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UMI
EMPIRICAL ESSAYS ON AGENCY
COSTS IN LAW AND ECONOMICS

by

Douglas J. Cumming

A thesis submitted in conformity with the requirements
For the Degree of Doctor of Philosophy, Graduate Department of Economics,
In the University of Toronto

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This thesis is dedicated to the memory of my Mother, Dorothy.
DOUGLAS J. CUMMING

THESIS ABSTRACT

DEPARTMENT OF ECONOMICS, UNIVERSITY OF TORONTO

EMPIRICAL ESSAYS ON AGENCY COSTS IN LAW AND ECONOMICS

My thesis, entitled Empirical Essays on Agency Costs in Law and Economics, comprises eight chapters that investigate problems of moral hazard and adverse selection ("agency costs") in various contractual relationships. In addition to testing for agency costs, the essays also provide evidence on the impact that legal regulation has had on agency costs. Three contexts are considered herein: venture capital finance, contracts for legal services, and jurisdiction shopping. The first chapter introduces the issues and contexts considered. The second, third, fourth and fifth chapters focus on venture capital finance. The second and third chapters provide a review of the literature and a setting for the evidence introduced in the fourth chapter. The fourth chapter focuses on venture capital financial contracts. In particular, the focus is on the role of forms of venture capital finance in mitigating bilateral agency costs between the entrepreneurial firm and venture capitalists, as well as among syndicated venture capitalists. The fifth chapter considers the role of exit strategies in mitigating agency relationships between the entrepreneurial firm and its new owners.

While chapters two through five consider venture capital, the sixth, seventh and eighth chapters consider agency relationships in different contexts. The sixth chapter examines the role of alternative legal fee arrangements and other characteristics of a lawyer's practice in an empirical analysis of settlement conflicts. The seventh and eighth chapters consider agency costs in the context of jurisdiction shopping. The seventh chapter provides evidence that jurisdictions in Canada do not engage in corporate law reform in order to compete for incorporation revenues (i.e., the competitive model of corporate law production has not operated in Canada). It is not surprising, therefore, that share prices sometimes fall around the event of reincorporation, as demonstrated in the eighth chapter. As Canadian corporate law reform has not been generated from the competitive model (in contrast to the U.S.), there is greater potential for corporate managers to act against the interests of shareholders by reincorporating in another jurisdiction.
EXTENDED ABSTRACT

The issues and contexts in which agency costs are considered are introduced in the first chapter. The abstracts from chapters 2, 3, 4, 5, 6, 7 and 8 are as follows:

Chapter 2. Capital Structure and Entrepreneurship: A Review of the Literature

The role of debt, convertible debt, preferred equity, convertible preferred equity, common equity and mixed debt-equity contracts in mitigating agency costs in the context of venture capital financing is reviewed. The review not only considers one-shot investment transactions, but also evaluates the role of financing instruments when the structure of the investment involves staging and/or syndication. In addition, the effect of securities regulation on alternative forms of venture capital finance is reviewed.

Chapter 3. Robust Financial Contracting Among Syndicated Venture Capitalists

In their influential paper, Admati and Pfleiderer (1994) show that a "fixed-fraction" contract mitigates the mispricing of securities and misstatement of capital requirements, and facilitates optimal continuation decisions, in staged and syndicated venture capital financing. A fixed-fraction contract is one in which the original "inside" investor finances a fixed fraction of all the firm's investments and receives the same fraction of payoffs. This essay shows that the optimality of fixed-fraction contracts is contingent on the absence of moral hazard in Admati and Pfleiderer's model. Consideration of moral hazard is particularly important in view of the fact that the presence of agency costs in the financing of small and medium sized enterprises is considered to be the primary explanation for the existence of a venture capital market. A superior contractual arrangement is identified: early-stage "inside" venture capitalists employ straight preferred equity and later-stage "outside" venture capitalists employ convertible debt.

Chapter 4. Moral Hazard, Adverse Selection, and Venture Capital Financial Contracting

As the presence of both moral hazard and adverse selection are paramount to the explanation of the existence of a venture capital market, a theory explaining the forms of venture capital finance should
account for the presence of both hidden action and hidden information. This paper puts forth a theoretical framework explaining how alternative forms of finance can reduce the moral hazard and adverse selection costs associated with venture capital financing of small and medium sized developing enterprises. Optimal forms of finance for firms at different stages of development, firms in high technology industries, firms with few employees, *inter alia*, are delineated. The theoretical predictions are tested using Canadian data from 1977 to 1997. The empirical results support the theoretical predictions and identify legal and institutional impediments to efficient venture capital contracting in Canada.

Chapter 5. Venture Capital Exits in Canada and the United States [with Jeffrey MacIntosh]

Venture capital exit vehicles enable, to different degrees, mitigation of informational asymmetries and agency costs between the entrepreneurial venture and the new owners of the firm. Different exit vehicles also affect the amount of new capital for the entrepreneurial firm. Based on these factors, we conjecture the efficient pattern of exits depending on the quality of the entrepreneurial venture, the nature of its assets, and the duration of venture capital investment. We empirically assess the significance of these factors using a multinomial logit model. Our comparative results between Canada and the U.S. provide insight into the impact of different institutional and legal constraints, and suggest that such constraints have distorted the efficient pattern of exits in Canada.

Chapter 6. Settlement Disputes: Evidence from A Legal Practice Perspective

This essay explores the agency relationship between a lawyer and a client in the context of deciding whether to settle a case. The impact of alternative fee arrangements on settlement disputes is empirically assessed in discrete dependent variable econometric models utilizing survey data from lawyers in British Columbia. In contrast to the previous research based on traditional single-task principal-agent models, a broader multitask perspective of a lawyer's practice is explored. More frequent settlement disputes are observed where the handling of disbursements is one-sided, and among lawyers that advertise, use lump-sum billing and pursue jury trials and punitive damages. Disputes are less frequent among lawyers who employ percentage contingency fees and hourly rate contracts with a bonus for successful results. Disputes are also less frequent among lawyers in larger firms. The data also dispel the widely held view that contingent-fee attorneys bear the disbursement costs of going to trial.
Chapter 7.  The Role of Interjurisdictional Shopping in Shaping Canadian Corporate Law [with Jeffrey MacIntosh]

While competitive corporate law production has been well documented in the United States, there is a comparative dearth of Canadian evidence. This article addresses the question of whether the competitive model of corporate law production has operated, or could operate, in Canada. To this end, both the supply side and the demand side of the Canadian incorporation market are critically examined. The theory and empirical evidence indicate that institutional barriers have limited the extent of competitive corporate law production. The Uniformity Hypothesis, which postulates a legislative maximand of uniformity of provincial laws and not revenues derived from incorporation business, is advanced as a more compelling account of the observed pattern of Canadian corporate law reform. The evidence presented herein is consistent with our related research indicating that jurisdiction shopping for corporate charters has not always resulted in gains for shareholders of Canadian corporations.

Chapter 8.  The Rationales Underlying Reincorporation and Implications for Canadian Corporations [with Jeffrey MacIntosh]

In Chapter 7 it was argued on the basis of theory and empirical evidence that interjurisdictional competition has not played a significant role in shaping corporate law in Canada. Nevertheless, there was demand-side econometric evidence of jurisdiction shopping on the basis of incorporation fees and the corporate law reforms in a few Canadian jurisdictions. The purpose of this article is to address two additional demand-side issues pertaining to firms that have reincorporated (i.e., changed jurisdiction of incorporation at least once during their lifetime) in Canada. First, the rationales underlying firms' decisions to reincorporate from one jurisdiction to another are examined. To this end, we analyze the results of a survey sent to firms listed on a Canadian stock exchange that reincorporated after 1975. Second, the issue of whether jurisdiction shopping affects firm value is empirically assessed by means of an event study. Our results indicate that (1) inter-provincial reincorporations tend to be prompted by the transaction costs of carrying on a business, (2) federal reincorporations have a more substantive law-shopping component, and (3) while the effect of jurisdiction shopping by itself on firm value is on average insignificant, certain reincorporation transactions statistically enhance firm value and others are value decreasing.
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Chapter 1. Introduction

This thesis comprises 7 essays that fall under the rubric "Empirical Essays on Agency Costs in Law and Economics". Each essay sets out the theory underlying the agency relationships and how certain legal factors have mitigated or exacerbated the costs associated with their existence. The essays significantly add to the comparative dearth of empirical evidence on agency costs in the law and economics literature.

Chapters 2 through 5 consider a number of agency relationships in the context of venture capital finance. In particular, a bilateral agency relationship exists between venture capitalists and entrepreneurs, and there exists an agency relationship among venture capitalists in syndicated deals. These agency relationships are reviewed in the context of selecting a venture capital financial contract in Chapter 2. Chapter 3 critiques an important paper discussed in Chapter 2 on syndication and venture capital financial contracting. In particular, Admati and Pfleiderer's (1994) fixed-fraction contract is shown to be suboptimal, and a superior contract is identified, when moral hazard is introduced into their model. Chapters 2 and 3 provide an important context for the new evidence introduced in Chapter 4.

Chapter 4 sets out a theory of how agency costs can be mitigated by employing different forms of finance depending on the characteristics of the venture capitalist and the entrepreneurial firm. Empirical tests using aggregate Canadian data are conducted using 3SLS, Durbin-Wu-Hausman tests, and a bootstrap experiment. The empirical results also show how securities legislation and legislation respecting labour-sponsored venture capital funds have diminished the ability of venture capitalists and entrepreneurs to use alternative securities to mitigate agency costs. The theory and empirical evidence offer an altogether unique contribution to the literature by demonstrating that the optimal form of finance depends on the characteristics of the venture capitalist(s), the entrepreneurial firm, and the regulatory environment. The theory and evidence dispel the widely held view (see, e.g., Barry, 1994; Berglöf, 1994; Carter and Van Auken, 1994; Cornelli and Yosha, 1997; Gompers, 1998; Marx, 1998; Neher, 1993; Norton and Tennenbaum, 1992; Pozdena, 1990; Sahlman, 1988, 1990; Silver, 1987; Testa, 1988; Tyebjee and Bruno, 1984; and Wang, 1996) that convertible preferred equity is the optimal form of venture capital finance.

While agency relationships between entrepreneurs and venture capitalists have been a subject of much attention in the literature, there has been a comparative dearth of evidence on the role of venture
capital exit strategies in mitigating agency costs between the entrepreneurial firm and new owners. In Chapter 5, the agency relationships in venture capital finance are further explored in a theoretical and empirical assessment of the factors that affect venture capital exits (the means by how venture capitalists dispose of their investments). Optimal exits mitigate the agency costs between the entrepreneurial firm and the new owners of the corporation. These relationships are considered in detail through a theoretical and empirical examination of the factors that affect the choice of exit vehicle. Multinomial logit econometric techniques are employed. The adverse effect of securities legislation and Labour Sponsored Venture Capital Corporation legislation on Canadian venture capital exits is apparent from the comparative results across Canada and the U.S.

Chapter six explores the agency relationship between a lawyer and client under the following alternative fee arrangements: contingency fees, lump-sum billing, hourly-rate billing, and hourly-rate billing with a bonus for successful results. Interestingly, the theory underlying these relationships is analogous to that in the fourth chapter on the alternative forms of venture capital finance. The impact of these alternative fee arrangements on disputes between a lawyer and a client regarding the decision to settle a case is empirically assessed in discrete dependent variable econometric models that utilize survey data. Other factors analyzed include the handling of disbursements, expected damage awards, punitive damages, percentage caps on contingency fees, the system for handling ex post fee disputes, and other characteristics of the lawyer's practice. The unique empirical evidence fills a significant gap in the literature. Existing empirical research on settlement conflicts (e.g., Thomason, 1991) has focused on the characteristics of each case separately. Chapter six, on the other hand, employs the much broader multitask principal-agent perspective introduced by Holmstrom and Milgrom (1991) in estimating factors that lead to a conflict of interest in settlement. In addition, chapter six provides guidance for the policy debate regarding the formal legitimisation of contingency fees in Ontario.

The agency relationship between managers and shareholders of a corporation is assessed in the final two chapters in the context of choosing a jurisdiction of incorporation. In chapter seven, the extent to which jurisdiction shopping for corporate charters has existed in Canada is empirically assessed in a rigorous study of the supply and demand side of the Canadian incorporation market. The theory and evidence indicates that the competitive model of corporate law production is a weak account for the observed pattern of Canadian corporate law reform. The supply side evidence shows that at best there have only been passive financially motivated corporate law reforms (i.e., to avoid loss of incorporation
business, not to proactively attract incorporation business). The demand side evidence indicates that jurisdiction shopping for corporate charters is not evident in Canada to a degree that would motivate corporate law reform for financial reasons. That is, if corporate law reforms have been financially motivated then we would expect corporations to pay more attention to the reforms that have been implemented. The absence of significant jurisdiction shopping, however, weakens the competitive model as an explanation for Canadian corporate law reform. The Uniformity Hypothesis, under which the legislative maximand is the achievement of corporate law uniformity across the different jurisdictions, is shown to be a more compelling account of the observed pattern of corporate law reform in Canada.

Chapter eight addresses two additional jurisdiction shopping issues. The first is positive: why have firms reincorporated from one jurisdiction to another? This question is answered in an empirical evaluation of the results of a survey sent to TSE firms that reincorporated between 1975 and 1997. The second is normative: should jurisdiction shopping be sanctioned in Canada? To the extent that agency costs exist because managers of corporations are acting in their own self-interest at the expense of shareholders in their choice of jurisdiction of incorporation, the answer is undoubtedly "no". A financial econometric event study that couples the survey data with TSE share price data is used to test for the presence of agency costs. The evidence delineates where agency problems are manifest in reincorporation transactions when the reincorporation transaction (1) facilitated additional public financing (a result consistent with Myers and Mjulf, 1984), (2) facilitated greater managerial flexibility, and (3) imposed a higher percentage of unrelated directors to a firm's board. Importantly, the evidence in Chapters seven and eight are complementary. If the competitive model of corporate law reform has not operated in Canada then we would not expect to observe value maximizing reforms to be implemented across the Canadian jurisdictions (Romano, 1987). Under the Uniformity Hypothesis where jurisdictions would adopt reforms irrespective of financial considerations, optimal corporate laws do consistently necessarily result. As such, it is not surprising that share prices sometimes decrease upon announcement of reincorporation. In contrast, in the United States where there has been much more vigorous corporate law production, the evidence consistently indicates that share prices have risen around the event of reincorporation (Romano, 1985).

The essays in this thesis extend previous research by demonstrating the importance of context in the empirical estimation of agency costs. For example, whereas previous research has consistently predicted that convertible preferred equity is the optimal form of venture capital finance, the fourth
chapter shows that the optimal form of finance depends on the characteristics of the transacting parties and the legal environment in which they operate. In addition, chapter four provides the first empirical evidence on forms of venture capital finance. The fifth chapter demonstrates that optimal venture capital exit strategies depend on the nature of the entrepreneurial firm and legal and institutional differences between Canada and the United States. The sixth chapter provides unique evidence regarding the importance of a multitask principal-agent perspective in assessing the factors that cause settlement conflicts between a lawyer and a client. Finally, essays in chapters seven and eight demonstrate that the presence of agency costs in reincorporation is transaction specific and depends on the factors affecting corporate law reform. Moreover, the essays show that the pattern of Canadian corporate law reform has been driven by different factors than that underlying corporate law reform in the United States. In sum, the essays demonstrate that the presence of moral hazard and adverse selection depends not only on the characteristics of the transacting parties, but also on the legal and institutional constraints binding the parties.
Chapter 2: Capital Structure and Entrepreneurship: A Review of the Literature

2.1. Introduction

This literature review focuses on agency costs, including both moral hazard and adverse selection, as they pertain to the choice of form of finance in venture capital contracts. Insights into venture capital financial contracting are also gleaned from the literature on the interplay between agency costs and corporate capital structure. The analysis of the effect of agency costs on the form of finance is organized as follows. A definition of the various financing instruments is provided in section 2.2. Section 2.3 briefly reviews the meaning of moral hazard and adverse selection. In section 2.4 we restrict our attention to only debt and common equity financing offers in the initial investment stage in order to highlight the basic trade-offs between debt and equity. To this end, the important work of Amit et al. (1997) and Noe and Rebello (1996) is reviewed in detail.

In section 2.5 and throughout the remainder of the paper, financing offers may be in the form of debt, convertible debt, preferred shares, convertible preferred shares, common shares, or any combination of these instruments. Section 2.5 focuses on three papers on the role of convertible securities. The section begins with the important idea explained by Farmer and Winter (1986) that while agency costs cannot completely be eliminated by the use of options, agency costs can nevertheless be mitigated by options. The application of this principle in the context of venture capital finance by Sahlman (1988, 1990) and Marx (1998) is then reviewed. Essentially, the work by both Sahlman and Marx is based on the idea that "[s]ince intervention by the venture capitalist is sometimes efficient and contracts can provide proper incentives for intervention to occur when and only if it is efficient, it is optimal to give the venture capitalist the right to intervene". Finally, section 2.5 reviews the important role of convertible securities in mitigating risk-shifting costs (Jensen and Meckling, 1976; Green, 1984).

Venture capitalists are long-term investors (typically 3 to 7 years) that invest with a view to obtaining significant capital gains. As such, it is not surprising that their contracts may be structured with eventual exit in mind (Cumming and McIntosh, 1999a; Berglöf, 1994; Sahlman, 1990; MacMillan et al., 1985). Importantly, Berglöf (1994) recognized that the issue of exit gives rise to trilateral bargaining problems in the sense of Aghion and Bolton’s (1992) seminal paper. Berglöf showed that there is a role for convertible debt and convertible equity when the entrepreneur has an incentive to give up control
rights in order to lower the cost of outside finance. Berglöf’s thesis is reviewed in detail in section 2.6.

Section 2.7 considers two papers that discuss the role of convertible securities in mitigating agency costs; however, in contrast to sections 2.5 and 2.6, the theories in section 2.7 are developed in the context of staged financing. Staged financing involves periodic capital commitments whereby the venture capitalist does not commit all of his or her funds to the project at the outset. A staged contract enables the VC to provide financing on an as-needed basis in order to facilitate monitoring and reduce agency costs. Wang (1996) and Cornelli and Yosha (1997) argue that there are strong rationales for the use of convertible securities when capital commitments are staged.

In addition to being staged, venture capital contracts may also be syndicated. In other words, more than one venture capitalist may be involved in the financing of a particular entrepreneurial venture. Syndication is particularly desirable where there are significant growth opportunities for a firm because of the potential for hold-up problems (Rajan, 1992; Houston and James, 1996; Hooks and Opler, 1993). In order to mitigate agency costs among syndicated investors, Admati and Pfleiderer (1994) show that a fixed fraction contract is optimal whereby the payoff to the “inside” venture capitalist is independent of the payoff to “outside” venture capitalists. The particulars of these ideas are outlined in full in section 2.8.

In section 2.9 the distorting effect of Canadian securities regulation on the design of financial contracts is assessed. To this end, the important work by MacIntosh (1994) is reviewed. A summary follows in section 2.10.

2.2. The Financial Instruments

The following financing instruments have become commonly employed in the venture capital industry: straight debt, convertible debt, straight preferred equity, convertible preferred equity, common equity, and combinations thereof. Straight debt holders have priority over all other claimants in the event of bankruptcy. Debt holders are fixed claimants in non-bankruptcy states, but residual claimants in bankruptcy states. Debt holders typically receive periodic pre-specified interest payments and can force

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2 Hold-up problems will be particularly acute for firms with substantial growth opportunities and substantial intangible
the firm into bankruptcy in the event of non-payment of interest and/or principal at the pre-specified date. Convertible debt has the same features as straight debt; however, it is also convertible into common equity at a pre-specified price. Common equity holders have the lowest priority in bankruptcy and are residual claimant in both bankruptcy and non-bankruptcy states. Dividends are not pre-specified under common equity contracts.

Preferred equity holders have priority in bankruptcy after debt claimants, but superior priority over common equity claimants. Preferred equity holders are fixed claimants in non-bankruptcy states and residual claimant in bankruptcy states. Dividend payments are pre-specified under preferred equity contracts. In contrast to debt claimants, preferred equity claimants cannot force the firm into bankruptcy in the event of non-payment of dividends, but they are entitled to the cumulative stream of pre-specified dividend payments prior to any common equity dividend payments. Convertible preferred equity contracts have the same features as straight preferred equity contracts with the added feature that they can be converted into common equity at a pre-specified rate.

The focus herein is on these five standard financial instruments. There is a broader contract space. For example, convertible debt is a hybrid bond that allows its bearer to exchange it for a given number of shares of common stock anytime up to and including the maturity date of the bond. A convertible bond is equivalent to a portfolio of 2 securities: (1) straight debt with the same coupon rate and maturity as the convertible bond, and (2) a warrant written on the value of the firm. A broader contract space, however, is not considered herein for a number of reasons. Papers that do consider a broader contract space (e.g., Aghion and Bolton, 1992), yield optimal contracts that resemble the standard financial instruments. The fact that the standard instruments in corporate finance are used most frequently suggests that considerable gains arise from standardization, and greater transaction costs arise from designing contracts to mimic the standard forms of finance (Berglöf, 1994; Macdonald, 1992). Additional reasons for concentrating on the five standard forms of finance are discussed in chapter 4.

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3 A warrant is a security issued by the firm in return for cash. It promises to sell m shares (usually one share) of stock to an investor for a fixed exercise price at any time up to the maturity date. Therefore a warrant is like an American call option written by the firm. It is not exactly the same as a call because, when exercised, it increases the number of shares outstanding and thus dilutes the equity of the stockholders.

4 Farmer and Winter (1986, p.1161) note that "[a]ny piece-wise linear, continuous sharing rule can be implemented by the issuance of debt, and a finite number of call options (or put options)". But note that there are very different incentive consequences of convertible debt relative to warrants issued with debt in discrete time versus continuous time contexts (Green, 1984). For the effects to be the same, the spanning portfolio must be revised at every instant.
2.3. Moral Hazard and Adverse Selection Theory

This section introduces the concepts of moral hazard and adverse selection. A well-known result from moral hazard theory is that an agent's (the entrepreneur's or the venture capitalist's) effort is an increasing function of his or her residual claim (i.e., share in the profits) to the project:

Principle 1  *An agent's effort is an increasing function of his or her residual claim to the venture.*

The intuition behind Principle 1 is straightforward. The risk-averse parties (the entrepreneur and the VC) take unobservable actions that affect the stochastic distribution of the size of the pie to be divided between them. The effort of each party yields a positive externality on the other party, but such effort is costly to both parties. As such, where the probability of bankruptcy is trivial, the entrepreneur's [venture capitalist's] effort into a venture is an increasing [decreasing] function of the relative amount of debt to equity provided the venture capitalist. A sharing rule that provides a greater equity share to the VC yields more [less] VC [entrepreneurial] effort.

The probability of bankruptcy may be non-trivial, in which case a VC that provided debt financing is a residual claimant in bankruptcy states. Therefore, where there is a non-trivial probability of bankruptcy, Principle 1 implies that the VC's effort will be positively related to the total amount of debt financing that the VC contributes to the project. This is in contrast to non-bankruptcy states whereby VC effort is positively related to the equity sharing rule (the VC's ownership stake in the firm).

The addition of adverse selection to moral hazard complicates the analysis but also suggests there may be more desirable forms of financing depending on how the venture capitalist perceives the characteristics of the entrepreneur. In a world with both hidden information and hidden action, the form of financing chosen will depend on the cumulative density functions of market uncertainty and project

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6 Optimal effort levels where the gains to additional effort are fully internalized by each party cannot be achieved by options in financial contracts (Farmer and Wimer, 1996). Nevertheless, incentive schemes to alleviate the bilateral moral hazard problem in a variety of contractual settings have been the subject of much research in industrial organization; Tirole, *ibid.*, at p. 178. See, e.g., Holmström (1982) on the use of a third party to make the other parties residual claimants.
quality. An important result from adverse selection theory is that the distribution of project qualities depends on the type of financing offered by the venture capitalist; see Principle 2.

Principle 2 In a venture capital financial market with both hidden action and hidden information, debt financing attracts relatively more low quality (i.e., riskier) projects than common equity financing.

The intuition behind Principle 2 is based on the seminal work of Stiglitz and Weiss. Relative to more established firms, small and medium sized firms are charged high interest rates on their loans from banks, and even higher rates from venture capitalists (Riding, 1997; Riding and Haines, 1994; Wynt and Hatch, 1990; Oser et al., 1993). As interest rates increase, the mix of entrepreneurs seeking financing becomes worse. Low quality entrepreneurs are willing to borrow at high interest rates because they perceive their probability of repaying the loan to be low. High interest rates induce entrepreneurs to undertake projects with lower probabilities of success but higher payoffs when successful. Similarly, under debt financing entrepreneurs can take on excessively risky projects and thereby transfer wealth from debt-holders (VCs) to equity-holders (themselves). This may induce low-quality high risk entrepreneurs to pursue ventures that they might not otherwise have pursued under common equity financing (Principle 1; Stulz, 1990; Leland and Pyle, 1977). Stiglitz and Weiss' framework therefore implies that in the presence of pure adverse selection and in the absence of moral hazard, equity is the optimal form of finance (Stiglitz and Weiss, 1981, at pp.40-408; de Meza and Webb, 1987, at p.291).

In contrast to debt, equity provides venture capitalists with greater managerial participation and monitoring capacity, among other things, such that venture capitalists are better able to resolve information asymmetry and reduce risk shifting, asset stripping and underinvestment (MacIntosh, 1994.

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7 It is important to recognize, however, that there exists other theories such as de Meza and Webb (1987, 1992), which suggest offers of equity finance attract the worst projects. The conflicting results are due to different assumptions regarding risk distributions across firms: Stiglitz and Weiss assumed mean-preserving spreads of project risk, whereas de Meza and Webb assumed expected returns differed across projects. De Meza and Webb's assumptions yield an overinvestment equilibrium, whereas Stiglitz and Weiss' assumptions yield an underinvestment equilibrium. Stiglitz and Weiss' framework appears to be a more accurate depiction of the market for small and medium enterprises (see, e.g., MacIntosh, 1994; Riding, 1997).

8 See Jensen and Meckling (1976), Myers (1977), Green (1984) and Trebilcock et al. (1985). In the presence of limited liability entrepreneurs may also engage in asset stripping, such as excessive dividends and managerial compensation, in the event of bankruptcy to transfer wealth from debt-holders to equity holders (Halpern et al., 1980; Petit and Singer, 1985). In addition, there is an underinvestment problem around the time of bankruptcy as entrepreneurs lack incentive to adopt all positive NPV projects because most or all of the benefit accrues to debt holders (Trebilcock et al., 1985). Small and high-technology firms also have few assets for collateral; therefore, there are few contractual methods to reduce the agency costs associated with debt (MacIntosh, 1994, p.76).
Offers of equity financing tend to be accepted by entrepreneurs with projects where the participation of the venture capitalist has the potential to significantly enhance the returns to the project and the entrepreneur is still inclined to go ahead when equity is issued.

Adverse selection costs are particularly important for venture capitalists. As discussed by Sahlman (1988, 1990), VCs care about both systematic risk (i.e., the correlation between overall market performance and the returns to the venture), as well as unsystematic risk (i.e., risk particular to the firm itself, such as the managerial expertise of the entrepreneurs). VCs actively monitor their investments. Given that they spend a great deal of time monitoring their investments, VCs will not always hold a fully diversified portfolio of investee firms (Barry, 1994). As a result, in addition to systematic risk, the unsystematic risk of a potential investee firm is also extremely important for VCs.

Given the extra adverse selection costs associated with debt financing (Principle 2), why would a venture capitalist ever use debt financing? The entrepreneur's effort is more often than not a crucial element in the success of a project and debt financing yields greater entrepreneurial effort (Principle 1). It is therefore important for venture capitalists to consider the trade-off between moral hazard and adverse selection costs when selecting the financial contract for a prospective entrepreneur. The following sections review papers that have considered this trade-off.

### 2.4. Straight Debt and Straight Common Equity

Few studies simultaneously consider the effect of moral hazard and adverse selection on optimal capital structure. Amit et al. (1997) and Noe and Rebello (1996) have recently attempted to fill this gap. This section reviews these two studies in turn.

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* It has been argued that in the presence of asymmetric information, debt financing signals more favourable information about the firm's investment prospects relative to a new equity issue in a public equity market (Myers and Mjulf, 1984). That is, since new equity issues result in a dilution of the benefits associated with future investment opportunities, a new public equity issue may be interpreted as a signal of no promising future investment opportunities. Myers and Mjulf's proposition, however, is not directly applicable in the case of venture capital finance of small and high-technology firms. In contrast to investors in public equity markets, venture capitalists are active investors who, with equity incentives, will provide input to increase the returns to the venture (Principle 1). Dilution of current entrepreneurial equity interests may therefore be associated with an increase in investment opportunities, thereby dismissing the relevance of Myers and Mjulf's proposition in the context of venture capital finance.
Amit et al. (1997) consider a four-stage model of venture capital finance with moral hazard and adverse selection in the presence of limited liability. The entrepreneur, banks (external lenders) and the venture capitalist (VC) comprise the (risk-neutral) players. The entrepreneur has a project that requires funding. They consider an ex ante agency contracting framework in which the parties make a contract, effort decisions are made, and then uncertainty is revealed. There are two types of uncertainty: market uncertainty, and project quality uncertainty. The imposition of market and quality uncertainty enables consideration of both moral hazard and adverse selection costs. While all players in the model face market uncertainty, only the entrepreneur knows ex ante the quality of his or her own project. (Project $\alpha$ is of higher quality than project $\beta$ if the returns to $\alpha$ second-order stochastically dominate the returns to $\beta$; see Principle 2 discussed above.) The venture capitalist does not know the quality of the entrepreneur’s project, but does have an idea about how quality is distributed across entrepreneurs. Because of a lack of collateral (together with limited liability) and a lack of a track record, investors in the venture capital industry are more vulnerable to problems arising from informational asymmetries. The entrepreneur, on the other hand, does know the quality of the project.

Sequential rationality is assumed and therefore the multistage model is solved by backward induction. In the first stage the venture capitalist makes a financing offer (i.e., chooses equity participation and a sharing rule) which can either be accepted or rejected by the entrepreneur. If the financing offer is accepted then in the second stage the entrepreneur selects his or her own equity contribution and external borrowing. In the third stage, the entrepreneur chooses his or her own effort level. Finally, uncertainty is revealed and market returns are distributed.

Amit et al. (1997) assume (1) the venture capitalist only offers equity finance; (2) offers are accepted or rejected (i.e., there is no bargaining); (3) venture capitalists and entrepreneurs are risk neutral; (4) the venture capitalist does not provide any managerial input;\(^{10}\) and (5) financing is neither staged nor syndicated. This enables the authors to derive an analytic solution for the amount of equity financing provided by the venture capitalist and external debt financing provided by banks. However,

\(^{10}\) Although venture capitalists are generally active investors that closely monitor their investments and provide managerial input into their investments (in areas of managing, finding suitable legal advisors, strategic partners, underwriters, suppliers, marketing, inter alia; see MacInnis, 1994), Amit et al. (1997) assume that the venture capitalist cannot increase the expected returns to the venture through greater VC effort.
Amit et al.'s theory does not account for the fact that venture capitalists provide a mix of financing; financing can only be provided in the form of equity. Noe and Rebello (1996), on the other hand, do allow for financing offers to be in the form of either debt or common equity.

Noe and Rebello (1996)

Noe and Rebello's (1996) recent work made a first step towards developing a theory of optimal capital structure that combines the predictions from the literature on moral hazard and adverse selection in the context of debt and common equity financing. Although their model focuses on the agency relationship between managers and shareholders in firms with publicly traded equity, their model is nevertheless applicable to venture capital financing. Note that while Noe and Rebello's analysis distinguishes between manager-controlled firms and shareholder-controlled firms, the shareholder-controlled firm is more analogous to the context of VC financing (i.e., the VC determines the financial policies of the entrepreneurial firm; see McIntosh, 1994).

Shareholder-Controlled Firms

In the absence of informational asymmetries regarding firm quality, moral hazard determines the optimal form of finance. Noe and Rebello focus on the role of debt, together with the absence of internal finance, in improving the bargaining position of shareholders relative to management. That is, debt financing increases the threat of financial distress. Internal finance, on the other hand, increases firm solvency and therefore limits shareholder bargaining power. Shareholders are therefore interested in minimizing moral hazard (with the managers qua agents) via a strategy that minimizes internal finance (i.e., high dividends) and maximizes competitively-priced external debt financing.

In the presence of both moral hazard and adverse selection, a reduction in dividends or debt and increase in equity finance may be optimal. The following Principle (based on Noe and Rebello, 1996, Proposition 3) delineates when common equity will be issued. Note that debt financing leaves the entire residual claim to the venture in the hands of the entrepreneur (in non-bankruptcy states) and therefore, by

Noe and Rebello assume there exists two states of nature (high and low) and two managerial quality levels (good and bad). Their set up is a discrete version of the more general set up of Amit et al. (1997) with continuous distributions of market and quality uncertainty; however, in contrast to Amit et al. where the VC only employed common equity financing, Noe and Rebello's
Principle 1, entices greater effort from the entrepreneur. (Specifically, Noe and Rebello interpret greater equity financing as lowering the threat of financial distress and thereby increasing managerial rent concessions.) At the same time, however, there are greater adverse selection costs associated with debt financing (Principle 2).

Principle 3  
*If the adverse selection costs are relatively small, i.e.*,  

\[
\text{External Financing Needs} \quad < \quad \text{Moral hazard effect of debt finance}
\]

\[
\text{Internal Funds} \quad \text{Adverse selection costs of debt finance}
\]

Then the firm will finance with debt and will pay some dividends if it has favourable information.

The inequality in Principle 3 is likely to be satisfied when adverse selection costs are small. When adverse selection is more problematic, the firm is forced to employ more costly vehicles that signal favourable information. This may be done by either issuing equity or by issuing securities at prices below their intrinsic value. First, the substitution of equity for debt finance increases concessions to managers. However, this moral hazard effect never completely induces a preference on the part of inside owners to "give away" some of the cash flows to outside investors by underpricing. Thus, underpricing is not necessary when adverse selection is not so severe such that equity financing alone is sufficient to signal information; a mixture of debt and equity financing (without dividends) is the firm's optimal policy (see Noe and Rebello, Proposition 4). However, underpricing\(^\text{12}\) is necessary when adverse selection costs are severe if the firm wants to signal its favourable information (see Noe and Rebello, Proposition 5).

Note that both Noe and Rebello's hierarchy and Myers and Mjulfs's (1984) pecking order hierarchy both suggest debt financing is more desirable than equity financing. However, the hierarchical position of internal finance is different in Noe and Rebello's and Myers and Mjulfs's analysis. Internal finance is at the top of Myers and Mjulfs's pecking order. Noe and Rebello place external finance is placed at the top of the hierarchy; internal finance is used only when adverse selection costs are significant. Internal finance is undesirable in shareholder controlled firms because internal finance increases solvency and therefore reduces the effectiveness of debt in extracting managerial rents. That is, set up enables an assessment of the impact of moral hazard and adverse selection costs on the use of debt and equity financing.

\(^\text{12}\) Because of Noe and Rebello's simplifying distributional assumptions, the firm is indifferent between issuing equity and debt when it is forced to underprice securities.
internal finance reduces the effectiveness of debt in moral hazard with the manager qua agent.

In sum, the financing hierarchy in shareholder-controlled firms is as follows: external debt finance, internal funds, equity finance, and lastly, underpricing. Shareholder controlled firms will be forced to use less desirable forms of finance where managerial moral hazard is significant, informational asymmetry is significant, and where the firm has limited internal financing capability.

Noe and Rebello's model has a number of implications for shareholder controlled firms. First, shareholders accept increased managerial moral hazard associated with equity finance only when adverse selection costs are high; therefore, debt signals less favourable information than equity. Second, shareholders reduce dividend payouts only when adverse selection costs are significant; therefore, a reduction in dividend payouts signals favourable information. Third, shareholder-controlled firms will be forced to rely more heavily on equity financing when they lack internal financing (because they cannot use the less costly signal of reducing dividends).

Manager-Controlled Firms

The above analysis focused on the case of shareholder-controlled firms. Now consider the case of manager controlled firms. Managers face a trade off of increased rents (a benefit) against adverse selection (a cost). As a result, manager-controlled firms may have a different signalling hierarchy than shareholder-controlled firms. Debt financing is not optimal as a result of the adverse selection costs associated with debt (see Principle 2 above). Lower dividends reduce managerial rent concessions because there is less reliance on external capital. Lower dividends also reduce the need to misprice securities. Equity issuance also limits managerial rent concessions but does not reduce mispricing; therefore, equity issuance is more costly than dividend reduction. As such, managerial controlled firms prefer financing with dividend reductions over equity financing.

Noe and Rebello's model has significant implications for managerial control. First, dividends will increase only when adverse selection costs are high; therefore, high dividends convey favourable information. Second, managers will only finance with debt (and therefore lower their rent concessions due to the threat of financial distress) only if adverse selection costs are pronounced; therefore, increased debt signals favourable information. Third, manager-controlled firms will rely more heavily on debt only
when they lack internal sources of funds and are unable to signal favourable information more cheaply by increasing dividends.

**Implications from Noe and Rebello's Model**

Some general implications from Noe and Rebello's model are as follows. First, significant informational asymmetry will lead to greater cross-sectional dispersion in financing policies as firms try to signal favourable information by changing their financial policies. Second, very pronounced informational asymmetries will induce underpricing. Third, because debt financing increases the threat of financial distress and reduces managerial moral hazard, shareholders prefer debt but managers do not.

Noe and Rebello suggest some ways in which the theory can be tested. First, there are a number of proxies for informational asymmetries, such as a firm's size and age (younger and smaller firms have greater informational asymmetries; see Barclay and Smith, 1995). Similarly, the number of analysts following a firm's stock and whether or not the firm has been rated by a rating agency will affect informational asymmetry (Best and Zhang, 1993). High R&D expenditures also proxy significant informational asymmetry (Helwege and Liang, 1994) because it is more difficult to evaluate high-technology output (MacIntosh, 1994). As managerial rents are proportional to the manager's unique contributions to the firm, the greater the relationship-specific (as proxied by, e.g., the managers' tenure) capital, the greater the managerial rents. In addition, higher levels of asset intangibility (which are harder to value and replace) will proxy for the magnitude of managerial rents (Hart and Moore, 1994). High Tobin's Q ratios can also proxy the degree to which human capital contributes to firm value.\(^\text{13}\)

2.5. Convertible Preferred Equity and Convertible Debt

In the previous section only two types of VC finance were considered: common equity and debt. Common equity, preferred equity, convertible preferred equity, convertible debt, debt and combinations thereof are considered herein. The availability of alternative forms of finance enables certain VCs and entrepreneurs to construct Pareto dominant contracts relative to that which would be possible in a world in

\(^{13}\) Relatedly, the collateralizability of the firm's asset base can proxy moral hazard because collateral values are usually based on the extra-firm value of the asset rather than the value of the asset in the hands of current management. Therefore, low collateral values can proxy significant managerial rents. Asset collateralizability itself may be proxied by depreciation charges (Kale, Noe and Ramirez, 1991).
which there is only common equity and debt. In other words, an increase in the number of available forms of financing cannot make VCs and entrepreneurs worse off and will frequently make at least one of the contracting parties better off. If the VC contributed a significant amount of funds to the venture in a world with market and quality uncertainty, then agency costs can be mitigated by selecting a form of financing other than straight debt or straight common equity. In other words, when debt and equity are being used optimally in the sense of Principle 3 above, the addition of a third security can still make the entrepreneur and venture capitalist strictly better off whenever moral hazard costs are nontrivial. For example, Farmer and Winter (1986) show that options cannot eliminate agency costs, but nevertheless have a role in mitigating agency costs. Options provide managers with a higher return in some states, but induce higher effort across all states. A higher residual claim to the manager in the high-output state is also facilitated by the fact that the shadow cost associated with the financing constraint of increasing the manager's share is lower in the high-output state.

In venture capital financing the entrepreneur and a venture capitalist develop a close relationship, and where information regarding the project's quality is gradually revealed to both parties (Sahlman, 1988, 1990). Explanations for the use of convertible securities that focus on the fact that these instruments are relatively insensitive to variations in the riskiness of the underlying assets (e.g., Brennan and Schwartz, 1988; Harris and Raviv, 1985; Stein, 1992; Nyborg, 1995; Brennan and Kraus, 1987; Brennan and Schwartz, 1988; Constantinides and Grundy, 1990) are therefore often better suited towards publicly traded corporations relative to venture capital financing. Important exceptions include Green (1984), where convertible debt affects the inclination of the entrepreneur to engage in risky projects, and is therefore particularly useful in start-up financing situations, and Cornelli and Yoshia (1997) who focus on the use of convertible debt in mitigating window dressing in staged venture capital financing. Marx (1993) argues that when the venture capitalist is risk averse, convertible preferred equity dominates both only equity and only debt financing by generating the right incentives for the venture capitalist to intervene in the project as a response to poor performance. Berglóf (1994) focuses on the control aspect of convertible instruments as convertibility options allow the parties to contract on nonverifiable but observable information (discussed below). These papers which are pertinent to the venture capital context are discussed in more detail below.

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Note that it is not the case, as Haugen and Senbet (1981, 1986) argued, that agency costs can be reduced to zero with a single option.
Sahlman (1988, 1990)

Sahlman argues that convertible preferred equity is the optimal form of venture capital finance for a number of reasons. First, it enables some income from an investee that is only marginally successful. In particular, VCs take control over poor performing investees and therefore determine when dividend payments are made. When the entrepreneur decides that the burden of paying dividends is too onerous, the entrepreneur will typically try to buy out the VC's preferred shares. Second, convertible preferred shares are often liquid since they typically provide the VC with the right to force redemption of the preferred stock or to put the stock to the company. This option may be exercised if the company is financially viable but too small to go public. Third, convertible preferred equity contracts typically specify that the VC can sell his shares at the same time and on the same terms as the entrepreneur, which prevents situations in which the entrepreneur sells his shares before the VC. Fourth, flexible conversion terms can be incorporated into convertible preferred equity contracts. This can benefit the VC-entrepreneur relationship since the risk-and-reward-sharing scheme can be designed to meet the parties' needs. The conversion ratio will often be based on the company's performance such that the conversion price is higher the better the company's performance, thereby providing the entrepreneur with incentives to work. Fifth, convertible preferred equity also serves as a screening device because it shifts the risk of poor performance from the VC to the entrepreneur (the VC is entitled to a larger share of total value if total value is low). If the entrepreneur were not truly confident of his own abilities and deeply committed to the venture then the entrepreneur would not accept the terms of the contract.

Sahlman (1990) also argues that there is an indirect tax advantage to using convertible preferred equity. The issuance of convertible preferred equity lowers the economic value of common equity. Therefore, when the entrepreneur's taxable income is paid in common equity, the entrepreneur's tax is lower.

Marx (1998)

Marx's (1998) attention is devoted to the idea that there are only certain situations when the VC

14 See also Berglöf (1994, discussed below).
15 For example, Gompers (1998, Table 4) reports that 38 percent of a sample of 50 convertible preferred equity contracts included automatic conversion covenants where conversion would take place prior to an IPO exit if annual income
will be interested in contributing effort to the entrepreneurial firm (i.e., "venture capitalist intervention"). Marx assumes that the VC can increase the returns to only poor quality projects (i.e., expected return is first-order stochastically dominant upon intervention into only poor performing projects). Intervention is not cost-free because the VC has to put forth costly effort and the entrepreneur loses the benefit of control. As such, under a straight debt there is excessive VC intervention into poor performing projects by the VC because the VC is the sole residual claimant in bankruptcy states (see the text accompanying Principle 1 above). There is too much intervention because the VC considers his benefits and costs without internalizing the entrepreneur’s. Similarly, under straight common equity there is too little VC intervention in poor performing projects because the venture capitalist bears the full cost of intervention but shares the gain with the entrepreneur. In contrast, under convertible preferred equity the VC’s payoff can be specified such that the VC will choose the efficient intervention strategy.

