # Managers			0.049	0.743			0.451	3.773***
# Managers with MBA			-0.065	-0.208			1.058	4.553***
# Managers with Science and Engineering Deg.			0.554	1.905*			-0.325	-1.359
Number of Observations	44		44		23		23	
F Statistic	4.06***		4.10***		4.02**		2.57*	
Loglikelihood	-70.671		-62.316		-35.430		-26.451	
Akaike Information Statistic	3.485		3.333		3.429		3.344	
Adjusted R^2	0.263		0.419		0.292		0.440	

Table 7. Comparison between Canadian LSIFs and UK VCTs

This table presents a comparison of risk and returns to the Canadian Labour Sponsored Investment Funds (LSIFs) (also known as Labour Sponsored Venture Capital Corporations, or LSVCCs) and the UK Venture Capital Trusts (VCTs). Figures are for the period ending March 1, 2005. LSIF sources: http://www.globefund.com and http://ww.morningstar.ca; VCT data source: http://www.trustnet.com/vct/ <all accessed 1 March 2005>. Both UK VCTs and Canadian LSIFs are among the class of mutual funds that invest in private equity. UK VCTs are regulated slightly differently than LSIFs (for specific details, see Cumming, 2003). The pseudo beta measure for LSIFs is as defined in Table 2. The Riskmetrics™ Risk-Grades Rank for VCTs is defined at http://www.trustnet.com/vct/, and is a standardized measure of volatility; for comparison, US T-Bills have a Risk Grade of approximately 40, the S&P 500 has a Risk Grade of approximately 110, and NASDAQ has a Risk Grade measure of approximately 210. The low risk for VCTs and similarly the low beta for LSIFs reflects the periodic valuations of the underlying portfolio of investee firms. An untrained investor might be confused as to why risk measures are so low for LSIFs and VCTs based on information provided on various webpages, including the data sources, among others (as discussed in the text).

	UK VCTs				Canadian LSIFs			
	Riskmetrics Risk-Grades Rank	1-Year Return	3-Year Return	5-Year Return	Pseudo Beta	1-Year Return	3-Year Return	5-Year Return
Mean	59.019	9.027	-6.175	-34.395	0.097	-3.664	-6.915	-6.968
Median	54.390	5.800	-10.000	-40.300	0.090	-4.130	-6.370	-5.010
Standard Deviation	53.879	21.613	42.791	39.038	0.081	9.880	7.701	6.738
Minimum	1.360	-43.600	-70.100	-82.900	-0.030	-34.640	-26.010	-23.840
Maximum	381.280	86.200	191.100	95.200	0.340	26.200	5.460	1.660
Number of Funds for which data exists in column	72	78	69	38	47	111	44	23
Total Number of Funds as at March 2005	99				123			
Year of legislation allowing first fund	1995				1983 Quebec, 1988 Federal Canada, 1989-1994 Other Canadian Provinces			
Aggregate pool of capital in asset class managed as at March 2005	£1.6 billion				£4.3 billion			
Broadly described tax incentives for investors to invest	40% tax relief on individual investments of up to £200,000 (after Finance Act 2004); 20% tax relief on individual investments of up to £100,000 (before Finance Act 2004)				The maximum tax subsidized investment in any year is $Can 5000 (£2164). The after-tax cost of a $5,000 LSIF investment made through the vehicle of an RRSP (see section 2) ranges from $1180 to $2390, or roughly 27 to 48 %of the nominal dollar cost of the investment (see Table 1).			