There are two major problems with Marx’s paper. First, Marx assumes that intervention by the venture capitalist can prevent some bad returns but cannot affect the probabilities of high returns. This is a completely inaccurate depiction of the venture capital market; see MacIntosh (1994) and Amit et al. (1997). This assumption effectively drives Marx’s results. As discussed above, while pure debt gives the VC too great an incentive to intervene, and pure equity too little, the convertible preferred equity sharing rule facilitates the optimal level of intervention. Since intervention by the venture capitalist is only sometimes efficient and contracts can provide proper incentives for intervention to occur when and only it is efficient, it is optimal to give the venture capitalist the right to intervene (i.e., a convertible preferred equity contract). What if the VC also added value to high-quality firms (e.g., in the going public process; see Cumming and MacIntosh, 1999)? Second, Marx interprets the mixed debt-equity sharing rule as equivalent to a convertible preferred equity contract. That is, the efficient sharing agreement for the project’s return is generated by selling debt and equity to the venture capitalist. However, a mixed debt-equity contract is significantly different from an option contract (this point is discussed throughout this literature review and my thesis chapter entitled "Moral Hazard, Adverse Selection and Venture Capital Financial Contracting").

Jensen and Meckling (1976) and Green (1984)

Risk shifting arises under debt contracts because the entrepreneur has an incentive to undertake...
excessively risky actions which increase the entrepreneur's (residual claimant's) expected wealth. Residual claimants to a firm's assets have an incentive to pursue excessively risky projects to transfer expected wealth from fixed claimants to residual claimants because in favourable states the residual claimant benefits and in bad states the fixed claimant loses. Jensen and Meckling (1976) argued that because an option's value is an increasing function of the entrepreneurial firm's variance, convertible debt holders will be less concerned than straight debt holders about the possibility that entrepreneurs may undertake risky projects, thereby increasing the risk of bankruptcy. The option to convert allows fixed claimants to participate in the value created if riskier projects are undertaken.

Green's (1984) contribution was to formalize Jensen and Meckling's (1976) argument and explicitly show the role of convertible securities in mitigating risk shifting. Green (1984) abstracts from agency conflicts between equity holders and management ("insiders") and focuses on the incentive effects of limited liability when additional capital is needed for investment. Note that perfect monitoring eliminates all excessive risk-taking by insiders at the expense of debt holders. With sub-perfect monitoring, however, convertible securities only facilitate a 'second-best' solution in which there is still excessive risk taking. (While options mitigate agency costs, they do not eliminate agency costs; see also Farmer and Winter, 1986.)

2.6. Trilateral Bargaining and Convertible Securities

Berglöf (1994)

The importance of exiting investments has been well documented (Cumming and MacIntosh, 1999a; Berglöf, 1994; Sahlman, 1990; MacMillan et al., 1985). Depending on the type of firm and availability of a suitable exit vehicle (such as an IPO, acquisition, secondary sale or buyout), venture capitalists typically invest in a firm for 3 to 7 years. As venture capitalists inevitably exit their deals in view of obtaining significant capital gains, one might reason that contracts are structured with eventual exit in mind. The importance of exit relates to the general class of trilateral bargaining problems, those in which one party arrives after the others (as described in Aghion and Bolton's seminal paper). The entrepreneur has the greatest incentive to give up control of the firm to lower the cost of outside finance when the entrepreneurial firm is doing poorly. The situation of the entrepreneur is enhanced (as bankruptcy is avoided) and the situation of the original venture capital investor is worsened (the
entrepreneurial firm's assets -- which are difficult to value by a court -- may be stripped by the new controlling party. (That is, although the state of nature cannot be assessed by a court, it can be assessed by the parties involved; see Tirole, 1998, p.26.)

Convertible contracts mitigate against such trilateral bargaining problems. The key insight is that the entrepreneur's interest in giving up control of the firm is contingent on the state of nature. In bad states of nature the entrepreneur wants to give up control and asset stripping is likely to result; therefore the VC wants to retain control in bad states. In good states the VC wants to capture some of the up-side potential. Moreover, in good states the VC may want to prematurely exit the investment at the expense of the entrepreneur (see, e.g., Gompers, 1995). Convertible contracts allow the parties to contract on the state of nature to protect against the incentives of two parties contracting with a third party to extract surplus from each other.\footnote{Mixes of debt and equity also reduce agency costs but such contracts are inferior to convertible contracts (Bergløf, 1994, Proposition 5).} The convertibility option enables the VC to retain control in bad states and the entrepreneur to retain control in good states such that trilateral bargaining problems are mitigated. In the absence of convertible securities, the VC faces a trade-off between being able to capture up-side potential (under common equity financing) in good states and protection against dilution (under debt financing) in bad states. Bergløf does show that a mixed debt-equity contract is superior to straight debt and straight common equity. However, a convertible contract more completely mitigates trilateral bargaining by enabling different control allocations in different states of nature. While previous research had investigated how the prospect of firm failure may affect capital structure (e.g., Aghion and Bolton, 1992; Zingales, 1991; Grossman and Hart, 1988),\footnote{Aghion and Bolton (1992) identified the trilateral bargaining problem. Grossman and Hart (1988) investigated the allocation of votes among equityholders of a widely held firm. Zingales (1991) applied Grossman and Hart's model to the} such research had not identified the role of convertible contracts in mitigating trilateral bargaining.

Caution is warranted in interpreting Bergløf's results for an number of reasons. First, the apparent optimality of convertible contracts noted by Bergløf (1994) has also been documented by, for example, Barry (1994), Carter and Van Auken (1994), Gompers (1998), Marx (1998), Neher (1993), Norton and Tenenbaum (1992), Pozdena (1990), Sahlman (1988, 1990), Silver (1985, 1987), Testa (1988), Tyebjee and Bruno (1984) and Wang (1996). It is important to note, however, that convertible preferred equity and convertible debt have never been the most common form of VC finance in Canada (see chapter 4 of this thesis). Bergløf's theory also fails to account for the changing intensity in the use
of different securities over time. Second, Berglöf’s theory is incomplete as it focuses on the agency problems upon exit and does not account for the role of financial instruments in mitigating agency costs between the entrepreneur and the VC at the initial contracting stage, or in the context of staging and/or syndication. Third, control transfer through convertibility options may be costly (e.g., failure to meet debt payments may be an imperfect signal of the state of nature). Fourth, since the sale of the firm is a verifiable event, contracts could be made contingent on sale. For example, the consent of both parties may be required in a VC contract before sale of the firm can be effected (for example, through shotgun clauses\(^{20}\)). Finally, a number of restrictions have been imposed on the contracting problem. For example, to simplify the model, Berglöf has focused on the case where the probability of a buyer occurring is exogenous, but the adverse selection literature suggests that the choice of capital structure will effect the likelihood of a buyer reappearing.\(^{21}\)

These comments should not be taken to suggest that exit has no role in shaping the form of finance employed in a VC contract. Rather, the role of the form of finance in mitigating agency costs at the exit stage must be viewed by the contracting parties to be more important than the role in mitigating other agency costs. For example, in a syndicated deal, convertible contracts may be suboptimal (see discussion of syndication below) even though the VCs will exit the investment. In light of this, the role of convertible contracts in mitigating agency costs associated with exit will depend on whether the agency costs associated with exit are viewed as the paramount consideration. This in turn depends on the characteristics of the entrepreneurial firm. In particular, as discussed in Berglöf (1994) and described above, where an entrepreneurial firm is not earning its cost of capital, the agency costs associated with the sale of the firm are extremely significant because the entrepreneur has the incentive to give up control of the firm to a third party and extract surplus from the venture capitalist.

### 2.7. Staged Financing and Convertible Securities

**Neher (1992)**

Neher (1992) argued that convertible preferred equity is the optimal VC contract. Neher

\(^{20}\) A shotgun clause stipulates that any party must be willing to sell at any offer that (s)he makes to buy out the other party.

\(^{21}\) Berglöf does recognize this point and suggests it is not problematic because “making the probability of takeovers contingent on the choice of contract would only reinforce the complementarity of debt and equity financing; debt financing
employed the following (somewhat unrealistic) assumptions. First, Neher assumed that all projects are efficient; that is, fully implementing the project is always efficient. Second, Neher assumed that financing will always be staged (periodic cash flows based on performance reviews and capital requirements). Finally, due to the possibility of contract renegotiation, Neher assumed that the venture capitalist's share of the project is always half of the return of the project regardless of the initial contract. This assumption is based on the premise that once the project is underway, the entrepreneur can reduce the venture capitalist's claim on the project by threatening to abandon the project.

At each financing stage the VC will stop financing the project if the VC's expected payoff is less than the required future investment. Informational asymmetry therefore implies that some efficient projects may be abandoned. To avoid abandonment of positive NPV projects and continue financing as many efficient projects as possible, Neher argues that the VC should receive a share of the liquidation value of the project, except in the last period. The optimal contract in Neher's model is therefore the convertible preferred equity contract.

Wang (1996) argues Neher's assumption that the entrepreneur will renegotiate is not rational because the entrepreneur's threat of abandoning the project is not credible. The entrepreneur's payoff is zero if abandons the project, and strictly positive if he fulfils the contract. (The entrepreneur is a residual claimant and Neher assumed that the return to the project is always positive.) Renegotiation is therefore not a sub-game perfect equilibrium.

Wang (1996)

Wang (1996) presents a model with stage financing and bilateral moral hazard (see Principle 1), but without uncertainty regarding project quality. Although debt contracts mitigate moral hazard (with the entrepreneur qua agent), it presents a number of problems. The VC may abandon some efficient projects because the VC is a fixed claimant who does not participate in the venture's upside potential. The entrepreneur may also abandon some efficient projects because the face value of debt on a straight debt contract must be significant (and therefore the entrepreneur's payoff small) in order to induce the VC to provide the capital for investment. Finally, debt tends to be an unattractive method of venture capital finance for early stage firms without revenues to pay the interest on debt.

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reduces the likelihood of diluting takeovers in bad states of nature."
Wage contracts are the exact opposite of debt contracts. Wage contracts make the venture capitalist a residual claimant and the entrepreneur a fixed claimant; as such, wage contracts reduce the entrepreneur’s incentive to work. Because the effort of the entrepreneur is an essential component for the success of an entrepreneurial venture, wage contracts are sub-optimal.

A straight equity contract is also sub-optimal. If future investment requirements are greater than the VC’s expected equity share then the VC will abandon the project even if the project’s expected NPV is positive. If the VC’s equity share is large enough to ensure continued financing of all positive NPV projects then the entrepreneur will have too little incentive to work.

The optimal contract in Wang’s model is a convertible preferred equity contract. Convertible preferred equity is optimal as it mitigates the bilateral moral hazard problem (see Principle 1 above) and positive NPV projects continue to be financed. A correctly specified convertible preferred equity contract provides sufficient incentives for most positive net present value projects to be funded. Bilateral moral hazard is also mitigated (but not completely eliminated) because the VC’s payoff is greater when the project does better, thereby providing the VC with an incentive to put forth optimal effort and continue to fund the project. The entrepreneur’s payoff also depends on the performance of the project so that she has sufficient incentive to work.

Note that convertible debt contracts are less efficient than convertible preferred equity contracts in Wang’s model. In contrast to a preferred equity holder, a debt-holder has the right to force the firm into bankruptcy if the promised coupon is not forthcoming. The limited cash flows of early stage firms makes convertible preferred equity more attractive than convertible debt.

Cornelli and Yosha (1997)

Cornelli and Yosha (1997) argue that convertible contracts (either convertible debt or convertible preferred equity\textsuperscript{22}) mitigate the informational asymmetries in staged financings (without syndication)

\textsuperscript{22} Cornelli and Yosha’s model applies, with minor changes, to convertible preferred equity as well because Cornelli and Yosha abstract from taxes and control rights.
because there is an agency cost in the termination decision. In an environment with staged financing, convertible debt is better than a mixture of debt and equity because it reduces the entrepreneur's incentives to focus his effort on the short-term success of the project. Entrepreneurs will overstate the project's performance (i.e., engage in "window dressing") whenever additional capital is required in order to increase the probability that the VC will continue to fund the project. This incentive to "window dress" is mitigated by convertible contracts whereby conversion sufficiently reduces the entrepreneur's equity share.

Short-term signal manipulation is mitigated by convertible contracts because window dressing increases the probability that the venture capitalist will exercise the option and dilute the entrepreneur's equity ownership. The conversion option also reduces the probability the VC will liquidate the venture (see also Neher, 1993, and Wang, 1996, discussed above). Convertible contracts are therefore superior to straight sharing contracts when capital commitments are staged and the terms of conversion are pre-specified. Note that the terms of conversion must be pre-specified to facilitate renegotiation design. Otherwise, bargaining power would not be pre-set under different states of nature. This latter feature of Cornelli and Yosha's model is consistent with Aghion, Dewatripont, and Rey (1994), Noldeke and Schmidt (1997) and von Thadden (1995).

2.8. Syndication

Admati and Pfleiderer (1994)

Syndication describes the structure of a venture capital arrangement with a lead "inside" investor and a number of "outside" investors (Sahlman, 1988, 1990). Syndication is a valuable part of the venture capital screening process in the initial investment stage (see also Sah and Stiglitz, 1986). Syndication also enables risk avoidance through risk sharing (see also Wilson, 1968).

While convertible securities may be optimal for staged capital commitments (see Neher, 1992, 23 Relatedly, von Thadden (1995) shows that a contract that resembles a long-term credit line can reduce such short-termistic behaviour in staged financing situations. Hellmann (1993) derives an optimal debt-equity mix. Bagwell and Zechner (1995) analyze a situation where managers of a firm's division can exert effort to influence a divestiture decision by the top management.

24 In my view, entrepreneurs may nevertheless "window dress" only just enough so that the VC will want to continue to fund the project without converting debt or preferred equity into common equity.)
Wang, 1996, and Cornelli and Yoshia, 1997, discussed above), it may not be optimal for syndicated venture capital deals in which there is a general partner ("inside investor") and a number of limited partners ("outside investors"). In the context of multistage financing with an inside investor and at least one outside investor (i.e., staging and syndication), Admati and Pfleiderer (1994) show that informational asymmetry problems are best resolved by contracts which provide a fixed fraction to the inside investor. A fixed fraction contract is one which provides the inside VC with the same fraction of all securities issued by the firm, and the inside VC's shares have priority over all other claimants. The fixed-fraction contract resolves the information asymmetry between inside and outside investors that are involved in later financing rounds because the inside VC's payoff is independent of securities issued in the second stage. The inside VC does not have any incentive to misrepresent the value of the firm with a fixed fraction contract. The inside VC will in fact have an incentive to truthfully reveal information when reputational assets are taken into account. As such, the fixed fraction contract is optimal for inside VCs when staged financing is used with syndicated venture capital deals.

Lerner's (1994) empirical evidence from 651 rounds of investment in 271 biotechnology firms supports Admati and Pfleiderer's (1994) theory. Lerner found that the stake of venture shareholders remained relatively constant (less than a 5% change in 21% of the syndicated deals, and less than a 25% change in 70.5% of the syndicated deals) across financing rounds in syndicated deals. Chapter 3 of this thesis, however, points out a number of limitations with the fixed-fraction contract. Most importantly, moral hazard is absent in Admati and Pfleiderer's model. A superior contract for syndicated investors is identified in chapter 3.

2.9. Canadian Securities Regulation

MacIntosh (1994)

Securities regulation in Canada has also significantly curtailed the formation of a secondary (resale) market for the equity of firms in their earlier stages of development in at least three important respects (see generally MacIntosh, 1994, at s.5). First, there exists escrow requirements to prevent entrepreneurs and venture capitalists from deserting projects after public offerings. These escrow requirements tend to be overly onerous in Canada (MacIntosh, 1994, at pp.114-15,148-49), thereby
limiting the incentive of entrepreneurs and venture capitalists to go public. As IPOs are the most suitable form of VC exit for high-quality firms in an unregulated market (Cumming and MacIntosh, 1999a), escrow requirements reduce the value of the equity of firms in their earlier stages of development.

Second, the required disclosure in primary and secondary markets is cost-ineffective for smaller issuers in Canada (MacIntosh, 1994, at pp.115-24). For small investments (less than $150,000 in Ontario), a prospectus must be filed. Preparing and filing a prospectus, however, can often cost at least as much. At this level of investment, most investors require a substantial fraction of equity share in the firm (see Principle 3); however, the reluctance of entrepreneurs to forgo equity interests is one of the most common reasons for the breakdown of contractual negotiations between small-scale investors and entrepreneurs (Jog et al, 1991). As a result, the onerous prospectus requirement in Canada prevents small-scale investments from being made (MacIntosh, 1994, pp.101-104). Not surprisingly, the size of VC investments in Canada is typically much larger than VC investments in other countries (MacIntosh, 1994; Riding and Orser, 1997).

Third, legislation imposing resale restrictions is particularly onerous in Canada. For example, securities purchased pursuant to a prospectus exemption prior to the firm’s initial public offering (IPO) are subject to a hold period of 12 months even where all the securities are of the same class. The differential treatment between pre- and post-IPO securities was motivated by “back-door underwriting” concerns; however, commentators argue that it is not justified (MacIntosh, 1994, at p.108). Hold periods are also different for different types of securities. As Canadian regulators view bonds and preferred equity to be inherently safer than common equity (this is surprising in light of Principle 2), hold periods for bonds and preferred equity are notably shorter (MacIntosh, 1994, at p.107).

In sum, Canadian securities legislation has impeded the development of a secondary resale market for equity securities of small and medium sized firms in Canada. The exit mechanism is implicit with debt. With equity, on the other hand, a viable secondary market is needed to ensure suitable exit. Therefore, equity-type securities, and especially pure common equity securities, are less likely to be

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25 See O_regs. s.19(o)(1); see also Gillen (1992), p.194, for a discussion of similar but somewhat less restrictive legislation in the other provinces.

26 Back-door underwriting involves an issuer that sells securities to individuals who would qualify for a prospectus exemption. The securities are then immediately resold to individuals that would not qualify for such an exemption.

27 Equity contracts with buyback provisions also ensure exit. However, there is no market mechanism to determine the suitable buyback price, and buybacks are generally an inferior exit vehicle (Cumming and MacIntosh, 1999a).
issued in financing start-up and expansion investments than that which would otherwise be the case. In the empirical tests in the following sections, the extent to which debt-type securities are more frequently used than that which would otherwise be expected to exist for early stage and expansion investments provides a measure of the impact of securities regulation in Canada on small firm financing.

2.10. Summary

This literature review has focused on the role of agency costs in the choice of form of finance in venture capital contracts. The contract space was limited to straight debt and straight common equity by Amit et al. (1997) and Noe and Rebello (1996). Their research highlights the basic trade-offs between debt and equity in the initial investment stage.

Financing offers in the form of debt, convertible debt, preferred shares, convertible preferred shares, common shares, or any combination of these instruments has been considered in the bulk of previous studies. The seminal work of Jensen and Meckling (1976) showed that convertible securities have a role in mitigating agency costs, including risk-shifting costs (Green, 1984, formalized this argument). Farmer and Winter (1986) noted that although agency costs cannot completely be eliminated by the use of options, agency costs can nevertheless be mitigated by options. Sahlman (1988, 1990) and Marx (1998) applied this principle to the context of venture capital finance to express the idea that there are certain situations in which active venture capitalist participation adds value to the venture. Berglöf (1994) recognized that the role of trilateral bargaining problems (in the sense of Aghion and Bolton’s, 1992, seminal paper) in shaping venture capital contracts.

Venture capital contracts are sometimes staged. That is, financing involves periodic capital commitments to enable the VC to provide financing on an as-needed basis in order to facilitate monitoring. Neher (1994), Wang (1996) and Cornelli and Yoshia (1997) argue that there are strong rationales for the use of convertible securities when capital commitments are staged. In addition to being staged, venture capital contracts may also be syndicated (i.e., more than one venture capitalist is involved in the financing of an entrepreneurial venture) to mitigate the potential for hold-up problems (Rajan, 1992; Houston and James, 1996; Hooks and Opler, 1993). Admati and Pfleiderer (1994) showed that a fixed-fraction contract mitigates is optimal because the payoff to the "inside" venture capitalist is independent of the payoff to "outside" venture capitalists. Chapter 3 of this thesis, however, shows that
this contract is not robust to the introduction of moral hazard into Admati and Pfleiderer's model.

The most important point gleaned from the review of the literature is as follows. Selecting a form of finance to mitigate moral hazard and adverse selection costs requires an understanding of the context and characteristics of the entrepreneur and venture capitalist(s). One-shot financing may be appropriate in certain situations (i.e., where monitoring is unnecessary). In other situations, staging and/or syndication may be more appropriate. The literature shows that the optimal form of finance depends on the structure of capital commitments. An understanding of the regulatory environment is equally important. The distorting effect of Canadian securities regulation on design of financial contracts was assessed in Section 2.8 of this paper. Chapter 4 of this thesis also considers the effect of Canadian Labour Sponsored Venture Capital Legislation.
3.1. Introduction

Syndicated venture capital investments typically involve a lead "inside" investor (or group of investors) in earlier financing rounds and "outside" investors involved at later financing rounds of an entrepreneurial venture (Sahlman, 1990; Admati and Pfleiderer, 1994). Venture capitalists ("VCs") syndicate their investments for a number of reasons. Syndication allows risk avoidance through risk sharing (Wilson, 1968). Sah and Stiglitz (1986) discussed the role of syndication in making better decisions about whether to invest in the entrepreneurial venture. Lerner (1994) noted "window-dressing" incentives for syndication similar to that of pension funds as discussed by Lakonishok, Shleifer, Thaler, and Vishny (1991). In addition, reliance on only one supplier of capital may give rise to significant hold-up problems as the supplier has an informational monopoly and too much control over liquidation and exit decisions. This potential for hold-up with a single supplier of capital has been shown to adversely affect investment incentives and growth opportunities (Rajan, 1992; Hooks and Opler, 1993).

While syndication may offer significant gains, costly informational asymmetries and free-riding may arise among syndicated investors (Sahlman, 1990).\(^1\) Jensen and Meckling (1976) first noted the role of financial instruments in mitigating such agency problems and informational asymmetries. Subsequent research has suggested that convertible preferred equity is the optimal form of venture capital finance.\(^2\) For syndicated venture capital financing, Admati and Pfleiderer (1994) argued that the optimal contract is a "fixed-fraction" contract whereby the initial "inside" VC finances a fixed fraction of all the firm's investments and receives the same fraction of the payoffs. Admati and Pfleiderer's contribution is important and significant. They show that a fixed-fraction contract can eliminate mispricing of securities and misstatement of capital requirements by the entrepreneur and "inside" early-stage investors to

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1 Sahlman (1990) also notes that because the effort of both the entrepreneur and VC(s) determines the success of the venture, there is a bilateral agency problem such that one party may not work as hard if part of the residual claim to the venture flows to the other party.

2 See, e.g., Barry (1994); Cornelli and Yoshia (1997); Gompers (1998); Marx (1998); Neher (1993); Norton and Tenenbaum (1992); Sahlman (1988, 1990); Silver (1987); Trester (1998); Tyehjee and Bruno (1984); and Wang (1996). Cumming (1999a), however, shows that convertible preferred equity has never been the most commonly used form of VC finance in Canada and explains why one may expect other forms of finance to be employed depending on the characteristics of the venture capitalist(s) and the entrepreneur. The aggregate industry Canadian data presented by Cumming (1999a) shows that common equity has been the most common form of finance in recent years (used for about 40% of all investments in 1997), followed by straight debt (15%), convertible debt (12%), mixes of straight common equity and straight debt (10%), straight preferred equity (5%), and convertible preferred equity (4.5%).
"outside" later-stage investors. Admati and Pfleiderer argue that fixed-fraction contracts are robust with respect to continued financing of positive NPV entrepreneurial ventures.

This paper re-examines the optimality of fixed-fraction contracts for syndicated venture capital investors. The interdependent goals of limiting mispricing of securities, limiting misstatement of capital requirements, and facilitating optimal continuation of staged investments are not disputed. Rather, two important issues that are fundamental to "robustness" are identified. The first is the issue of which party has priority in the event of bankruptcy of the entrepreneurial venture. Priority in bankruptcy appears to have been assigned to the inside VC in the paper by Admati and Pfleiderer (1994: 385). This paper provides a simple example (Case A of section II below) to show that this priority assignment is not robust with respect to optimal continuation. Second, this paper shows that the fixed-fraction contract is not robust to the introduction of a small (even infinitesimal) amount of effort-related moral hazard costs. In the derivation of the optimality of fixed-fraction contracts, effort-related moral hazard costs are ignored. Admati and Pfleiderer (1994: section V) do nevertheless introduce incentives for the entrepreneur (after proving their primary result that fixed-fraction contracts facilitate optimal continuation) in the context of an example where it is never optimal to abandon the project. However, this paper provides a second example (Cases B and C of section II below) to show that optimal continuation and moral hazard are directly related. The approximate optimality of fixed-fraction contracts is a knife-edge result in that it requires the complete absence of moral hazard. The inside VC will have an incentive to misrepresent the value of securities issued to outside VCs when the entrepreneur’s effort depends (even infinitesimally) on her residual claim, and her effort affects the value of the firm (and therefore also affects the value of the inside VC’s claim).

Consideration of moral hazard is particularly important in view of the fact that the presence of agency costs in the financing of small and medium sized enterprises is considered to be the primary explanation for the existence of a venture capital market. Syndicated VC financing involves agency

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4 "Roughly speaking, a contract is robust with respect to some property if it is not critical that some specific probabilistic model of the world be correct for the contract to have that property" [Admati and Pfleiderer (1994:373)].

5 The full analysis of effort incentives and abandonment was "beyond the scope of [their] paper" [Admati and Pfleiderer, 1994: 393].

6 Note that Admati and Pfleiderer’s (1994) result will still hold if the effort of entrepreneur and outside venture capitalist are perfect substitutes, and the relation between residual claim and effort is identical across both parties.

7 With the presence of agency costs (moral hazard and adverse selection costs), we expect a group of specialized investors with enhanced ability to monitor and screen investments; see MacIntosh (1994), Amit, Brander and Zott (1997), Amit, Giosten, and Muller (1990, 1993).
relationships in three dimensions (Sahlman, 1990): (1) the entrepreneur is an agent of the VCs, (2) the VCs are agents of the entrepreneur, and (3) the VCs are agents of each other. If a financial contract is truly "robust" with respect to optimal continuation, then it should not be contingent on the assumed relation between each party's effort and expected payoff, and the effect of effort on the expected value of the venture.

When moral hazard is present, a superior contract to the fixed-fraction contract is identified in this paper. Mispricing and misstatement of capital requirements is mitigated and optimal continuation is facilitated when inside VCs employ straight preferred equity and outside VCs employ convertible debt. The essential intuition is as follows. In anticipation of non-bankruptcy states, there is no relation between the payoff to the inside VC as a fixed preferred equity claimant and the outside VC's and entrepreneur's effort levels; therefore, the inside VC has no incentive to misrepresent the value of the securities issued to later stage outside investors. In anticipation of bankruptcy states, the inside VC has little or no incentive to induce outside VC participation for two reasons. First, if the inside VC contributes additional capital at each financing stage, the inside VC will have a diminished incentive to induce outside VC participation when the outside VC has priority and bankruptcy is expected. Second, regardless of whether the inside VC contributes additional capital, trilateral bargaining problems are exacerbated around bankruptcy when the outside VC has priority (Bergløf, 1994; Aghion and Bolton, 1992). As such, the inside VC has little or no incentive to induce outside VC participation in the financing of negative expected NPV projects (that should not receive continued financing) when the outside VC has priority. Finally, the outside VC holds convertible debt, not straight debt, in order to mitigate entrepreneurial risk-shifting (Green, 1984; Jensen and Meckling, 1976) and to induce active participation by the outside VC to ensure the success of the entrepreneurial firm (Farmer and Winter, 1986).

This paper is organized as follows. Section I explains Admati and Pfleiderer's (1994) fixed-fraction contract. A counterexample is sufficient to illustrate the conditions under which the fixed-fraction contract is not optimal. The counter example is provided in section II. An alternative contract is also proposed within the context of the example in section II. Section III demonstrates that the proposed contract is optimal in a general framework. Section IV concludes.
3.2. Fixed-Fraction Contracts

Admati and Pfleiderer (1994: 385) define a fixed-fraction contract as one in which the inside venture capitalist [hereafter "VC"] provides the same fraction of future capital required by the firm and VC receives the same fraction of the firm's total payoffs. Admati and Pfleiderer (1994: Proposition 2 at 385) claim that fixed-fraction contracts induce optimal continuation decisions. Admati and Pfleiderer's (1994: 385-386) intuition for the result that fixed-fraction contracts induce optimal continuation is as follows. VC's initial investment provides VC with a fixed fraction of the firm's payoff, and VC is solely responsible for providing the same fraction of capital required by the firm. If VC was required to invest a greater fraction than the fraction of payoffs received then there may exist some positive NPV projects that VC will not finance. Similarly, some negative NPV projects will be financed if VC receives a greater fraction of the payoffs than the fraction of capital provided.

Fixed-fraction contracts necessarily require outside investors to be involved at later financing rounds [hereafter "VC"] because VC only finances a fraction of future capital requirements. Admati and Pfleiderer (1994: 387) explain that the fixed-fraction contract resolves the information advantage that VC has over VC. Because VC receives a fixed fraction of the firm's payoff (and VC provides the same fraction of required capital), VC's payoff is independent of the pricing of all securities issued at later financing rounds. The pricing of VC's securities simply determines the division of surplus between VC and the entrepreneur. Given the independence of VC's and VC's payoff, VC has no incentive to misrepresent information to VC; in fact, VC's concern over his/her reputation mitigates information asymmetry between the entrepreneur and the outside syndicate(s).

Admati and Pfleiderer (1994: 387) note that their model does not predict the type of securities issued to later stage investors if managers are not risk neutral (see also Dybvig and Zender, 1991). Admati and Pfleiderer (1994: sections V and VI) do predict, however, that risk aversion and effort

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Admati and Pfleiderer (1994) offer the following explanation: "...the fraction of the second stage investment that is put up by the original venture capitalist is equal to the fraction of the total payoffs that he would obtain if no continuation takes place, and this is the same fraction of the total payoffs that he obtains for any positive second stage investment level that is chosen. We will call the contracts identified in Proposition 2 fixed-fraction contracts. Note that these contracts are similar to equity in that they give the venture capitalist a fixed fraction of the payoff. However, unlike common equity, the venture capitalist does not own a residual claim, since his shares have priority over all claims issued by the firm. " [Admati and Pfleiderer, 1994: 385; emphasis in original.] Admati and Pfleiderer further note that "[the fixed-fraction contract bears similarity to the notion of 'strip financing,' where certain agents receive the same fraction of all the securities issued by the firm". Note that in their quoted explanation of proposition 2, they seem to have mistakenly assigned priority to the inside
incentives may lead outside investors to employ options and/or warrants.

3.3. Syndication Example

This section provides a simple example that illustrates the perverse incentives that may arise under Admati and Pfleiderer's (1994) fixed-fraction contract. A superior contract is then proposed in this section. The following section considers the proposed contract in a more general setting.

Suppose an entrepreneurial venture requires $100 of initial capital. The entrepreneur and "inside" venture capitalist (VC1) each agree to provide $50. Second-round financing is also required. In the second round, VC1 and the "outside" venture capitalist (VC2) each provide $50. The amounts invested by the three parties in the two financing rounds are summarized in the first part of Table 1. Within this context, four different contracts held by the three parties are now considered for illustrative purposes. As per Admati and Pfleiderer's (1994: 385) exposition quoted in note 7 above, we first consider Case A in which VC1's shares have priority over all other claimants. In Case B we consider a fixed-fraction contract whereby all claimants have equal priority. Effort-related moral hazard costs are ignored in Cases A and B. Effort-related moral hazard is introduced in Cases C and D. Case C considers the fixed-fraction contract with equal priority and moral hazard. A new contract is then proposed in Case D.

Within Cases A, B, C and D, we consider two cases of bankruptcy: (1) the value of the firm is $10 without second-round investment, and (2) the value of the firm is $140 with second-round investment (with slight modification in Cases C and D). In all cases we assume that VC1 has inside knowledge of the future value of the firm after each financing round, but VC2 does not have such knowledge. VC2 relies upon the information provided by VC1 in deciding whether to invest and on what terms.

Case A. Fixed-fraction contract with inside VC1 priority

Suppose that second round investment yields a salvage value of the firm's assets equal to $140; this information is known to VC1 but not to VC2 prior to the second-round investment. VC1 would like to

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ventures capitalist; see infra, section II, Case A.

* A more realistic assumption would be that the inside VC has superior knowledge than the outside VC(s); regardless,
entice VC2 to invest at the second round because $100 - $100 = $0 (> $40, VC1’s payoff in the absence of second-round investment). Investment in the second round is efficient (a $100 investment yields a gain of $140-$10 = $130). However, second-round investment will not happen where VC2 is a rational investor (if the entrepreneur and VC2 are of the same priority then the payoff to VC2 is ($140-$100)/2-$50=$-30). Regardless of the division of the remaining $40 between the entrepreneur and VC2, VC1’s priority over the other claimants, as per Admati and Pfleiderer’s (1994: 385, quoted above in note 7) explanation of their fixed-fraction contract, does not facilitate optimal continuation. In view of this fact, the remainder of this paper considers the fixed-fraction contract where the inside VC1 does not have priority over other claims issued by the firm.

Case B. Fixed-fraction contract with equal priority among all parties and no effort-related moral hazard

It is fruitful to consider what happens to the continuation decision when all the parties are assigned equal priority under the fixed-fraction contract. In reconsidering the above example, we demonstrate that perverse incentives still exist such that the inside venture capitalist may want to entice an outside investor to invest so that the inside investor benefits at the outside investor’s expense. Note that the perverse incentives exist as a result of the introduction of effort-related moral hazard problems into Admati and Pfleiderer’s model.

As before, the fact that second-round investment yields a salvage value of the firm’s assets equal to $140 is known to VC1 but not to VC2 prior to the second-round investment. If the price of securities issued at the second round of investment is the same as the price of securities issued at the first stage, then the net payoffs would be as follows: VC1 receives $30, VC2 receives $-15, and the entrepreneur receives $-15. VC1 would like to entice VC2 to invest at the second round because $140/2 - $100 = $-30 (> $-45, VC1’s net payoff if there was no second-round investment). Investment in second round is efficient (a $100 investment yields a gain of $140-$10 = $130). However, second-round investment will not happen where VC2 is a rational investor (because the parties are of the same priority, the entrepreneur and VC2 each receive net payoffs equal to $140/4-$50=$-15).

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the implications and lessons from the example are the same.

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The lesson from Case A applies irrespective of the price of the securities issued at the second stage and the priority rule between the entrepreneur and VC2.
Admati and Pfleiderer (1994) argued that the above continuation problem may be resolved by lowering the price for the securities in the second round. If VC2 expected the salvage value to equal $140, then the price of the securities issued in the second round could be lowered such that VC2 received at least (subject to risk preferences) $50/140 = 35.7\%$ of the firm's equity (see Table 1). (The entrepreneur therefore has 14.3\%, and VC1 always has 50%). As such, VC2's expected payoff would be slightly positive and s/he would invest (assuming risk neutrality). Changing the price of securities issued at the second stage affects the division of surplus between the entrepreneur and VC2 but does not affect the fixed fraction received by VC1.

Because the fraction received by VC1 is unchanged, Admati and Pfleiderer argue that (at p.387) "...with fixed-fraction contracts, the venture capitalist's payoff is independent of the pricing of any securities issued at the second stage". Unfortunately, there is a crucial assumption driving this argument: either there is no moral hazard, or the entrepreneur's and outside VC1's effort must be equally important to the success of the venture and the moral hazard effect of changing these parties' residual claim to the firm's assets must be identical. However, if the entrepreneur's effort is more dependent on her residual claim and has a greater impact on the success of the venture,11 then the inside VC1 has an incentive to overprice securities issued at the second stage to maximize the entrepreneur's effort and the value of the firm (which in turn maximizes VC1's payoff). In the context of a model with moral hazard, if the effect of the entrepreneur's effort on the value of the firm differs (even just infinitesimally) from that of the outside VC2, then the inside VC1 will always misrepresent the value of securities issued to the outside VC2, as illustrated in Case C below.

**Case C. Fixed-fraction contract with equal priority among all parties and effort-related moral hazard**

The inside VC1 also has no role in facilitating optimal continuation and mitigating informational asymmetries between the entrepreneur and outside VC2 under a fixed-fraction contract when residual claim affects effort and the effect of the entrepreneur's effort on the firm's payoff is different from that of the outside VC2. For example, suppose that a reduction in the entrepreneur's equity share (denoted by \( \beta \) in Table 1) caused the entrepreneur to work less (even if this effect is infinitesimal), thereby reducing the expected salvage value of the firm. The fixed-fraction contract would not be robust with respect to

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11 The effort of the entrepreneur is typically more pertinent to the success of a venture than that of the outside investors; see Cumming (1999a).
optimal continuation: the inside VC1 would have an incentive to overstate the value of the firm (i.e., overprice securities issued in the second round to minimize entrepreneurial moral hazard costs). A rational outside VC2 anticipating this perverse incentive may not participate.12 In the example in Table 1, the value of the firm (equal to $120+408) increases as the entrepreneur’s equity share (β) increases. Therefore, the inside VC1’s payoff increases as β increases. The inside VC1’s payoff is maximized by maximizing the price of securities issued at the second stage (which is due to the fact that the example only involves entrepreneurial moral hazard and not a more complicated bilateral agency relationship in which the VCs’ effort also affects firm value). VC2 will not participate because his/her payoff is less than 0 whenever β > 0.096, and VC1 has an incentive to misrepresent information to inflate the price of second-stage securities such that β = 0.5.

After their derivation of the optimality of fixed-fraction contracts, Admati and Pfleiderer (1994: section V) do introduce effort-related moral hazard in the context of an example in which it is always optimal to continue financing the project. Their example shows that an entrepreneur will have a greater incentive to put forth effort as the entrepreneur’s payoff (which depends of the prices of securities issued in the second stage) is greater when effort is expended. However, Admati and Pfleiderer (1994: 391) also assume that the inside VC1 will not misrepresent information to outside investors because the inside VC1 employs a fixed-fraction contract. Of course, this begs the question. By overpricing securities in the second stage, the value of the firm increases (as a result of the increase in the entrepreneur’s effort), and therefore the value of the inside VC1’s fixed-fraction contract increases because the size of the pie to be divided between the parties increases. To use Admati and Pfleiderer’s (1994: 374) phraseology, the inside VC1’s incentive to overprice new securities as an “old shareholder” (and thereby take away value from outside investors) is greater than his incentive as a “new shareholder” to underprice new securities (and thereby take value away from the entrepreneur). The only time that these incentives offset one another is when the value of the firm is independent of effort incentives, or when each party’s effort and contribution to the value of the firm are perfect substitutes with one another.

In sum, in the general case where effort depends on residual claim and each party’s effort has a unique effect on the value of the entrepreneurial venture, fixed-fraction contracts will not reduce informational asymmetries between the entrepreneur and outside investors. Where the entrepreneur’s effort is more important than the outside VCs’s effort for the success of the venture, fixed-fraction
contracts will exacerbate informational asymmetries because the inside VC\textsuperscript{1} has a financial stake in overpricing securities issued at the second stage. In view of this perverse incentive, fixed-fraction contracts do not ensure optimal continuation with outside VC\textsuperscript{2} participation. Fixed-fraction contracts cannot achieve a first-best solution to mitigating informational asymmetry, and a superior contractual arrangement can be identified (see Case D and section III below).

**Case D. The proposed contractual arrangement**

Now consider the following contractual arrangement [hereafter the "proposed contract"]: VC\textsuperscript{1} uses straight preferred equity; VC\textsuperscript{2} uses convertible debt;\textsuperscript{12} the entrepreneur holds common equity. As in Case C, suppose that the value of the firm is $120+40\beta$ (where $\beta$ is the entrepreneur's equity share) after second-round investment. The net payoffs to the three parties are provided in Table 1. VC\textsuperscript{1} will entice VC\textsuperscript{2} to invest at the second round because $120-50-100 = -30 (> -40, \text{ VC}\textsuperscript{1}'s net payoff if there is no second-round investment). VC\textsuperscript{2} will invest whenever VC\textsuperscript{1} encourages investment. Investment in the second round is Kaldor-Hicks efficient (a $100 investment leads to a gain of at least $110). Second-round investment is also Pareto efficient with the proposed priority structure because no party was made worse off by investing in the second round given the initial investment. In fact, it is easy to verify that only efficient projects will be financed in the second round where the salvage value of the firm's assets is greater than or equal to $110 when VC\textsuperscript{1} holds straight preferred equity, VC\textsuperscript{2} holds (convertible) debt and the entrepreneur holds common equity (see also section III below).

There are at least three reasons why an active outside venture capitalist (VC\textsuperscript{2}) will want to hold convertible debt as opposed to straight debt. First, venture capitalists are typically active investors and the convertibility option (from debt to common equity) provides the outside VC\textsuperscript{2} with an incentive to provide significant effort to ensure the success of the venture (Haugen and Senbet, 1981, 1986; Farmer and Winter, 1986). In contrast, banks will typically provide straight debt as they provide less value added to the enterprise. Second, the convertibility option facilitates risk sharing between the entrepreneur and the outside VC\textsuperscript{2} (Admati and Pfleiderer, 1994: 394) as the payoff to VC\textsuperscript{2} (entrepreneur) is greater (lower)

\textsuperscript{12} VC\textsuperscript{2} will participate only if VC\textsuperscript{1} is able to convince VC\textsuperscript{2} that the value of the securities is greater than their true value.

\textsuperscript{13} The outside investor may simply hold straight debt for the purposes of this example. Effort-related incentive factors are discussed below to show that there are reasons to expect active outside investors (e.g., venture capitalists) to use convertible debt. Non-active outside investors (e.g., banks) may simply employ straight debt. Note that a preferred equity contract can have large dividend payments to encourage inside VC\textsuperscript{1} effort; VC\textsuperscript{1} will contribute effort to ensure timely payment of dividends.
in good states and lower (greater) in bad states. Third, convertible debt mitigates risk-shifting problems. The entrepreneur will have less incentive to undertake excessively risky actions to transfer expected wealth from debt-holders (the outside VC2) to equity-holders (the entrepreneur) because the outside VC2 can convert his/her securities to capture the benefit of any excessively risky actions undertaken by the entrepreneur (Green, 1984).

Importantly, note that when VC1 (a straight preferred equity holder) and VC2 (a convertible debt holder) are never among the same priority class, the incentive to misprice securities and misstate capital requirements is minimized because VC1 and VC2 are never among the same priority class. VC1 does not hold convertible preferred equity because perverse incentives may arise if VC1 and VC2 both convert to common equity and thereafter receive interdependent payoffs. Because VC1 is never a residual claimant as a straight preferred equity holder, there is no relation between the payoff to VC1 and the entrepreneur's and VC2's residual claim/effort. Therefore, even if the entrepreneur's effort has a greater impact on the value of the firm than that of VC2, VC1 has no incentive to overstate the price of securities issued to VC2 at second-round financing. Informational asymmetry between VC2 and the entrepreneur is resolved by VC1 where VC1 is a preferred equity-holder for any possible differences in the specification of the relation between residual claim, effort and firm value for VC2 and the entrepreneur. In contrast, under a fixed-fraction contract, resolution of informational asymmetry only occurs where the efforts of VC2 and the entrepreneur have the same relation to their equity share and the same effect on the value of the firm. In the typical case where the entrepreneur's effort is more directly related to his/her residual claim and has a greater effect on the value of the firm than that of VC2, fixed-fraction contracts held by VC1 do not resolve informational asymmetry and do not facilitate optimal continuation.

In bankruptcy states, there is a positive relation between entrepreneurial effort and the payoff to straight preferred equity holders. However, the inside VC1 will not even have an incentive to encourage outside VC2 participation in anticipation of bankruptcy for two reasons. First, trilateral bargaining (Aghion and Bolton, 1992), is exacerbated when the outside VC2 has priority and the entrepreneurial firm is anticipating bankruptcy. When an entrepreneurial firm is not earning its cost of capital, the entrepreneur has an incentive to contract with the third party to give up control over the

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14 Bankruptcy states are an exception to this statement, as discussed below.
15 See supra, note 10 and accompanying text.
firm to acquire additional financing at a lower cost. The inside VC\textsuperscript{1} is worse off upon the arrival of a third party investor who gains priority (Bargløf, 1994). The situation of the inside VC\textsuperscript{1} is worsened when the third party acquires control over the firm and strips the assets of the firm (which are difficult to value in court; Bargløf, 1994). In contrast, the situation of the new third party investor is improved because the investor acquires control over the firm. The situation of the entrepreneur is also improved even though the entrepreneur forgoes control over the firm because bankruptcy is avoided as a result of the lower cost financing provided by the third party. The inside VC\textsuperscript{1} therefore does not have an incentive to search for and give up control to outside third-party investors when the entrepreneurial firm is doing poorly as the potential for trilateral bargaining is exacerbated.

In addition to trilateral bargaining problems, there is a second reason why the inside VC\textsuperscript{1} will not be interested in encouraging outside VC\textsuperscript{2} participation in anticipation of bankruptcy. The inside VC\textsuperscript{1} will not have an incentive not to induce outside second-round investment in anticipation of bankruptcy when the outside VC\textsuperscript{2} priority and VC\textsuperscript{1} must contribute additional capital in the second round. This second reason is apparent from the part D of the syndication example. A general proof of this fact is also provided in section III below.

In sum, the syndication examples illustrated three main points. First, if the inside VC\textsuperscript{1} has priority at each financing round, outside VC\textsuperscript{2}'s will never participate at later financing rounds unless they are certain that the entrepreneurial firm will never face bankruptcy. Second, in a world with moral hazard, fixed-fraction contracts are not optimal because the inside VC\textsuperscript{1} will always want to misstate capital requirements and the value of securities issued to outside VC\textsuperscript{2} investors at each financing round to maximize the effort of the party who's effort is relatively more important to the success of the venture. Therefore, fixed-fraction contracts do not facilitate optimal continuation of staged and syndicated venture capital investments. Third, the proposed contractual arrangement in which the inside VC\textsuperscript{1} employed straight preferred equity and the outside VC\textsuperscript{2} employed convertible debt mitigated the perverse incentive effects associated with the fixed-fraction contract. In anticipation of non-bankruptcy states, the investing parties' payoffs were independent and therefore the inside VC\textsuperscript{1} had no incentive to misrepresent the value of the firm. In anticipation of bankruptcy states, the inside VC\textsuperscript{1} did not have an incentive to induce the participation of an outside VC\textsuperscript{2} with priority as a result of trilateral bargaining. This incentive not to induce financing of negative expected NPV projects was reinforced when the inside VC\textsuperscript{1} contributed capital at each investment round. The following section
makes explicit this latter proposition that only efficient projects will be financed in the second round where the outside VC\textsubscript{2} holds convertible debt, the entrepreneur holds common equity, and the inside VC\textsubscript{1} holds straight preferred equity and must contribute capital at each financing round.

3.4. Optimal Continuation and the Proposed Contract

In the discussion of the proposed contract in Case D of the syndication example in previous section, there were two reasons offered as to why the inside VC\textsubscript{1} would not induce outside VC\textsubscript{2} participation when the inside VC\textsubscript{1} knows the entrepreneurial firm is facing bankruptcy. The first related to trilateral bargaining in the sense of Aghion and Bolton (1992). Berglöf (1994) has demonstrated that when an entrepreneurial firm is doing poorly, the inside VC\textsubscript{1} has no incentive to induce outside VC\textsubscript{2} participation when the outside VC\textsubscript{2} has priority because of trilateral bargaining problems. The second reason related to the more basic fact that an inside VC\textsubscript{1} has little incentive to induce outside VC\textsubscript{2} participation in later stage financing of a project that is facing bankruptcy when the outside VC\textsubscript{2} has priority, and the inside VC\textsubscript{1} must contribute additional capital. The purpose of this section is to make explicit this latter point.

Consider the following notation. Let $E^1$ represent the entrepreneur's investment in the first round. $I^1$ is the inside VC\textsubscript{1}'s investment in the first round (preferred equity). $I^2$ is the inside VC\textsubscript{1}'s investment in the second round (preferred equity). $O^2$ is the outside VC\textsubscript{2}'s investment in the second round (convertible debt). $B$ is the salvage value of the assets after the first-round investment. $V$ is the salvage value of the assets after second-round investment.

As in the syndication example in section II, the outside VC\textsubscript{2} relies on information about the entrepreneurial firm provided by VC\textsubscript{1} in deciding whether to invest in the entrepreneurial firm as a syndicated partner with VC\textsubscript{1}. The inside VC\textsubscript{1} and entrepreneur have the same information about the value of the firm. The following propositions consider the basic case in which the inside VC\textsubscript{1} has full information about the value of the firm after second-round financing. The case in which the inside VC\textsubscript{1} faces market uncertainty after second-round financing is thereafter addressed below.

**Proposition 1:** If $[V - O^2 - I^2 < B]$ then the inside VC\textsubscript{1} will not invest $I^2$ under the proposed contract. If $[V - O^2 - I^2 > B]$ then the inside VC\textsubscript{1} will invest $I^2$ under the proposed contract.
**Proof:** The payoff to inside VC\(_1\) is \(V - O^2 - I^2\) if the inside VC\(_1\) does invest. The payoff to inside VC\(_1\) is B if the inside VC\(_1\) does not invest. *Q.E.D.*

**Proposition 2:** Second-round investments will always be Kaldor-Hicks efficient under the proposed contract.

**Proof:** The Kaldor-Hicks efficiency condition is as follows: \(V - B > I^2 + O^2\) (i.e., second-round investment adds value). This condition is satisfied only where the inside VC\(_1\) wants to invest \(I^2\): \(V - O^2 - I^2 > B\) (Proposition 1). *Q.E.D.*

**Proposition 3:** Second-round investments will always be Pareto efficient under the proposed contract.

**Proof:** The second-round investment will be made if and only if \(V - O^2 - I^2 > B\) (Proposition 1). This implies \(V - B > O^2 + I^2\) (i.e., the increase in salvage value of the assets more than offsets the extra amount invested in the second round); therefore, the outside VC\(_2\) is as well off as before the investment was made (given s/he has first priority as a debt holder) and the inside VC\(_1\) is at least as well off (given s/he has second priority as a preferred equity holder). The entrepreneur's welfare is unchanged as a result of the second-round investment in bankruptcy states and improved in non-bankruptcy states. *Q.E.D.*

Propositions 1, 2 and 3 make clear the fact that under the proposed contract the inside VC\(_1\) has no incentive to induce outside VC\(_2\) participation when the entrepreneurial firm is facing bankruptcy. The inside VC\(_1\) with an informational advantage will only want to finance projects that are Kaldor-Hicks efficient when the inside VC\(_1\) employs straight preferred equity and the outside VC\(_2\) employs (convertible) debt.\(^{16}\) Second-round Kaldor-Hicks inefficient investments result in a loss to the inside VC\(_1\) when the outside VC\(_2\) has priority in bankruptcy. Kaldor-Hicks efficient investments are also Pareto efficient as the priority rules ensure that any investment that benefits the inside VC\(_1\) will also make the outside VC\(_2\) better off. The entrepreneur is at least as well off as a common equity holder because the entrepreneur does not contribute additional capital in the second round.

Note that Propositions 1, 2 and 3 are based on the fact that the outside VC\(_2\) has priority over the inside VC\(_1\) (who in turn has priority over the entrepreneur). Alternative contractual arrangements that gave a similar priority structure would satisfy the above propositions; for example, two classes of debt
could be issued to VC₁ and VC₂. However, there are a number of reasons why the inside VC₁ should employ preferred equity and not subordinated debt. Most importantly, the inside VC₁ typically starts financing an entrepreneurial firm at the firm's early stages of development (often when the firm does not have cash flows to pay the interest on debt). A strategy of VC₁ debt financing, whereby the inside VC₁ could force the firm into bankruptcy in the event of non-payment of interest and/or principal at a prespecified date, would make the entrepreneur more susceptible to hold-up and renegotiations than a strategy of VC₁ preferred equity financing (Sahlman, 1990). When the firm is beginning to generate cash flows and is in need of additional capital for expansion and development from syndicated investors (see Rajan, 1992; Hooks and Opler, 1993; Lerner, 1994), debt financing is more feasible. VC₂ has an interest in holding (convertible) debt in order to ensure that VC₁ positive expected NPV projects. If the project turned out to be unsuccessful and interest and/or principal payments were not forthcoming, as a debtholder VC₂ could bargain with the entrepreneur to extract surplus from VC₁ (Berglöf, 1994). Under the proposed contract, VC₁ only has an incentive to continue to finance projects with syndicated partners if s/he believes that the venture will be successful.

The addition of market uncertainty to the framework would complicate the analysis but would not change the basic message. The inside VC₁ will generally not induce outside VC₂ participation when the inside VC₁ expects the investment in the firm will yield a negative net present value. Of course, the first-best Pareto-efficient outcome may not necessarily result when the inside VC₁ faces market uncertainty regarding the value of the firm after second-round investment. Nevertheless, the priorities allocated to the inside VC₁ and outside VC₂ do ensure the parties make the best possible continuation decision with the available information as the inside VC₁ is only better off after second-round financing if the entrepreneurial firm does not go bankrupt.

In sum, optimal continuation is facilitated under the proposed contract in which the inside VC₁ employs straight preferred equity in the first and second financing rounds, the outside VC₂ employs convertible debt in the second financing round, and the entrepreneur employs common equity in the first

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16 Convertibility was employed for reasons discussed above; see supra, note 12 and accompanying text.
17 The inside VC₁ may have a perverse incentive to continue financing a negative expected NPV project (with a large upside potential) if s/he provided a large amount of capital in the first stage but only had to provide a small amount of capital at the second stage. Requiring the inside VC₁ to provide a comparatively large amount of financing at the second stage (as in Admati and Pfeiderer’s fixed-fraction contract) would help to mitigate this problem. A more in depth analysis with priors on VC₁'s expectations and a repeated game story with reputational concerns would be fruitful. Regardless, the fact that the inside VC₁ would be concerned about trilateral bargaining problems (Aghion and Bolton, 1992; Berglöf, 1994) significantly mitigates
financing round. The inside VC does not have an incentive to continue financing, and/or induce outside VC financing, when the entrepreneurial firm is facing bankruptcy.

3.5. Conclusion

Venture capital financial contracts can be designed to mitigate agency costs among syndicated investors and the entrepreneur. They may also limit mispricing and misstatement of capital requirements for later stage syndicated partners. Further, they may facilitate optimal continuation decisions such that most NPV projects continue to receive financing. Admati and Pfleiderer (1994) argued that "fixed-fraction" contracts fulfill these objectives. However, bankruptcy appears to be incorrectly assigned to the inside VC in their exposition. Moreover, the optimality of the fixed-fraction contract has been shown to depend on the absence of effort incentives (moral hazard). Given the fact that agency costs are the primary explanation for the existence of a venture capital market, this is a significant limitation. Generally, the inside venture capitalist will not be indifferent to the pricing of new securities issued to outside later stage investors because such prices will affect the parties' residual claim and effort, and hence will also affect the value of the firm and payoff to the inside venture capitalist. In a more general framework with moral hazard, a superior contractual structure was identified: the inside early stage venture capitalists finance with straight preferred equity and the outside later stage venture capitalists employ convertible debt.

If inside venture capitalists finance projects with straight preferred equity then one may expect to observe a positive relation between the use of straight preferred equity and the number of very early stage investments. Similarly, when additional capital is needed at the expansion stage of development, outside investors may be invited to participate as syndicates; therefore, a greater number of both convertible debt contracts and straight preferred equity contracts should be observed for expansion stage financing. Cumming (1999a) provides empirical evidence that more straight preferred equity contracts are observed for early stage investments and more straight preferred equity and convertible debt contracts are observed for expansion stage investments. These are plausible results in view of the discussion herein.

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VC's incentive entice VC to participate in negative expected NPV projects under the proposed contract.

Alternatively, if there is moral hazard, the optimality of fixed-fraction contracts requires the moral hazard effects among the entrepreneur and outside syndicated partners to be identical. In general, however, the effect of residual claim on effort, and the significance of each parties' effort to the value of the firm will differ across the parties (see Cumming, 1999a).
A theory of venture capital financial contracting should be able to account for the observed forms of finance as well as changes in the intensity of the use of observed form of finance over time. This paper has provided a rationale for the use of straight preferred equity by inside venture capitalists and convertible debt by outside syndicated partners. This contrasts with the conventional wisdom that convertible preferred equity is the optimal form of venture capital finance. Cumming (1999a) also documents the fact that convertible preferred equity has never been the most commonly used form of venture capital finance in Canada. A change in the conventional wisdom, and additional research on forms of venture capital finance, appear to be warranted.

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19 See Cumming (1999a) and supra, note 2.
20 See papers cited supra, note 2.
Table I
Syndication Example

There are two financing rounds. The first part of the Table provides the amounts invested. The second part of the Table outlines the cases. For each case, the inside VC₁ knows the salvage value of the firm if there is second-round financing. The outside VC₂ relies on the information provided by VC₁. If second-round investment does not happen then the salvage value of the firm is equal to $10.

<table>
<thead>
<tr>
<th>Amounts invested by the three parties for Cases A, B, C and D.</th>
<th>First-Round Financing</th>
<th>Second-Round Financing</th>
<th>Total Amount Invested</th>
</tr>
</thead>
<tbody>
<tr>
<td>VC₁</td>
<td>$50</td>
<td>VC₁</td>
<td>$50</td>
</tr>
<tr>
<td>Entrepreneur</td>
<td>$50</td>
<td>Entrepreneur</td>
<td>$0</td>
</tr>
<tr>
<td>VC₂</td>
<td>$0</td>
<td>VC₂</td>
<td>$50</td>
</tr>
<tr>
<td>Total</td>
<td>$100</td>
<td>Total</td>
<td>$100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Salvage Value</th>
<th>VC₁</th>
<th>VC₂</th>
<th>Entrepreneur</th>
<th>Should happen?</th>
<th>Will happen?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Fixed-fraction contract with VC₁ priority (as per Admati and Pfeiderer, 1994: 385) and no effort-related moral hazard costs</td>
<td>$140</td>
<td>$0</td>
<td>($)30</td>
<td>($)30</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>B. Fixed-fraction contract with equal priority and no effort-related moral hazard costs</td>
<td>$140</td>
<td>($)30</td>
<td>$0</td>
<td>($)30</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>C. Fixed-fraction contract with equal priority and effort-related moral hazard costs</td>
<td>$120+406³</td>
<td>-$100+0.5(120+406)</td>
<td>-$50+0.5(120+406)</td>
<td>-$50+0.5(120+406)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>D. Proposed contract with moral hazard VC₁: Straight Preferred Equity VC₂: Convertible Debt Entrepreneur: Common Equity</td>
<td>$120+406³</td>
<td>($)30</td>
<td>0</td>
<td>($)50</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1. This assumes that the price of securities issued at the first and second stage are equal. The continuation results hold for any second-stage pricing.
2. Assuming a $10 salvage value without second-round financing, VC₁ would like second-round financing to happen but VC₂ will not participate.
3. The price of second-stage securities must be low enough to provide (a risk neutral) VC₂ with at least 35.7% (50/140) of the firm's equity.
4. Value of the firm itself depends on the entrepreneur's residual claim (θ), and therefore also depends the price of securities issued at the second stage.
5. VC₁ overstates the value of second-stage securities to minimize moral hazard (and VC₂'s share, 1-θ) and maximize the value of the firm. VC₂ will not participate.
6. Moral hazard costs could be normalized to 0 without loss of generality with respect to optimal continuation in case D. The entrepreneur's equity share does not affect VC₁'s payoff in non-bankruptcy states. In bankruptcy states, trilateral bargaining dissuades VC₁ from seeking outside VC₂ participation.
Chapter 4. Moral Hazard, Adverse Selection and Venture Capital Financial Contracting

4.1 Introduction

The importance of small and medium sized enterprises (SMEs) in fostering research and development and economic growth has been well documented (Acs and Audretsch, 1990; Scherer, 1989; MacIntosh, 1994; Toronto Stock Exchange, 1979; Sharwood, 1989; Premier's Council, 1988). Venture Capital has become an increasingly important source of financing for SMEs (Macdonald, 1992; Riding and Orser, 1997), and the success of SMEs has been linked to the ways in which venture capital financial contracts are structured (Cornell and Shapiro, 1988; Sahlman, 1988, 1990; Brennan and Schwartz, 1988). The aim in this paper is to investigate the nature of optimal venture capital financial contracts for SMEs with different characteristics, including their stage of growth and the characteristics of the industry in which the firm operates. Empirical tests of the theory using Canadian data are also presented.

Since Jensen and Meckling's (1976) seminal article there has been extensive research on the relationship between optimal capital structure and the agency costs of equity and debt.\footnote{See Barnea et al. (1981) for a general discussion on agency problems and entrepreneurial capital structure.} *Agency costs of equity* are most notably the result of shirking (hidden action or "moral hazard"); the entrepreneur's incentive to work is reduced when the venture capitalist has part of the residual claim to the firm. *Agency costs of debt* consist of risk shifting (equity-holders take on excessively risky projects to transfer wealth from debt-holders), asset stripping (such as excessive dividends and managerial compensation which are particularly acute around the event of bankruptcy), and underinvestment (as the firm approaches bankruptcy, equity-holders lack incentives to adopt all positive NPV projects because most or all of the benefit accrues to debt-holders).

Because venture capital contracts are long term (typically 3 to 7 years) and venture capitalists are active investors that monitor and manage their investments, agency costs are particularly important to both venture capitalists and entrepreneurs alike. As discussed by Sahlman (1988, 1990), an agency relationship exists in three dimensions in most venture capital contracts. First, there is an agency relationship with the venture capitalist as the principal and the entrepreneur as the agent whereby the entrepreneur acts to ensure the success of the project on venture capitalist's behalf. Second, because venture capitalists are active investors that manage their investee firms (providing strategic and marketing advice, securing distribution channels, and finding suitable legal and accounting advisors, among other
things), an agency relationship exists in the opposite direction with the entrepreneur as the principal and venture capitalist as the agent. Third, there is an agency relationship among venture capitalists when deals are syndicated, where the general partner is the agent and the limited partners are principals. The effect of these agency relationships on the nature of the financing arrangement is the focus of this paper.

This paper focuses on the standard financial instruments: debt, convertible debt, preferred equity, convertible preferred equity, common equity, and combinations thereof. A broader contract space does exist in practice. For example, convertible debt is a hybrid bond that allows its bearer to exchange it for a given number of shares of common stock anytime up to and including the maturity date of the bond. A convertible bond is equivalent to a portfolio of 2 securities: (1) straight debt with the same coupon rate and maturity as the convertible bond, and (2) a warrant written on the value of the firm. A broader contract space, however, is not considered herein for a number of reasons. Papers that do consider a broader contract space (e.g., Aghion and Bolton, 1992), yield optimal contracts that resemble the standard financial instruments. The fact that the standard instruments in corporate finance are used most frequently suggests that considerable gains arise from standardization, and greater transaction costs arise from designing contracts to mimic the standard forms of finance (Berglöf, 1994; Macdonald, 1992). Regardless, the data (described in section 4.4 below) used to test the hypotheses developed herein has been recorded in such a way that if a contract was designed to mimic one of the standard forms of finance then the standard form was recorded.

It is often claimed (see, e.g., Barry, 1994; Berglöf, 1994; Bergmann and Hege, 1998; Carter and Van Auken, 1994; Cornelli and Yoshia, 1997; Gompers, 1998; Marx, 1998; Neher, 1993; Norton and Tenenbaum, 1992; Pozdina, 1990; Sahlman, 1988, 1990; Silver, 1987; Testa, 1988; Trester, 1998; Tyebjee and Bruno, 1984; and Wang, 1996) that convertible preferred equity is the optimal form of venture capital finance. The typical arguments that convertible preferred equity minimizes agency costs implicit in venture capital contracts are as follows. Convertible preferred equity provides the venture

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2 A warrant is a security issued by the firm in return for cash. It promises to sell m shares (usually one share) of stock to an investor for a fixed exercise price at any time up to the maturity date. Therefore a warrant is like an American call option written by the firm. It is not exactly the same as a call because, when exercised, it increases the number of shares outstanding and thus dilutes the equity of the stockholders.

3 Farmer and Winter (1986, p.1161) note that "[a]ny piece-wise linear, continuous sharing rule can be implemented by the issuance of debt, and a finite number of call options (or put options)". But note that there are very different incentive consequences of convertible debt relative to warrants issued with debt in discrete time versus continuous time contexts (Green, 1984). For the effects to be the same, the spanning portfolio must be revised at every instant.
capitalist with a stronger claim on the liquidation value of the company in the event of bankruptcy, thereby shifting the risk from the venture capitalist to the entrepreneur. At the same time, convertible preferred equity reduces the entrepreneur's dilution of ownership relative to straight common equity financing. Convertible preferred shares also enable a greater amount of funds to be raised relative to straight debt as the venture capitalist has some equity participation. In the context of staged financing, convertible preferred equity also ensures that most positive expected NPV projects continue to receive financing (Wang, 1996). Convertible preferred shares have also been argued to facilitate the conversion of illiquid holdings into cash (Sahlman, 1990), and mitigate problems associated with selling the firm (Silver, 1987) particularly when the incentive effects of trilateral bargaining are considered (Berglöf, 1994).

The conventional wisdom that convertible preferred equity is the optimal form of venture capital finance is refuted in this paper. This paper refers to Canadian data from 1977 to 1997 that clearly indicates convertible preferred equity has never been the most common form of venture capital finance. Theories that suggest the optimality of convertible preferred equity, or any other particular form of financing, fail to account for the observed use of a variety of forms of venture capital finance and the changes in the intensity of the use of different forms of finance over time. Theories that yield a unique optimal form of investment generally focus on moral hazard without also accounting for adverse selection. This is unfortunate as the presence of both moral hazard and adverse selection are paramount to the explanation of the existence of venture capital financing of new and developing enterprises (MacIntosh, 1994; Amit, Brander and Zott, 1997; Amit, Glosten, and Muller, 1990, 1993).

The theme of this paper is that the mix of financing instruments in venture capital is a response to conditions of asymmetric information: moral hazard and adverse selection. The form of investment defines the nature of the relational contract and risk allocation among a venture capitalist and the investee corporation. Each form of investment entails a different degree of commitment, communication, and coordination of activities, and facilitates alternative methods to respond to uncertainty. Optimal venture capital financial contracts will depend on the characteristics of the entrepreneurial firm: its stage of development, whether the firm is in a high-technology industry, the size of the required investment, the number of employees at the entrepreneurial firm, among other things. Different forms of moral hazard

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4 Agency costs among small and medium sized firms have resulted in the emergence of investors such as venture
and adverse selection are, it is argued, more pronounced at different stages of the relationship and for specific types of industries. Each financing instrument or strategy is best suited to deal with a particular set of problems, as developed in the literature on venture capital financing; thus predictions arise as to the optimum form of financing. The contribution of this paper is the use of the new data set to test the stylized predictions that flow from a synthesis of the literature.

Previous empirical research on venture capital finance is limited. Sahlman (1990) reports the exclusive use of convertible preferred equity by one venture capital organization's investments in five companies. Trester (1998) reports the results of a survey sent to eight venture capital firms that "had at least $250 million under management and had done in excess of 100 deals." Similarly, Gompers (1998) analyzes fifty investment rounds by only one venture capital organization in eight companies using only convertible preferred equity. Clearly, none of these samples are representative of the venture capital industry at large. The industry data used in this study provides a much more complete picture of the forms of finance used by venture capitalists. While Gompers' analysis focuses on the particular covenants used in convertible preferred equity contracts, the empirical analysis herein considers more generally the optimal form of finance used in venture capital contracts. Moreover, in contrast to the Gompers' empirical research, the econometric analysis herein accounts for an endogeneity issue that is inherent in adverse selection theory. While previous research has not investigated the relationship between observable characteristics of SMEs and optimal forms of venture capital finance, the unique empirical evidence confirms the hypotheses conjectured herein.

Venture capital financial contracts that mitigate moral hazard and adverse selection will enhance the growth opportunities for SMEs and therefore facilitate research and development and economic growth. Are there legal and/or institutional barriers that impede the ability of venture capitalists to design financial contracts that reduce moral hazard and adverse selection costs? This paper argues that such impediments do exist in Canada as a result of both securities legislation and Labour-Sponsored Venture Capital Fund legislation.

This paper is organized as follows. Section 4.2 begins by setting up a general framework within

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5 Contractual forms depend on the characteristics of the entrepreneurial firm; however, offers of different contracts will attract different firms. See infra, Principle 2 and accompanying text, and section 4.5.
which to analyze the venture capital financial contracting problem. In the subsections within section 4.2, additional structure is imposed upon the framework to develop testable hypotheses regarding optimal forms of finance. Insights into venture capital financial contracting are gleaned from the literature on the interplay between agency costs and corporate capital structure. Section 4.2 delineates the interplay between moral hazard and adverse selection costs, the financial contract, and the characteristics of SMEs. Section 4.3 considers the effect of taxes, securities legislation and Labour-sponsored Venture Capital Corporation Legislation on selected forms of finance. Section 4.4 describes the data used to test the theory. The empirical tests presented in section 4.5 employ 3SLS simultaneous equation regressions, and Durbin-Wu-Hausman tests and a bootstrap experiment in the appendices confirm the appropriateness of this methodology. The last section considers policy implications and concludes.

4.2. Agency Problems in Entrepreneurial Finance

The central theme in this paper is that certain agency problems associated with financing an entrepreneurial venture will be more pronounced depending on the stage of investment (start-up, expansion, buyout and turnaround stages, defined below) and characteristics of the entrepreneurial firm (number of employees and high-technology firms). The entrepreneur and venture capitalist(s) select the form(s) of finance (debt, convertible debt, convertible preferred equity, preferred equity, or combinations thereof) in response to agency costs associated with different investment transactions. In addition, the parties select the structure of the financing arrangement, which may or may not include staging (where capital flows are periodic and continued financing is contingent on ongoing performance reviews) and/or syndication (where there is more than one venture capital investor for a particular entrepreneurial firm). The choice of the structure of the financing arrangement is interrelated with the choice of the form of finance, as discussed below. This section of the paper develops testable hypotheses that link the characteristics of the entrepreneurial venture to the structure of the financing arrangement and selected form of finance. The following section considers the effect of taxes and securities legislation on venture capital financing arrangements. In addition, the effect of legislation creating different types of venture capital funds on the nature of the financing arrangement is assessed.

The theory herein is presented at a sufficient level of generality and with reference to a number of models of venture capital finance to account for the fact that agency costs depend on the characteristics of
the transacting parties. The analysis begins by outlining the elements common to each financing decision irrespective of the characteristics of the transacting parties. A framework with hidden action and hidden information in the presence of limited liability is considered. The entrepreneur has a project that requires funding. While funding can be obtained from banks or from VCs, the amount of external borrowing (bank debt) is predetermined where the entrepreneur borrowed money from other sources prior to negotiating financing with the VC. If a firm has bank debt then it is assumed that venture capital debt contracts are subordinated to the bank debt, which is the norm in Canada (see Macdonald, 1992).

Consider the following contracting ex ante agency framework in which the parties make a contract, effort decisions are made, and then uncertainty is revealed. There are two types of uncertainty: market uncertainty, and project quality uncertainty. The imposition of market and quality uncertainty enables consideration of both moral hazard and adverse selection costs, respectively. The entrepreneur and venture capitalist(s) comprise the (risk-averse) players. While all players in the model face market uncertainty, only the entrepreneur knows ex ante the quality of his or her own project. (Project \( \alpha \) is of higher quality than project \( \beta \) if the returns to \( \alpha \) second-order stochastically dominate the returns to \( \beta \).) The cost of the entrepreneur's project, the entrepreneurial capital contribution (and therefore the required amount of total outside investment) and the quality of the entrepreneur's project are exogenous variables. The effort of the entrepreneur, the effort of the venture capitalist(s), the structure of the deal (with staging and/or syndication, defined above), the form of VC finance and the equity-sharing rule (if common equity is employed) are endogenous variables. The equity-sharing rule provides the VC with a certain percentage ownership stake in the firm.

Following Amit et al. (1997), sequential rationality is assumed and therefore the multistage model is solved by backward induction. Consider, for example, a model with one investment round. In the

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6 Of course, in practice external bank debt may be obtained after the entrepreneur and VC contract; however, in that case VC contracts invariably specify the extent of external financing that the firm may invoke; see Jorg et al. (1991).

7 In other words, projects offer the same means but differ in their risks as in Stiglitz and Weiss (1981); see infra, note 12 and Principle 2.

8 Failure of entrepreneurs to invest all of their available capital would signal poor quality and hence VCs would not finance their project; see de Meza and Webb (1987, p.289).

9 Amit et al. (1997) used a slightly different set-up. In the first stage, the VC chooses equity participation and a sharing rule. In the second, the entrepreneur selected his or her own equity contribution and external borrowing. In the third, the entrepreneur chooses his or her own effort level. Finally, uncertainty is revealed and market returns are distributed. Their model had three players: banks (providing debt finance), a venture capitalist (providing common equity finance only), and an entrepreneur.
first stage the venture capitalist makes a financing offer which can either be accepted or rejected by the entrepreneur. A financing offer comprises the total dollar value, the form of financing and where the form of financing is not entirely debt, a sharing rule between the VC and the entrepreneur regarding the residual profits of the firm. The venture capitalist does not know the quality of the entrepreneur's project, but does have an idea about how quality is distributed across entrepreneurs. The entrepreneur, on the other hand, does know the quality of the project. If the financing offer is accepted, in the second stage the venture capitalist and entrepreneur choose their optimal effort level. Finally, after the second stage, uncertainty is revealed and returns are distributed.

Given this basic framework, it is now necessary to specify the characteristics of the transacting parties in order to impose more structure on the contracting problem to ascertain the structure of the financing arrangement (possibly with staging and/or syndication, defined above) and to determine the selected form(s) of finance. Different characteristics of entrepreneurial firms, including their stage of development, number of employees, and nature of their assets, are considered below in the subsections of part 4.2. Section 4.3 considers different types of venture capital firms that have arisen from legal and institutional constraints particular to Canada.

As an entrepreneurial firm's stage of development is one of its most salient features (MacIntosh, 1994), the various stages are analyzed first. The conventional stages, as defined in the literature (see, e.g., MacIntosh, 1994) and used in the venture capital industry (see, e.g., Macdonald, 1992), are as follows:

- **Start-up Stage**: the entrepreneurial firm may be based on a concept without a product or any marketing, or it may have a product being developed, but not yet sold commercially;
- **Expansion Stage**: the entrepreneurial firm requires significant capital for plant expansion, marketing, and to initiate full commercial production and sales;
- **Acquisition/Buyout Stage** [hereafter "Buyout Stage"]: the operating management of the entrepreneurial firm acquires a product line, a division, or a company;
- **Turnaround Stage**: the entrepreneurial firm is earning less than its cost of capital.

While these four stages are mutually exclusive, note that all firms go through the start-up and expansion
stage, but not all experience the buyout and turnaround stage in their life cycle. In addition, the following non-mutually exclusive characteristics of an entrepreneurial firm are considered:

- **First-Time Investees**: Entrepreneurial firms that have not received some form of investor-backed assistance (from banks, angel investors, or other venture capitalists);
- **High-technology Firms**: Entrepreneurial firms in high-technology industries (e.g., biotechnology, communications, computer, electronics, energy, environmental technology, and medical);
- **Few Employees**: Entrepreneurial firms with fewer than 100 employees.

Particular agency costs (including moral hazard, adverse selection, hold-up, free-riding, window-dressing, and trilateral bargaining) are more pronounced depending on the structure and stage of investment and the characteristics of the entrepreneurial firm. As the agency costs that arise in the buyout stage are the simplest, the buyout stage is discussed in first instance in subsection 4.2.1. The buyout stage is used as a vehicle to outline the basic agency principles; it is the analytical benchmark. The other three stages depart from the benchmark case in that they bring about more complicated agency relationships. Turnaround transactions are considered in subsection 4.2.2. Start-up and expansion stage financing is reviewed in detail in subsection 4.2.3. The differences between financing an entrepreneurial firm for the first time, and follow-on financing, are contrasted in subsection 4.2.4. Subsection 4.2.5 considers the nature of the financing arrangement for high-technology entrepreneurial firms. Entrepreneurial ventures with few employees are discussed in subsection 4.2.6. A summary of the testable hypotheses developed in these subsections follows.

The testable hypotheses are formed in part on the basis of the Canadian exits data employed by Cumming and MacIntosh (1999a); see Table 1. The exits data is not used to test the theory; rather, the exits data sheds light on the duration of investment and distribution of returns obtained from investees with certain observable characteristics. Canadian industry data (see section 4.4 below) is used to test the hypotheses. The Canadian exits data comprises 134 portfolio companies from 22 venture capitalists. U.S. exits data employed by Cumming and MacIntosh (1999a) from 13 venture capitalists and 112 portfolio companies are also included in Table 1 for comparison. The exits data depict four important
stages of a firm's development at which a VC may provide financing: buyout, turnaround, start-up and expansion. Whether or not the investee was in a high-technology industry was also recorded in the exits data. Table 1 presents on the cost, duration, and real return of these investments.

4.2.1. Buyout Stage Venture Capital Investments

Buyout financings [hereafter "buyouts"] provide the capital to enable operating management of the entrepreneurial firm to acquire a product line, a division or a company (Macdonald, 1992, at pp. 8-9). Buyouts are a relatively simple and therefore useful initial framework for analyzing venture capital financial contracts.

In general, venture capitalists are active investors that closely monitor and provide managerial input into their investments (in areas of managing, finding suitable legal advisors, strategic partners, underwriters, suppliers, marketing, *inter alia*; see MacIntosh, 1994; Sahlman, 1988, 1990). In the general case, therefore, the VC can increase the expected returns to the project through greater VC effort. The VC's effort will depend on the extent of financial commitment relative to the entrepreneur and the form of investment. As such, the VC's effort decision is made in conjunction with the financing offer. Because the returns to the venture depend on the effort of both the VC and the entrepreneur, there is a bilateral moral hazard problem. In the case of buyouts, however, the moral hazard problem is unilateral. Buyouts require a significant amount of effort on behalf of the entrepreneur to buyout the particular product line or company, but relatively little effort by the venture capitalist. The role of the venture capitalist in a typical buyout transaction is to provide the capital needed by the entrepreneur so that the entrepreneur, as the established expert in this enterprise and area of business with inside knowledge, can carry out his intended transaction without the VC's involvement (Macdonald, 1992).

A well-known result from moral hazard theory is that an agent's (the entrepreneur's or the venture capitalist's) effort is an increasing function of her residual claim (share in the profits) to the project:

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about venture capitalists' perceptions of investees in earlier periods entirely on the basis of the exits data may be suspect.  

Principle 1  

*An agent's effort is an increasing function of her residual claim to the venture.*

The intuition behind Principle 1 is straightforward. The risk-averse parties (the entrepreneur and the VC) take unobservable actions that affect the stochastic distribution of the size of the pie to be divided between them. The effort of each party yields a positive externality on the other party, but such effort is costly to both parties. As such, where the probability of bankruptcy is trivial, the entrepreneur's [venture capitalist's] effort into a venture is an increasing [decreasing] function of the relative amount of debt to equity provided the venture capitalist. A sharing rule that provides a greater equity share to the VC yields more [less] VC [entrepreneurial] effort.\(^\text{12}\) In view of the fact that buyouts require entrepreneurial effort, not VC effort, debt appears *a priori* to be a relatively more attractive form of finance than equity.

Staging (i.e., the VC provides periodic capital flows subject to performance reviews rather than a lump sum investment) generally enables the VC to monitor entrepreneurial effort (Gompers, 1995). Buyout transactions, however, do not require staged financing to facilitate monitoring. The nature of a buyout transaction is transparent (i.e., the transaction is observable by the parties and verifiable by a court). The parties can write a contract such that the VC's capital is used to provide the funds to enable the entrepreneur to buyout a product line or company, and the VC can exit (i.e., dispose of) the investment upon the completion of the buyout transaction.

The addition of adverse selection to moral hazard complicates the analysis but also suggests there may be more desirable forms of financing depending on how the venture capitalist perceives the characteristics of the entrepreneur. In a world with both hidden information and hidden action, the form of financing chosen will depend on the cumulative density functions of market uncertainty and project quality. An important result from adverse selection theory is that the distribution of project qualities depends on the type of financing offered by the venture capitalist:

Principle 2  

*In a venture capital financial market with both hidden action and hidden information, debt financing attracts relatively more low quality (i.e., riskier) projects than common equity financing.*

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\(^\text{12}\) The probability of bankruptcy may be non-trivial, in which case a VC that provided debt financing is a residual claimant in bankruptcy states. Therefore, where there is a non-trivial probability of bankruptcy, Principle 1 implies that the VC's effort will be positively related to the total amount of debt financing that the VC contributes to the project. This is in contrast to non-bankruptcy states whereby VC effort is positively related to the equity sharing rule (the VC's ownership stake in the firm).
The intuition behind Principle 2 is based on the seminal work of Stiglitz and Weiss (1981). Relative to more established firms, small and medium sized firms are charged higher interest rates on their loans from banks, and even higher rates from venture capitalists (Riding, 1997; Riding and Haines, 1994; Wynant and Hatch, 1990; Orser et al., 1993). As the interest rate increases, the mix of entrepreneurs seeking financing becomes worse. Low quality entrepreneurs are willing to borrow at high interest rates because they perceive their probability of repaying the loan to be low. High interest rates induce entrepreneurs to undertake projects with lower probabilities of success but higher payoffs when successful. Under debt financing, entrepreneurs can take on excessively risky projects and thereby transfer wealth from debt-holders (VCs) to equity-holders (themselves). This may induce low-quality high-risk entrepreneurs to pursue ventures that they might otherwise not have pursued under common equity financing (Principle 1; Stulz, 1990; Leland and Pyle, 1977). Stiglitz and Weiss' framework therefore implies that in the presence of pure adverse selection and in the absence of moral hazard, equity is the optimal form of finance (Stiglitz and Weiss, 1981, at pp.407-408; de Meza and Webb, 1987, at p.291).

In contrast to debt, equity provides venture capitalists with greater managerial participation and monitoring capacity, among other things, such that venture capitalists are better able to resolve information asymmetry and reduce risk shifting, asset stripping and underinvestment (MacIntosh, 1994, pp.88-89). Offers of equity financing tend to be accepted by entrepreneurs with projects where the

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13 It is important to recognize, however, that there exist other theories such as de Meza and Webb (1987, 1992), which suggest offers of equity finance attract the worst projects. The conflicting results are due to different assumptions regarding risk distributions across firms: Stiglitz and Weiss assumed mean-preserving distributions of project risk, whereas de Meza and Webb assumed expected returns differed across projects. de Meza and Webb's assumptions yield an overinvestment equilibrium, whereas Stiglitz and Weiss' assumptions yield an underinvestment equilibrium. Stiglitz and Weiss' framework appears to be a more accurate depiction of the market for financing small and medium sized enterprises (see, e.g., MacIntosh, 1994; Riding, 1997).

14 See Jensen and Meckling (1976), Myers (1977), Green (1984), Trebilcock et al. (1985). In the presence of limited liability entrepreneurs may also engage in asset stripping, such as excessive dividends and managerial compensation, in the event of bankruptcy to transfer wealth from debt-holders to equity holders (Halpern et al., 1980; Pettit and Singer, 1985). In addition, there is an underinvestment problem around the time of bankruptcy as entrepreneurs lack incentive to adopt all positive NPV projects because most or all of the benefit accrues to debt holders (Trebilcock et al., 1985). Small and high technology firms also have few assets for collateral; therefore, there are few contractual methods to reduce the agency costs associated with debt (MacIntosh, 1994, p.76).

15 It has been argued that in the presence of asymmetric information, debt financing signals more favourable information about the firm's investment prospects relative to a new equity issue in a public equity market (Myers and Majluf, 1984). That is, since new equity issues result in a dilution of the benefits associated with future investment opportunities, a new public equity issue may be interpreted as a signal of no promising future investment opportunities. Myers and Majluf's proposition, however, is not directly applicable in the case of venture capital finance of small and high technology firms. In
participation of the venture capitalist has the potential to significantly enhance the returns to the project and the entrepreneur is still inclined to go ahead when equity is issued.

Adverse selection costs are particularly important for venture capitalists. As discussed by Sahlman (1988, 1990), VCs care about both systematic risk (i.e., the correlation between overall market performance and the returns to the venture), as well as unsystematic risk (i.e., risk particular to the firm itself, such as the managerial expertise of the entrepreneurs). VCs actively monitor their investments. Given that they spend a great deal of time monitoring their investments, VCs will not always hold a fully diversified portfolio of investee firms (Barry, 1994). As a result, in addition to systematic risk, the unsystematic risk of a potential investee firm is also extremely important for VCs.

Given the extra adverse selection costs associated with debt financing (Principle 2), why would a venture capitalist ever use debt financing? The entrepreneur’s effort is more often than not a crucial element in the success of a project and debt financing yields greater entrepreneurial effort (Principle 1). It is therefore important for venture capitalists to consider the trade-off between moral hazard and adverse selection costs when selecting the financial contract for a prospective entrepreneur. Noe and Rebello’s (1996) recent work develops a theory of optimal capital structure that combines the predictions from the literature on moral hazard and adverse selection in the context of debt and common equity financing. Although their model focuses on the agency relationship between managers and shareholders, the implications of their model are applicable to venture capital financing.16 The following Principle (based on Noe and Rebello, 1996, Propositions 3 and 4) delineates when some common equity will be issued. Note that debt financing leaves the entire residual claim to the venture in the hands of the entrepreneur (in non-bankruptcy states) and therefore, by Principle 1, entices greater effort (or “rent”) from the entrepreneur. At the same time, however, there are adverse selection costs associated with debt financing as debt attracts riskier projects (Principle 2).

Contrast to investors in public equity markets, venture capitalists are active investors who, with equity incentives, will provide input to increase the returns to the venture (Principle 1). Dilution of current entrepreneurial equity interests may therefore be associated with an increase in investment opportunities, thereby dismissing the relevance of Myers and Majluf’s proposition in the context of venture capital finance.

16 Noe and Rebello (1996) assume there exists two states of nature (high and low) and two managerial quality levels (good and bad). Their set up is a discrete version of the more general set up of Amit et al. (1997) with continuous distributions of market and quality uncertainty; however, in contrast to Amit et al. where the VC only employed common equity financing, Noe and Rebello’s set up enables an assessment of the impact of moral hazard and adverse selection costs on the use of debt and equity financing.
Principle 3  

In a financial market with hidden action and hidden information, the venture capitalist (VC) will finance entirely with debt whenever:

\[
\frac{VC's \text{ capital contribution}}{Entrepreneur's \text{ contribution}} < \frac{\text{Moral hazard effect of debt finance}}{\text{Adverse selection costs of debt finance}}
\]

While Noe and Rebello (1996) provide a more quantitative model with formal precision, the qualitative intuition underlying Principle 3 is as follows. The numerator of the right-hand side will be greater where the entrepreneur's effort is more important to the success of the venture relative to that of the VC (Principle 1). The denominator of the right-hand side is proportional to the risk associated with debt finance (Principle 2).\(^{17}\) An increase in the numerator (or decrease in the denominator) of the right-hand side increases the expected return to the venture. The left-hand side is the ratio of financing provided by the VC to the entrepreneurial equity contribution. Where the ratio of the benefits (reduced moral hazard) to the costs (increased adverse selection) of debt financing exceed the ratio of external to internal funding of the entrepreneur's project, debt is chosen over equity (Noe and Rebello, 1996, Proposition 3).

There is typically little quality uncertainty and unsystematic risk associated with buyout ventures (MacIntosh, 1994; Macdonald, 1992). Buyout stage firms are relatively more established than their counterparts in earlier stages of development. It is therefore relatively easier for VCs to screen buyout investments by analyzing the history of the firm and the entrepreneur's work habits and track record. Therefore, adverse selection costs associated with debt finance in buyout transactions are relatively insignificant and there is little need to syndicate a buyout transaction for reasons of risk sharing, among other things.\(^{18}\) Moreover, as discussed above, moral hazard costs (with the VC as the agent) are also negligible such that increasing the VC equity share does not materially increase the value of a buyout transaction; but moral hazard costs (where the entrepreneur is the agent) are significant. As such, if the VC's initial capital contribution relative to that of the entrepreneur is sufficiently small, debt would appear to be a particularly useful form of finance for a buyout transaction as the entire residual claim is in the hands of the entrepreneur. On the other hand, if the entrepreneur's financing needs are sufficiently large, then the VC will require equity participation provided by common share financing to induce VC

\(^{17}\) The unit of measurement for the numerator and denominator of the right-hand side of the inequality in Principle 3 is irrelevant (as long as it is consistent).

\(^{18}\) See also infra, subsection 4.2.3.
participation (Principle 3).

While straight debt financing (or a mix of debt and common equity when the VC’s capital contribution is sufficiently large) appears to be a particularly useful form of finance for buyouts, are there nevertheless gains to employing convertible debt, convertible preferred equity, or straight preferred equity in buyout transactions? Various arguments have been advanced to suggest that convertible debt has a role in financing certain entrepreneurial ventures. First, because of the relative insensitivity of convertible bonds to the risk of the issuing company, it is easier for the bond issuer (the entrepreneur) and the purchaser (the venture capitalist) to agree on the value of the bond. This makes it easier for them to come to terms and requires no bonding or underwriting service by investment bankers (Brennan and Kraus, 1987; Brennan and Schwartz, 1988). Buyouts, however, are less risky transactions than turnarounds, start-ups, and expansion stage investments. It is much easier to assess the value of a buyout transaction because the firm has an established track record. Second, convertible debt may be better tailored to the cash flow patterns of rapidly growing firms. The coupon rate on convertible debt is lower than straight debt because the right to convert is worth something. The lower coupon rate during early years keeps the probability of bankruptcy lower than straight debt; then, if the firm is successful, more cash will be available for growth after conversion takes place. But because buyout stage firms have established track records and demonstrated profits, this rationale does not apply for buyouts.

Convertible debt may also mitigate agency costs associated with financing entrepreneurial ventures for three primary reasons. First, entrepreneurs will be less inclined to undertake excessively risky projects (which would increase the risk of bankruptcy) to increase expected entrepreneurial wealth because the conversion privilege associated with convertible debt allows the VC to participate in the value created if riskier projects are undertaken (Green, 1984). In a buyout transaction, however, the specific nature of the transaction and purpose of the venture capitalist’s contribution can be clearly outlined and pre-specified (i.e., buyouts are observable by the parties and verifiable by courts). Second, the convertibility option mitigates problems associated with the incentive effects of trilateral bargaining (giving up control to a third party; see subsection 4.2.2 below). Trilateral bargaining, however, is not at issue in buyout transactions. By definition, entrepreneurs in buyout transactions are interested in acquiring a firm or product line; they are certainly not interested in giving up control to a third party.

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Third, the convertibility option may induce greater effort from an agent across all the different possible states of nature (i.e., for different market outcomes) even though the agent's payoff is higher in only some states (Farmer and Winter, 1986). An option to convert from debt to common equity, for example, provides the venture capitalist with a higher return in some states, but induces higher effort across all states. As discussed above, however, in a buyout the venture capitalist has little or no role in increasing the value of a buyout transaction. There is no reason to provide the venture capitalist with an option to convert. Option contracts are not needed because, for reasons discussed above, it is desirable to make the entrepreneur the sole residual claimant in the transaction. In sum, convertible debt does not appear to add value to a buyout transaction. Moreover, the absence of unsystematic risk inherent in buyout transactions (buyout investments in Table 1 had the lowest standard deviation in returns) makes the opportunity cost of forgoing convertibility privileges quite insignificant.

Convertible preferred equity and convertible debt differ in that fixed payments prior to conversion and equity sharing rules after conversion are dissimilar. In contrast to a convertible preferred equity contract, the holder of a convertible debt contract (that has not been converted) has the right to force the firm into bankruptcy if the promised coupon payment is not forthcoming. A convertible preferred equity contract (that has not been converted) provides the investor with the right to cumulative stipulated dividends prior to dividend payments to common equityholders. Nevertheless, convertible debt and convertible preferred equity share common features. As with convertible debt, convertible preferred equity induces greater VC effort in all states, even though the VC's payoff is higher in only some states (Farmer and Winter, 1986). Moreover, the convertible option in both convertible preferred equity and convertible debt has also been argued to mitigate agency problems associated with selling the firm (Silver, 1987) particularly when the incentive effects of trilateral bargaining (Aghion and Bolton, 1992) are taken into account (see subsection 4.2.2 below). Regardless, as discussed above, these rationales for employing convertible contracts do not apply for buyout transactions.

20 Jensen and Meckling (1976) first conjectured this idea; Green (1984) later formalized this argument.
21 Haugen and Senbet (1981, 1986) argue that agency costs can be reduced to zero with a single option; Farmer and Winter (1986) point out that options cannot eliminate agency costs, but nevertheless have a role in mitigating agency costs.
22 A higher residual claim to the manager in the high-output state is also facilitated by the fact that the shadow cost associated with the financing constraint of increasing the manager's share is lower in the high-output state (Farmer and Winter, 1986). But optimal effort levels where the gains to additional effort are fully internalized by each party cannot be achieved by options in financial contracts (Farmer and Winter, 1996). Nevertheless, incentive schemes to alleviate the bilateral moral hazard problem in a variety of contractual settings have been the subject of much research in industrial organization; Tirole, ibid., at p. 178. See, e.g., Holmström (1982) on the use of a third party to make the other parties residual claimants.
23 However, this may be due to the sample size; see Table 1.
Sahlman (1990) provides the most comprehensive survey of the attributes of convertible preferred equity financing. First, convertible preferred equity creates a mechanism for deriving income from an investment that is only marginally successful through pre-specified dividend payments. Nevertheless, buyout transactions financed by debt yield similar, but more certain, results.\(^{24}\) Second, Sahlman argues that the venture capitalist often acquires redemption rights as well as rights to sell their shares on the same terms as entrepreneurs under convertible preferred equity contracts, which enhances liquidity. The exit mechanism associated with debt financing, however, is transparent and prespecified (liquidity is only an issue with equity). Third, the conversion terms can be specified such that they are tied to the performance of the firm (i.e., the better the performance, the greater the conversion price, thereby lowering the dilution of the entrepreneur's equity share upon conversion and increasing the entrepreneur's effort). The unimportance of VC effort in buyouts, however, negates any rationale for VC equity ownership in the first place. Fourth, there may be taxation benefits to the use of convertible preferred equity (Sahlman, 1990). That is, the issuance of convertible preferred equity lowers the value of the outstanding common stock and therefore lowers the compensation (i.e., tax payable by) the entrepreneur. In a buyout transaction, however, the moral hazard effect (i.e., lower entrepreneurial effort) of issuing convertible preferred shares will likely dominate this tax effect. Finally, convertible preferred equity shifts risk from the venture capitalist to the entrepreneur and therefore serves as a screening device (the entrepreneur will only accept the contract if she is confident of her abilities and deeply committed to the venture). The necessity of this screening device, however, is limited for an established entrepreneur effecting a buyout transaction.

While convertible preferred equity undesirably lowers the value of entrepreneurial equity in buyouts, is there nevertheless a rationale for employing straight preferred equity in buyout transactions? It has generally been noted that "[t]he theory of finance has no good explanation for why some firms use alternative financial instruments such as... preferred stock..." (Copeland and Weston, 1988, p.473). In the context of venture capital financing, however, Cumming (1999b) argues that preferred equity mitigates agency costs among syndicated venture capitalists (see subsection 4.2.3 below). However, preferred equity does not appear to be a particularly wise choice for buyout transactions. Relative to debt, straight preferred equity does guarantee a periodic return on the investment. An entrepreneur that

\(^{24}\) There is no obligation to pay preferred dividends but there is an obligation to pay interest on debt.
insists on preferred equity over debt in a buyout transaction would signal the firm's inability to pay pre-specified interest payments and therefore low quality.

In sum, debt financing is conjectured to be the optimal form of finance for buyout transactions. It was also noted that a mix of debt and common equity might also be observed where the venture capitalist's capital contribution is significant (Noe and Rebello, 1996). Because buyout firms have an established track record, unsystematic risk is low relative to systematic risk. Adverse selection costs are therefore not as significant for buyout investments relative to other investments.

**Hypothesis 1** *A greater proportion of contracts with at least some debt will be observed for buyout investments.*

The contractual environment in the following subsection is similar to buyout transactions in that the entrepreneurial firms in this subsection and the following subsection have been in existence for some time. However, the environment below differs in that the entrepreneur seeks venture capital assistance because the entrepreneurial enterprise is no longer earning its cost of capital. This contractual environment gives rise to a significantly different set of agency problems than that described above.

### 4.2.2. Turnaround Stage Venture Capital Investments

*Turnaround firms* are ones in which the investee business is earning less than its cost of capital (Hambrick, 1985). Turnarounds tend to have a high failure rate and high variability in returns (Table 1). A unique menu of agency costs arises within the context of a turnaround investment. On one hand, bilateral moral hazard costs from shirking are low. Because entrepreneurs are faced with the prospect of unemployment, entrepreneurial shirking costs are unlikely to be significant. Shirking on behalf of the VC will also be insignificant because of the substantial capital contribution typically required by the VC.

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23 The role of combining straight debt and common equity in reducing agency costs has been considered in other theoretical research. Aghion, Dewatripont and Rey (1990) show that straight debt and common equity have complementary roles in that the fixed payment of debt reduces managerial compensation in bad states and limits investment in takeover defences, whereas equity enables efficiency-enhancing takeovers. Berglöf (1994) shows that a combined debt and common equity contract limits potential trilateral bargaining conflicts (in the sense of Aghion and Bolton, 1992) associated with the sale of the firm because the entrepreneur has control in good states of nature and the VC has control in bad states of nature. However, in Berglöf's (1994) set-up, the combined debt-equity contract is inferior to a convertible contract; see infra section 4.2.2.
On the other hand, costs of entrepreneurial incompetence and the risk of asset stripping are significant for turnaround ventures. Risk shifting problems are also characteristic of turnaround investments. As turnarounds approach bankruptcy, inside equity holders (entrepreneurs) will not have the incentive to adopt all positive NPV projects because such projects only (or mostly) benefit debt-holders. Inside equity holders will adopt excessively risky projects in order to transfer expected wealth from debt-holders to equity-holders (Jensen and Meckling, 1976; Green, 1984). Convertible debt mitigates risk shifting problems because the VC shares in any increase in equity value associated with risk shifting (Green, 1984).

One of the most significant agency problems in the context of a turnaround investment arises from *trilateral bargaining* (Berglöf, 1994). As described in Aghion and Bolton's (1992) seminal paper, trilateral bargaining problems arise when a third party (an outside investor) contracts with the entrepreneur (after the initial VC and the entrepreneur contract) such that the entrepreneur and third party extract surplus from the initial VC. Trilateral bargaining problems are particularly acute when the entrepreneurial firm is experiencing financial distress. When the entrepreneurial firm is doing poorly, the entrepreneur may give up control of the firm to lower the cost of outside financing. The cost of outside financing from a third party investor is lower where the third party investor acquires control over the firm and the outside party attaches value to the control rights. The arrival of a third party investor can therefore improve the situation of the entrepreneur and worsen the situation of the initial venture capitalist (see Berglöf, 1994). The entrepreneurial firm is better off when it no longer faces bankruptcy as a result of the low cost additional financing provided by the third party investor. The third party investor is better off after gaining effective control over the firm's assets. The situation of the initial VC may be worsened after the arrival of the third party investor that acquires control of the firm and strips the firm's assets without paying full value (the value of an entrepreneurial firm's assets is often difficult to ascertain in court; see Berglöf, 1994). The initial venture capitalist therefore has a strong incentive to select a form of finance that provides control over the firm's assets under different states of nature (resolutions of market uncertainty).

Berglöf (1994) shows that convertible preferred equity and convertible debt mitigate trilateral

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26 Note that VCs have a significant incentive to put forth significant effort under debt financing because as a firm approaches bankruptcy, debt-holders are in fact residual claimants to the firm's assets (see Principle 1 and accompanying text).
bargaining problems in times of financial distress.\textsuperscript{27} The reason is that the option to convert allows the parties to contract on the state of the market. The option to convert will be exercised upon a favourable realization of market uncertainty, and the control of the firm's assets will change after the securities have been converted. A state contingent allocation of control protects against the incentives of two parties contracting to extract surplus from a third party. The convertibility option in securities held by the VC enables the VC to retain effective control over the decision to sell the firm regardless of the state of nature. In the event of good economic times, the VC converts his securities into common equity to capture the upside potential of the firm's value. (The VC may or may not have effective control after conversion, depending on the terms of conversion. In the event that the VC is a minority equity-holder after conversion, the VC still benefits as a residual claimant capturing the upside value of the firm.) Importantly, however, in bad states the VC retains effective control and can prevent the entrepreneur from contracting with a third party to extract surplus from and worsen his situation as the initial VC. As a result, convertible contracts will be more frequently employed among investments in entrepreneurial firms that are not earning their cost of capital.\textsuperscript{28}

Given the potential for these distributional conflicts in times of financial distress, the initial venture capital investor has little incentive to syndicate (i.e., to find third party investors for) turnaround investments. Staging may nevertheless be employed to reduce risk exposure. Regardless of whether turnaround investments are staged, convertible securities will still be employed (as discussed in subsection 4.2.5 below, convertible securities mitigate agency costs manifest in staged and non-syndicated investments).

Because venture capitalists invariably plan to exit their investments (by IPOs, acquisitions, secondary sales, buybacks, or writeoffs) in view of obtaining capital gains, one might reason that contracts are structured \textit{ex ante} with eventual exit in mind (Berglöf, 1984; Cumming and MacIntosh, 1999a; MacMillan \textit{et al.}, 1985; Sahlman, 1990). The role of convertible securities in limiting agency

\textsuperscript{27} A contract that combines straight debt and straight common equity also mitigates trilateral bargaining, but is inferior to a convertible contract (Berglöf, 1994, Proposition 5). The least effective contract is one that uses only straight debt or only straight common equity (Berglöf, 1994). Other research has suggested that the high agency costs associated with turnaround investments make leverage less valuable and monitoring more valuable (Harris and Raviv, 1991).

\textsuperscript{28} Berglöf (1994) derived this result generally, irrespective of whether the firm was at the turnaround stage. However, an entrepreneur's incentive to lower the cost of outside finance will be more pronounced at the turnaround stage.
costs associated with the sale of the firm will be relevant in so far as sale provisions cannot be contracted for at the initial contract stage. Moreover, convertible securities will be selected to mitigate trilateral bargaining costs only when the contracting parties perceive such costs to be more important than other agency costs. For example, even though VCs will eventually exit buyout transactions, convertible contracts are not optimal for buyouts (see subsection 4.2.1 above) and trilateral bargaining is not at issue when an entrepreneur buys out to acquire control. In contrast, when an entrepreneurial firm is not earning its cost of capital (i.e., in a "turnaround stage"), an entrepreneur has a pronounced incentive to give up control of the firm to a third party and extract surplus from the initial VC investor.

In addition to mitigating the perverse incentives associated with trilateral bargaining, when an entrepreneurial firm is doing poorly there may be another reason for employing convertible securities. Marx's (1998) theory on the optimal form of venture capital finance yields a prediction similar to Berglöf's (1994). Marx argues that convertible preferred equity dominates both straight common equity financing and straight debt financing by generating the right incentives for a risk-averse venture capitalist to intervene in the project as a response to poor performance. Marx assumed that the VC could increase the return to a poor performing project but not one that is performing moderately well or better. Intervention is not cost-free (the VC must exert effort and the entrepreneur loses the benefit of control) but intervention does increase the expected value of the project in the first order dominant sense. Given Marx's assumptions, straight debt is not optimal. There will be excessive intervention by the VC because the VC is the sole residual claimant under a debt contract when the entrepreneurial firm is doing poorly. The VC only considers his/her benefit and the cost of intervention without taking into account the entrepreneur's benefits/costs. Similarly, a straight common equity contract is suboptimal because there will be too little intervention. When the entrepreneurial firm is doing poorly, the venture capitalist bears the full cost of the effort associated with the intervention but shares the benefit of the intervention with the entrepreneur. In contrast, under a convertible contract the venture capitalist's payoff contains a fixed part and a proportional part. By choosing appropriate parameters the convertible preferred equity

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29 For example, a shotgun clause stipulates that any party must be willing to sell at any offer that (s)he makes to buy out the other party.
30 This point explains the fact that convertible preferred equity and convertible debt have never been the most common form of VC finance in Canada (see Figure 1 below). Berglöf's theory also fails to account for the changing intensity in the use of different securities over time (Figure 1). Moreover, Berglöf's theory is incomplete as it focuses on the agency problems upon exit and does not account for the role of financial instruments in mitigating agency costs between the entrepreneur and the VC at the initial contracting stage, or in the context of staging and/or syndication (discussed below).
31 Marx labels anything that is not straight debt or straight common equity as convertible preferred equity.
contract could induce the VC to choose the efficient intervention strategy.12

In sum, convertible contracts mitigate against problems of risk shifting (Green, 1984) and trilateral bargaining (Berglöf, 1994), and may provide desirable incentives for VC intervention (Marx, 1998) when the entrepreneurial firm is doing poorly. As a result, it is expected that VC investments in firms that are earning less than their cost of capital to be financed with convertible securities.

Hypothesis 2 A greater proportion of convertible securities will be observed for turnaround investments.

In the previous two subsections, entrepreneurial firms that have been in existence for a while were considered. The agency problems that arise under the financing of very early stage entrepreneurial firms that do not yet have an established product, or are in need of significant capital for expanding production of a product, are explored in the following subsection.

4.2.3. Start-up and Expansion Stage Venture Capital Investments

Start-up firms are in their early stages of development. The firm may merely be based on a concept without a product or any marketing, or it may have a product being developed, but not yet sold commercially. Start-ups generally require a moderate amount of capital, and VC’s tend to invest in start-ups for a relatively long time (typically at least 5 years; see Table 1).

Three factors characterize start-up firms. First, start-ups have significant systematic risk (the returns to start-up investments are highly dependent on the state of the economy). Their inherent systematic risk arises from the fact that R&D, product development, and market research comprise their entire expenditures. In effect, start-ups have significant operating leverage (fixed to variable costs) which makes their success contingent on the state of the economy (MacIntosh, 1994). Second, start-ups have a high degree of unsystematic risk and informational asymmetry (Principle 2) for the following reasons

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12 Unfortunately, this result is driven by the assumptions underlying the model. Marx assumes that intervention by the venture capitalist can prevent some bad returns but cannot affect the probabilities of high returns. This is an inaccurate depiction of the role of venture capital finance (see, e.g., MacIntosh, 1994; Amit et al., 1997). Since intervention by the VC is sometimes efficient and contracts provide proper incentives for intervention to occur when and only if it is efficient, it is optimal to give the venture capitalist the right to intervene (i.e., a convertible preferred equity contract).
difficulties perseverance generally ups (Macintosh, 1994; Barclay and Smith, 1995). They have, by definition, little or no track record; start-ups typically have not been incorporated for more than one year (Macdonald, 1992, at pp. 8-9). Start-ups generally have a single product (or no product at all) without a demonstrated market potential. The difficulties faced by start-ups generally makes their success highly dependent on the abilities and perseverance of the entrepreneur. It is difficult to assess the entrepreneur's risk preferences, non-pecuniary preferences, and work-leisure preferences, and therefore difficult for the VC to evaluate the investment (Pettit and Singer, 1985). As a result, adverse selection costs will be significant for start-up investments. A third characteristic of start-ups is that they tend to have significant moral hazard costs (in which the VC is the principal and the entrepreneur is the agent). The malleable nature of their assets provides entrepreneurs of start-up firms with greater discretion to invest in personally beneficial strategies. If financing is in the form of equity, then entrepreneurs may not invest in risky projects; if financing is in the form of debt, then entrepreneurs may invest in projects that are too risky in order to transfer expected wealth from debt-holders to equity holders. VCs therefore stipulate a number of restrictive provisions in contracts with start-up firms to prevent risk shifting (Jog et al., 1991).

Expansion stage investments provide the entrepreneurial firm with significant capital for plant expansion, marketing, and initiation of full commercial production and sales (Macdonald, 1992, at pp. 8-9). Expansion investments are typically made for about four years, and VCs tend to contribute quite a large amount of capital to the project relative to entrepreneurs at the expansion stage (Table 1). As with start-ups, expansion stage firms have non-trivial levels of systematic and unsystematic risk, a variety of growth options, and require a significant amount of effort to ensure their success.

In net, the significant growth options available to start-up and expansion stage firms give rise to a number of agency costs and a role for staging (periodic capital flows, rather than a lump-sum investment) to facilitate monitoring (Gompers, 1995). This is in contrast to the buyout stage where there is little need to monitor through staging as agency costs and informational asymmetry are significantly less pronounced (see subsection 4.2.1).

Syndication describes the structure of a venture capital arrangement with a lead "inside" investor(s) (involved in earlier financing rounds) and a number of "outside" investors involved at later financing rounds (Sahlman, 1988, 1990). In the start-up and expansion stages of investment there are
significant rationales for syndicating venture capital investments (Lerner, 1994). First, syndication is a valuable part of the venture capital screening process in the initial investment stage (Sah and Stiglitz, 1986). Second, syndication enables risk avoidance through risk sharing (Wilson, 1968). Third, syndication may also enable VCs to exploit informational asymmetries and collude to overstate their performance to potential investors upon VC exit (Lakonishok et al., 1991). Fourth, and perhaps most importantly, theoretical and empirical evidence suggests a positive relationship between the number of suppliers of capital to a firm and the growth opportunities of a firm (Houston and James, 1996). Reliance on one supplier of capital provides that supplier with an information monopoly that adversely affects investment incentives because of potential hold-up problems (Rajan, 1992). Such hold-up problems will be particularly acute for firms with substantial growth opportunities (Hooks and Opler, 1993) because a single supplier has too much control over liquidation (exit) decisions. For all these reasons, an "inside" venture capitalist that finances an early stage firm with significant growth opportunities and high informational asymmetry will seek "outside" syndicated investors.

In contrast to earlier stage investments, the rationales for syndication do not apply for buyout and turnaround stages. In the buyout stage, there are significantly less informational asymmetries and uncertain growth opportunities as the firm has an established track record and the nature of the transaction is transparent (see subsection 4.2.1). In the turnaround stage whereby trilateral bargaining problems are significant, a syndicated investor may exacerbate the adverse incentives associated with trilateral bargaining; third party investors are precisely what the initial VC is trying to avoid in turnaround financings.

A financial contract in a staged and syndicated investment relationship seeks to minimize agency costs among the entrepreneurial firm and its syndicated investors (Admati and Pfleiderer, 1994; Lerner, 1994). In particular, the interdependent financial contracting objectives are to (1) limit free-riding on effort between the outside and inside VCs, (2) minimize overstatement / underatement of capital requirements by the inside VC to the outside VCs, and (3) facilitate optimal continuation decisions (all positive NPV projects). Admati and Pfleiderer (1994) show that the objectives are met when the payoff to the inside VC is independent of the financing provided by the outside VCs. Admati and Pfleiderer therefore suggest that the optimal contract is a fixed-fraction contract, whereby the inside VC finances a constant fraction of all future investment and receives the same fraction of the firm's payoffs. The
intuition is as follows (Admati and Pfleiderer, 1994: 385-387). If the inside VC obtained a higher [lower] fraction than that which he financed, then he would want to continue to finance [abandon] some projects that should be abandoned [financed]. The fixed-fraction contract also helps to resolve the informational advantage that the inside VC has over the outside investors. The payoff to the inside investors under a fixed fraction contract is independent of the pricing of new securities issued to outside investors. The price of new securities only affects the division of the surplus between outside investors and the entrepreneur. As such, the inside VC does not have an incentive to misrepresent the value of new securities, and reputational concerns will lead the inside VC to truth telling.

Cumming (1999b) re-examines the optimality of Admati and Pfleiderer's (1994) fixed-fraction contract for staged and syndicated venture capital investors. The goals of limiting overpricing / underpricing of securities, limiting overstatement / understatement of capital requirements, and continued financing of positive NPV investments were not disputed. Rather, Cumming (1999b) shows that the optimality of a fixed-fraction contract significantly depends on the absence of moral hazard in Admati and Pfleiderer's (1994) model. Consideration of moral hazard is particularly important in view of the fact that the presence of agency costs in financing small and medium sized enterprises is considered to be the primary explanation for the existence of a venture capital market.\(^{13}\) With the addition of moral hazard, the fixed-fraction contract cannot achieve the three interdependent contracting objectives outlined above. In particular, the inside venture capitalist has an incentive to misrepresent the value of securities issued to outside venture capitalist(s) when the entrepreneur's effort depends on her residual claim, and her effort affects the value of the firm (and therefore also affects the value of the inside venture capitalist's claim).\(^{14}\) Under fixed-fraction contracts in realistic settings that incorporate moral hazard, resolution of information asymmetry only occurs in the unrealistic case in which the effort of the outside VC and the entrepreneur have the same relation to their equity share and the same effect on the value of the firm. In the typical case where the entrepreneur's effort is more directly related to her residual claim and has a greater effect on the value of the firm than that of the outside VC, fixed-fraction contracts do not resolve informational asymmetry and do not facilitate optimal continuation.

\(^{13}\) With the presence of agency costs (moral hazard and adverse selection costs), it is expected that a group of specialized investors with enhanced ability to monitor and screen investments; see MacIntosh (1994), Amit, Brander and Zott (1997), Amit, Gosten and Muller (1990, 1993).

\(^{14}\) Note that Admati and Pfleiderer's (1994) result will still hold if the effort of entrepreneur and outside venture capitalist are perfect substitutes, and the relation between residual claim and effort is identical across both parties.
Cumming (1999b) proposes that the optimal security design under syndication that achieves the three interdependent objectives of optimal continuation, mitigating mispricing and misstatement of capital requirements is as follows: the inside VC employs straight preferred equity and the outside VC(s) employs convertible debt (see Chapter 3 of this thesis). The insider's claim to the firm's assets is fixed and dividend payments are pre-specified. Importantly, note that when the inside VC is a straight preferred equity holder and the outside VC is a convertible debt holder, the incentive to misprice securities and misstate capital requirements is minimized because the investors are never among the same priority class. The inside VC does not hold convertible preferred equity because perverse incentives may arise if the inside and outside VCs both convert to common equity and thereafter receive interdependent payoffs. *Because the inside VC (a straight preferred equity holder) is never a residual claimant and the entrepreneur (a common equity holder) is always a residual claimant, there is no relation between the payoff to the inside VC and the entrepreneur's residual claim/effort.* Therefore, even if the entrepreneur's effort has a greater impact on the value of the firm than the outside VC's effort, the inside VC has no incentive to overstate the price of securities issued to the outside VC. Informational asymmetry between the outside VC (a convertible debt holder) and the entrepreneur (a common equity holder) is resolved by the inside VC (a straight preferred equity holder) for any given relation between firm value, residual claim and effort of the outside VC and the entrepreneur.

In anticipation of possible bankruptcy, there may be a positive relation between the entrepreneur's effort and the expected payoff to the inside VC as a preferred equity holder. However, entrepreneurial shirking costs are less pronounced as the entrepreneur faces the prospect of unemployment in the event of bankruptcy (Cumming, 1999b). Moreover, the inside VC has little incentive to seek syndicated investors for entrepreneurial firms that are near bankruptcy because of pronounced trilateral bargaining problems (see the turnaround stage in subsection 4.2.2 above). Mispricing will therefore not be a significant problem because the inside VC's payoff is, for the most part, independent of the price of newly issued securities. The inside VC will also not benefit from

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35 Bankruptcy states are an exception to this statement, as discussed below.

36 As the firm approaches bankruptcy, there may be an underinvestment problem if equity-holders lack incentives to adopt all positive NPV projects where most or all of the benefit accrues to debt-holders. Nevertheless, the inside VC does not have an incentive to entice new outside investment in anticipation of near certain bankruptcy (see subsection 4.2.2 above), especially if the inside VC must finance part of the new investment and the outside VC has priority (Cumming, 1999b).

37 Recall that moral hazard costs can be mitigated but never completely eliminated (Farmer and Winter, 1986).
exaggerating the enterprise's capital requirements in anticipation of possible bankruptcy because outside VCs have priority in bankruptcy (as long as debt has not been converted into common equity; see Cumming 1999b). Similarly, in non-bankruptcy states the inside VC will not benefit from misstating capital requirements because the inside VC's payoff is independent of capital provided by the outside VCs in non-bankruptcy states. The inside VC will in fact benefit from truthfully revealing information to protect reputational assets and ensure timely payment of pre-specified dividends associated with his straight preferred equity securities.

There are at least three reasons why outside VCs will want to hold convertible debt instead of straight debt. First, VCs are typically active investors and the option to convert from debt to common equity provides an incentive to contribute significant effort to ensure the success of the venture (Haugen and Senbet, 1981, 1986; Farmer and Winter, 1986). In contrast, banks typically finance with straight debt as they are less active investors. Second, the convertibility option facilitates risk sharing between the entrepreneur and the outside venture capitalist (Admati and Pfleiderer, 1994: 394) as the payoff to the outside VC (entrepreneur) is greater (lower) in good states and lower (greater) in bad states. Third, convertible debt mitigates risk-shifting problems. The entrepreneur will have less incentive to undertake excessively risk actions to transfer expected wealth to herself from fixed claimants because the outside VC can convert his securities to capture the upside benefit (Green, 1984).

In sum, high informational asymmetry, bilateral moral hazard, significant growth options, and significant potential for hold-up problems characterize start-up and expansion stage investments. Start-up investments are therefore typically financed with straight preferred equity by an "inside" investor that gains knowledge about the firm as it develops its concepts and products. In the expansion stage, both "inside" and "outside" investors participate when significant capital is needed for growth. If the inside VC finances with straight preferred equity and the outside VCs finance with convertible debt then the investors' payoffs are independent and mispricing of securities, misstatement of capital requirements and free-riding on effort will be mitigated and optimal continuation decisions facilitated.

**Hypothesis 3** A greater proportion of straight preferred equity contracts will be observed for start-up investments.

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Note that the inside VC may require compensation for the risk associated with the "newness" of the investment; see infra, Hypothesis 5 and accompanying text.
Hypothesis 4  A greater proportion of straight preferred equity and convertible debt contracts will be observed for expansion investments.

So far, section 4.2 has reviewed the role of alternative forms of finance in reducing moral hazard and adverse selection costs in the buyout investment stage (subsection 4.2.1), turnaround stage (subsection 4.2.2) and start-up and expansion stages (subsection 4.2.3). These investment stages are mutually exclusive. The following three subsections consider other characteristics (which are not mutually exclusive) of the investment transaction and entrepreneurial firm that may affect the selected form of finance. In particular, subsection 4.2.4 contrasts first-time financing with follow-on investments. Subsection 4.2.5 considers high-technology entrepreneurial firms. Finally, the effect of financing firms with few employees is analyzed in subsection 4.2.6.

4.2.4. First-Time Financing versus Follow-on Financing

First-time financing, or "new" investments, which will generally have more uncertain quality than follow-on investments (i.e., investments in firms that have previously received some form of investor-backed assistance, such as angel financing; see Riding and Orser, 1997), will impart higher adverse selection costs than follow-on investments (MacIntosh, 1994; Gompers, 1995). New investments are a distinguishable characteristic in a venture capital transaction that will bear relevance on the selected form of finance. New investments are distinct from start-ups, for example, because new investments are characterized by the adverse selection costs whereas both moral hazard and adverse selection costs are associated with start-ups. (New investments may or may not have moral hazard; the only distinguishing characteristic of "newness" is the risk associated with never having invested in the enterprise before, which makes the risk associated with the investment more pronounced.) By Principles 2 and 3 (see subsection 4.2.1 above), it is expected that a greater proportion of common equity contracts will be observed for new investments in order to mitigate adverse selection costs. In addition, because of the relative insensitivity of convertible securities to the risk of the issuing firm, it is easier for the entrepreneur and the VC to agree on the value of the securities (Brennan and Kraus, 1987; Brennan and Schwartz, 1988). Therefore, a greater proportion of convertible securities may also be observed.

Hypothesis 5  A greater proportion of common equity and convertible securities will be observed for
first time financing (i.e., "new" investments).

It is important to note that the fact that an investment is "new" does not in and of itself suggest the use of common equity or convertible securities, but does suggest an independent rationale for employing such securities. As discussed, a new investment can also be characterized by it's the firm's stage of development, for example, and the agency costs associated with different investment stages may be relatively more important in certain transactions. A new investment may also be a high-technology enterprise, which may bear relevance on the selected form of finance, as discussed in the following section.

4.2.5. High-Technology Entrepreneurial Firms

Technology financing encompass all firms in the biotechnology, communications, computers, electronics, energy, environmental technology, medical and other high-technology industries. Technology firms have a greater degree of information asymmetry than non-technology firms (MacIntosh, 1994; Helwege and Liang, 1994). A significant percentage of technology firms' assets are intangible (such as human capital); therefore, technology firms may be difficult to value. As such, there may be significant adverse selection costs with technology firms, especially smaller technology firms (MacIntosh, 1994), and therefore such firms will carry less debt (see also Titman, 1984; Titman and Wessels, 1985). The tangible assets of technology firms also have a high degree of specificity (i.e., few alternative uses) which impairs the collateral value of technology sunk investments (Wynant and Hatch, 1991), reduces the benefits of financial leverage (Williamson, 1988), and reduces liquidation values (Shleifer and Vishny, 1992). Technology firms are therefore unlikely to be financed by debt.

MacIntosh (1994, at p.81) argues that "the danger of [entrepreneurs] shirking is not likely to be a significant one for the small, technology firm, given that entrepreneurs are self-selecting individuals of high motivation with a drive to succeed." There will likely be concern over VC shirking, however, as venture capitalists can significantly add to the value of technology firms because of their comparative managerial ability, role in finding suppliers, strategic partners, legal advisors, underwriters, and marketing (Riding and Orser, 1997). Therefore, straight common equity may be optimal for technology firms to minimize adverse selection costs (Principle 2) and maximize VC effort (Principle 1) without
dampening the effort of self-selecting entrepreneurs.

Hart and Moore (1994), on the other hand, argue that greater managerial rents exist with the intangible assets in technology firms because they are harder to replace. If moral hazard costs (with the entrepreneur qua agent) are perceived to be significant by the VC, and because adverse selection costs are non-trivial for technology firms, neither straight debt nor straight common equity will be employed. Rather, the VC will stage the capital contributions. Staging facilitates a reduction in agency costs by enabling the VC to monitor the entrepreneur and discontinue funding if the VC receives negative information about the entrepreneur's performance and the firm's prospects (Gompers, 1995; Cornelli and Yoshia, 1997).

Venture capitalists face a trade-off in deciding whether to syndicate an investment in a high-technology enterprise (see also subsection 4.2.3 above). On one hand, syndication may reduce the potential for hold-up, particularly where there is substantial entrepreneurial investment in highly specific assets. Syndication may also improve screening and facilitate risk sharing for risky high-technology entrepreneurial ventures. Importantly, syndication may also lead to strategic alliances with other entrepreneurial firms, which may enhance the value of the investment upon the VC's exit. On the other hand, syndication may be less common for high-technology firms as greater effort is typically required by the venture capitalist to ensure the success of the venture (e.g., assessing the suitability of technical equipment, monitoring, and timing initial public offerings; see MacIntosh, 1994). It is also more difficult for members of a syndicate to monitor each investors' value added, and therefore VCs can more easily free ride on the effort of other syndicated partners for high-technology investee firms.

In contrast to the U.S. experience (Lerner, 1994), there has been relatively little syndication of high-technology investments in Canada (Amit et al., 1997). The most likely explanation for this difference is the comparative lack of specialization of Canadian venture capitalists (MacIntosh, 1994), which mitigates the rationales for syndication for at least two reasons. First, a venture capital firm that invests in a diverse array of entrepreneurial firms, both high technology and otherwise, is less likely to search for a syndicated investor for a high-technology investee for reasons of enhancing the value of the investment by locating strategic partners for the entrepreneurial firm. A venture capital firm that focuses on a particular industrial sector, on the other hand, will more likely locate a strategic partner
for the investee through syndicating the investment with other venture capitalists. Second, a venture capitalist will have less of a need to find a syndicated partner to facilitate screening of a high-technology investment when other venture capital firms do not have comparative expertise in valuing a potential investee firm in any particular industrial area.

It is therefore expected that high-technology venture investments in Canada may be staged, but will rarely be syndicated. Optimal forms of finance for staged financing without syndication have been investigated in previous research by Wang (1996) and Cornelli and Yoshia (1997). Wang (1996) presents a model with stage financing (without syndication) and bilateral moral hazard (but without uncertainty regarding project quality). In Wang's framework, convertible preferred equity is optimal as it mitigates the bilateral moral hazard problem and positive NPV projects continue to be financed. The intuition is as follows. A straight equity contract is sub-optimal because future investment requirements may be greater than the VC's expected equity share, and therefore the VC may not continue to fund some projects that have a positive net present value. A correctly specified convertible preferred equity contract provides sufficient incentives for most positive NPV projects to be funded. Bilateral moral hazard is also mitigated (but not completely eliminated) because the VC's payoff is greater when the project does better, thereby providing the VC with an incentive to put forth optimal effort and continue to fund the project. The entrepreneur's payoff also depends on the performance of the project so that she has sufficient incentive to work.

Cornelli and Yoshia (1997) also argue that convertible contracts mitigate the informational asymmetries in staged financings (without syndication) because there is an agency cost in the termination decision. Entrepreneurs will overstate the project's performance (i.e., engage in "window dressing") whenever additional capital is required in order to increase the probability that the VC will continue to fund the project. This incentive to window dress is mitigated by convertible contracts whereby conversion sufficiently reduces the entrepreneur's equity share.

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39 Similarly, Mayers (1998) shows that convertible contracts control over-investment incentives in sequential financing.
40 Note that it is important that informational asymmetries be minimized to ensure efficient later-round investment decisions (i.e., only positive NPV projects continue to receive funding).
41 Entrepreneurs may nevertheless "window dress" only just enough so that the VC will want to continue to fund the project without converting debt or preferred equity into common equity. Financial instruments do not eliminate, but do mitigate, agency costs (Farmer and Winter, 1986).
In staged financing of high-technology ventures, convertible preferred equity is more likely to be employed than convertible debt as debt is less suited to the cash flows and research expenditures of developing high-technology firms (MacIntosh, 1994). Cumming and Macintosh (1999e) also evidenced a greater proportion of total expenses allocated to research and development among firms with relatively less debt (see also MacIntosh and Cumming, 1999).

In sum, high-technology entrepreneurial firms may be financed with common equity in the event that moral hazard (with the entrepreneur qua agent) is insignificant (MacIntosh, 1994). When moral hazard is significant, high-technology investments will be staged to facilitate monitoring (Gompers, 1995). Convertible preferred equity contracts mitigate informational asymmetries and ensure optimal continuation in staged investments (Wang, 1996; Cornelli and Yosha, 1997). Debt is less suited to cash flow patterns of research intensive high-technology firms (MacIntosh, 1994; Cumming and Macintosh, 1999e).

**Hypothesis 6** *A greater proportion of common equity and convertible preferred equity contracts will be observed for technology investments.*

### 4.2.6. Entrepreneurial Firms with Few Employees

Moral hazard costs (with the entrepreneurs qua agents) are more pronounced under VC equity financing when there are fewer employees in the entrepreneurial firm. The reduction in entrepreneurial effort as a result of equity financing will be less significant where the residual claim is distributed among a large number of entrepreneurs. For example, assuming equal sharing among entrepreneurs and equal sharing between the entrepreneurs and the VC, the residual claim to a single employee will change from 50% to 25% under equity financing if there are two employees; however, the residual claim to a single employee will only change from 1% to .5% under equity financing if there are 100 employees. Therefore, moral hazard costs (with the entrepreneurs qua agents) associated with common equity finance are more pronounced among firms with fewer employees / residual claimants (for a given specification of the marginal utility of income and marginal disutility of effort in the comparison across firms). Of course, moral hazard will not be more pronounced where the entrepreneurial firm is hierarchical and the employees are wage claimants. However, research has documented the fact that employees in entrepreneurial firms are often made residual claimants in order to enhance employee incentives (wages
with bonuses and monitoring tend to be less effective; see, e.g., Sykes, 1992). Venture capitalists often look for such incentive contracts to ascertain the quality of the firm before they provide financing (Sykes, 1992). As a result, a greater proportion of straight preferred equity and straight debt contracts, which leave the residual claim in the hands of the entrepreneurs, are expected for investee firms with few employees.

**Hypothesis 7** *A greater proportion of straight preferred equity and straight debt contracts will be observed for investee firms with few employees.*

In sum, the theme in section 4.2 has been that the mix of financing instruments and the structure of the venture capital contract is a response to conditions of asymmetric information. Problems of moral hazard and adverse selection are more pronounced at the (mutually exclusive) stages of the entrepreneurial firm's development (buyout, turnaround, start-up and expansion). In addition, three non-mutually exclusive firm characteristics were conjectured to independently affect the selected form of finance: first-time financing, high-technology firms and firms with few employees. Section 4.4 details the data that will be used to test the seven hypotheses developed above and the empirical results are presented in section 4.5. Before testing these hypotheses, the impact of legislation on forms of venture capital finance is assessed in the following section.

### 4.3. Legal and Institutional Barriers Impeding Efficient Venture Capital Contracting

While the previous section considered the role of agency costs in shaping venture capital contracts, section 4.3 evaluates the effect of legal and institutional impediments on VC finance. The impact of taxes, Canadian securities regulation, and Canadian Labour-sponsored Venture Capital Corporation legislation on the structure of VC contracts is considered. Because legal and institutional factors may distort the choice of financial instruments irrespective of agency costs, these factors are addressed before the empirical results based on Canadian data are presented.\(^{42}\)

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\(^{42}\) It is also important to note that statutory constraints may generally affect the choice of financing stage, which in turn will affect the choice of financing instrument.
4.3.1. Taxation

The traditional approach to the analysis of corporate capital structure considered the trade-off between tax benefits from debt finance (leverage) and expected bankruptcy costs. In a world with corporate taxes and without personal income taxes, the value of leverage is equal to the difference between value of a levered and unlevered firm. This difference is equal to the product of the corporate tax rate and the market value of debt (Modigliani and Miller, 1963; Copeland and Weston, 1988, p.451). Numerous examples exist in the literature illustrating the value of leverage in a world with corporate taxes and without consideration of personal taxes (e.g., Riding and Orser, 1997, p.9). Miller (1977), however, showed that the gain to leverage was much smaller than was previously thought. Importantly, Miller (1977) showed that any leverage advantage of debt is counterbalanced by the fact that the before tax return on bonds must be high enough to offset the disadvantage of income tax on income from bonds in order to induce investors to hold bonds. In this way the required interest payments on bonds have already been "grossed up" by any differential that bondholders must pay on their interest income and therefore the leverage advantage from debt financing is at best negligible. Therefore, one can begin from a position of indifference to debt vis-à-vis equity financing by evoking arguments pursuant to an equilibrium whereby the tax advantage of debt is grossed up in bond yields (Miller, 1977).43 In light of Miller's (1977) thesis, even if they have a relatively small impact on the value of the firm, expected agency costs can nevertheless determine optimal capital structure as long as agency costs exceed the transactions costs associated with achieving that optimum (Barnea et al., 1981, at p.15). The importance of some factor other than taxes, such as agency costs, in determining capital structure is evidenced by the fact that even before there were corporate taxes, firms had debt in their capital structure (Copeland and Weston, 1988, at p.509).

Within the particular context of venture capital financial contracting, Sahlman (1990) has noted that there may be taxation benefits to the use of convertible preferred equity. That is, the issuance of convertible preferred equity lowers the value of the outstanding common stock and therefore lowers the compensation (i.e., tax payable by) the entrepreneur. It has been argued, however, that the issuance of

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43 To the extent that there is a tax advantage associated with debt instead of equity may be more of an issue in the U.S. (where there is a dividend tax credit). Recent evidence from Fama and French (1998), however, shows that signalling obscures any tax effects. Nevertheless, there is one tax issue in Canada with Labour-sponsored Venture Capital Funds, discussed infra, subsection 4.2.6 and section 4.3.
other forms of finance also lower the value of common stock (e.g., the issuance of additional common stock may lower the value of outstanding common stock; see Myers and Mjlf, 1984). Moreover, the comparative dearth of convertible preferred equity contracts in the data (section 4.4) suggests a significant tax advantage associated with convertible preferred equity does not exist (or at least other factors, such as agency costs, have been relatively more important). Regardless, even if there is a slight tax advantage to issuing convertible preferred equity, there has not been a change to the tax legislation in Canada between 1977 and 1997 (the years covered by the data; see section 4.4) that has been pertinent to selected forms of venture capital finance. As the empirical tests (section 4.5) account for changes in patterns of finance over time, taxes are not part of the equation.

4.3.2. Canadian Securities Legislation

Securities regulation in Canada has significantly curtailed the formation of a secondary (resale) market for the equity of firms in their earlier stages of development in at least three important respects (see generally MacIntosh, 1994, at s.5). First, escrow requirements (so that the entrepreneur and venture capitalist do not desert the project after a public offering) tend to be overly onerous in Canada (MacIntosh, 1994, at pp.114-15,148-49), thereby limiting the incentive of entrepreneurs and venture capitalists to float an initial public offering. As IPOs are the most suitable form of VC exit for high-quality entrepreneurial firms in an unregulated market (Cumming and MacIntosh, 1999a), escrow requirements reduce the value of the equity of firms in their earlier stages of development. Second, the required disclosure in primary and secondary markets is cost-ineffective for smaller issuers in Canada (MacIntosh, 1994, at pp.115-24). For small investments (less than $150,000 in Ontario), a prospectus must be filed.44 Preparing and filing a prospectus, however, is often as costly. At this level of investment, most investors require a substantial fraction of equity share in the firm (see Principle 3); however, the reluctance of entrepreneurs to forgo equity interests is one of the most common reasons for the breakdown of contractual negotiations between small-scale investors and entrepreneurs (Jog et al, 1991). As a result, the onerous prospectus requirement in Canada prevents small-scale investments from being made (MacIntosh, 1994, pp.101-104).45 Third, legislation imposing resale restrictions is

44 See O.Regs. s.19(e)(1); see also Gillen (1992), p.194, for a discussion of similar but somewhat less restrictive legislation in the other provinces.
45 The size of VC investments in Canada is typically much larger than VC investments in other countries (MacIntosh, 1994; Riding and Orser, 1997). However, U.S. investments were generally larger than their Canadian counterparts in Cumming and
particularly onerous in Canada. For example, securities purchased pursuant to a prospectus exemption prior to the firm’s initial public offering (IPO) are subject to a hold period of 12 months even where all the securities are of the same class. The differential treatment between pre- and post-IPO securities was motivated by “back-door underwriting” concerns; however, commentators argue that it is not justified (MacIntosh, 1994, at p.108). Hold periods are also different for different types of securities. As Canadian regulators view bonds and preferred equity to be inherently safer than common equity (this is surprising in light of Principle 2), hold periods for bonds and preferred equity are notably shorter (MacIntosh, 1994, at p.107).

In sum, Canadian securities legislation has impeded the development of a secondary resale market for equity securities of small and medium sized firms in Canada. The exit mechanism is implicit with debt. With equity, on the other hand, a viable secondary market is needed to ensure suitable exit. Therefore, equity-type securities, and especially pure common equity securities, are less likely to be issued in financing start-up and expansion investments than that which might otherwise be the case. This will impact the overall level of observed forms of finance over the years covered by the data (1977-1997; see Figure 1 in section 4.4). However, there have not been changes to securities legislation between 1977 and 1997 that have affected the use of different forms of finance over time. A variable for securities legislation is therefore not employed in the empirical tests in section 4.5.

4.3.3. Canadian Labour-sponsored Venture Capital Corporation Legislation

Labour-sponsored Venture Capital Corporation (LSVCC) legislation was introduced in most Canadian jurisdictions around the late 1980s in order to facilitate business and employment growth. The generous tax incentives provided to those that invest in Labour Sponsored Venture Capital Funds (LSVCFs) has fundamentally changed the nature of small business financing in Canada. LSVCCs now

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MacIntosh’s (1999a) exits data (see Table 1 above).

46 Back-door underwriting involves an issuer that sells securities to individuals who would qualify for a prospectus exemption. The securities are then immediately resold to individuals who would not qualify for such an exemption.

47 Equity contracts with buyback provisions also ensure exit. However, there is no market mechanism to determine the suitable buyback price, and buybacks are generally an inferior exit vehicle (Cumming and MacIntosh, 1999a).

48 Note that straight common equity has been the most commonly used form of venture capital finance in Canada in recent years in spite of the negative liquidity effects of Canadian securities legislation. This suggests the relative importance of other factors driving the observed pattern of different forms of venture capital finance.

49 For a description of the Canadian venture capital market and government involvement therein, see Colcy (1990) and Best and Mitra (1997).
have over $4 billion under management (more than half of the industry total) and over 80% of new venture capital came from LSVCFs in the last two years.\(^{30}\) In recent years, LSVCCs have received more funds than they can invest. For example, Working Ventures, the largest LSVCC, recently had to halt trading of its fund until it could invest contributed funds.\(^{31}\)

Cash windfalls attract less experienced entrants that may overinvest\(^ {32} \) and monitor less efficiently than experienced VCs (Blanchard, Lopez de Silanes and Shleifer, 1994). In effect, there is a significant moral hazard problem (with the LSVCC's managers qua agent). Common equity (see Principle 1) and convertible securities (see Farmer and Winter, 1996) are therefore attractive instruments in that they provide LSVCC managers with incentives to do the best they can for the entrepreneurial firm.

Unlike private venture capital corporations that purely invest for profit, LSVCCs mix the goal of profit maximization with that of job creation and/or investing in enterprises with a union affiliation. In addition, LSVCC legislation imposes a number of constraints on the manner in which funds can be invested, including:\(^ {33} \)

1. sixty percent (under the federal legislation) of new funds received must be invested within a certain amount of time after receipt (otherwise a penalty is imposed\(^ {34} \)) and the remaining assets must be invested in liquid securities;
2. investee firms cannot have more than $50 million in assets or 500 employees;
3. 50% or more of employees must be full time and 50% or more of wages must be paid to residents in the jurisdiction governing the LSVCC;
4. investee firms cannot carry on business or reinvest funds outside Canada; and
5. LSVCCs cannot invest more than the lesser of $10 million or 10% of the equity capital of the Fund in any one business.

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\(^ {30} \) In 1996, for example, labour-sponsored funds accounted for $1.2 billion of $1.5 billion in new cash inflows into Canada's venture capital market. See Macdonald & Associates' 1997 CVCA Annual Report.

\(^ {31} \) See "Working Ventures Puts Capital Raising on Hold" at www.newswire.ca...June996/05/c0564.html.

\(^ {32} \) Greater liquidity leads to more and larger investments (Jensen, 1986).


\(^ {34} \) Under the Ontario and federal legislation, for example, the fund pays a 20% deficiency tax and additional penalties (including possible revocation of the fund's registration) depending on the circumstances.
Because LSVCCs must invest in projects within a limited amount of time from the date of receipt of funds, the quality of their screening process is inferior. LSVCCs should therefore seek to reduce adverse selection costs by using more equity relative to debt (see Principle 2 discussed above). At the same time, however, four competing factors have been in play. First, LSVCFs are RRSP eligible investments, and therefore LSVCCs prefer interest payments (deductible by a corporate player and non-taxable to the recipient) to dividends (which bear non-refundable tax at the corporate level). Second, LSVCCs can only invest the lesser of $10 million or 10% of the equity capital in any one company; under this limited capital contribution, debt investment is more likely to be employed than equity (see Principle 1 discussed above). Third, LSVCFs have been subject to much public scrutiny because they have received excessive amounts of capital and have achieved mediocre returns. In order to enhance the book value of returns, LSVCCs have been noted to use debt instruments so that the annual accrued interest makes their performance appear to be relatively better on an annual basis. Fourth, the quality concerns surrounding LSVCCs suggest an issue of certification (see, e.g., Barry et al., 1990; Megginson and Weiss, 1991; Holmström and Tirole, 1997). An entrepreneurial firm associated with a VC organization with an inferior reputation will have a more difficult time obtaining external capital from banks and/or outside venture capitalists (Emerick and White, 1992). Therefore, LSVCCs may use relatively more debt (instead of employing third-party debt or debt from outside VCs) where additional leverage is desired by the entrepreneur. (Relatedly, if the VC firm is not as good at giving advice and other VC support, then there is less need to give the VC firm an equity stake to provide incentives to help the entrepreneurial venture.) In sum, these four factors suggest that LSVCCs have an incentive to employ debt, or at least convertible debt, irrespective of the financial instruments that would minimize the moral hazard and adverse selection costs associated with their investees.

**Hypothesis 8**  
*LSVCCs employ proportionately more debt and convertible debt.*

In section 4.2, moral hazard and adverse selection costs were conjectured to be more pronounced at different stages of development (buyout, turnaround, start-up and expansion stages), first-time financing, and for different industries (high-technology and otherwise) and firms with few employees. On the basis of a synthesis of the literature and the VC exits data, seven hypotheses were formed relating the observable characteristics of entrepreneurial firms to the alternative forms of venture capital finance (debt,

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This observation was made by Mary Macdonald of Macdonald & Associates (the firm that collects data for the Canadian
convertible debt, preferred equity, convertible preferred equity, common equity, and combinations thereof). In section 4.3, legal and institutional factors affecting the forms of venture capital finance were also noted. Taxation and securities regulation were assessed, but such legislation has not changed between 1977 and 1997, the years covered by the data (section 4.4). The effect of Canadian Labour-sponsored Venture Capital Corporation legislation was also evaluated. The introduction this legislation in various Canadian jurisdictions between the mid 1980s to the early 1990s suggested an additional hypothesis to be tested in the empirical analysis in section 4.5. The eight hypotheses are summarized in Table 2.

Noe and Rebello (1996, at p.653) note that "[n]ot surprisingly, few of the hypotheses [pertaining to the role of different forms of financing in reducing moral hazard and adverse selection costs] have been tested empirically." The remainder of this paper attempts to fill this gap by providing the first empirical tests of different forms of venture capital finance. These tests are carried out using a new data set described below in section 4.4. A discussion of the empirical methodology and the presentation of the results follow in section 4.5.

4.4. Data

Aggregate annual data (1977-1997) from Macdonald and Associates' Canadian Venture Capital Association (CVCA) Annual Reports is used to test the hypotheses developed in the previous sections. Macdonald & Associates (1992, at pp. 10-11) provide a brief descriptive analysis of Canada's venture capital industry since the industry's inception in 1952. The pre-1977 period is not considered in this paper because industry data is not available. Prior to the mid 1970s there were only a few firms operating in the industry and venture capital was not recognized as having a "nucleus" or basis for the evolution of a "diverse structure" until the mid 1970s.

The annual aggregate industry data from employed in the econometric analysis below measures the number of investments in entrepreneurial firms with different characteristics, including the number of:

- Start-up investments;
- Expansion-stage investments;

Venture Capital Association during a lecture at the University of Toronto Law School in February, 1998.
Buyout investments;
- Turnaround investments;
- High-technology investments;
- New investments;
- Investments in firms with fewer than 100 employees;
- Investments using only common equity, preferred equity, convertible preferred equity, straight debt, and both debt and common equity; and
- Investments in firms located in each Canadian jurisdiction.

The data on the number of investments (as a percentage of the total number of investments) using different forms of finance in Canada is depicted in Figure 1. Common equity has been the most common form of VC finance, especially in recent years. Since 1991, debt has been the second most commonly used form of finance, followed by roughly equal numbers of investments with convertible debt and mixes of common equity and debt. Although many authors (e.g., Barry, 1994; Berglöf, 1994; Bergmann and Hege, 1998; Carter and Van Auken, 1994; Cornelli and Yoshia, 1997; Gompers, 1998; Marx, 1998; Neher, 1993; Norton and Tenenbaum, 1992; Pozdena, 1990; Sahlman, 1988, 1990; Silver, 1987; Testa, 1988; Trester, 1998; Tyebjee and Bruno, 1984; and Wang, 1996) have claimed convertible preferred equity is the optimal form of venture capital finance, in Canada convertible preferred equity has never been the most common form of VC finance.

4.5. Econometric Analysis

Empirical tests of the hypotheses are presented in this section with the following econometric specifications. Six equations are specified with six forms of finance (common shares, preferred shares, convertible preferred shares, convertible debt, debt with common shares, and debt) used as left-hand side variables.\(^56\) The right-hand side variables in the equations are as follows: a constant; the lagged value of the left-hand side variable; the number of start-up, turnaround, expansion and buyout investees; the number of investees with fewer than 100 employees; the number of new investments; and the number of investees in technology intensive industries. A variable was also included to account for the introduction

\(^56\) Other equations were estimated with combinations of other securities recorded in the data. However, combinations of other securities were employed significantly less frequently than those reported, and the estimated coefficients were all statistically insignificant.
of LSVCC legislation in the various Canadian jurisdictions. The LSVCC variable is the sum of the number of jurisdictions that had adopted LSVCC legislation in each year.\(^{57}\) The first equation in the system of equations is as follows:

\[
\text{Common Equity} = \beta_0 + \beta_1 \text{Common Equity (lagged 1 period)} + \beta_2 \text{Start-up} + \beta_3 \text{Expansion} + \beta_4 \text{Buyout} + \beta_5 \text{Turnaround} + \beta_6 \text{New Investment} + \beta_7 \text{Technology} + \beta_8 \text{Employees (< 100)} + \beta_9 \text{LSVCC Legislation} + \epsilon
\]

The other equations in the system are almost identical, except for the different lagged left-hand-side variables. Both the left-hand and right-hand side variables (except the LSVCC legislation variable) are expressed as a percentage of the total number of investments.\(^{58}\) Note that the first observation was dropped because the lagged left-hand side variable was used. In addition, note that the lagged left-hand side variables for other forms of finance are not included in each equation (e.g., only the lagged common equity variable appears on the right-hand side of the common equity share equation). To identify the model, it would be desirable to include other forms of finance for each equation; however, such a system was not estimable because there were too many right-hand side variables for the data. As such, cross-equation restrictions were imposed to identify the model: the system was estimated with cross-equation equality restrictions on the \(\beta_1\) coefficients.\(^{59}\)

The following approaches to estimating the six equations were contemplated: equation-by-equation ordinary least squares (OLS), equation-by-equation two-stage least squares (2SLS); seemingly unrelated regression (SUR) methodology (Zellner, 1962), and three stage least squares (3SLS). 2SLS or 3SLS estimation is more appropriate than OLS or SUR estimation if some of the explanatory variables in the system are endogenous. The theoretical framework suggests the right-hand side variables of the system are potentially endogenous because offers of a particular form of financing by one venture capitalist may elicit acceptance by some entrepreneurs, but not others. That there are different adverse

\(^{57}\) Quebec was the first jurisdiction (1983), followed by the federal jurisdiction (1988). There are now 8 jurisdictions with similar LSVCC legislation; see Vaillancourt (1997).

\(^{58}\) The sum of the left-hand-side variables does not sum to one as there were "other" financing mixes in the data. The "other" equation was dropped from the system; see Barton (1968).

\(^{59}\) Without imposing the cross-equation restrictions, the estimates are dependent on the equation that is left out of the estimated system; see Berndt and Savin (1975) and Anderson and Blundell (1982) for details. Other identifying restrictions were contemplated; however, the cross equation restrictions appeared to be the most suitable on the basis of the likelihood dominance approach to model selection (Davidson and MacKinnon, 1993, at ch.14.3). As well, very few of the estimates changed in any significant way as a result of imposing the cross-equation restrictions. This is in part illustrated by the 2SLS results in Table 6 in Appendix B.
selection costs with different financing instruments (Principle 2) suggests that some of the variables may be endogenous. Durbin-Wu-Hausman tests for endogeneity (see Appendix A) show that the effect of endogeneity is significant; therefore, neither equation-by-equation OLS nor SUR estimation is employed.

3SLS estimation generates asymptotic efficiency gains over 2SLS unless there is no contemporaneous correlation among the error terms or unless the regression functions are linear and identical across the equations in the system, in which case Kruskal's Theorem applies (Davidson and MacKinnon, 1993, at ch.9.7). As the regression equations are not identical across the system of equations, there is the potential for efficiency gain from system estimation. The greater the contemporaneous correlation among the error terms, the greater the efficiency gain from using 3SLS over 2SLS. The fact that there actually is efficiency gain with the 21 observations in this data set is verified in Appendix B by means of a bootstrap experiment.

The 3SLS results are presented in Table 3. The following 15 instrumental variables were used: the lagged left-hand side variables, the LSVCC legislation variable, the number firms from Ontario, Quebec, Alberta, British Columbia, the prairie provinces, maratimes, foreign and other jurisdictions. Choice of these instruments was natural: the number of start-up firms and technology firms, for example, may be region and industry dependent; however, they will not be directly related to the forms of financing. Enough instruments were used to identify the model; additional instruments were not used to avoid finite sample bias (Davidson and MacKinnon, 1993, ch.7). The results provide strong support for the eight hypotheses developed in sections 4.2 and 4.3 and are briefly summarized below.

**Buyout Investments**

As they impart relatively insignificant adverse selection costs and require significantly more entrepreneurial effort than VC effort, it was conjectured that buyouts would be financed with at least some debt (Hypothesis 1). Industry analysts such as Macdonald (1992, at pp. 8-9) have also observed that buyout transactions are normally highly leveraged. The evidence, however, does not indicate that any particular form of finance is observed in greater proportions for buyout investments. This may indicate a greater role of venture capitalists and/or more quality uncertainty among buyout stage transactions than that depicted in subsection 4.2.1.
Turnaround Investments

The incentive of entrepreneurs to give up control of their firm to a third party to lower the cost of capital is greatest for turnaround firms (firms that are earning less than their cost of capital). Bergløf (1994) showed that convertible securities best resolve this trilateral agency conflict (see section 4.2.2 and Hypothesis 2). Bergløf also showed that combined debt and common equity contracts also mitigate trilateral bargaining; albeit this combined contract is inferior to a convertible contract. The 3SLS estimates provide support for these propositions: a greater proportion of combined debt and common equity (p-value equal to 0.0217) contracts are observed for turnaround investments, and a greater proportion of convertible debt is also observed (p-value equal to 0.0022).

It is perhaps not surprising that convertible preferred equity is not observed for turnaround investments for three reasons. First, Bruno and Tyebjee (1985) argue that if financing is needed for the short term, debt is more desirable than equity because equity does not facilitate early exit (and turnaround investments are typically for a short duration; see Table 1). Second, equity fails to provide collateralization and therefore bankruptcy costs are greater under common equity financing. Third, higher debt-equity ratios have been empirically correlated with higher returns to turnaround investments (Chowdhury and Lang, 1993).

Start-up and Expansion Stage Investments

Investments are financed by "inside" VCs at the start-up stage and both "inside" and "outside" VCs at the expansion stage of development (see subsection 4.2.3). It was conjectured that inside VCs would employ straight preferred equity and outside VCs would employ convertible debt in syndicated investments (see subsection 4.2.3, and Hypotheses 3 and 4). This contractual arrangement mitigates mispricing of securities, misstatement of capital requirements, and facilitates continued financing of

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60 Nevertheless, there are contractual dispute resolution and exit agreements that can be specified in VC contracts (including buy-sell clauses such as shotgun clauses, buy-out agreements, and best-efforts clauses to take the company public; see McIntosh, 1994, at p.85).

61 Greater financial leverage (more debt relative to equity) has also been associated with significantly higher growth levels; greater equity share in the hands of the entrepreneur is associated with greater productivity of employees; and greater equity in the hands of the VC is associated with greater growth of the investee’s sales (Bruno and Tyebjee, 1985; Riding and
positive NPV projects (Cumming, 1999b). As expected (Hypothesis 3), the 3SLS estimates indicate that a greater proportion of preferred equity contracts are observed for start-up investments (p-value equal to 0.0011). Other forms of finance do not appear to be employed for start-ups.

A greater proportion of straight preferred equity and convertible debt contracts were expected for syndicated expansion investments (see Hypothesis 4 and subsection 4.2.3). The 3SLS estimates support these propositions. A greater proportion of straight preferred equity (p-value of 0.0168) contracts were observed for expansion stage investments. A greater proportion of convertible debt contracts is also observed (p-value of 0.0066). This latter result may also indicate that some expansion investments are also staged but not syndicated (see subsection 4.2.3).

First-Time ("New") Investees

A greater proportion of common equity contracts is observed for new investees (p-value equal to 0.0087). This result was expected (see Hypothesis 5 and accompanying text). Convertible securities (which are relatively insensitive to the risk of the company), however, are not observed.

Technology Investees

In Hypothesis 6 it was conjectured that common equity will be employed for technology firms where moral hazard costs (with the entrepreneur qua agent) are trivial (as suggested by MacIntosh, 1994). The 3SLS estimates do not support this conjecture (p-value equal to 0.1947). On the other hand, Hart and More (1994) suggested entrepreneurial rents are non-trivial for technology firms. For such cases, it was conjectured (see Hypothesis 6 and accompanying text) that convertible preferred equity would be employed. The 3SLS provide stronger support for this prediction (p-value equal to 0.0002). No other contracts are observed for high-technology firms.

Investee Firms with Fewer than 100 Employees

Because the moral hazard effect (with the entrepreneurs qua agents) of equity finance is more

Orser, 1997).
pronounced in firms with fewer residual claimants, a greater proportion of straight preferred equity and straight debt financing was expected to be observed for firms with few employees (Hypothesis 7). The 3SLS estimates show that a greater proportion of straight debt contracts is observed for firms with less than 100 employees (p-value equal to 0.0293). A greater proportion of straight preferred equity contracts are also observed (p-value equal to 0.0020).

**Labour-Sponsored Venture Capital Corporation Legislation**

Taxation, media scrutiny and certification issues were conjectured to play a role in biasing LSVCCs towards financing with at least some debt (Hypothesis 8). The 3SLS estimates show that proportionately more straight debt contracts are used by LSVCCs (p-value equal to 0.0044). Although convertible debt would entice LSVCC managers to exert greater effort on behalf of entrepreneurial ventures, they are not observed. The estimates do show that proportionately more straight common equity contracts are employed (p-value equal to 0.0361) which maybe due to the relatively large investments made by LSVCCs (see Principle 3 and subsection 4.2.1).

4.6. Concluding Remarks and Policy Implications

As hidden action and hidden information are of paramount importance in the venture capital market, theories explaining the use of alternative forms of VC finance should account for both moral hazard and adverse selection costs. This paper extended previous theoretical work by conjecturing that moral hazard and adverse selection costs will be more pronounced depending on the characteristics of the entrepreneurial firm (stage of development, prior investor assistance, high-technology firms, and the number of employees) and venture capitalists (LSVCCs or otherwise). The unique empirical evidence provided strong support for the testable hypotheses. While Macdonald and Associates' (1977-1997) industry data employed in this paper offers a first look at the empirical evidence on the frequency of use of different forms of VC finance, further empirical work using investment-by-investment data is warranted. The author is currently assembling such a data set.

The empirical evidence also showed that the regulation of and public scrutiny surrounding LSVCCs, now the largest sector in Canada's venture capital market, has influenced the financing
strategies of LSVCC managers. Generous tax benefits has provided LSVCCs with a windfall of funds and LSVCCs must invest such funds within a limited time of their receipt, and invest them in relatively small firms (although they are not that small by VC standards). Although these factors suggest that the agency costs of debt will be more pronounced for LSVCCs, tax benefits unique to LSVCCs and the intense public scrutiny on the book value of their investments have biased LSVCCs to employ proportionately more debt financing. In addition to LSVCC legislation, there may also exist a distortion in the venture capital market for small investments as a result of securities legislation in Canada. The prospectus requirement for small investments coupled with the cost of preparing a prospectus creates a minimum value at which investments will be feasible. The cost of conforming to the regulatory requirements is proportionately greater for smaller firms than larger firms in Canada. In effect, regulatory requirements have reduced the liquidity of small scale investments, and therefore reduced the availability of suitable exit vehicles. In view of Canadian and LSVCC legislation and securities legislation, it is not surprising that straight debt has been the second most common form of venture capital finance in Canada since 1991.

A plethora of factors influence venture capital financial contracts. The empirical evidence presented herein dispels the widely held view that there is a unique optimal form of finance, such as convertible preferred equity, for all venture capital contracts. Rather, moral hazard and adverse selection costs are the driving force underlying the selection of forms of VC finance, and the relative significance of these agency costs depends on the characteristics of both the entrepreneur and the venture capital investor(s). Venture capitalists can use alternative forms of finance to mitigate particular moral hazard and adverse selection costs associated with different entrepreneurial firms. In a less regulated market there would be more scope for forms of finance to mitigate agency costs and venture capitalists would be even more successful in fostering growth in the entrepreneurial sector.

Appendix A: Durbin-Wu-Hausman Tests

Table 4 presents Durbin-Wu-Hausman statistics\textsuperscript{62} for the effect of endogeneity in the regression equations. Note that the tests are on a variable-by-variable basis, not across all variables simultaneously, due to data constraints in the number of observations. The test statistics provide strong evidence in favour

\textsuperscript{62} For details, see Davidson and MacKinnon (1993) at pp. 237-42, 389-95.
of using instrumental variables.

Appendix B: Bootstrap Experiment

A bootstrap experiment was employed in order to check the finite sample properties of test statistics, and to check whether the use of 3SLS estimation provided an efficiency gain over 2SLS. The experiment was conducted as follows. Random draws, with replacement, were taken from the residuals of the model estimated in part (a) 1000 times. From these draws, 1000 new vectors of the left-hand-side variable were generated, and then 1000 new estimates of the coefficients were generated from the new left-hand-side variable and original right-hand-side variables. Means and standard errors of the coefficients were then computed from the estimated distributions of the coefficient estimates. Given that the experiment used 1000 recalibrations, the approximation error of the coefficients' standard errors will be roughly 3.2%. The results in Tables 5 and 6 do not unequivocally indicate that there are efficiency gains associated with system estimation. Nevertheless, because the standard errors of some of the coefficient estimates are lower with system estimation, and because there is some contemporaneous correlation among the residuals, 3SLS was employed. The 3SLS estimates are also intuitively more appealing as they take into account the interdependency of the choices among financing instruments.

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61 Recall as well that cross-equation restrictions were imposed on the 3SLS estimates for purposes of identification. As such, the 2SLS and 3SLS are technically not directly comparable; however, the 2SLS estimates provide insight into the effect of imposing the cross-equation restrictions.
Figure 1. Forms of Venture Capital Finance in Canada: 1977-1997
<table>
<thead>
<tr>
<th>Investment Characteristic</th>
<th>Canadian Data</th>
<th></th>
<th></th>
<th></th>
<th>U.S. Data</th>
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</thead>
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<td>#</td>
<td>% Write-offs</td>
<td>Mean</td>
<td>Variance</td>
<td>Minimum</td>
</tr>
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<td>-13.32%</td>
<td>26.50%</td>
<td>-100.00%</td>
</tr>
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<td>$12,742,000</td>
<td>$1,091</td>
<td>$6,348,000</td>
<td>$1,606,500</td>
</tr>
<tr>
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<td>0</td>
<td>15</td>
<td>4.2941</td>
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<td>Expansion Real Return</td>
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<td>14.75%</td>
<td>7.17%</td>
<td>33.63%</td>
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<td>4</td>
<td>11</td>
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<td>Buyout Real Return</td>
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<td>0.00%</td>
<td>25.46%</td>
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<tr>
<td>$ Invested</td>
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<td>Duration</td>
<td>3.8333</td>
<td>9.3667</td>
<td>1</td>
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<td>Turnaround Real Return</td>
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<td>66.67%</td>
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<td>Technology Real Return</td>
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<td>12.33%</td>
<td>8.73%</td>
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<td>$ Invested</td>
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<td>$11,528</td>
<td>$7,280,200</td>
<td>$1,545,800</td>
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</tbody>
</table>

* Source: Cumming and Macintosh (1999a).

** Dollar values expressed in real 1990 U.S. Dollars. Real returns in Canada do not reflect exchange rate changes.
<table>
<thead>
<tr>
<th>Characteristic of Entrepreneurial / Venture Capital Firm</th>
<th>Moral Hazard Costs</th>
<th>Adverse Selection Costs</th>
<th>Staged Contract</th>
<th>Syndicated Contract</th>
<th>Predicted Form of Finance</th>
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<tr>
<td>Early Stage</td>
<td>Significant</td>
<td>Significant</td>
<td>Yes</td>
<td>Yes, But Often Only At Later Financing Rounds</td>
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<td>Expansion Stage</td>
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<td>Yes</td>
<td>Straight Preferred Equity (Inside VC) Convertible Debt (Outside VCs)</td>
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<td>Buyout Stage</td>
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<td>No</td>
<td>Straight Debt (Small VC Contribution) Debt &amp; Common Equity (Large VC Contribution)</td>
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<td>Turnaround Stage</td>
<td>Trilateral Bargaining Issue</td>
<td>Significant</td>
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<td>No</td>
<td>Convertible Securities Debt &amp; Common Equity (3rd best choice)</td>
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<td>New Investee</td>
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<td>Common Equity convertible Securities (Robust Valuation)</td>
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<td>Technology Industry</td>
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<td>Common Equity convertible Securities</td>
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<td>Employees &lt;100</td>
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<td>Straight Debt Straight Preferred Equity</td>
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<td>Labour-Sponsored Venture Capital Fund (LSVCF)</td>
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<td>Trivial</td>
<td>Significant But Over-Weighed By Desire To Increase Book Value</td>
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<td>Left-Hand Side Variables</td>
<td>Const.</td>
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<td></td>
<td>(0.0054)</td>
<td>(0.0578)</td>
<td>(0.1200)</td>
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<td>(0.0124)</td>
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<tr>
<td></td>
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<td>(0.1903)</td>
<td>(0.0066)</td>
<td>(0.1986)</td>
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<td>(0.1518)</td>
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<tr>
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<td>30</td>
<td>30</td>
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</tr>
<tr>
<td>Apple</td>
<td>20</td>
<td>20</td>
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**Note:** Table 4: Durbin-Wu-Hausman Tests
## TABLE 5. 3SLS Bootstrap Experiment
Means (Standard Errors in Parentheses)

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<td>Preferred Equity</td>
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<td>Right-Hand Side Variables</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
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<td>Const.</td>
</tr>
<tr>
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<td></td>
<td>(0.09924)</td>
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Chapter 5. Venture Capital Exits in Canada and the United States

5.1. Introduction

Venture capital investing is primarily equity investing. Many investee firms are young firms lacking the cash flow and profitability that would enable them to pay dividends. Thus, most of the venture capitalist's return arises in the form of capital gains. For this reason, understanding the means by which venture capitalists (VCs) exit (i.e., dispose of) their investments and realize these capital gains is vital to an understanding of the venture capital process. Indeed, there is evidence suggesting that the suitability of the various exit vehicles (initial public offering, acquisition, company buyback, secondary sale, and write-off, each defined below) for potential investee firms is considered by VCs to be an important factor in deciding whether to invest, and on what terms (MacMillan et al., 1985; Carter & Van Auken, 1994; Kahn, 1987; Bruno & Tyebjee, 1985).

Venture capital investing is characterized by complex webs of agency problems resulting from hidden action and hidden information (Sahlman, 1990; MacIntoh, 1994). For example, venture capital firms may be viewed as agents of their investors, and have incentives to favour their own interests over those of the investors (Gompers, 1996). Investee firms are agents of VCs, and likewise have incentives to favour their own interests over those of the VCs. While these agency problems have been extensively discussed in the literature, another set of agency problems has received comparatively little attention: the set of agency problems that arises upon exit, as between the sellers of the firm's equity (the VC and the management of the investee firm) and the purchasers. In this paper, we hypothesize that the choice of exit vehicle is strongly influenced by a desire to minimize these agency problems, and hence maximize the value of the firm upon exit.

We further hypothesize that the particular set of agency problems that exit strategies are designed to mitigate differ according to the nature of the VC's relationship with the entrepreneurial firm, and the characteristics of the entrepreneurial firm itself. In addition, as different entrepreneurial firms will require different amounts of new capital for investment upon VC exit, exit strategies are also designed to

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1. It is often repeated that convertible preferred equity is the optimal form of venture capital finance; see, e.g., Sahlman (1990); Berglöf (1994). A variety of forms of finance, however, appear to be employed in practice. The only industry-wide empirical evidence on the types of forms of finance used by venture capitalists is provided by Canadian data. In recent years, straight common equity has been the most commonly used form of finance in Canada (used for about 40% of all investments), followed by straight debt (15%), convertible debt (12%), mixes of straight common equity and straight debt (10%), straight preferred equity (5%) and convertible preferred equity (4.5%); see Cumming (1999a).
reflect the entrepreneurial firm's future capital requirements. We argue that the extent of future capital requirements and the degree of informational asymmetry and moral hazard systematically depend upon the following three factors:

- Venture capital investment duration,
- Entrepreneurial firm "quality", defined below, and
- The nature of the firm's assets (high-technology and otherwise).

Because these three factors affect the firm's capital requirements and degree of informational asymmetry and moral hazard, and because the selected exit strategy affects the amount of capital raised and the degree to which informational asymmetry and moral hazard may be mitigated, there is a causal link from investment duration, firm quality and the nature of the firm's assets to exit strategy.

The first factor, the duration of venture capital investment, is used to account for the venture capitalist's role in mitigating informational asymmetry and agency costs through putting in place appropriate incentive contracts for the firm's employees, securing distribution channels, finding suitable legal and accounting advisors, among other things. A longer investment duration signals a greater VC role in mitigating informational asymmetries and agency costs between the entrepreneur and its new owners.\(^2\) As such, certain exit vehicles will be relatively more appropriate the longer the investment duration. We therefore conjecture a causal link from venture capital investment duration to exit strategy (Hypothesis 1). However, we do recognize the possibility that causality may also flow from exit choice to duration (e.g., due to market illiquidity). Close attention is directed towards this causality issue in the theory and empirical analysis herein.

The second factor that is conjectured to have an impact on exit strategy is the investee firm's "quality" (defined in detail in subsection 5.4.2 below). Recent empirical work has considered the role of firm specific characteristics and proxies for informational asymmetries and agency costs in the decision to go public (Pagano et al., 1998; Gompers and Lerner, 1999). However, previous research has not considered quality issues in assessing the relative empirical likelihood of each of the alternative venture capital exit vehicles. Higher quality entrepreneurial firms have more growth potential and therefore

\(^2\) VC backed IPOs tend to perform better than their non-VC backed counterparts; see Barry et al. (1990); Brav &
require more capital upon exit. Higher quality firms may also yield greater transaction synergies for the new owners. In addition, higher quality firms are less risky and have less pronounced informational asymmetry and agency costs; therefore, higher quality firms require less monitoring by the new owners. In sum, quality itself has many underling elements, and many of these elements are not directly measurable. Nevertheless, the encompassing category of "quality" is particularly useful in the analysis of exit strategy as the elements embodied in quality all suggest a consistent exit strategy, as developed in the theory accompanying Hypothesis 2. Note, however, that we employ the value that the VCs receives for his ownership interest upon exit as a proxy for entrepreneurial firm quality. The use of this proxy gives rise to the potential for endogeneity, which is considered in the theory and empirical analysis herein.

The third factor that is conjectured to affect exit strategy relates to whether or not the firm is in a high-technology industry. High-technology firms include firms in biotechnology, communications, computers, electronics, energy, environmental technology, and medical related industries. Agency costs and informational asymmetry among high-technology entrepreneurial firms are widely recognized as being distinct from their non-high-technology counterparts (Helwege and Liang, 1994; Hart and Moore, 1994; Noe and Rebello, 1996). We extend this well accepted idea to conjecture (Hypothesis 3) that exit strategies depend on whether or not the investee is a high-technology firm.

The three hypotheses are tested using venture capital exits data from Canada and the U.S. The empirical results provide strong support for the hypotheses. In addition, the comparative results between the Canada and the U.S. illustrate the impact of different legal and institutional constraints on VC investing, and suggest that such constraints have distorted the efficient pattern of exit in the relatively more heavily regulated Canadian market.

This paper is organized as follows. In section 5.2 we begin with a basic description of alternative exit vehicles. These alternative exit vehicles are associated with different new owners for the firm. Section 5.3 considers the degree to which the particular new owners are able to resolve informational asymmetries, value the firm, and monitor their new investment. In section 5.4 we develop the three hypotheses that link investment duration, firm quality and the nature of the firm's assets to choice of exit vehicle. Legal and institutional constraints in Canada and the U.S. that impact VC exit strategies are

Gompers (1997).
discussed in section 5.5. We empirically test the three hypotheses in section 5.6 using survey data from Canada and the U.S. In particular, a multinomial logit model is used to analyze the factors that motivate the choice of one exit vehicle over another. In light of the empirical results, we offer concluding remarks and policy implications in section 5.7.

5.2. Exit Vehicles

In general, VCs will exit their investments by one of the following five methods: initial public offering (IPO), acquisition, company buyback, secondary sale, or write-off. In an IPO, the firm sells shares to members of the public for the first time. The VC will typically not sell all (or even part of) its shares into the public market at the date of the public offering, for reasons discussed below. Rather, securities will be sold into the market over a period of months or even years following the public offering. Alternatively, following the IPO the VC may dispose of its investment by making a dividend of investee firm shares to the fund’s owners. Despite the fact that the VC will not usually sell more than a small fraction of its shares at the time of the IPO (if any at all), exits effected by sales subsequent to the IPO are (following common usage) classified as "IPO" exits.

Sometimes a VC will exit via an acquisition exit in which the entire firm is purchased by a third party. This form of exit may be effected in a number of different ways. For example, the transaction may be structured as a sale of all the shares of the company in return for cash, shares of the acquiror, or other assets. Alternatively, the transaction may be structured as a sale of the firm’s assets or as a merger between the investee firm and purchasing firm (or a subsidiary thereof). However the transaction is effected, the buyer will often be a larger, established company seeking a foothold on the technology possessed by the selling firm.

Exit may also be effected by means of a secondary sale, in which the VC sells its shares to a third party. This type of exit differs from an acquisition exit in that only the shares of the VC are sold to the third party. As in an acquisition, however, the purchaser will often be a larger corporation seeking a foothold on the company’s technology.

In a buyback, the entrepreneur and/or firm managers (referred to simply as "the entrepreneur"
A write-off occurs where the VC walks away from its investment. While a write-off will often involve the failure of the company, the VC may continue to hold shares in a non-viable or barely profitable enterprise.

5.3. Exit Vehicles and Informational Asymmetry

Venture capitalists are unique investors in that they have specialized skills in selecting investee firms and monitoring their progress. Informational asymmetry and agency costs among small and medium sized developing enterprises are in fact considered to be the primary explanation for the emergence of venture capital investors (Sahlman, 1988, 1990; MacIntosh, 1994; Amit et al., 1997). In this paper we extend this well accepted proposition by conjecturing that informational asymmetry plays a significant role in shaping the efficient pattern of venture capital exits. We therefore begin our analysis by detailing the relationship between informational asymmetry and exit strategy. In this section we argue that the ability of new owners to resolve informational asymmetry, value the firm and monitor the investment varies by exit type.

5.3.1. IPOs

The ability to resolve information asymmetry is closely connected with monitoring capability. Knowledgeable buyers who can critically evaluate the information they receive from management can better determine when the managers are not performing adequately (i.e., can more readily recognize moral hazard problems). The ability of the buyer(s) to monitor managers will depend not only on the identity of post-exit shareholders (and their ability to resolve information asymmetries), but also on the post-exit concentration in shareholdings. In general, managers will be disciplined more effectively by a controlling (and non-managerial) shareholder than by an unrelated group of small shareholders.

Where information asymmetries between insiders and outsiders are particularly large, public buyers may not possess the ability to accurately gauge the worth of the company. In such cases, a sale in the public market may result in a price that represents a lower multiple of earnings than in the case of a
strategic acquisition. Indeed, more often than not, public buyers will be less well positioned to resolve information asymmetries than a strategic buyer.

An IPO generally involves the sale of a minority interest to public investors, leaving a controlling shareholder or coalition of shareholders in place. While the existence of a controlling shareholder(s) may bring some discipline to the managers, the managers themselves will often form a significant part of the controlling coalition. Moreover, after an IPO, control will often be split among a variety of shareholders. The control coalition may thus be subject to collective action and defection problems. By contrast, in the case of a strategic acquisition, a single shareholder will usually hold all of the firm's equity. Thus, one would conjecture that a strategic acquisition by a knowledgeable buyer will result in better post-exit monitoring of managers than an IPO.

5.3.2. Acquisitions

In a sale of the entire firm to a third party buyer, the buyer will often be a "strategic buyer". A strategic buyer will usually be a large company in the same or similar business as the purchased firm (either as competitor, supplier, or customer; see, e.g., Venture Economics, 1995), and will integrate the company's technology with its own following the acquisition. That strategic buyers are usually in the same or a closely related business to the acquired firm is not merely accidental. Just as VCs are specialists at resolving information asymmetries in the earlier stages of investing, strategic buyers are particularly well positioned to evaluate the firm's product, technology, and management. Knowledge of the particular business is what enables the buyer both to evaluate the firm's potential and, following the acquisition, provide useful monitoring and strategic advice. Indeed, because of its bargaining power, a strategic buyer will tend to have better access to inside information about the firm than many other types of buyers (such as purchasers in secondary sales). Finally, following the acquisition, the strategic buyer will own 100% of the firm. It will therefore be optimally positioned to discipline wayward managers.

5.3.3. Secondary Sales

In a secondary sale, the buyer will often possess the same ability as a strategic acquiror to overcome information asymmetries (indeed, strategic buyers and secondary buyers are often the same
parties). However, a secondary sale results in a very different configuration of post-exit shareholdings than an acquisition. Because VCs most often purchase minority interests, the buyer of the VC's shares will also acquire a minority interest. The buyer's ability to acquire information and to monitor and discipline management will thus be far less than where the buyer purchases the entire firm.

The lessened ability to monitor and discipline is not merely a consequence of the fact that the buyer will be a minority shareholder. Prior to the sale, the VC will have carefully nurtured a relationship with the entrepreneur and other shareholders. In a successful venture capital investment, the VC will seldom if ever have to resort to its formal powers as a shareholder or director; it will exercise informal powers of persuasion by virtue of its amicable relationship with the entrepreneur. The purchaser of the VC's shares, however, will have no pre-existing relationship with the non-selling shareholders in the firm. It will thus not (at least immediately) be able to use its minority shareholding to the same effect as the VC. For this reason, a buyer will normally prefer to make a strategic acquisition rather than a secondary purchase of the VC's shares.

5.3.4. Buybacks

Whether the corporation or insider group actually purchases the VC's shares, the insiders are the true buyers. For obvious reasons, the problem of information asymmetry disappears, since the insiders know more about the enterprise and its prospects (and their own activities) than anyone else.

5.3.5. Summary

While the buyback best addresses problems of information asymmetry, it eliminates an effective external monitor without substitution of a new one. A buyer in a strategic acquisition or secondary sale will usually be well placed to resolve information asymmetries, but in an acquisition transaction the buyer will be better able to monitor managers than following a secondary sale. Lastly, public shareholders will often be both comparatively incapable of resolving information asymmetries and less effective monitors than strategic acquirors or secondary purchasers. These factors form the basis of Principle 1.

Principle 1 Informational asymmetry is eliminated upon buyback exits. The ability of new owners to resolve informational asymmetry, value the firm and monitor the investment is greater
upon strategic acquisitions than secondary sales. Informational asymmetry remains the most pronounced upon IPO exits.

In the following section, we use this relationship between informational asymmetry and exit strategy to develop testable hypotheses relating investment duration and firm characteristics to choice of exit vehicle.

5.4. Exit Strategies

An appraisal of the various factors that may influence a venture capitalist in selecting one exit vehicle over another is provided in this section. Choice of exit vehicle is related to investment duration, project quality, and high-technology firms in subsections 5.4.1, 2 and 3, respectively. In section 5.5 we discuss legal and institutional differences between Canada and the U.S. that are likely to affect the empirical analysis presented in section 5.6 and the Appendix.

5.4.1. Investment Duration and Exit Strategy

Venture capital investment duration (i.e., the total length of time that a VC will invest in a particular project) is generally determined by the exhaustion of the VC’s skill set (MacIntosh, 1997). Our related research indicates that investment duration is shorter when exit is preplanned or induced by an unsolicited offer (Cumming and MacIntosh, 1999d). Investment duration is longer for earlier stage (seed, start-up and expansion) investments. Venture capitalists with larger amounts of capital available for additional investment also tend to exit their existing investments sooner. Gompers (1996) has shown that grandstanding can affect investment duration. Market liquidity may also affect investment duration. However, irrespective of the factors that may influence a venture capitalist’s total investment duration, in this subsection we examine the effect that investment duration will have on exit strategy.

The causal link from investment duration to exit strategy results from the proactive role VCs have

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3. Gompers (1996) conjectured that young venture capital firms take their companies public sooner than older more established venture capital firms in order to prematurely enhance their reputation and attract more business. His empirical results show that younger and less established VC firms (1) underprice their IPOs more than other firms, (2) have had less time as members on the Board of Directors of the investee corporation at the time of the IPO, (3) hold smaller equity stakes in the investee, and (4) time their exit such that it precedes or coincides with raising funds for their subsequent venture investments.

4. An illiquid market may also independently affect choice of exit vehicle. This may weaken the causal link between duration and choice of exit vehicle; see infra, sections 5.5 and 5.6, and the Appendix to Chapter 5.
with their investments. Aside from their ability to evaluate prospective investments and separate the wheat from the chaff, VCs are specialized monitors who offer investee firms valuable guidance once the investment has been made. VCs monitor and sometimes replace management, participate in strategic decisions, and offer informal advice on decisions of lesser importance. The ability to monitor is closely connected with the ability to resolve information asymmetries. It is only by virtue of a keen understanding of the enterprise and what is needed to achieve success that the VC can monitor effectively. In turn, monitoring not only addresses problems of moral hazard, but also reduces information asymmetry by enhancing information flow between the entrepreneur and the VC. Experienced VCs will have webs of contacts that assist the firm in sourcing materials and finding other sources of funding. VCs can also use their experience to help the firm find skilled lawyers, accountants, investment bankers, marketers, and other professional advisors.

Given VCs' proactive role in their investees, the longer the investment duration, the more likely the enterprise will have an established product and demonstrated profit potential. When the time comes for the VC to exit, the degree of information asymmetry between firm insiders and outsiders will be less severe than at the time of investment. Older firms that have benefitted from VC guidance will tend to have a proven product, an established market, relatively experienced management, and more elaborate internal control and information systems than when the VC's first investment was made. This will attenuate many of the risks that confront investors in the earlier stages of the firm's existence.

The severity of the information asymmetry confronting the firm will be a factor in the choice of exit. Longer investment duration reduces this informational asymmetry by providing a signal to the market that the enterprise's management has matured sufficiently and contacts between the firm and suppliers, marketing experts, lawyers and investment bankers are in place and need little further development (Meggison and Weiss, 1991; Gompers, 1996). As such, when VCs invest over a longer duration, exit vehicles that do not in and of themselves facilitate reduced informational asymmetry (see

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5. Research also indicates that venture capital backed firms do better than their non-venture capital backed counterparts; see Barry et al. (1990).
6. These risks are described in Sahlman (1990: at 489); see also McIntosh (1994). Nonetheless, the degree of information asymmetry will be high compared with that of a typical public company. A public company will have a lengthier operating history. Moreover, much more information about a public firm will be on the public record, both as a consequence of the operation of private information gathering networks and mandatory disclosure requirements.
Principle 1) become relatively more attractive. In contrast, a shorter investment duration will more likely be associated with an exit strategy that enables new owners to better resolve informational asymmetry, value the firm and monitor the investment. Given the fact that informational asymmetry is mitigated the least by IPOs, followed by secondary sales, acquisitions and buybacks (see Principle 1 in section 5.3 above), we conjecture the following causal relationship in Hypothesis 1.

Hypothesis 1 The longer the venture capitalist's investment duration, the more likely the following exit vehicles (in decreasing order of likelihood): IPOs, secondary sales, acquisitions, buybacks, and writeoffs.

Hypothesis 1 will be tested using Canadian and U.S. data (described in subsection 5.6.1 below). In the Appendix we also test for the possibility of endogeneity (i.e., duration may be affected by exit strategy, possibly as a result of illiquidity; see section 5.5 below). Additional hypotheses relating the entrepreneurial firms' characteristics to exit strategy are considered in the following subsections.

5.4.2. Firm Quality and Exit Strategy

In this subsection we postulate a causal relationship between firm quality and choice of exit vehicle. Quality refers to both high expected value and low risk. As discussed further below, firm quality therefore depends on the following: (1) informational asymmetry, (2) growth potential, and (3) potential for transaction synergies when merged with other enterprises. Note that characteristic (1) relates to the firm's risk, whereas characteristics (2) and (3) relate to the firm's expected value. As the various exit vehicles either mitigate or exacerbate each of these characteristics, predictions regarding exit strategy arise as higher quality firms will be better suited to certain exit strategies while lower quality firms will be better suited towards others.

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7. Similarly, Chemmanur & Fulghieri (1994) develop a model in which public offerings are better suited to older, more established companies in which moral hazard adverse selection costs are less pronounced.

8. In addition, note that writeoffs may be expected to be most frequent where investment duration is shortest. Mitigating informational asymmetry between the firm and its future owners obviously is irrelevant to an investment that will be written off. VCs will not actively contribute to an investee once they learn that its quality is so low that it must be written off. While "living-dead" investments may exist (whereby VCs hang onto the investment in hope of a turnaround) a strategy of supporting living-dead investments may diminish a VC firm's reputation and its ability to signal quality to future owners through their active participation in the development of the firm.

9. In other words, \( \frac{\partial (\text{IPO})}{\partial \text{Duration}} > 0 \) (i.e., the derivative of the probability of an IPO / the probability of a secondary sale with respect to VC investment duration is positive). Similarly, Hypothesis 1 states that \( \frac{\partial (\text{IPO})}{\partial \text{Duration}} > 0 \), and therefore \( \frac{\partial (\text{Secondary Sale})}{\partial \text{Duration}} > 0 \), etc.
For obvious reasons, the quality of a firm will be closely correlated with the value the VC receives for its shares. In the empirical analysis in section 5.6, project quality is therefore proxied by the value of the VC's shares upon exit. This may give rise to confusion regarding the direction of the causal relationship between quality and exit strategy. Quality, as defined by characteristics (1), (2) and (3) above, will generally determine choice of exit vehicle. However, as quality is proxied by the value of the VC's shares upon exit in our empirical analysis, it may be argued that choice of exit vehicle affects quality.\footnote{10} The potential for endogeneity is considered in the discussion of the theory below and empirically analyzed in section 5.6 and the Appendix.

This subsection is divided into five parts. Parts 1 through 4 discuss different factors that pertain to firm quality and exit strategy. Part 1 relates firm quality, as indicated by informational asymmetry and moral hazard, to exit strategy. Part 2 discusses the role for "common exit strategies" (defined below) for high quality firms. Part 3 notes that transaction synergies will generally be greater among higher quality firms, and such synergies can only be realized with certain exit strategies. In Part 4, the fact that higher quality firms will have more growth potential is related to the different magnitudes of capital that can be raised by different exit vehicles. Part 5 summarizes the factors (see also Table 1 below) and concludes with \textit{Hypothesis 2} relating firm quality and exit strategy.

\textbf{5.4.2.1. Informational Asymmetry, Moral Hazard and Firm Quality}

In section 5.3 above, we conjectured that different exit vehicles will facilitate a reduction in informational asymmetry between the entrepreneurs and new owners of the firm to different degrees (see \textit{Principle 1}). Entrepreneurial firm "quality", as discussed above, in part depends on the transparency of the firm's prospects and entrepreneur's actions. New owners will more heavily discount the value of the entrepreneurial venture when the new owners are unable to resolve informational asymmetry and monitor the investment. Therefore, exit strategies that mitigate informational asymmetry and facilitate monitoring will more likely be selected where it is difficult to value the firm and monitor the investment. In contrast, exit strategies for higher quality firms will less likely be driven by the need to reduce informational

\footnote{10. If the causal relationship was only from exit vehicle to quality, and certain exit vehicles yielded both first- and second-order dominant returns, then the dominated exit strategies would never be observed; however, the data clearly indicate that every exit vehicle is observed in Canada and the U.S.}
asymmetry and monitor the investment. Venture capitalists also choose exit strategies knowing that an ownership change will affect managerial incentives. The change in managerial share ownership and residual claims to the firm's assets differs by exit vehicle. Exit strategies will therefore be designed to mitigate against potentially adverse effects of managerial ownership changes on firm value.

(i) IPOs

It was argued in section 5.3 that IPOs facilitate the least reduction in informational asymmetry (Principle 1). The new owners after an IPO, public shareholders, tend to be less effective monitors than strategic acquirors or secondary purchasers. Therefore, if the characteristics of the firm are such that agency costs resulting from informational asymmetry and inability to monitor are quite significant then an IPO will be a less preferred exit strategy. The value of the firm's assets would be heavily discounted in an IPO as a result of the severe informational asymmetry associated with the firm. In contrast, if the firm's prospects and entrepreneur's actions are transparent then an IPO will be a relatively more attractive means of exit (Chemmanur and Fulghieri, 1994).

Purchase of the entire firm by a single person or entity may result in underdiversification for the purchaser — at least if the purchaser is an individual or private company. In theory, underdiversification should not be of concern to an acquiror that is a public company (or other tradeable entity); the shareholders of a public company may themselves diversify the unsystematic component of the firm's risk by purchasing portfolios of securities. An individual or private company, however, may not have sufficient capital to fully diversify unsystematic risk, even if it has sufficient capital to effect the acquisition. Indeed, even managers of public companies may have incentives to avoid high net present value but high risk investments to the extent that such investments result in managerial underdiversification (Coffee, 1986). Because ability to bear risk will be priced, risk spreading considerations will mitigate the adverse effect that informational asymmetry has on the desirability of an IPO exit strategy.

Empirically, managerial share ownership has been shown to be an important determinant of the degree of alignment between managerial and shareholder interests (Jensen and Murphy, 1990). However, there is conflicting evidence on the nature of this relationship. There is evidence, for example, that as
managerial ownership increases, the value of the firm first rises, falls, and then rises again (Wruck, 1988; Morck et al., 1988). There is also evidence, however, that the value of the firm rises and then falls as management ownership increases McConnell and Servaes, 1990). In either case, the explanation for the non-linear relationship between management ownership and firm value appears to be that as managers acquire more shares, their ability to resist a hostile takeover (the entrenchment effect) increases. As ownership increases, the incentive to act in the best interests of all shareholders (the alignment effect) also increases. By itself, the former will tend to diminish the value of the firm, while the latter will increase it. Over some ranges of share ownership, the entrenchment effect apparently dominates the alignment effect. Unfortunately, without consistent evidence as to the nature of the relationship between management ownership and share value, it is difficult to predict how ownership changes associated with the VC’s exit will affect firm value. Regardless, as we proxy firm quality by the value of the VC’s shares upon exit in the empirical tests (section 5.6), we test for the possibility that exit strategy impacts quality.

IPOs will generally leave the existing management in place; however, the raising of new capital will significantly dilute their shareholdings. This will result in a diminished alignment effect. However, it will also result in a diminished entrenchment effect. Thus, there will be no consistent causal effect of choosing an IPO on the value of the VC’s shares resulting from moral hazard. Rather, as discussed above, we expect IPOs to be chosen for higher quality firms with transparent prospects and low informational asymmetry. We nevertheless do consider the potential for endogeneity in the empirical analysis in section 5.6 and the Appendix.

(ii) Acquisitions

Because acquisitions involve the purchase of the entire firm, the entrepreneur (whether part of the old management team or not) will have little or no ownership interest in the enterprise. Therefore, a strategic acquisition may tend to result in inferior post-exit incentives for the entrepreneur relative to exit vehicles in which the managers retain a non-trivial shareholding interest. Nevertheless, incentive compensation schemes can be implemented upon acquisition to enhance the entrepreneur’s incentives and mitigate moral hazard costs. Moreover, in contrast to IPOs, acquisitions are more effective exit strategies for monitoring and resolving informational asymmetries between the entrepreneur and new

11. However, note that such incentive schemes do not appear to be as effective as share ownership in aligning manager
owners (Principle 1). Therefore, firms with severe informational asymmetry and monitoring costs that would likely be heavily discounted in an IPO are more likely to be exited by an acquisition.

(iii) Secondary Sales

Recall that strategic acquirors purchase the entire firm, but secondary purchasers only acquire the VC's interest in the firm. A secondary sale of just the VC's interest will generally not affect managements' shareholdings; moral hazard costs associated with secondary sales are less pronounced than under an acquisition exit. However, strategic acquirors were conjectured to be somewhat better at resolving informational asymmetry, valuing the firm and monitoring than secondary purchasers (see Principle 1 in section 5.3 above). In net, therefore, the need to mitigate informational asymmetry and moral hazard upon exit does not suggest whether secondary sales or acquisitions are more efficient. More guidance is gleaned from other factors discussed below.

(iv) Buybacks

There is no informational asymmetry in the case of a buyback because the new owner is the entrepreneur (Principle 1). Buybacks also enhance managerial incentives because the entrepreneur(s) becomes the sole residual claimant(s). In addition, because the entrepreneur and/or firm will usually have to borrow money to purchase the VC'S shares, the buyback will often substantially enhance the entrepreneur's or the firm's debtload. The higher level of fixed interest payments will act as a discipline on management (Jensen, 1986). Thus, buybacks are the only form of exit that might be hypothesized to enhance managerial incentives. Moreover, the buyback will jettison a specialized monitor (the VC) without bringing any replacement monitor on board. Indeed, one of the objectives of the buyback may be to eliminate external monitors, so that the entrepreneur may indulge a taste for leisure in a way that she was unable to do when the company had minority investors. The entrepreneur may be interested in doing so when she is less concerned about becoming fabulously wealthy than about running a "lifestyle" company; i.e. one that furnishes profits that are adequate to pay the interest on the firm's new debt and provide a reasonable return without the extraordinary commitment than is generally demanded by a VC. Indeed, a buyback may be evidence that the VC initially failed to appreciate the entrepreneur's

and shareholder interests; see Macintosh (1996).
work/leisure preferences. Buybacks are therefore the most attractive exit vehicle for low quality firms in which pronounced informational asymmetry and moral hazard would lead outside buyers to significantly discount the value of the firm.

In sum, the value of a firm with uncertain prospects as a result of informational asymmetry and dubious managers who's actions are difficult to monitor will be heavily discounted by the new owners. Higher quality firms with low informational asymmetry and agency costs will most likely be exited by means of an IPO. The lowest quality firms (that are not written off) will most likely be exited by a buyback. Informational asymmetry and moral hazard did not suggest an efficient ordering as between acquisitions and secondary sales. A more definitive rank ordering between acquisitions and secondary sales, as well as with the other exit vehicles, is provided by the examination of the characteristics explored in the following subsections.

5.4.2.2. The Value of a Common Exit Strategy in Promoting Teamwork and Enhancing the VC's Reputation

A "common exit strategy" is one in which the VC and entrepreneur dispose of their interest in the same way (i.e., an through an IPO or acquisition; see section 5.2 above). A venture capital investment is virtually by definition a relational investment, and a strong and amicable working relationship between the VC and the entrepreneur is the hallmark of a successful investment. Where the parties agree, explicitly or implicitly to work towards a common exit strategy, this increases the perception that the parties are "on the same team", or "on the same page". Thus, a cooperative exit strategy can assist in fulfilment of the venture capitalist's and entrepreneur's expectations.

Evidence of the value of a common exit strategy arises in the frequency with which 'go along' or 'piggyback' rights are observed in agreements between VCs and entrepreneurs. Such rights may be held by the VC, the entrepreneur, or both. They enable the holder of the right to sell at the same time and price as the other (or veto the sale) in the event of a third party offer. Common exit strategies (IPOs and acquisitions) will therefore be more frequently employed among higher quality firms.

As buybacks and secondary sales result in the disposition of the VC's interest alone, they are inferior to a common exit strategy. Buybacks and secondary sales will therefore be employed more
frequently for low quality firms. Buybacks and secondary sales may in fact be evidence of a breakdown in the VC-entrepreneur relationship — and reason to believe that buybacks and secondary sales will be selected for lower quality investments than cooperative exit strategies.\textsuperscript{12}

Note that the common exit strategy factor does suggest a possibility for endogeneity. That is, rather than common exit vehicles being chosen for higher quality firms, it may be that common exit vehicles yield higher returns by signalling entrepreneurial and VC cooperation. Again, the empirical analysis in section 5.6 and the Appendix tests for this potential for endogeneity.

5.4.2.3. Transaction Synergies

A firm's characteristics in and of themselves yield potential for transaction synergies. Some venture capital exits facilitate the realization of transaction synergies, while others do not. We postulate that synergies will be more common and recognized more often by synergistic partners for firms of higher quality (as defined above). Therefore, exit vehicles that facilitate realization of synergies will be selected for higher quality firms.

(i) IPOs

In an IPO, the firm is not directly combined with any other entity. An IPO will thus not generally facilitate the realization of any direct transaction synergies. An IPO may, however, facilitate indirect synergies where another entity purchases the entrepreneurial firm's shares. To the extent that synergies are more frequently inherent among higher quality firms, IPOs will therefore be a desired exit vehicle for high quality firms.

Note that in a market characterized by rational expectations, any anticipation of a hostile acquisition for synergistic (or other) motives will be incorporated into the price at which the firm's shares trade in the public market. This premium should be reflected in the price at which the shares are initially sold to the public. In this way, some expectation of the realization of future synergies may be captured by

\textsuperscript{12} However, note that even without such express stipulation, an experienced VC will often take the entrepreneurs' preferences into account when choosing an exit option. Cultivating the entrepreneur's interests protects and enhances the VC's reputation in the entrepreneurial community, leading to a higher probability of capturing future venture capital business.
those exiting the firm at the time of or following the IPO. Therefore, an IPO exit strategy may cause the value of the VC's shares to increase. This is yet another reason to be wary about the potential for endogeneity in the empirical tests with the use of the value of the VC's shares upon exit as a proxy for firm quality.

(ii) Acquisitions

The purchase of the firm by a strategic buyer will often result in the realization of synergies. The decision to purchase the firm will frequently be the outcome of a so-called "make or buy" decision. Such a decision arises where the buyer has reached a critical juncture at which it needs to develop a specific product or technology to complete or complement an existing product line. Rather than developing the product or technology itself, it will identify a firm that possesses what it needs and will buy the firm. All of these factors will make high quality firms with potential transaction synergies suitable for a strategic acquisition exit strategy.

(iii) Secondary Sales

Transaction synergies are far less likely to be realized in the case of secondary sales than acquisitions, primarily because the buyer will have far less ability to combine the target's assets with its own. Legally effecting a combination of assets will generally require both directors' and shareholders' resolutions, whether the combination is effected by way of amalgamation, a sale of the target's assets to the purchaser, or by other means. If the buyer possesses only a minority shareholding interest in the target enterprise, securing such resolutions will be difficult or impossible.

Even when the buyer purchases a controlling interest from the departing VC, the buyer is necessarily taking on as many partners as there are other shareholders. Attempts to transfer assets from the target to the buyer may result in a lawsuit by one or more of these shareholders for breach of fiduciary duty or oppression. Moreover, in some jurisdictions, procedural requirements must be satisfied before substantial assets may be transferred from one company to another. In Ontario, for example, securities laws compel a buyer wishing to transfer significant assets to a related firm to secure a valuation of the
firm and obtain approval of the transaction by minority shareholders.\textsuperscript{13}

\textit{(iv) Buybacks}

While secondary sales facilitate few synergies, buybacks never result in transaction synergies. IPOs and strategic acquisitions better facilitate the realization of transaction synergies for high quality firms.

\textbf{5.4.2.4. Capital Raised}

The firm’s present financial status and future promise will impact on its current valuation. A firm with tremendous prospects of future success will require significant additional capital. Exit techniques differ in the extent to which they are associated with the raising of new capital for the firm. Higher quality firms with more promising growth prospects will tend to be exited by the vehicle that raises the most capital.

\textit{(i) IPOs}

An IPO is associated with a very large infusion of fresh capital. Importantly, it is the only exit vehicle that invariably has this result.\textsuperscript{14} As a result, firms with the greatest growth potential will be exited by IPOs in order to raise the capital needed for expansion.

\textit{(ii) Acquisitions}

On the face of it, an acquisition raises no fresh capital; it merely rearranges ownership interests (i.e. transfers the company to new owners). However, an acquisition transaction will often be the prelude to fresh investment of new capital by the strategic buyer, with a view to further development of products and/or technologies.

\textsuperscript{13} OSC Policy 9.1. These rules will apply to most venture-backed private companies. See MacIntosh (1994: at 131-133. In this respect, the rules in the U.S. are typically less demanding.

\textsuperscript{14} By contrast, the reverse takeover, a close cousin of the IPO, does not automatically result in the raising of new capital (although in practice a fresh infusion of capital will usually occur in connection with this type of transaction).
(iii) Secondary Sales

A secondary market sale of shares does not result in new investment. It is also less likely than an acquisition to presage the investment of new capital by the buyer. As indicated above, strategic buyers often desire to obtain 100% of the company before investing new capital. However, even if the buyer will not be immediately investing fresh capital in the business, it will sometimes purchase the VC's shares with a view to ultimately making an acquisition and investing new capital.

(iv) Buybacks

In many cases where the VC's investment has been very successful, the entrepreneur or the company will simply lack the resources to repurchase the VC's interest. Because high growth companies are almost always cash-starved, entrepreneurs who anticipate rapid growth may be unwilling to effect a buyback if the resulting cash drain or diminution in borrowing capacity means that the firm will have insufficient cash resources to effect that growth. In this sense, the buyback may be evidence that the entrepreneur and VC are in agreement that the firm lacks significant upside potential. Moreover, in order to effect a buyback, either the company or the entrepreneur will usually borrow money, replacing the VC's shares with debt. Even if it is the entrepreneur that effects the borrowing, the entrepreneur's ability to pay interest and principal on the loan will depend on a steady flow of cash from the business (whether the money is paid out as remuneration, dividends, or in some other form). Thus, whether directly or indirectly, the buyback will put some strain on the firm's cash resources.

5.4.2.5. Summary of Factors Indicating Quality Affects Exit Choice

In sum, venture capitalists choose exit strategies depending on the quality of the entrepreneurial venture. These factors are summarized in Table 1. Informational asymmetry, common exit strategies, transaction synergies and capital raised suggest that the highest quality projects will be exited by means of IPOs. Acquisitions are more likely than secondary sales for firms with potential for growth and transaction synergies. Buybacks will not likely be a suitable means of exit for higher quality firms with significant growth potential. These factors lead us to the following hypothesis that will be empirically
assessed in section 5.6.

**Hypothesis 2** Higher quality entrepreneurial firms (i.e., with low informational asymmetry and significant growth prospects) will be exited by (in decreasing order of likelihood): IPOs, acquisitions, secondary sales, buybacks, and writeoffs. 15

Psychological factors may play a role leading VCs and entrepreneurs to select IPOs (MacIntosh, 1997). There is some (albeit not unambiguous) evidence that IPO pricing is subject to psychological factors, and not merely investment fundamentals (Ritter, 1991; Levis, 1993; Loughran and Ritter, 1993; Loughran, 1993; Jog, 1997; Lerner, 1994; Brav and Gompers, 1997; MacIntosh, 1993). The operation of these psychological factors may result in periodic market overvaluations of IPOs. Again, this indicates the importance of testing for the endogeneity of the value of the VC's shares upon exit in our econometric tests in section 5.6. Note, however, that endogeneity may not be significant as the theory does not indicate a systematic prediction that some exit vehicles consistently yield higher and/or less risky returns. 16 As well, if choice of exit caused VCs' returns then we would not expect to observe (or very rarely observe) the dominated exit strategies. The evidence in section 5.6 shows that all exit vehicles are used. Nevertheless, we do test for the presence of endogeneity in our empirical analysis.

In subsection 5.4.3, we relate the characteristics of the entrepreneurial firm's assets to exit strategy. In this final part of subsection 5.4, we conjecture the third and last hypothesis to be tested in the empirical analysis.

### 5.4.3. Exit Strategies for High-Technology Firms

High-technology firms (e.g., those in biotechnology, communications, computers, electronics, energy, environmental technology, and medical related industries) are distinct from other entrepreneurial firms in a number of important respects. First, high-technology firms' assets tend to be intangible and are often difficult to value. Therefore, informational asymmetry tends to be greater among high-technology

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15. In other words, $\delta(P_{IPO}/P_{Acquisition})/\delta(\text{Quality}) > 0$ (i.e., the derivative of the probability of an IPO / the probability of an acquisition with respect to entrepreneurial firm quality is positive). Similarly, Hypothesis 2 states that $\delta(P_{Acquisition}/P_{SecondarySale})/\delta(\text{Quality}) > 0$, and therefore $\delta(P_{IPO}/P_{SecondarySale})/\delta(\text{Quality}) > 0$, etc.

firms (Helwege and Liang, 1994). Second, moral hazard may be more significant among high technology firms as entrepreneurs' actions are more difficult to monitor (Hart and Moore, 1994; Noe and Rebello, 1996). Note, however, that it has been argued that high-technology entrepreneurs are a self-selecting group of highly motivated individuals such that moral hazard costs associated with changing ownership structure are not as significant for high-technology entrepreneurs (MacIntosh, 1994). Third, high-technology firms that are high quality often have inherent synergies. Finally, the growth potential of a high quality high-technology firm may be greater than their non-high-technology counterparts.

In net, these characteristics indicate a particular pattern of exits for high-technology firms for the following reasons (some of the pronounced factors are indicated in Table 1). First, if moral hazard costs are more pronounced among high-technology firms then IPOs and acquisitions may not be favoured. However, moral hazard effects have been argued to be less pronounced among high-technology entrepreneurs (MacIntosh, 1994); therefore, moral hazard may not be a dominant consideration. Second, high informational asymmetry suggests acquisitions will be favoured (see Principle 1 in section 5.3 above). Third, high-technology firms tend to be riskier and risk-spreading will be most efficient in an IPO exit (MacIntosh, 1994). Finally, the potential for growth and transaction synergies will especially favour IPOs and acquisitions over secondary sales and buybacks for high-technology firms.

Competing factors may affect the frequency of high-technology writeoffs. On one hand, writeoffs may be more frequent if VCs have difficulty ascertaining the quality of the investment. On the other hand, writeoffs may be less frequent to the extent that there is a self-selection mechanism: high-technology entrepreneurs tend to be a self-selecting group of hard-working and highly motivated individuals (MacIntosh, 1994). While we expect this later effect to dominate the former, the empirical evidence will shed more light on the relative importance of these competing factors.

**Hypothesis 3** High-technology entrepreneurial firms will be exited by (in decreasing order of likelihood): acquisitions, IPOs, secondary sales, buybacks, and writeoffs.\(^{17}\)

In sum, different exit vehicles enable informational asymmetries between the entrepreneurial firm

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17. In other words, \( \frac{\partial\text{Probability of Acquisition}}{\partial \text{Technology}} > 0 \) (i.e., the derivative of the probability of an acquisition / the probability of an IPO with respect to binary indicator of whether it is a technology entrepreneurial firm is positive). Similarly, Hypothesis 3 states that \( \frac{\partial \text{Probability of Sale}}{\partial \text{Technology}} > 0 \), and therefore \( \frac{\partial \text{Probability of Sale}}{\partial \text{Technology}} > 0 \), etc.
and its new owners to be mitigated to different degrees (*Principle 1*). The degree to which informational asymmetry is pronounced depends on investment duration, entrepreneurial firm quality and whether the entrepreneurial firm is in a high-technology industry. Three factors were therefore conjectured to affect choice of exit vehicle: venture capital investment duration (*Hypothesis 1*), entrepreneurial firm quality (*Hypothesis 2*), and whether or not the investee is a high-technology firm (*Hypothesis 3*). Before proceeding with the empirical analysis of these three hypotheses in section 5.6, in the following section we first consider how the comparative results from the Canadian and U.S. data may reflect legal and institutional differences between the two countries.

5.5. Legal and Institutional Factors Affecting Exit Strategies in Canada and the U.S.

This section briefly touches on a number of legal factors that may effect exit strategy (see MacIntosh, 1994, 1997, Robinson, 1997, and Andrews, 1995, for a more detailed analysis). Subsection 5.5.1 notes that there is a different mix of venture capital funds in the Canadian and U.S. data, and these funds may have different exit objectives. Tax differences between Canada and the U.S. are noted in subsection 5.5.2. Differences in Canadian and U.S. securities regulation, underwriter specialization and market liquidity are discussed in subsection 5.5.3.

5.5.1. Type of Venture Capital Fund

The U.S. data examined in section 5.6 consists of a sample of private venture capital funds only. In contrast, the Canadian data contains a mix of venture capital funds. Macdonald & Associates (1992) has classified the Canadian industry into 5 different types of funds. Each type of fund employs venture capital managers to invest the money of others. The primary difference across funds arises in the source of contributed funds. "Private independent" funds are funded mainly by public and private pension funds and wealthy individuals. "Corporate industrial" funds are wholly owned venture capital subsidiaries of corporations, while "corporate financial" funds are wholly owned subsidiaries of financial institutions. Together, these three types of funds are referred to below as "private" funds. "Government" or "public" funds are venture capital corporations owned and run by the federal or provincial governments. Finally, hybrid funds are "funds which are formed in response to a government incentive or an investment by government alongside private investors, or which have secured more than 50% of their capital from
another hybrid fund."

Private, public, and hybrid funds have differing investment objectives. Private funds invest purely for profit. Public and hybrid funds are constrained profit maximizers. They maximize profits within the peculiar constraints thrust upon them by their statutory and/or sponsorship mandates. Public funds target small, early stage technology investments that often cannot secure funding through other channels. They invest almost entirely in firms with their principal facility in Canada. Hybrid funds mix the goal of pure profit maximization with that of job creation (and/or investing in enterprises with a union affiliation), although some (like Working Ventures) have publicly stated that they will pursue pure profit maximization. The provincially incorporated hybrid funds are also constrained to invest in firms with their principal business in the province of incorporation. Public and hybrid funds operate under legal constraints that sometimes influence their exit strategy.

The most important type of hybrid fund is the Labour Sponsored Venture Capital Corporation (LSVCC). The legal constraints under which the LSVCCs operate tend to colour their exit strategy in three important respects. First, the federal and provincial LSVCC legislation typically provides that a fund will be penalized for failing to invest a stated percentage of its committed capital within a certain period of time following receipt of that capital. Second, the rapid influx of capital has resulted in many LSVCCs being unable to find qualified managers to invest their committed capital. This in turn has led to the hiring of many inexperienced VC managers. As LSVCC managers are relatively inexperienced and have a limited amount of time to invest contributed funds, their screening process is diminished and their value added to their investees (see section 5.4.1) is weakened. Third, the LSVCCs are essentially open-ended mutual funds from which investors may withdraw at any time. While investors may typically withdraw only after 5 years without being subject to recapture of the investment tax credit (now 8 years in the federal legislation), investors in private funds are often locked in for 10 years (although investors in Solidarité, the largest fund in Quebec, must normally wait until retirement to cash out of the fund). This creates a need to maintain a greater percentage of the investment portfolio in comparatively liquid form, as compared to a private or government fund. LSVCCs tend to make larger investments in less risky and

19. For example, while it existed, Innovation Ontario (a public fund) was required to give the entrepreneur a call option to repurchase the VC's interest (although it appears to have been the only government fund required to do so). If the business starts to become profitable, the entrepreneur would typically exercise the option and cash out its public investor.
relatively older firms with less growth potential and in traditional non-high-technology industrial sectors. To the extent that LSVCC investees lack upside potential, LSVCCs may more frequently exit their investments via buybacks and secondary sales than via IPOs or acquisitions. In sum, the limited amount of time to invest contributed funds, the relative inexperience of LSVCC managers, and the need to keep investments in a relatively liquid form suggest LSVCC exit strategies may bear little or no relation to investment duration and entrepreneurial firm characteristics (see Hypotheses 1, 2 and 3 above).

The Canadian data, described in section 5.6 below, does not distinguish between different types of venture capital funds.20 In view of the fact that the U.S. data are entirely from private funds but the Canadian data mixes public, private, and hybrid funds, we expect stronger support for Hypotheses 1, 2 and 3 in the U.S. than in Canada. (Note that LSVCCs controlled roughly half the total amount of venture capital under management in Canada between 1992 to 1995, the years spanned by our data, and significantly more than any other type of fund).21 Choice of exit strategy in Canada is therefore less likely to be driven by investment duration and the characteristics of the entrepreneurial firms.

5.5.2. Tax Factors

A number of U.S. commentators have detailed various changes to the tax structure in the U.S. which gave an enormous impetus to the development of the venture capital industry in the late 1970s and early 1980s (Bygrave and Timmons, 1992; Gompers, 1994). The tax structure in the U.S. has also impacted upon the VC's choice of organizational form; eighty percent of venture capital firms are organized as limited partnerships.22

The differential taxation of various exit techniques may constitute a reason for cross-sectional

20. Macdonald & Associates refused to disclose this information.
21. See Macdonald & Associates (1992-1996). LSVCCs have been growing in size since their inception in the mid to late 1980s across the various Canadian jurisdictions. This growth is purely tax-driven. Before the most recent federal budget, investors in LSVCCs received a 20% provincial plus a 20% federal tax credit on an investment of up to $5,000. Under the March 1996 federal budget, the government's tax credit is now a 15% credit on a maximum investment of $3,500. LSVCCs must be incorporated by a labour union, which must also control the board of directors (although in the typical case, the union's only financial interest in the fund will be the sponsorship fee that it receives for creating the fund). Despite the labour union affiliation, anyone can invest in a LSVCC. Management of the LSVCCs is invariably contracted out to expert venture capital managers.
variations in patterns of exit use, both within Canada and as between Canada and the U.S. Taxation factors may also account for changes in exit strategies over time. While no attempt was made to systematically determine the tax consequences of all means of exit both in Canada and the U.S., discussions with VCs suggested that tax factors were relatively unimportant in the choice of exit strategy. Whether shares are sold by the VC in an IPO, a secondary market sale, an acquisition, or a buyback, the VC will generally pay capital gains tax on the appreciation in the value of its holdings.

5.5.3. Securities Regulation, Underwriter Specialization and Market Liquidity

VCs are subject to a variety of types of regulation that impact on the cost of carrying on business. Securities regulatory requirements, for example, have a significant impact on the cost of taking a firm public (MacIntosh, 1994). Securities regulatory requirements also impact on other types of investors, such as Angel investors and "love capital" investors (MacIntosh, 1994). This has an indirect impact on VCs. If fledgling firms cannot surmount the seed and start-up stages because of an inability to tap love capital or Angel investors, they may never get to the stage when a VC can provide further funding. In effect, securities regulation has inhibited the development of a secondary resale market for investments in small and medium sized enterprises to a greater degree in Canada than the U.S.

Market liquidity generally presents greater constraints within Canada's relatively smaller economy, and may therefore account for some of the differences in the empirical results across Canada and the U.S (MacIntosh, 1994). For example, there may also be a comparative dearth of strategic acquirors in Canada's relatively smaller economy. VCs in Canada may employ secondary sales and buybacks more frequently than in the U.S., irrespective of the factors driving Hypotheses 1, 2 and 3 discussed above.

Greater liquidity in the U.S. market may also be the result of differing appetites of institutional investors for small firms. Canadian institutions are often said to be more risk averse than U.S.

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23. We have especially benefitted from Michael Pary and Mary Macdonald's comments.
24. MacIntosh (1994). Further study should be undertaken of the impact of securities regulatory requirements on small firms and on the venture capital community, in order to ensure that the regulatory burden is not excessive.
26. To date, no analysis has been undertaken of the nature of institutional portfolios in Canada and the comparative willingness of institutions in Canada and the U.S. to purchase shares in smaller firms. Nor has any analysis been undertaken
institutions, and less predisposed either to buying small firm IPOs or to trade small firms in the secondary markets. Institutional trading creates a public good, in the sense that an institutional decision to buy or sell creates an opportunity for a trader on the other side of the market. By creating liquidity, institutional activity in secondary markets also facilitates public offerings by small firms.\(^{27}\)

There is some evidence that the regulatory environment in the U.S. is more accommodating to small firms than the regulatory environment in Canada (MacIntosh, 1994). The liquidity of secondary market trading is an important determinant of the ability of small firms to sell securities in the primary market. While the empirical record is slender, there is some reason to believe that secondary market trading mechanisms offer investors in small firms greater liquidity in the U.S. than in Canada (MacIntosh, 1994). This suggests IPOs may be relatively less attractive in Canada than the U.S.\(^{28}\)

Unfortunately, there is little systematic evidence on the comparative nature of Canadian and U.S. underwriting industries. However, anecdotal evidence suggests that in the U.S. there are proportionately more underwriters willing to bring small and medium-sized firms to the public market than in Canada.\(^{29}\) Anecdotal evidence also suggests that U.S. underwriters play a more active role than their Canadian counterparts after a small firm goes public, functioning either as market makers (i.e. standing ready to buy or sell the firm's shares for their own account) or price quoters. Because the anticipation of secondary market liquidity is an important inducement in effecting primary market sales, the willingness of underwriters to play this dual role tends to ensure greater access to the primary market for small firms.

The U.S. market is also characterized by the existence of niche underwriters that service the high technology market; there are no such players in Canada (MacIntosh, 1994). While it is again possible that regulatory factors have played a role, these differences may again simply reflect the comparative size of the two economics. The greater concentration of small firm underwritings in particular regions of the

\(^{27}\) This emphasizes the importance of regulating institutional purchases in a manner which does not restrict the purchase of small firms. Legal restraints on institutional investors have played an uncertain role in institutional purchases of small firm stocks. Even restrictive 'legal for life' statutes have 'basket clauses' allowing for purchases of risky small firm shares, although recent federal adoption of "prudent person" investing standards may encourage more small firm investment. See generally Gelfand (1993); MacIntosh (1994).

\(^{28}\) This is unfortunate for the Canadian venture capital industry. Indeed, Bygrave and Timmons (1992: at 169) suggest that "a healthy IPO market gives the venture capital industry its vitality. Without IPOs the venture-capital investment process would not be viable." Similar remarks have been made by Huntsman & Hoban (1980).

\(^{29}\) See Profit (1994) (indicating the largest players in the small cap underwriting market); see also Economic Council of Canada (1982: at 29).
U.S. allows underwriters to exploit economies of scale associated with small firm offerings. In net, IPOs will therefore be a more attractive exit vehicle from high quality ventures in the U.S. than in Canada.

In sum, we conjectured that exit strategies in an unregulated and liquid market will be determined by Hypotheses 1, 2 and 3 developed above. We expect to observe less evidence in support of these hypotheses in the relatively illiquid and more regulated Canadian market. The hypotheses are evaluated in the following section.

5.6. Empirical Evidence

Our empirical analysis begins with the presentation of a number of summary statistics from the Canadian and U.S. data in subsection 5.6.1. A multinomial logit model is then employed in subsection 5.6.2 to assess the impact of various factors that influence venture capitalists' choice of exit vehicle (Hypotheses 1, 2 and 3). Concluding remarks and policy implications follow in section 5.7.

5.6.1. Data

The survey data comprise exits from 112 portfolio companies from 13 venture capitalists in the U.S and 134 portfolio companies from 22 venture capitalists in Canada between 1992 and 1995. The data are summarized in Tables 2 and 3. Table 2 indicates that the most common exit vehicles in the U.S. were writeoffs (29.5% of the total), IPOs (26.8%), and acquisitions (26.8%); the least common were secondary sales (8.0%), company buybacks (5.4%) and other (3.6%). In Canada, the most common exit methods were company buybacks (30.6%), IPOs (26.9%) and writeoffs (20.1%); the least common were acquisitions (11.9%), secondary sales (9.0%) and other (1.5%) (see Table 3). It may be

30. Collection of the survey data was done in conjunction with MacDonald & Associates in Canada and Venture Economics in the U.S. Both companies produce annual yearly statistical summaries of the venture capital industry in their respective countries. The data comprises approximately 10% of all U.S. exits and 25% of all Canadian exits from 1992 to 1995.

31. All dollar amounts were converted into constant 1990 US dollars. US dollars figures were converted into constant 1990 dollars using International Financial Statistics, label 11/64. Canadian dollar values were converted into constant dollars using the CPI from CANSIM, label P700000, and to US dollars using foreign exchange rates from CANSIM, label B3400.

32. "Other" exits involve mixed exit strategies (e.g., part buyback, part secondary sale). Other exits were included in the multinomial logit estimation below; however, their coefficients are not reported (for succinctness) because their expected signs are somewhat ambiguous and the coefficients were generally insignificant (with the exception of endpoint comparisons, such as writeoffs).
that the high buyback rate in Canada reflects a comparative dearth of strategic acquirors in Canada. The fact that acquisitions were used with greater frequency in the U.S. than in Canada adds some credence to this view. The percentage of exits taken as writeoffs also show some differences between the two countries: while 30.4% of investments were written off in the U.S., only 20.1% were written off in Canada.

Average annual real returns in the U.S. were highest for acquisitions (57.8%), IPOs (45.2%) and buybacks (11.4%) (see Table 2). Average annual real returns were negative for secondary sales and writeoffs in the U.S. In contrast, in Canada, average annual real returns were negative only for writeoffs (see Table 3). Average annual real returns were highest for secondary sales in Canada (34.5%). For all exit vehicles taken together, the average annual real return was positive in the U.S. (1.43%) but negative in Canada (-7.03%).

On average, there were higher initial investments in the U.S. than in Canada for IPOs, secondary sales, and writeoffs; initial investments were higher in Canada for acquisitions and buybacks (see Tables 2 and 3). Exit values were highest (lowest) for IPOs (writeoffs) in both Canada and the U.S. Both average investment and exit values were higher in the U.S. than in Canada. This is consistent with anecdotal evidence that U.S. VCs have specialized to a much greater degree than their Canadian counterparts (Macdonald & Associates, 1992, 1994; Sahlman, 1990: at 489). While most Canadian funds have historically been willing to entertain investments in virtually any industry, many U.S. funds have limited themselves to investments in particular areas of the high technology spectrum (e.g. biotechnology or computers; Bygrave and Timmons, 1992). Both industry focus and specialization are likely to enhance VC profits (Klienman and Shulman, 1992). The comparative lack of focus and specialization in Canada are two more factors that would lead us to expect Canadian VCs to earn lower profits than U.S. VCs.

Given the context of the summary statistics, we now turn to a more rigorous analysis of the data. A multinomial logit model is used to test Hypotheses 1, 2 and 3. The Canadian and U.S. data enable a comparison of the relative efficiency of venture capital exit strategies in Canada and the U.S.
5.6.2. Multinomial Logit Analysis

In order to investigate the factors that motivate a venture capitalist to choose one particular exit strategy over another, we employ the multinomial logit techniques first developed by Theil.\textsuperscript{33} The log-density for observation $t$ of the multinomial logit model can be algebraically written as:

$$\ln L = \sum_{j=1}^{J-1} Y_t (x'_t \beta_j) - \log \left(1 + \sum_{j=1}^{J-1} \exp(x'_t \beta_j)\right)$$

where $Y_t$ represents observation "t" for the $j^{th}$ dependent variable, $x'_t$ is observation $t$ of the matrix of independent variables, and $\beta_j$ is the coefficient for independent variable $j$. The loglikelihood function was estimated by Newton's method using Limdep (Greene, 1986: ch. 24).

The dependent variable used in our multinomial logit model is the choice of exit vehicle. The explanatory variables include the value of the VC’s shares upon exit and the duration of the investments, as well as a dummy variable indicating whether the portfolio company operated in a technology industry. The multinomial logit model assumes the independence of irrelevant alternatives across the explanatory variables. The data did not reject this assumption according to Hausman and McFadden's asymptotically distributed chi-squared test (Huntsman and McFadden, 1984). Note that other explanatory variables were explored but not included.\textsuperscript{34} For reasons outlined in section 5.4, we believe that these explanatory variables had the most direct effect on choice of exit vehicle. In addition, inclusion of other variables yielded insignificant results and were not supported on the basis of Akaike and Schwartz information criteria.\textsuperscript{35}

As discussed throughout section 5.4, it is important to check for endogeneity of the quality and duration explanatory variables. The Durbin-Wu-Hausman test statistics presented in the Appendix do not

\textsuperscript{33} Theil (1969). Our approach is analogous to that used by Schmidt & Strauss (1975).

\textsuperscript{34} For example, we tested the average annual real return (instead of the value of the VC’s shares upon exit) as a proxy for firm quality. The results were not notably different. The value of the VC’s shares upon exit was believed to be a more suitable proxy as it reflects quality at time of exit, while the average annual real return measures the change in quality over the duration of VC investment. In addition, note that there were 4 staged investments and 1 syndicated investment in the U.S. data and 9 staged and 5 syndicated investments in the Canadian data. Dummy variables for staging and/or syndication were not significant and did not affect the qualitative results.

\textsuperscript{35} See, e.g., Judge, \textit{et al.} (1988: at c.20.4). Standard tests did not indicate an omitted variable bias problem; see Lee
indicate any significant effects from endogeneity. The multinomial logit estimates from Canada and the U.S. are presented in Table 4 and discussed below.

5.6.2.1. Hypothesis 1: Duration and Exit Strategy

In Hypothesis 1 we conjectured that in order to mitigate informational asymmetry between entrepreneurial firms and their new owners, the longer the VC’s investment duration, the more likely the following exit vehicles (in decreasing order of likelihood): IPOs, secondary sales, acquisitions, buybacks, and writeoffs. The U.S. data do not support Hypothesis 1 in the choice of IPOs. Investment duration has had a negative effect on the likelihood of IPOs relative to acquisitions and secondary sales in the U.S. (see equations 1 and 2, respectively). This evidence is consistent with grandstanding whereby higher quality firms are exited by IPOs sooner than that which might otherwise be optimal (to mitigate informational asymmetry between the firm and its new owners) to enhance the reputation of the VC firm (Gompers, 1996). In contrast to the U.S. data, the Canadian data provide somewhat stronger support for Hypothesis 1 with respect to IPO exits. IPOs were more likely than secondary sales (equation 2) and writeoffs (equation 4) the longer the investment duration.

Equations 5 and 8 highlight some of the interesting differences across the U.S. and Canadian data. As expected, acquisitions are more likely than secondary sales the shorter the duration in the U.S.; however, the opposite result is observed in Canada (equation 5). In equation 8, secondary sales are more likely than buybacks the longer the investment duration in the U.S., but the shorter the duration in Canada. Secondary sales appear to have become a more frequently employed exit strategy irrespective of investment duration in Canada. This is most likely the result of legal and institutional factors discussed in section 5.5 above.

5.6.2.2. Hypothesis 2: Quality and Exit Strategy

In Hypothesis 2 we conjectured that higher quality entrepreneurial firms with low informational asymmetry and significant growth prospects would be exited by (in decreasing order of likelihood): IPOs, acquisitions, secondary sales, buybacks, and writeoffs. IPOs were expected to be more common than
acquisitions for higher quality investees with significant growth prospects. Nevertheless, strategic acquisitions are more likely to resolve informational asymmetries than other forms of exit, and also frequently promise the realization of transaction synergies and low post-acquisition agency costs. We thus conjectured (Hypothesis 2) that higher quality investee firms will more likely be exited via acquisitions than secondary sales (which exhibit higher post-acquisition agency costs, no transaction synergies, greater informational asymmetries, and a lessened ability to monitor the investment), buybacks (which exhibit no transaction synergies, little prospect for substantial infusion of capital, elimination of outside monitoring, and inefficient risk bearing), and writeoffs.

Strong evidence in support of the posited relationship in Hypothesis 2 between exit strategy and entrepreneurial firm quality is found in almost all the equations. In the U.S., the only insignificant quality coefficients are those for some of the buyback exits: equations (3), (6) and (8). Buybacks in the U.S. appear to be selected only when there are special circumstances warranting a buyback strategy. In fact, Venture Economics (the industry association that records U.S. venture capital statistics) does not even bother to record the number of buybacks in the U.S. (but the association does record statistics for the other exits). It appears that buybacks in the U.S. are only selected when the entrepreneurial firm has acquired funds that facilitate the buyback of the VC's ownership interest, irrespective of the quality of the entrepreneurial venture. Not surprisingly, however, equation (10) does indicate that higher quality firms are exited by buybacks than writeoffs in the U.S.

In Canada, the only insignificant quality coefficients are those "at the margin": equations (1), (5) and (8). That is, while higher quality firms in Canada may not necessarily be exited by an IPO over an acquisition (equation 1), IPOs are more likely than secondary sales, buybacks and writeoffs (equations 2, 3 and 4, respectively). Similarly, higher quality firms are not necessarily more likely to be exited through strategic acquisitions than secondary sales (equation 5); but strategic acquisitions are more likely than buybacks and writeoffs for higher quality firms (equations 6 and 7, respectively). Finally, higher quality firms are not necessarily more likely to be exited through secondary sales than buybacks (equation 8), but secondary sales are more likely than writeoffs for higher quality firms (equation 9).

The insignificance of the quality coefficients at the margin (in conjunction with the significance of all quality coefficients off the margin) in Canada is one of the more interesting empirical phenomena as it
strongly indicates inefficiency resulting from legal and institutional factors. IPOs may not be selected for higher quality firms in Canada as the transactions costs of an IPO are quite significant in Canada, and relatively more pronounced than that in the U.S. However, for off-the-margin comparisons (IPOs to secondary sales, buybacks and writeoffs) the transactions costs are no so great as to distort the choice of exit away from an IPO for higher quality firms. For the choice between acquisitions and secondary sales in Canada, the comparative dearth of strategic acquirors and institutional investors in Canada appears to have resulted in some secondary sale exits that might otherwise have been exited by an acquisition. The evidence is consistent with the view that the relatively more onerous Canadian securities regulation has inhibited the development of a secondary resale market for private equity investments to a greater degree in Canada than the U.S.

In subsection 5.4.2, we postulated that buybacks would be selected for lower quality investments for a number of reasons (see Hypothesis 2 and accompanying text), including the loss of the external monitor (the venture capitalist), increased debt, and the absence of transaction synergies. While the off-the-margin evidence in Canada (buybacks relative to IPOs and acquisitions) is significant, the trade-off on the margin for firms at the lower end of the quality spectrum shows no rank-ordering between secondary sales and buybacks, which further suggests partial illiquidity of small firm private equity in Canada. Nevertheless, note that the results indicate (not surprisingly) that the lowest quality firms in Canada and the U.S. are written off (equations 4, 7, 9 and 10).

5.6.2.3. Hypothesis 3: Technology and Exit Strategy

In Hypothesis 3 we conjectured that high-technology entrepreneurial firms would be exited by (in decreasing order of likelihood): acquisitions, IPOs, secondary sales, buybacks, and writeoffs. The U.S. evidence provides relatively weak support for Hypothesis 3 in equations (1) - (4). In equation (1), there is weak evidence that IPOs are less likely than acquisitions for high-technology investees in the U.S. In contrast, technology firms are more likely to be exited via an IPO than an acquisition (equation 1) in Canada. IPOs are also more likely than buybacks (equation 3) and writeoffs (equation 4) for Canadian high-technology firms. These differences between the Canadian and U.S. results are likely due to risk spreading considerations. In particular, the need to spread the risk of a high-technology company across

36. See section 5.5, supra.
a number of diverse buyers may be greater in Canada, as there are fewer firms in Canada with sufficient capital to diversify the risk of an acquired high-technology firm. Moreover, the cost of holding risky private equity is relatively more pronounced for high-risk high-technology ventures in Canada because of onerous resale restrictions imposed in Canadian securities legislation. In contrast, larger U.S. firms in a less regulated market may be in a better position to achieve diversification via a strategic acquisition.

As expected (Hypothesis 3), technology investments play a significant role in the choice of buybacks vis-à-vis other exit vehicles in the U.S.; in particular, equations (6) and (8) respectively indicate buybacks are less likely than acquisitions and secondary sales for technology investments. However, the Canadian data are not supportive, which may reflect the comparative lack of specialization of Canadian VCs relative to their U.S. counterparts. As above, these results may also reflect the relatively more onerous restrictions on private equity holders in Canada and a comparative dearth of strategic purchasers of high-technology firms in Canada.

5.7. Conclusion

Venture capital exit strategies enable, to different degrees, the new owners to resolve informational asymmetry, value the firm and monitor the investment. Exits may also facilitate transaction synergies and the infusion of new capital for high quality growing enterprises. We therefore predicted that efficient exit strategies depend upon the length of venture capital investment, entrepreneurial firm quality, and the characteristics of the entrepreneurial firms' assets (high-technology or otherwise). The empirical evidence provided the strongest support for the proposition that IPOs are most often used for the highest quality firms; that strategic acquisitions are more likely than secondary sales for higher quality firms; and that buybacks are typically used for low quality firms. The empirical evidence provided moderate support for the conjectures that exit strategies depend on investment duration and whether or not the investee is a high-technology firm. Greater support for all three hypotheses was evidenced in the U.S. than in Canada.

The evidence presented in this paper adds support to the view that IPOs are central to the venture

37. Ibid.
38. Ibid.
39. Ibid.
capital process. IPOs are most often selected for higher quality firms. This emphasizes the importance of ensuring that regulatory hurdles to accessing the public markets are cost-effective and not unduly onerous. It also emphasizes the importance of healthy secondary trading markets (i.e., the stock exchanges and over-the-counter markets) as there is an inextricable link between primary and secondary markets. Securities can typically be sold into the public markets only if investors can anticipate some degree of secondary market liquidity. Moreover, once the firm goes public, secondary markets provide valuable information about how subsequent equity offerings should be priced. Thus, it is just as important to ensure that regulatory requirements in secondary markets be cost-effective as those in the primary markets. The relatively more onerous Canadian regulations appear to have limited the liquidity of equity interests in small and medium sized enterprises.

The evidence also indicates that relative to the U.S., buybacks are used much more frequently and acquisitions much less frequently. The comparative dearth of acquisition exits in Canada is troubling, given that this form of exit can facilitate monitoring and reduce information asymmetry between the entrepreneur and new owners as well as provide significant capital to high quality and high growth firms. It may be, however, that there is little that government policy can do to correct the situation -- at least in the short term. The lack of strategic partners in Canada is likely a product of the fact that Canadian markets are smaller and less developed than those in the U.S. Nonetheless, policy makers should be aware that policy which tends to create a more vibrant, competitive large firm sector will also indirectly impact on small firms by furnishing more potential strategic partners.

The Canadian venture capital market has been dominated in recent years by Labour Sponsored Venture Capital Corporations (LSVCCs). The tax incentives associated with LSVCFs have drastically affected the provision of venture capital in Canada. Roughly 80% of new venture capital funds came from LSVCFs during the years of our exit data (1992-95). Our empirical evidence suggests that the legal constraints imposed on these organizations may have distorted efficient exit strategies by dictating minimum hold periods for investments and maximum periods in which new venture capital funds must be invested. Relatively inexperienced LSVCC managers may have further exacerbated the empirical differences between Canada and the U.S.

Inefficient exit strategies, where observed, may reflect either an econometric misspecification or
illiquid and distorted markets as a result of legal and institutional factors. On one hand, our empirical analysis details the absence of bias in our coefficient estimates resulting from possible missing and/or endogenous explanatory variables. On the other hand, the comparative results across Canada and the U.S. do indicate the effect of legal and institutional barriers on liquidity and the efficiency of venture capital exit strategies. Our U.S. data came from a sample of private venture capital funds. In contrast, the Canadian data contains a mix of public, private and hybrid venture capital funds. The significantly greater evidence of efficient exit strategies among private U.S. venture capitalists is strong evidence that relatively inefficient Canadian regulation has limited the liquidity of entrepreneurial firm equity and fostered relatively inefficient venture capital investors. In a well functioning exits market free from legal and institutional constraints, venture capitalists are free to select exit strategies that not only mitigate informational asymmetries and agency costs between firms and their new owners, but also provide the requisite capital to meet the needs of developing enterprises.

Appendix: Durbin-Wu-Hausman Tests

As we used the venture capitalists' average annual real return to proxy project quality, it is necessary to check for the endogeneity of the average annual real return variable (see subsection 5.4.2). We also noted the potential for endogeneity with duration (subsection 5.4.1). Table 5 presents Durbin-Wu-Hausman statistics\(^40\) for the effect of endogeneity in the duration and average annual real return coefficients in the multinomial logit regression equations specified in section 5.6. We selected various states/provinces (including, for example, California and Massachusetts in the U.S., and B.C., Ontario and Quebec in Canada) in which the entrepreneurial firms were located as instrumental variables. These were particularly intuitive instrumental variables as an entrepreneurial firm's quality may depend upon its location (e.g., its location may yield lower monitoring costs, less informational asymmetry, and better growth prospects, and resources may be better and more readily available in certain areas), but a firm's physical location in and of itself is at best a very weak and indirect determinant of exit strategy. Standard diagnostic statistics confirmed the suitability of the location instruments. The use of different instruments did not affect the interpretation of the results.

The Durbin-Wu-Hausman statistics provide strong evidence that endogeneity has not affected the

multinomial logit coefficient estimates presented in Table 4. Table 5 indicates that significant endogeneity effects are observed only very rarely. There is no systematic evidence of significant endogeneity effects across any of the exit choices in either Canada or the U.S. Importantly, therefore, the use of instrumental variables would introduce more bias than it would mitigate. As such, the standard multinomial logit estimates are presented in Table 4.
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Table 1: Summary of Factors Affecting Project Quality in EEL Strategies
### Table 2. U.S. Exit Data Summarized by Exit Method

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<tr>
<th>Exit Vehicle</th>
<th>Number of Companies</th>
<th>Average Portfolio Investment ($000s)*</th>
<th>Average Exit Value ($000s)*</th>
<th>Average Gross Real Return (%)</th>
<th>Average Annual Real Return (%)</th>
<th>Average Duration (Years)</th>
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| Exit Method     | Number of Portfolio Companies | Average Investment ($000s)* | Average Exit Value ($000s)* | Average Gross Real Return (%)** | Average Annual Real Return (%)** | Average Duration (Years) | Technology | Industry |
|-----------------|-------------------------------|-----------------------------|-----------------------------|---------------------------------|---------------------------------|--------------------------|------------|
| IPO             | 36                            | 176.98                      | 482.07                      | 963.5                           | 22.044                          | 5.86                     |            |
| Acquisition     | 16                            | 232.95                      | 389.31                      | 84.5                            | 13.309                          | 6.94                     |            |
| Secondary Sale  | 12                            | 47.855                      | 91.926                      | 129.8                           | 34.464                          | 3.08                     |            |
| Buyback         | 41                            | 80.627                      | 93.29                       | 51.6                            | 2.6572                          | 6.34                     |            |
| Writeoff        | 27                            | 39.555                      | 0.455                       | -97.1                           | -97.101                         | 4.07                     |            |
| Other           | 2                             | 287.11                      | 366.99                      | 32.5                            | 7.7373                          | 6                       |            |
| Total           | 134                           | 116.57                      | 218.34                      | 277.2                           | -7.0254                         | 5.53                     | 62         | 72       |


Foreign exchange rates from CANSIM, label B3400. Values expressed in U.S. dollars for comparative purposes only.

** Returns were computed in Canadian dollars and do not reflect exchange rate changes.
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Chapter 6. Settlement Disputes: Evidence from a Legal Practice Perspective

6.1. Introduction

It is widely recognized that the choice of legal fee contract is a response to conditions of asymmetric information (Dana and Spier, 1993; Danzon, 1983; Schwartz and Mitchel, 1970; Scothmer and Rubinfeld, 1993). The contract space for legal fees has nevertheless been limited in some jurisdictions. Most notably, contingency fees are banned entirely in many European countries (Pfennigstorf, 1984), and the Province of Ontario in Canada prohibits percentage contingency fees except for class action suits (Puri, 1999). While contingency fee arrangements are permitted in every other Canadian province and in the United States, percentage caps and other restrictions on their use are common across jurisdictions (Hay, 1996: 529-31). For example, in British Columbia there is a 33% percentage cap and it is not possible for a lawyer to contract for a percentage of the recovered costs.\(^1\)

Restrictions on legal fee arrangements are designed to limit conflicts of interest between lawyers and their clients. Previous theoretical and empirical research has related conflicts of interest in the settlement decision to legal fee arrangements. Schwartz and Mitchell (1970) predicted that income maximizing attorneys will work fewer hours than needed under contingent fee contracts to maximize plaintiff settlements. This prediction is based on the assumptions that there is a positive relation between out-of-court settlement size and the number of hours that lawyers invest in their plaintiffs' claims, and that plaintiffs are ignorant of the relationship between attorney hours and settlement size. Schwartz and Mitchell also assumed that attorneys only adjust their labour input. Danzon (1983), on the other hand, showed that when attorneys adjust their labour input as well as the contingency fees percentage there is no conflict of interest between lawyers and their clients.

Kritzer et al. (1985) hypothesized that contingency fee lawyers would spend less time on cases than hourly-rate lawyers. This hypothesis was tested using data from 371 hourly-rate and 288 contingency fee contracts. Kritzer et al. found that contingency fee lawyers work less than hourly rate lawyers for claims under $6000, and the number of hours invested by contingency fee lawyers increased

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\(^1\) Contingency fee arrangements have been prohibited in order to avoid potential settlement conflicts, among other things, resulting from a lawyer's financial interest in the outcome of a case; see Halsbury's Laws of England, 4th ed. (1974), para.400, p.272, and An Act Respecting Chancery, S.O. 1897, c.327, ss.1 and 2.

\(^2\) Canada follows the English cost rule such that the loser may have to pay the costs of the winner.
with the size of the claim. In the context of class action suits, Rosenfield (1976) conjectured that attorneys would maximize their own welfare at the expense of their clients because none of the individual class members would have sufficient interest to monitor their lawyers' actions. Data from 104 class action suits showed attorneys who settled tended to receive greater compensation than those who went to trial, but the amount received by the class was lower among settled cases. In Miller's (1987) model, contingent-fee attorneys may settle at a sub-optimal level because they bear trial costs. Thomason (1991) used New York Workers Compensation Board data (25,842 claims, 1971-1977) and found empirical support for Miller's model.

The existing empirical literature on conflicts of interest in the settlement decision focuses on the characteristics of specific cases. This article differs from the existing literature by exploring legal practice sources of settlement conflicts with new empirical evidence. The approach taken herein is based on the view that a number of different characteristics of a lawyer's practice, and not simply the characteristics of a case at hand, may lead to a conflict of interest in the settlement decision. In this study, the characteristics of lawyers' practices are scrutinized and related to the frequency with which lawyers have disputes with clients regarding the settlement decision. This new approach does have the drawback that the estimates lack the precision that case-specific data can provide. However, it does enable one to take a broader look at a lawyer's beliefs and characteristics of his/her practice that may lead to a conflict of interest in the settlement decision. This empirical approach follows the spirit of the multitask principal-agent perspective formally introduced by Holmstrom and Milgrom (1991) and briefly mentioned in earlier research on legal fees by Clermont and CurriVan (1978:579) and Miller (1987: 203). The approach contrasts with previous empirical research (e.g., Thomason, 1991) based on traditional principal-agent frameworks to relate the characteristics of a particular case to the legal fee arrangement employed. The unique empirical evidence provided herein strongly supports the broader legal practice perspective on the sources of conflicts over settlement.

Particular features of a lawyer's typical cases analyzed in this exploratory econometric study include fee arrangements (contingency fees, hourly rate billing, hourly rate billing with a bonus for successful results, and lump-sum billing) and the handling of disbursements. Additional characteristics of the lawyer's legal practice include advertising legal services, the size of a lawyer's firm, specialization of a lawyer's practice, restricting cases to a minimum expected value, and the pursuit of innovative cases, jury trials and punitive damages. In addition, the effect of a lawyer's concern over percentage caps,
prohibitions on contracting for a percentage of the recovered costs, and the judicial review process for fee disputes is also assessed. Existing empirical studies on conflicts of interest in settlement using case-by-case data have not taken such legal practice based factors into account.

This paper is organized as follows. Section 6.2 reviews basic agency theory in the context of legal fee arrangements. Testable implications from a legal practice perspective are outlined in section 6.3. The survey data is described in section 6.4. Insightful qualitative responses to the questionnaires are quoted throughout the paper. Empirical tests on the frequency of settlement conflicts are provided in section 6.5. The last section concludes.

6.2. Legal Fees and Agency Theory

In the standard ex ante agency framework, uncertainty and the inability to perfectly monitor a lawyer’s effort gives rise to the following well-known result from moral hazard theory (Tirole, 1988: 35-36).

**Principle 1** A lawyer’s effort is an increasing function of his or her residual claim to the settlement offer or damages awarded at trial.

The intuition underlying Principle 1 is as follows. A lawyer takes unobservable actions that affect the stochastic distribution of the magnitude of the settlement offer or damages awarded at trial. A lawyer’s effort benefits himself and his client, but such effort is costly to the lawyer; therefore, the lawyer will put forth more effort where he or she receives a greater percentage of the settlement offer or damages awarded at trial. As a result, because they provide lawyers with a financial interest that is contingent on the outcome of the litigation, contingency fees mitigate moral hazard costs.

Contingency fees may also facilitate more efficient and innovative solutions to legal problems. Lawyers tend to apply more innovative approaches because they do not feel as compelled to follow a client’s instructions on each issue with respect to the allocation of time. For example, some British Columbia survey respondents indicated:

"[Contingency fees] permit more innovation because lawyers have more discretion."

"It provides a certifiable relationship with the client (not always feeling the meter is
In contrast, novel legal solutions are much harder for a lawyer to justify on an hourly basis if it is uncertain whether such an approach will take more time.

In British Columbia it is common practice to charge a 25% contingency fee for a settled case and a 33% contingency fee in the event of trial. This type of option contract that provides a lawyer with a greater fee in the event of successful results at trial further mitigates moral hazard costs.

**Principle 2** Contracts that provide higher percentages for trial reduce the potential for settlement conflicts.

The intuition underlying Principle 2 is straightforward. The higher percentage compensates the lawyer for the additional effort required at trial.

Conditions of asymmetric information lead to not only moral hazard costs but also adverse selection costs (Stiglitz and Weiss, 1981; de Meza and Webb, 1987, 1992). Payment structure therefore affects not only effort but also quality.

**Principle 3** A greater proportion of riskier cases will be pursued under contingency fee arrangements than under hourly rate contracts.

The intuition underlying Principle 3 is as follows. Contingency fee arrangements provide lawyers with economic justification for taking on cases with lower chances of success but higher payoffs if successful. Contingency fees are in fact often employed in riskier cases as they facilitate a transfer of risk from the client to the lawyer (Miller, 1987). The client’s payoff is higher in bad states but lower in good states under a contingency fee arrangement relative to an hourly rate contract. Contingency fees therefore tend to attract clients who have a lower probability of success and have an interest in sharing the residual claim to the results of the action.

Note that where there is greater risk associated with a case, there is greater potential for differing opinions regarding the potential damage awards that may be possible at trial. In addition,
plaintiffs and plaintiff lawyers may have different attitudes towards risk, and these differences become magnified as the stakes of the case rise. As discussed further in section 6.4, such differences may result in more frequent conflicts between a plaintiff and plaintiff attorney regarding the decision to settle a case.

The qualitative survey responses support the conjecture that lawyers are willing to take on more problematic cases under contingency fees because such fees provide greater upside potential than hourly rate contracts. In Ontario where percentage contingency fees are prohibited (except in class action suits), 39% of the respondents felt that the formal legitimisation of contingency fees would make a difference to their current practices in so far as they would take on a different mix of cases. Some lawyers in Ontario responded to the question of how his/her practice may be affected by the formal legitimisation of contingency fee arrangements by noting:

"It will be possible to provide my firm's management with reasonable economic justification for taking on problematic cases."

"(1) I can enter a formal arrangement with clients so that there are fewer misunderstandings regarding fee arrangements; (2) a formal contingency arrangement could, in some cases, provide a measure of survival and/or encouragement to pursue more claims where chances of success are more tenuous."

"I would be likely to accept more cases that have a lower chance of success than I do now."

"[The formal legitimisation of contingency fees] will broaden the base of more cases and take more risk."

"I am likely to accept more risky but potentially lucrative cases if I can charge much more than my normal fee."

"[The formal legitimisation of contingency fee arrangements will cause] an increase in the volume of my practice particularly in defence of actions brought against health care providers and institutions; likely to make the resolution of my cases more difficult and expensive."

"The costs of litigation are so great these days - even for handling just a 'basic' claim - that many legitimate claims never get out of the starting gate. This is particularly true in insurance litigation - contingency fees would level the playing field a great deal."

In the B.C. questionnaire, the respondents were asked to indicate whether or not contingency fees enabled / encouraged them to accept more innovative cases. Ninety-two percent said that contingency fees facilitated innovative cases, and some commented:

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Note that 28% of Ontario respondents said that it would not make a difference to their current practice and 33% were unsure.
"A client will never hesitate to engage a creative lawyer who can take the case in a more innovative fashion on a contingency. On an hourly rate the client would feel he's paying for that potentially novel approach and thus much more difficult to obtain those instructions."

"Especially in wrongful dismissal law area but also in more complex personal injury claims where liability is in issue - i.e., assault and including sexual assault."

"I do stuff that other lawyers would walk away from due to CFA's [contingency fee agreements]."

"Parties involved in innovative cases do not usually have funds available for litigation."

"A lot of interesting / complex / risky / doubtful cases would be passed over if the client was forced to pay for a 'fee for service' basis."

"Permits more innovation because lawyers have more discretion."

Note, however, that the word "innovative" may be interpreted as "vexatious" or "frivolous". The incentive to initiate frivolous lawsuits that is created as a result of contingency fee arrangements has been frequently analysed in the literature (see, e.g., Buffone, 1995; Dana and Spier, 1993; Katz, 1990). Seven percent of the respondents expressed this concern in Ontario, and some of their reasons were:

"Generally people with little money have few real causes of action."

"I believe [percentage contingency fees] will tend to prompt and feed actions of limited merit intended to drive defendants to nominal or modest offers to avoid time and money costs of full defence and trial."

However, none of the B.C. respondents noted problems relating to frivolous and vexatious lawsuits. Moreover, the likelihood of frivolous and vexatious suits is severely diminished by the fact that Canada follows the English cost rule whereby the loser may have to pay the costs of the other side (Donohue, 1991).

In sum, clients care about both moral hazard and adverse selection costs when selecting their legal counsel and legal fee arrangement because such agency costs affect the quality of their legal services. Moral hazard costs are reflected in the fact that a lawyer's effort will be greater the greater his/her residual claim to the lawsuit. Adverse selection costs will be greater where lawyers undertake more innovative and risky approaches to problematic (or possibly vexatious) cases. Relative to hourly rate contracts, contingency fees mitigate moral hazard costs but exacerbate adverse selection costs. The following section puts these theoretical concepts into the context of the settlement decision and characteristics of lawyers' practices.
6.3. Agency Problems in Settlement

The purpose of this section is to consider factors that may lead to a conflict of interest between a plaintiff and plaintiff attorney in the settlement decision. While the plaintiff, not the plaintiff attorney, has legal control over the settlement decision, there has been academic debate over which party should have control over the settlement decision. Miller (1987: 198-202, 209) advocates plaintiff control over the settlement decision because the settlement offer is too low under attorney control. Thomason's (1991) empirical results confirm this result in that settlement amounts tend to be most beneficial to the contingent-fee attorney, not the plaintiff. Watts (1994: 172), however, notes that Miller fails to consider the frequency of trial in his analysis. The frequency of trial is less under plaintiff attorney control over the settlement decision; therefore, plaintiff attorney control over the settlement decision increases the *a priori* joint payoff to the three parties.\(^6\)

Certain underlying premises in this study diverge from previous research in a few fundamental respects. According to Miller (1987), Thomason (1991) and Watts (1994), plaintiff attorneys accept low settlement offers because they are not reimbursed for the trial costs under a contingency fee arrangement. The contingency fee arrangement that has become the standard contract in British Columbia, however, alleviates this problem: the plaintiff attorney gets 25% if there is no trial and 33.3% if there is a trial.\(^7\) Miller (1987), Thomason (1991) and Watts (1994) have further asserted that plaintiffs with contingency fee attorneys do not take into account trial costs and will therefore want to settle at a higher amount. The data on the handling of disbursements suggests that plaintiffs, not plaintiff attorneys, frequently cover or at least share trial costs.\(^8\) In effect, it is not necessarily the case that settlement demands will be too low when the plaintiff attorney makes, or at least tries to influence, the settlement decision. Furthermore, it is not necessarily the case (as Watts, 1994, has asserted) that attorney control lowers the frequency of trial and increases the joint *a priori* payoffs of the three parties. The broader legal practice perspective offered herein shifts the focus of the premise underlying this academic debate and offers a new look at the sources of conflict in the settlement decision. The importance of changing the conventional wisdom is highlighted below.

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7. See Principle 2, *supra*, and accompanying text.
8. See the discussion of disbursements, *infra*, subsection 6.3.2.
Consider two important dates over the duration of the plaintiff / plaintiff attorney relationship. The first is the date when the parties contract on the fee arrangement and the handling of disbursements. The second significant date is the time at which the defendant makes a settlement offer. The parties may have formed expectations regarding damages and costs at trial prior to a settlement offer and expectations regarding costs and possible damages awarded at trial may have been affected by the defendant's offer. Regardless of how expectations are formed, the distinguishing feature of the legal practice perspective (in contrast to case-by-case analyses) is that the lawyer's opportunity costs may differ between the initial contract date and the settlement offer date. Opportunity costs, therefore, may be an independent source of conflict of interest in the settlement decision.

As in previous research (e.g., Miller, 1997; Thomason, 1991; Watts, 1994), the analysis herein begins with the defendant's settlement offer. The plaintiff and plaintiff attorney must decide whether or not to accept the settlement offer. The determinants of the exact magnitude of the defendant's offer are not at issue. The purpose is to investigate situations in which the potential for conflict of interest between the plaintiff and plaintiff attorney is exacerbated as a result of either case specific or legal practice factors for any arbitrary offer from a defendant.

A summary of the notation is provided in Table 1. Note that the lawyer's opportunity costs of time associated with preparing for trial and going to court are distinguished in a separate variable. Expected trial costs do include disbursements, interest costs of delay associated with going to trial (Phillips and Hawkins, 1976: 502) and costs awarded against the unsuccessful party (under the English cost rule).

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9 It is important to note, however, that the defendant's offer may be influenced by his/her knowledge of the nature of the particular relationship between plaintiff and plaintiff attorney.
A risk-neutral defendant's settlement offer will be at most the sum of the defendant's costs associated with going to trial \( E(D_o) + E(C_o) \); risk aversion implies a higher settlement may be offered. A risk-neutral plaintiff will accept a settlement offer only if it is greater than or equal to the expected award at trial \( E(D_o) - E(C_o) \); risk aversion implies a lower settlement may be accepted. Similarly, a risk-neutral plaintiff attorney will also accept settlement offers to be greater than or equal to the expected award at trial \( E(F_o) - E(C_o) \); risk aversion also implies a lower settlement offer may be expected. The plaintiff and plaintiff attorney's expectations and opportunity costs may differ and the parties may have different preferences towards risk.\(^{10}\)

The conditions under which a conflict of interest between a plaintiff and plaintiff attorney may arise in the decision to settle a case are outlined in Principle 4. Principle 4 considers the possibility for a dispute to arise in the settlement decision from a much broader perspective than the case-by-case analysis (Holmstrom and Milgrom, 1991).

**Principle 4**  
A necessary and sufficient condition for a dispute regarding whether to settle a case is: 
(1) \( E(D_o) - E(C_o) > S_o > E(F_o) - E(C_o) - E(C_o) \)

or

(2) \( E(D_o) - E(C_o) < S_o < E(F_o) - E(C_o) - E(C_o). \)

The intuition underlying Principle 4 is as follows. In inequality (1), the plaintiff's expected gain from litigation exceed the defendant's; therefore, there is no offer that the defendant would make to convince the plaintiff to settle.\(^{11}\) The plaintiff's lawyer, on the other hand, would like to settle. Conversely, it may be the case that the plaintiff would like to settle but the plaintiff's lawyer would like to proceed to trial, as indicated in inequality (2). The intuition underlying the inclusion of a separate variable for outside opportunity costs can be illustrated by means of a simple example.\(^{12}\) Suppose the plaintiff attorney did not

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\(^{10}\) The analysis abstracts from the plaintiff's opportunity costs as they are not measurable in the data. Note that a low-income plaintiff may be more risk averse than a relatively wealthier plaintiff attorney; however, the analysis does not require preferences towards risk to be specified at the outset.

\(^{11}\) A very risk-averse plaintiff may accept a settlement offer significantly less than the expected value from trial.

\(^{12}\) Miller (1987: 203) noted "...there will be cases in which the attorney is not working at a profit. The attorney may,
have another case at the time of the initial contract but did have another case at the time the defendant made a settlement offer, but did not have the resources to work on both cases to their end at trial. If the expected value of the new case was sufficiently greater than that of the original, the lawyer would have settled the original case at a value lower than that which would have been expected from trial. Therefore, a conflict of interest may arise (e.g., the lawyer wants to settle but the client does not want to settle) where one would not have existed from the restricted case-by-case perspective. As such, it may be misleading to assert that "...the necessary condition for settlement is that the defendant's expected trial costs equal or exceed the plaintiff's expected gain from trial" (Thomason, 1991: 193) without explicitly accounting for opportunity costs.

Inequality (1) has been the focus of previous theoretical and empirical research on the conflict of interest in settlement (e.g., Miller, 1987; Thomason, 1991). Some respondents indicated conflicts depicted by inequality (1):

"Client believes [settlement] quantum too low and because client not paying hourly, client believes best to run it to trial."

"I acknowledge to my client at the outset of our relationship the potential conflict I have in this regard. I explain that in certain circumstances my narrow interest may be to settle a claim rather than go to trial. I point out that I will attempt to guard against doing so but note this possible concern. I then undertake to, and invariably do, discuss my formal assessment of each client's damages with the client BEFORE I do with an adjuster or opposing counsel. I point out to my client, at the time of this review, that if I recommend a settlement with them, they are entitled to have a good explanation as to why I have recommended the lower figure. I make sure that my assessment is a genuine estimation as to why I have recommended the lower figure. This is my hedge against a conflict most clients do not apprehend much less weigh." [Emphasis in original.]

Other respondents, however, also noted settlement conflicts as depicted by inequality (2):

"Usually client lacks the spine to push to trial. Will take a sure thing rather than risk getting lesser sum at trial."

"Clients that would do better at trial than settlement offered get 'cold feet' a few days before trial. They need encouragement to go -- sometimes that does not work."

The remainder of this section develops testable hypotheses on the factors that may lead to a

for example, suddenly become very successful, so that he or she can now earn a much higher fee than could be earned at the time he or she took on the case. In this situation, the attorney's opportunity costs could rise to the point where the attorney realizes an economic loss from the case. In such cases, the attorney might prefer to settle the case regardless of the size of the offer to simply get out of a losing proposition. (Perhaps it is more likely that the attorney in this pleasant predicament would hire a lower-paid associate to work on the case.) Even in this unusual situation, the attorney's incentives would not be optimal because he or she would settle for amounts much lower than the gain to the claim at trial."
conflict of interest between a lawyer and client. Factors particular to a case as well as extraneous factors are considered. These hypotheses are empirically tested in section 6.5 using British Columbia survey data described in section 6.4.

6.3.1. Legal Fee Arrangements

The purpose of this subsection is to develop hypotheses for the effect of alternative fee arrangements on the potential for conflict of interest between a plaintiff and plaintiff attorney in the decision to settle a case. The following four alternative fee arrangements are considered in turn: hourly rate contracts, hourly rate contracts with a bonus for successful results, lump sum billing, and percentage contingency fees. Table 2 summarizes the moral hazard (see Principle 1) and adverse selection (see Principle 3) costs associated with these alternative fee arrangements and the predicted effect on the potential for conflict of interest in the settlement decision.

An hourly rate fee arrangement has significant potential for moral hazard costs (Miller, 1987: 202-3). As the lawyer is not a residual claimant, the lawyer may have perverse incentives. If the lawyer does not have other work then s/he may be interested in pursuing the case to its end at trial, regardless of the merits of the case. (The lawyer may also misrepresent the amount of work done.) However, concern over reputation may mitigate this moral hazard problem.  

While moral hazard and settlement has been quite extensively discussed in the literature, a less common argument pertains to the adverse selection effect on settlement disputes arising from alternative fee arrangements. The types of cases pursued under hourly rate contracts tend to be less risky than cases under contingent contracts (see Principle 3); therefore, it is less likely that expectations of potential damage awards at trial will differ between the plaintiff and plaintiff attorney. Because damage expectations are more closely aligned, conflicts over the decision to settle may be less frequent under hourly rate contracts.

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13 This is subject to the market for legal services and the lawyer's outside opportunities; see Miller (1987: 202-3). Existing evidence, albeit limited, suggests there are positive rents in the market for legal services (Parshigian, 1977; McChesney, 1985); therefore, lawyers on hourly rate contracts may be interested in pursuing the case to its end at trial. Disputes arising out of outside opportunities may be mitigated in larger firms; see infra, Hypothesis 14 and accompanying text.

14 Reputation will mitigate lying to the extent that (1) lawyers are concerned about repeat business, and (2) where clients can ex post ascertain the amount of work actually done by the lawyer.
The moral hazard effect will be mitigated by the adverse selection effect under hourly rate contracts. On one hand, lawyers may have perverse incentives to pursue a case to its end at trial regardless of its merits (reputational considerations will likely mitigate this problem). On the other hand, expectations over potential damage awards are more likely to be aligned under hourly rate contracts than other fee arrangements. In net, it may be expected that these effects will cancel each other out such that hourly rate contracts will have no effect on the frequency of settlement disputes. The empirical tests in section 6.5 will provide further insight into the relative importance of these two effects.

Hypothesis 1  Lawyers who employ hourly rate contracts will have neither more nor less frequent settlement disputes.

Clermont and Currivan (1978) proposed that a contingent hourly rate fee plus a bonus for successful results would align the interests of a plaintiff and plaintiff attorney. The intuition for this result is as follows. First, the compensation scheme for the lawyer is clear and reflects the services provided. As a labourer the attorney is paid the hourly rate, and as an insurer against the risk of non-payment the attorney is paid a bonus in the event of successful results. Percentage contingency fees mix these two aspects of compensation together. Second, the bonus for successful results mitigates moral hazard costs (see Principles 1 and 2). Third, this fee arrangement also mitigates adverse selection problems relative to a percentage fee because the percentage bonus is smaller and therefore it is less likely that the lawyer and client will have divergent expectations regarding possible damages awards at trial (Principle 3). Finally, because the possibility of exorbitant profit is mitigated, lawyers will be more willing to forward cases to other lawyers (for more reasonable fees) in the event that it becomes either necessary or in the parties’ interests (Clermont and Currivan, 1978: note 164 and Appendix G). As such, outside opportunities arising in one’s legal practice are less likely to lead to a conflict of interest in the settlement decision for any particular case.

Hypothesis 2  Lawyers who employ contingent hourly rate contracts with a bonus for successful results will have less frequent settlement disputes.

In contrast to hourly rate contracts with a bonus for successful results, lump sum billing arrangements are an unclear compensation scheme that enables lawyers to pursue their own interests. Lump sum billing schemes will not necessarily reflect the services provided by the lawyer, and it is not necessarily clear that clients can properly ascertain situations where they do reflect the services provided.
Moral hazard costs cannot be eliminated if it is not clear when a lawyer builds in a bonus for successful results (Principles 1 and 2). Lump sum billing arrangements also exacerbate adverse selection problems because there may be potential for exorbitant profit; therefore, the chance that a plaintiff and plaintiff attorney have divergent expectations regarding the value of the case is magnified. Relatedly, the possibility of exorbitant profit limits lawyers willingness to forward cases to other lawyers even where conflicts of interest arise (Clermont and Currivan, 1978: note 164 and Appendix G).

**Hypothesis 3**  *Lawyers who employ lump sum billing arrangements will have more frequent settlement disputes.*

In contrast to lump sum billing, percentage contingent fees are a transparent fee arrangement. In their most basic form, the lawyer receives a percentage of the settlement or the damages awarded at trial (or zero in the event that the opposing party is successful). To the extent that this fee arrangement mitigates moral hazard problems (Principle 1), the interests of a plaintiff and plaintiff lawyer will be aligned and the possibility of a conflict of interest in settlement will be mitigated.\(^\text{15}\) For example, two British Columbia respondents noted:

"[Contingency fees are] somewhat more efficient because result is wholly outcome based, not punching a clock."

"[Contingency fees do not lead to disputes over the decision to settle because] economics of time; i.e., time value of money. It also saves the client the added stress. We will usually decrease our % to reach a settlement."

Recall that it is common practice in British Columbia to charge 25% in the event that a case is settled before trial and 33% in the event of trial. This graduated fee arrangement further aligns the interests of the lawyer and client in the settlement decision as the lawyer is compensated for the time and effort of preparing for trial (Principle 2).\(^\text{16}\)

While percentage contingency fees mitigate moral hazard, they nevertheless facilitate more risky actions (Principle 3). This in turn may lead to divergent expectations between a plaintiff and plaintiff attorney regarding possible damages at trial. It is therefore possible that conflicts of interest may be more frequent under percentage contingency fees. This problem may be magnified if the lawyer and client

\(^{15}\) Note that this statement ignores the handling of disbursements; see *infra*, subsection 6.3.2.

\(^{16}\) See also Miller (1987). In Miller's model, attorneys will choose lower than optimal settlements because they incur trial costs. In the empirical tests herein, however, the handling of disbursements is treated as a separate variable; see
have different degrees of risk aversion. For example, one Ontario respondent noted:

"The formal legitimation of contingency fees would make it harder to settle -- now only client has to be reasonable -- with contingency fees both the lawyer and client will have to want to settle."

Clermont and Currivan (1978) have also suggested that contingent fee attorneys may be less willing to refer cases to others lawyers in the event of possible conflicts in light of the potential for exorbitant profits under percentage contingency fees. However, reputational considerations may guard against this problem at least in some cases.

In net, the benefit of an increased willingness to provide additional effort on a case due to contingency fee arrangements may be mitigated by the adverse selection effect associated with such fee arrangements. Moreover, there may be a reduced willingness among some lawyers to refer lucrative cases even where conflicts are likely to arise. It is nevertheless conjectured that settlement disputes are less frequent among percentage contingent fee attorneys.

Hypothesis 4  Lawyers who employ percentage contingency fee arrangements will have less frequent settlement disputes.

6.3.2. Disbursements under Contingent Contracts

While clients cover disbursements under hourly rate contracts, the handling of disbursements is not a priori apparent for contracts in which the lawyer's bill is contingent on the outcome of the litigation. Previous research (e.g., Miller, 1987, Thomason, 1991) has assumed that lawyers pay the cost of trial (and therefore plaintiff attorneys accept lower settlement offers than plaintiffs). The survey data indicates that this assumption is inappropriate. For contingent contracts in British Columbia, 14.6% had the client cover disbursements, 57.6% of lawyers covered disbursements, and 27.8% shared

Hypothesis 5 and accompanying text.

Watts (1994: 171-2) stated that "[i]f the attorney makes the settlement decision, she makes a low settlement demand because she is not reimbursed for the time she spends preparing for trial. Attorney control lowers the settlement demand and thus decreases the likelihood of trial. If the plaintiff makes the decision, he does not take into account the cost of preparing for trial and settles only at a higher amount."

Nevertheless, it does appear to be the case that lawyers are more willing to finance disbursements where their payment is contingent upon the outcome of the case. For example, one of the respondents from British Columbia commented, "Poor people can't finance difficult cases. Contingency is the only financially sensible way for a lawyer to risk the time and money."
For contingent contracts in Ontario, 48.1% of lawyers had the client cover disbursements, 23.7% of lawyers covered disbursements themselves, and 28.2% shared disbursements. On the issue of sharing disbursement costs, one British Columbia respondent explained:

"In our experience, [contingency fee arrangements] have allowed prospective plaintiffs with legitimate claims but limited resources to pursue a claim/lawsuit where they otherwise would not or would agree to an inadequate settlement."

Similarly, Ontario respondents noted:

"[In the event of the formal legitimisation of percentage contingency fee arrangements in Ontario] I would be much more inclined to "invest" in the clients case rather than allowing the client to succumb to a demoralising offer (including investment in disbursements, etc.)"

"Costs are an important factor in driving clients to settlement. Contingency fees would lessen that factor and make settlement more difficult."

"[In the event of formal legitimisation of contingency fees] I will be very careful to advise defendants that their ultimate cost exposure, if successful, will be much higher and that reasonable settlements will be less likely, unless, of course, plaintiff's counsel is required to be personally responsible for payment of successful defendant's costs."

Table 3 outlines eighteen scenarios where a conflict of interest between the lawyer and client is potentially exacerbated as a result of the handling of disbursements under contingent contracts. In 50% of the cases where the disbursements are not shared, the potential for a settlement conflict is exacerbated. In scenarios (1) and (10), the lawyer's and client's conviction, respectively, to settle the case is strengthened.

Their expectations regarding possible damages awarded at trial are less than the settlement offer, and this difference is magnified by the trial costs. In scenarios (3), (5), (9) and (11), there is no conflict arising out of differences in expected damages at trial relative to the settlement offer. However, because only one party is covering the costs in these cases, there is a potential that the party covering the costs wants to settle as a result of having to carry the costs.

In contrast to scenarios (1) through (12), in cases (13) through (18) there is no potential for a settlement conflict to arise. The potential for a settlement conflict under a contingent contract between a plaintiff and plaintiff attorney cannot be exacerbated as a result of the handling of disbursements where both parties finance a proportion of disbursements roughly equivalent to their interest in the litigation. The intuition underlying this result is straightforward: as long as the handling of disbursements does not

19 That is, for contracts whereby payment is contingent on successful recovery in settlement or at trial, excluding...
distort the parties' financial interest in the outcome of the litigation, the potential for a settlement conflict to arise from the handling of disbursements is minimized. For example, under a 33% contingency fee arrangement, the lawyer would cover 33% of the disbursements if both parties were risk neutral. However, note that if the lawyer is relatively less risk averse then the lawyer would have to cover a share of disbursements that is slightly greater than her/his interest in the litigation to avoid a potential conflict of interest arising out of the handling of disbursements.

**Hypothesis 5**  *Lawyers who finance all disbursements, and lawyers who have clients finance all disbursements, will have more frequent settlement disputes.*

### 6.3.3. Restricting Contingent Cases to a Minimum Expected Amount of Money

Eighteen percent of the British Columbia respondents (and 19% of Ontario respondents) indicated they restrict contingent contracts to a minimum expected amount of money. Respondents generally indicated that the primary reason for such a restriction was to ensure that the case would be worth proceeding to trial if a reasonable settlement was not forthcoming. Settlement conflicts may therefore be less likely among lawyers who restrict contingency fee cases to a minimum expected damage award or settlement. That is, because such lawyers would at least not rule out the possibility of trial at the outset, settlement conflicts are expected to be less frequent. Note, however, that there are two competing considerations. First, Clermont and Currivan (1978) have suggested that lawyers may be less willing to refer a case in the event of a potential conflict where there is a significant financial stake in the outcome of the case. Second, divergent attitudes towards risk may lead to conflicts where there exists a larger potential damage award (see Principle 3 and accompanying text above). While the empirical results will indicate the relative importance of these competing factors, we can nevertheless postulate that they are likely to offset one another.

**Hypothesis 6**  *Lawyers who restrict contingent fee arrangements to a minimum amount of money will*...
have neither more nor less frequent settlement disputes.

6.3.4. Jury Trials, Punitive Damages and Contingent Fees

Pursuit of jury trials and punitive damages under contingent fee arrangements may increase the likelihood of settlement conflicts between a plaintiff and plaintiff attorney in two ways. First, the potential for a conflict of interest to arise may be exacerbated by the lawyer's unwillingness to refer potentially lucrative cases (Clermont and Currivan, 1978). Second, there may exist different expectations regarding damage awards between a plaintiff and plaintiff attorney. The possibility for larger awards may exacerbate the potential for conflict of interest in the decision to settle if the plaintiff and plaintiff attorney have different attitudes toward risk. For example, some of the British Columbia respondents noted:

"The impact of a possibly higher fee at trial bears on evaluation of my settlement offer and benefit of going to trial." [Emphasis added.]

"There is naturally no motivation to seek an award at trial for $25,000 if that is what the case is worth when there is an offer on the table for $20,000. Two days of trial for [the possibility of a percentage of an extra] $5,000 is not financially attractive."

"Prospective damage awards provide an incentive to take difficult cases to trial -- they often require creative legal solutions where the law is not clear or liability is split."

"Have been able to obtain jury awards for totally insolvent clients -- especially disability insurance claims."

"Jury awards are higher under contingency fee arrangements than otherwise in most major injury cases. Jury awards are lower under contingency fee arrangements in most minor injury cases."

These comments suggest that a jury may "bump-up" a damage award to compensate a client for the fact that a lawyer will receive one-third of the damage award, especially if the jury is able to estimate the wealth of the client. This may exacerbate conflicts of interest if there are significant differences in risk aversion between a lawyer and client.

Hypothesis 7  Lawyers who pursue jury trials and punitive damages for contingent fee cases will have more frequent settlement disputes.

6.3.5. Percentage Caps

Percentage caps limit risk taking by lawyers. Clients interested in pursuing a case to its end at trial may be faced with a conflict with a lawyer who feels 33% is not enough to compensate for the risk of
non-payment. Some of the British Columbia respondents commented:

"I usually charge 25% for MVA cases + 8.33% if trial required. This is insufficient in the 'usual' for MVA cases." [We may infer from this comment that this is also insufficient for innovative/risky cases that require more effort on the lawyer's behalf.]

"[I am dissatisfied with] percentage limits placed in MVA cases and the failure of the court to uphold contingent agreements in some damage cases involving minors or incapacitated in spite of major difficulties of success." [Emphasis added.]

"The present 33% restriction denies clients representation in many cases because lawyers settle for too little (or refuse the case) if the restrictions make the case uneconomic. Price controls never save money — they only result in a withdrawal (or inferior) goods and services because no one will (or can) operate at a loss."

A settlement dispute may arise when a lawyer feels that the 33% cap is insufficient to compensate for the risk of trial. There is, however, a competing factor. Clermont and Currivan (1978) have suggested that smaller percentages limit the upside potential and therefore increase the willingness of a lawyer to refer cases when they are too busy, etc., because any one particular case will have less of an exorbitant upside potential. In net, therefore, percentage caps will not necessarily lead to a greater frequency of settlement disputes among lawyers who feel the 33% limit is too low.

Hypothesis 8 The 33% cap on percentage contingency fees will have no effect on the frequency of settlement disputes.

6.3.6. Prohibition on Including Costs in Percentage Contingency Fees

Canada follows the English cost rule whereby the loser may be responsible for paying the costs of the winner. In British Columbia, however, there is a prohibition on contracting for a percentage of the awarded costs at a successful trial. This may lead to a conflict of interest in deciding to settle a case, as explained by two British Columbia respondents:

"Party and party costs go to client, so if case goes to trial lawyer's fee is fixed, but client's net recovery can raise 10%"

"In cases where there is a high reward for costs it is fair (to allow the lawyer to recover a percentage of those costs) because the lawyer has done the extra work - especially special costs, where it is usually the lawyer who bears the brunt of the behaviour which attracts such an award. The present restriction removes any financial incentives re costs."

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22 Hay (1996: 529-31) argues that a cross-the-board limit for all civil cases may be inappropriate as risk may vary widely across certain practice areas.
Hypothesis 9  The impact of the prohibition on contracting for a percentage of the recovered costs on the frequency of settlement disputes will be positive.

6.3.7. Specialization of Legal Practice

Many survey respondents indicated that they were able to specialize their practice as a result of contingent fees. In the B.C. Questionnaire, 59% of the respondents indicated that they were able to specialise their practice more than would otherwise be the case as a result of the availability of contingency fees. Specialization is made possible through the availability of contingent contracts primarily because lawyers may select among a broader range of alternative fee arrangements to better manage risk. Some of the respondents to the B.C. Questionnaire noted:

"I would not otherwise be involved at all in motor vehicle law"

"As we receive a great number of enquiries for personal injury cases, many of which are of relatively small economic value, we find that we can assign these to our junior lawyers who gain a great deal of experience in the field of personal injury and civil litigation in particular. As a result of our advertising campaign and the allocation of the cases we feel we have gained a significant expertise in personal injury."

"I am able to specialise and therefore gain greater expertise in MVA [motor vehicle accident] cases which enables me to take on riskier cases on occasion."

"Some clients have unreasonable expectations: it is the lawyer’s duty to advise the client of the law in the area. Once they learn what will likely happen at court, they are more reasonable."

It is conjectured that specialization may lead clients to defer more frequently to a lawyer’s expertise in deciding whether to settle a case. With experience in a particular practice area, a lawyer can better convey potential damages to a client from analogous cases tried by the lawyer (or other members of the firm) in the past.23

Hypothesis 10  Specialization through the use of contingent contracts will lower the frequency of settlement disputes.

23 To the extent that specialization leads to greater risk among lawyers, there is greater potential for divergent expectations, as well as more divergent attitudes towards risk taking across lawyers and clients. In effect, there may be greater potential for conflicts in settlement. However, the effect of risk-taking behavior has been treated as a separate variable, as discussed in subsection 6.3.8. Note that collinearity between the risk-taking and innovation variables was not a problem in the empirical results (see section 6.5).
6.3.8. Pursuit of "Innovative" Cases under Contingent Fee Arrangements

The pursuit of "innovative" cases leads to greater potential for divergent expectations regarding the value of a case, as well as divergent attitudes towards risk taking across lawyers and clients. In effect, there may be greater potential for conflicts in settlement.

Hypothesis 11 The pursuit of innovative cases through the use of contingent contracts will have a positive effect on the frequency of settlement disputes.

6.3.9. Concern with Ex-Post Fee Reduction

British Columbia courts tend to follow Yule v. Saskatoon24 as the leading case on the issue of fee disputes. This case bases the reasonableness of a fee on the quantum meruit principle. Nevertheless, some particular common law rules have developed in the B.C. case law. For example, premium billing is only permitted where it is explicitly included in the contract.25 In several cases, a maximum hourly rate for senior counsel was imposed at $175/hour.26 However, the risk of non-payment assumed by the lawyer in a contingency fee arrangement is not consistently mentioned as a factor going to the reasonableness of the fee.27

Some of the more disturbing common law rules on fee disputes that have evolved are highlighted by the recent B.C.S.C. decision in Cook (Guardian ad item of) v. Mission Memorial Hospital.28 In that case, the disputed issue involved a review of the lawyer's fee for a negotiated settlement on behalf of an infant in a medical malpractice claim. The court reasoned (with the support of the British Columbia Law Society's rules) that because medical malpractice litigation can be extremely difficult, the maximum allowable percentage cap should be set at 40% of the recovery in these exceptional cases. The court reasoned that there are generally two factors that go to the maximum allowable percentage: risk (the higher the risk, the greater the allowable percentage) and damages (the greater the damages or settlement

24 Yule v. City of Saskatoon (No.4) (1955), 17 W.W.R. 296 (Sask.C.A.).
27 Yule, supra, note 24, does not include uncertainty of payment as part of the basis for the reasonableness of the fee. See also Neill, ibid.
awarded the lower the percentage). In addition, there were several factors listed that might mitigate against charging the full percentage ex post (even though the settlement must be approved ex ante by the Deputy Public Trustee for contingency fee cases in British Columbia). These factors include (1) time taken for a settlement decision to be reached (earlier settlement implies lower percentage), (2) whether the lawyer had to prepare for a trial, (3) whether the trial took as long as expected, (4) who carried the costs of disbursements (a lower percentage will result if the client carries the disbursements), (5) whether the lawyer has been able to keep herself/himself busy with other cases after a pretrial settlement or shorter than expected trial, and (6) the "sympathies of the case". Factors that were not included in this list include the reasonableness of settlement and whether liability was in question in the case or whether it was merely the level of damages which were in issue. In any event, on the basis of these factors, the judge applied a 35% fee ($850,000) to the recovered damages and then subtracted $200,000 to arrive at the allowed fee ($650,000) for the lawyer.

The rationales for the reduction of the lawyer's fee in the Cook decision have exacerbated the potential for moral hazard problems in attorney-client relationships. Consider factor (1): time taken for a settlement decision to be reached. If a reasonable offer is made soon after the defendants are made aware of the plaintiff's intention to pursue the action, the lawyer has little financial incentive to advise the client to accept the offer. This is especially true if the lawyer has not yet had to think about the logistics of a trial (factor 2). Factor (3) does not provide a financial incentive for the lawyer to pursue a speedy trial (see Principle 1). Factor (4) provides a financial incentive to the lawyer to invest his own disbursements in the case. As demonstrated above, one-sided investment in disbursements by the lawyer tends to cause a conflict of interest between the lawyer and client with respect to the settlement decision. It may appear as if factor (5) was introduced to reduce the potential for a conflict of interest in a settlement decision; however, factor (5) in no way eliminates the moral hazard problem and is potentially inefficient in so far as it reduces the lawyer's financial incentive to accept reasonable early settlement offers even if there is some other productive way in which his or her time may be spent. Finally, factor (6) leaves a large

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29 The court based these factors on the expert evidence of Mr. Adrian Chater, Barrister and Solicitor, Past Chairman of the Trial Lawyers Association of British Columbia, in Richardson v. Law and Surrey Memorial Hospital (Vancouver Registry C927555, May 1, 1996).

30 The reasonableness of this fee was not intended to be related to any particular percentage of the amount recovered. A sum of $200,000 was deducted because, in spite of having invested a large sum in disbursements, "...the plaintiff's solicitors were spared two weeks of trial and the possibility of obtaining nothing at all. The fee arrangement was intended to include any eventuality and many unforeseen contingencies which might raise the complexity of a particular action beyond what is reasonably expected. Though an excellent job was done, the solicitors prepared carefully, and a splendid result was achieved, extraordinary contingencies did not arise and a provident settlement was achieved virtually on the courthouse steps." [Quote from para. 51 of the
amount of room for judicial discretion, which in turn exacerbates the potential for moral hazard problems associated with contingency fees.\textsuperscript{31} The following comments from British Columbia attorneys illustrate the problems associated with resolution of fee disputes:

"I am not dissatisfied with the percentage set for contingency fees but am very dissatisfied with the registrar's discretion to set the fee the registrar feels is appropriate after all the work has been done. In hindsight, the registrar's perception is invariably that the work was actually a lot easier than it was."

"Agreements between lawyers and clients should be treated the same as contracts between all other members of society. The registrars and courts should not have special powers to set aside lawyer-client contracts or to exercise broad discretion in disallowing fees for services properly chargeable under terms of the lawyer-client contract. It is not fair to the lawyer to do the work under an agreed contractual agreement only to have the whole contractual agreement changed by the whim of the registrar after the work has been done."

"There is no practical method of assuring that an infant's contingency fee contract will be respected by the courts."

"There exists legislation and rules of law-society contingency fees but judges feel that they are somehow wrong and want to review in cases of infants and infirm represented by guardians -- not in cases of wealthy."

"I would like to see the contingency fee treated as a binding document respecting infants because the courts treat those agreements as non-binding -- to the detriment of the bar, and to the detriment of infants who have difficult claims." [Emphasis added.]

On the basis of the case law and qualitative survey comments, it is conjectured that settlement disputes will be more frequent among lawyers concerned about ex post fee reduction. As expected gains from trial are diminished for at least a subset of cases, lawyers will be less willing to proceed to trial even when their clients do not want to accept a settlement offer.

**Hypothesis 12** *Lawyers concerned with ex post fee reduction will have more frequent settlement disputes.*

6.3.10. Advertising Legal Services

The American Bar Association (1995a, 1995b) suggested that lawyer advertising does not affect the image of lawyers in general and lawyers who oppose advertising were more concerned with its impact on their fiscal revenues. Cebula (1998) further suggested that advertising increases the image of lawyers for the following reasons. First, advertising facilitates competition and therefore reduces prices. Second,

\textsuperscript{31} The Cook decision not only creates a conflict of interest between lawyers and clients with respect to the settlement decision, it also inhibits the access to justice provided by contingency fee arrangements. This is especially true for impecunious
advertising increases access to justice for the poor, less educated and younger members of society. Cebula found empirical support for these conjectures.\textsuperscript{32} Moral hazard concerns, however, were not considered in this research.

It is conjectured that lawyers who advertise their legal services will attract a greater number of new clients, which in turn will increase their opportunity cost of focusing on the interests of their current clients, relative to lawyers that do not advertise. Furthermore, it is conjectured that clients who pay attention to advertisements and media generally are more likely to form different expectations than that held by their legal representatives. Some of the British Columbia respondents indicated that settlement conflicts had arisen because:

"Client wants $1,000,000 for a broken toe."

"Client has unreasonable expectations from reading the paper re U.S. awards."

"Usually client has had expectations raised for a variety of reasons, including discussions with non-lawyers and through media (especially U.S. T.V.)."

In sum, both moral hazard issues and divergent expectations suggest settlement conflicts will be more frequent among lawyers who advertise.

**Hypothesis 13** *Lawyers who advertise their legal services will have more frequent settlement disputes.*

6.3.11. Size of Lawyer's Firm

Lawyers in larger firms will have more opportunities to pass off cases to other partners or junior associates should the need arise (as per situations arising as discussed in Principle 4 and accompanying text). Lawyers in smaller firms, especially sole practitioners, will have fewer opportunities to pass off losing cases (unless they were willing and able to refer such cases to lawyers in other firms). In effect, lawyers in larger firms are conjectured to have less frequent settlement disputes.

**Hypothesis 14** *Lawyers in larger firms will have less frequent settlement disputes.*
6.3.12. Previous Queries Regarding Fee Arrangements

Two factors suggest that lawyers who have had clients query a previously agreed upon fee arrangement after a case has been settled or decided at trial will also have had less frequent settlement disputes. First, it is possible that the prior query made the lawyer more sensitive to the needs and interests of his/her clients. Second, there may be a self-selection factor in the survey data. That is, lawyers that have had a client query a fee arrangement may simply tend to understate the frequency of settlement disputes. On the other hand, it may be that lawyers that have had clients query agreed-upon fees ex post may simply be the type to have had more frequent settlement disputes. Regardless, the importance of this variable is that it is a control variable for the possibility of self-selection in the econometric tests (see section 6.5) using the survey data (see section 6.4).

Hypothesis 15 Lawyers who have had clients query an agreed upon fee ex post will have less frequent settlement disputes.

6.4. Data

The econometric analysis in the following section is based on survey data from the British Columbia Trial Lawyers Association [hereafter “TLABC”]. Eight hundred surveys were distributed in June, 1996. There were 153 respondents from plaintiff attorneys. The surveys asked for yes-no type responses to the issues addressed in the proceeding sections. Qualitative comments were also solicited. A similar survey was sent to the 2200 members of the Advocates Society of Ontario. There were 225 respondents to the Ontario survey. Qualitative comments from the Ontario survey have been included in the above sections; however, the Ontario survey data is not employed in the econometric tests below as data on settlement disputes was not solicited.

It should be noted at the outset that the empirical tests below employ data on typical case characteristics handled by the respondents, and not case-by-case detail. Previous empirical research (e.g., Thomason, 1991) has employed case-by-case data that ignores the characteristics of the lawyers' practice. A data set with both case-by-case information and legal practice information would be ideal; however, confidentiality restrictions have prevented collection of such a detailed data set. The unique

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33 The survey data is on file with the author.
34 The surveys were directed towards plaintiff attorneys but the Advocates society and the TLABC has both plaintiff and
legal practice perspective offered by the data employed herein nevertheless provides significant additional insight to the existing empirical evidence on the sources of conflict of interest between plaintiffs and plaintiff attorneys in settlement decisions.

6.5. Econometric Analysis

The purpose of this section is to test the hypotheses developed in section 6.3 using the survey data described in section 6.4. Ordered logit and probit regression equations are used to ascertain whether the frequency of settlement disputes ("often", "sometimes", "rarely", and "never") depend on the characteristics of the lawyer's practice.

There are a variety of different models for handling discrete dependent variables, and choosing the right framework naturally depends on the nature of the problem analyzed. Ordinary least squares is not used because it grossly violates the assumption that the dependent variable can take on an unlimited range of values. As question 20 in the BC questionnaire allows for 4 different responses that are ordinal in nature, the ordered multinomial logit and probit models were selected.

The loglikelihood function for the ordered multinomial model with a dependent variable that has 4 discrete choices for the frequency of settlement conflicts ("often", "sometimes", "rarely", and "never") is as follows:

\[
L(\beta, \mu_1, \mu_2, \mu_3) = \sum \log(\Phi(\mu_3 - X\beta)) + \sum \log(\Phi(\mu_1 - X\beta) - \Phi(\mu_3 - X\beta)) \\
+ \sum \log(\Phi(\mu_2 - X\beta) - \Phi(\mu_1 - X\beta)) + \sum \log(\Phi(X\beta - \mu_1))
\]

where \(\Phi(\cdot)\) is the cumulative standard normal distribution function for the ordered multinomial probit model, and the logistic function for the ordered multinomial logit model. The \(\mu\)'s are thresholds for the mapping of the value of the observed dependent variable to its unobservable quantity. The independent

defendant attorneys. The exact number of defendant attorneys in the Advocates Society and TLABC is unknown.

35 See Davidson and MacKinnon (1993, at c. 15).
36 Ibid.; see also Greene (1993: c. 21); Agresti (1984); McCullagh (1980).
variables comprise the matrix \( X \), and the parameter vector is \( \beta \).

The multinomial logit and probit models were estimated using Limdep Econometric Software.\(^{18}\) The model must include a constant term using Limdep, and therefore one of the \( \mu \)s is not identified. As such, Limdep normalizes \( \mu_0 \) to 0. It should also be noted that the estimated coefficients are not interpreted as probabilities that there will be a conflict of interest. Rather, these probabilities are computed as the cumulative distribution function of the underlying probit or logit model with the independent variables multiplied by the estimated coefficients. The model is set up with the variables defined in such a way that a statistically significant positive coefficient indicates that the independent variable leads to a conflict of interest between the lawyer and the client.\(^{19}\) A statistically significant negative coefficient indicates that the independent variable leads to an alignment of interests between the lawyer and client in the settlement decision.

Table 4 presents both the ordered multinomial logit and probit estimates and the predicted and actual outcomes for both models are presented in Table 5. In addition to the coefficient estimates and t-ratios, p-values are also presented. The results, which are not surprisingly very similar across the logit and probit models, are notable. First, note that hourly rate fee arrangements do not appear to affect the settlement decision in either the ordered logit or ordered probit models. As predicted by Clermont and Currivan (1978), hourly-rate fees with a bonus for successful results tend to align the interests of lawyers and clients in both the ordered logit (p-value is 0.0119) and ordered probit (p-value is 0.0430) models. Contingency fee arrangements also appear to align the lawyer’s and client’s interest in the ordered logit model (the result is marginally significant with a p-value equal to 0.0853), but this effect is insignificant in the ordered probit model. Lump-sum billing, on the other hand, appears to lead to a conflict of interest in both the ordered logit (p-value equal to 0.0008) and ordered probit (p-value equal to 0.0010) models. These results provide very strong support for the first four hypotheses introduced in section 6.3.

The results also provide strong support for the prediction that one-sided handling of disbursements leads to more frequent settlement disputes (Hypothesis 5). The disbursement coefficients in both the ordered logit and ordered probit models for both the client covering all the disbursements and

\(^{18}\) See Greene (1995: c.23). The model was estimated with the heteroscedastic specification: var[\( e_i \)] = \( w \) (see Greene, ibid. at c.23.4), using the number of lawyers per firm as a weighting variable. Likelihood ratio tests indicated a strong preference for this heteroscedastic specification.

\(^{19}\) For example, the advertising variable was assigned the value 1 if the lawyer advertised, and 0 otherwise, and so on.
the lawyer covering all the disbursements were significant at the 1% level of significance.

The results confirm Hypothesis 6 that settlement disputes are neither more nor less frequent among lawyers who restrict contingency fee arrangements to a minimum amount of money. The regular pursuit of jury trials suggested, however, more frequent disputes in the ordered logit model (p-value equal to 0.0568) as predicted by Hypothesis 7, but this result was not significant in the ordered probit model. Stronger support for Hypothesis 7 is evidenced by the fact that regular pursuit of punitive damages resulted in more frequent disputes in both the ordered logit (p-value equal to 0.0668) and ordered probit (0.0602) models.

The results indicate the frequency of settlement disputes was on average no greater among lawyers who felt that the 33% percentage cap was too low. This supports the conjecture (Hypothesis 8) that a reluctance to take on additional risk of trial in some cases as a result of the 33% limit would on average be offset by a greater willingness to refer cases due to the limit on exorbitant profits. However, it was expected (Hypothesis 9) that a greater frequency of fee disputes would be observed among lawyers who wanted recovered costs included in the 33% cap. The coefficient on this variable in both the ordered logit and probit models are positive but insignificant. Similarly, neither specialization (Hypothesis 10) nor the pursuit of innovative cases (Hypothesis 11) affected the frequency of disputes.40

The coefficient for the variable indicating dissatisfaction with the judicial reform process (Hypothesis 12) was also positive but insignificant in both models. The qualitative survey responses, however, did indicate that at least some lawyers were reluctant to take on additional risk as a result of the tendency of the judiciary to reduce fees in certain cases. Taken together, these facts indicate that lawyers are more likely to refuse certain cases at the outset (thereby limiting access to justice for the subset of the population most likely to garner judicial sympathy) rather than disagree with a client over the decision to settle a case.

Both the ordered logit (p-value equal to 0.0463) and ordered probit (p-value equal to 0.0530) indicate that lawyers who advertise their legal services tend to have more frequent disputes with clients over the decision to settle a case. This confirms the conjecture that lawyers advertising their services are more interested in increasing their volume of cases rather than serving the interests of their current clients.
(Hypothesis 13). This evidence suggests a need to re-examine the American Bar Association's (1995a, 1995b) and Cebula's (1998) conclusions regarding the advertising of legal services.

The size of the lawyer's firm was a significant factor in both the ordered logit and probit models (p-values equal to 0.0000 in both models). This is very strong support for the conjecture (Hypothesis 14) that lawyers in larger firms are better able to share work in order to avoid settlement disputes, whereas lawyers in smaller firms tend to have more frequent settlement disputes. Finally, as expected (Hypothesis 15), respondents who indicated an absence of previous queries regarding fee arrangements ex post had fewer settlement disputes in both the ordered logit (p-value equal to 0.0010) and ordered probit (p-value equal to 0.0031) models.

The most important point to note from this empirical study is that legal practice based factors are statistically significant. In addition, note that it is possible to use the estimated coefficients to predict the frequency that a lawyer will have settlement disputes given the attributes of his/her practice. For example, the probability that a lawyer without partners (a sole practitioner), advertises his/her legal services, has the client cover all disbursements, employs contingency fees, and has had clients query fee arrangements in the past never has settlement disputes is 2.1168 - 0.0984 + 2.6291 + 0.9609 - 0.5632 - 0.2448 + \mu < 0, or, \mu < -4.8085. With the logistic distribution, this is given by 1/(1+e^{-4.8085}), which is equal to 0.0081. The probability that the same lawyer rarely has settlement disputes is \left[\frac{1}{1+e^{-4.7995}}\right] - \left[\frac{1}{1+e^{-4.8085}}\right], which is equal to 0.1338. By similar calculation, the probability that the same lawyer sometimes has settlement disputes is equal to 0.8501, and often has settlement disputes is 0.0080. Similar predictions are possible for lawyers in different practices. Such predictions are fairly accurate, as indicated by the comparison of the frequency of predicted and actual settlement disputes in Table 5.

6.6. Conclusion

Previous research on the conflict of interest in the settlement decision has utilized traditional principal-agent frameworks without accounting for the broader multitask framework in principal-agent analysis put forth by Holmstrom and Milgrom's (1991). A legal practice perspective that more completely depicts the possible sources of conflict of interest in settlement was offered herein. The

\[\text{Note that multicollinearity was not causing the insignificance of these results.}\]

\[\text{See Johnson, Kotz and Balakrishnan (1995: ch.23).}\]
empirical evidence provides strong support for the conjecture that factors arising from outside any particular case are significant sources of settlement conflicts. In this exploratory econometric study, significantly less frequent settlement disputes were evidenced among lawyers in larger firms, and among lawyers who typically employed percentage contingency fees and hourly rate contracts with a bonus for successful results. Disputes were more frequent among lawyers who advertised, used lump-sum billing, pursued jury trials and punitive damages, and did not share the disbursement costs with their clients.

The legal practice data employed herein also suggests a need to change some of the underlying assumptions driving traditional models of settlement. Most notably, in contrast to Miller (1987), Thomason (1991), and Watts (1994), disbursements in contingent cases are not always exclusively handled by the lawyer. Plaintiff lawyers will therefore not necessarily accept lower settlement offers than plaintiffs. In light of this change in the conventional wisdom, traditional models of settlement and related empirical evidence should be revisited.42

Case-by-case data that also provided details on the pertinent characteristics of the lawyer’s practice would be ideal. Lawyer-client confidentiality, however, prevents the collection of such detailed information. Nevertheless, further empirical research comparing results based on both case-specific and practice-specific data sets across different jurisdictions would complement this exploratory analysis and facilitate a more complete understanding of settlement conflicts.

42 Only 58% of lawyers in British Columbia and 24% of lawyers in Ontario covered disbursements themselves under contingent contracts; see supra, subsection 6.3.2.
<table>
<thead>
<tr>
<th>Legal Fee Arrangement</th>
<th>Moral Hazard Costs</th>
<th>Adverse Selection Costs</th>
<th>Potential for conflict of interest in settlement exacerbated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly Rate</td>
<td>Significant</td>
<td>Insignificant</td>
<td>Unclear. Lawyer not a residual claimant; therefore, significant moral hazard. However, reputation at stake. Also, cases pursued less likely to have uncertain prospects.</td>
</tr>
<tr>
<td>Hourly Rate plus Bonus for Success</td>
<td>Mitigated</td>
<td>Insignificant</td>
<td>No. Incentive contract (and reputation) mitigates moral hazard. Also, cases pursued less likely to have uncertain prospects.</td>
</tr>
<tr>
<td>Lump Sum Billing</td>
<td>Significant</td>
<td>Significant</td>
<td>Yes. Fee arrangement unclear. Lawyer can act in his/her own interest. Also, adverse selection suggests possibility for divergent expectations regarding damages.</td>
</tr>
<tr>
<td>Percentage Contingency Fee</td>
<td>Mitigated</td>
<td>Significant</td>
<td>Unclear. Incentive contract mitigates moral hazard. However, likely to have divergent expectations regarding damages.</td>
</tr>
</tbody>
</table>
Table 3. Conflict of Interest in Settlement and Financing Disbursements under Contingent Contracts

<table>
<thead>
<tr>
<th>Scenario Number</th>
<th>Settlement offer and expectations</th>
<th>Lawyer finances all disbursements ($C_p=0$)?</th>
<th>Client finances all disbursements ($C_p=0$)?</th>
<th>Both parties finance disbursements?</th>
<th>Potential for settlement conflict exacerbated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$E(D_p) &gt; S_q &gt; E(F_q)$</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes.*</td>
</tr>
<tr>
<td>2</td>
<td>$S_q &gt; E(D_p) &gt; E(F_q)$</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>$E(D_p) = E(F_q) &gt; S_q$</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes, if $S_q &gt; E(F_q) - E(C_p)$</td>
</tr>
<tr>
<td>4</td>
<td>$E(D_p) &lt; S_q &lt; E(F_q)$</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>$S_q &lt; E(D_p) &lt; E(F_q)$</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes, if $S_q &gt; E(F_q) - E(C_p)$</td>
</tr>
<tr>
<td>6</td>
<td>$E(D_p) &lt; E(F_q) &lt; S_q$</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>$E(D_p) = S_q = E(F_q)$</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>8</td>
<td>$S_q = E(D_p) = E(F_q)$</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>9</td>
<td>$E(D_p) &gt; E(F_q) &gt; S_q$</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes, if $S_q &gt; E(D_p) - E(C_p)$</td>
</tr>
<tr>
<td>10</td>
<td>$E(D_p) &lt; S_q &lt; E(F_q)$</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes.*</td>
</tr>
<tr>
<td>11</td>
<td>$S_q &lt; E(D_p) &lt; E(F_q)$</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes, if $S_q &gt; E(D_p) - E(C_p)$</td>
</tr>
<tr>
<td>12</td>
<td>$E(D_p) &lt; E(F_q) &lt; S_q$</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>$E(D_p) &gt; S_q &gt; E(F_q)$</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No.***</td>
</tr>
<tr>
<td>14</td>
<td>$S_q &gt; E(D_p) &gt; E(F_q)$</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No.***</td>
</tr>
<tr>
<td>15</td>
<td>$E(D_p) &gt; E(F_q) &gt; S_q$</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No.***</td>
</tr>
<tr>
<td>16</td>
<td>$E(D_p) &lt; S_q &lt; E(F_q)$</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No.***</td>
</tr>
<tr>
<td>17</td>
<td>$S_q &lt; E(D_p) &lt; E(F_q)$</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No.***</td>
</tr>
<tr>
<td>18</td>
<td>$E(D_p) &lt; E(F_q) &lt; S_q$</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No.***</td>
</tr>
</tbody>
</table>

* Lawyer's conviction to settle is strengthened.
** Client's conviction to settle is strengthened.
*** Assuming the lawyer and client finance a portion of disbursements roughly equivalent to their interest in the litigation.
<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Ordered Logit</th>
<th>Ordered Probit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t-Ratio</td>
</tr>
<tr>
<td>Constant</td>
<td>2.1168</td>
<td>1.764</td>
</tr>
<tr>
<td>Hourly Rate</td>
<td>-0.2864</td>
<td>-0.869</td>
</tr>
<tr>
<td>Fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hourly Rate Plus Bonus for Success</td>
<td>-0.6832</td>
<td>-2.516</td>
</tr>
<tr>
<td>Lump Sum</td>
<td>0.7813</td>
<td>3.342</td>
</tr>
<tr>
<td>Billing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingency Fee</td>
<td>-0.5632</td>
<td>-1.721</td>
</tr>
<tr>
<td>Client Covers all Disbursements</td>
<td>2.6291</td>
<td>4.611</td>
</tr>
<tr>
<td>Lawyer Covers all Disbursements</td>
<td>1.4639</td>
<td>2.523</td>
</tr>
<tr>
<td>Minimum Value for Contingency Cases</td>
<td>0.0930</td>
<td>0.834</td>
</tr>
<tr>
<td>Lawyer Seeks Jury Trial For Contingency Fee Cases</td>
<td>0.2509</td>
<td>1.905</td>
</tr>
<tr>
<td>Lawyer Seeks Punitive Damages For Contingency Fee Cases</td>
<td>0.1520</td>
<td>1.833</td>
</tr>
<tr>
<td>Lawyer Wants to Eliminate 33% Contingency Fee Cap</td>
<td>-0.1465</td>
<td>-1.487</td>
</tr>
<tr>
<td>Lawyer Wants Costs Included In the 33% Cap</td>
<td>0.2816</td>
<td>1.189</td>
</tr>
<tr>
<td>Lawyer Specialized Practice Through Contingency Fees</td>
<td>0.2275</td>
<td>1.351</td>
</tr>
<tr>
<td>Lawyer Pursues Innovative Cases Under Contingency Fees</td>
<td>-0.0675</td>
<td>-0.847</td>
</tr>
<tr>
<td>Lawyer Wants Judicial Review Process to Be Reformed</td>
<td>0.2816</td>
<td>1.189</td>
</tr>
<tr>
<td>Lawyer Advertises Legal Services</td>
<td>0.9809</td>
<td>1.993</td>
</tr>
<tr>
<td>Size of Lawyer's Firm</td>
<td>-0.0984</td>
<td>-5.147</td>
</tr>
<tr>
<td>(Number of Lawyers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client has Queried an Agreed Upon Fee Arrangement Ex Post</td>
<td>-0.2448</td>
<td>-3.297</td>
</tr>
<tr>
<td>( \mu_2 )</td>
<td>3.0087</td>
<td>3.442</td>
</tr>
<tr>
<td>( \mu_3 )</td>
<td>6.6202</td>
<td>6.371</td>
</tr>
<tr>
<td>Frequency of Dispute</td>
<td>Never</td>
<td>Rarely</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>7</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>65</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>153</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 6: Frequency of Actual and Predicted Outcome
Chapter 7. The Role of Interjurisdictional Competition in Shaping Canadian Corporate Law

7.1. Introduction

In the United States, interjurisdictional competition has played a significant role in shaping corporation law. The incentive for states to compete for corporate charters is purely financial, since states earn incorporation fees and franchise taxes when companies choose to incorporate locally [Romano (1985)]. In the early part of the century, New Jersey was the winner of the incorporation competition [Cary (1974)]. Since then, Delaware has emerged as the clear winner, chartering some 43% of the NYSE firms and 50% of the Fortune 500 firms [Macey and Miller (1986: 478), Romano (1985: note 93)].

The competition for corporate charters has spawned a vigorous academic debate in the U.S. Noting that a large part of Delaware's revenue was derived from the incorporation business, Cary (1974) opined that Delaware bent over backwards to offer a corporation law that appealed to corporate managers. In response, Winter (1977) noted that if Delaware corporations did in fact do poorly, one would expect that their cost of capital would increase to reflect the diminished returns. Winter noted that there was no evidence that this was the case. Subsequent empirical investigations have confirmed the responsiveness of Delaware (and a handful of other states) to corporate managers [Dodd and Leftwich (1980); Baysinger and Butler (1985); Romano (1985)]. However, the evidence suggests that Delaware shareholders are better, and not worse off than shareholders in other states. When firms reincorporate from another state to Delaware, share prices seem in the main to go up, and not down [Romano (1985)]. This evidence is consistent with the view that the various markets described earlier are generally successful in aligning managerial and shareholder interests. It is also consistent with the view that enhanced managerial freedom is a good thing, and not a bad thing for shareholders. In sum, competition between American states for corporate charters has resulted in corporate law reforms that have in the main benefitted shareholders.

1. The result, Cary (1974) suggested, was disastrous: Delaware's liberal code and lax fiduciary constraints allowed managers maximum freedom to line their own pockets, at the expense of shareholders. As such, Cary advocated that minimum standards be incorporated into federal law because the federal government with its vast revenues was not likely to become a prisoner of corporate managers.

2. It should be noted, however, that there are other interpretations to the empirical evidence showing positive movements in the stock price around the event of reincorporation. For example, there may be events surrounding the date of reincorporation that have increased the firm's value independent of the reincorporation [Bebchuk (1992: 1448-1451)]. Even if the reincorporation does in itself lead to increases in firm value, such evidence does not conclusively support the position that competition produces desirable corporate law reforms in all corporate law areas. That is, there may be desirable reforms with
While the focus of most empirical studies using U.S. data has centred on the question of whether state competition has been good or bad for shareholders, we wish to address the preliminary question of whether there has been, or will likely be in the foreseeable future, an incorporation market in Canada. There are two distinct but equally important components to this question. First, are legislators (or those who draft corporate law reforms) responsive to demands for reform, and consequently enact changes to the law that please corporate decision-makers? Second, is there a demand for corporate law? That is, do corporations and their legal advisors consider the relative quality and/or cost of the corporate law product in competing jurisdictions? These questions will be addressed in our analysis of the federal government's implementation of the Canada Business Corporations Act in 1975 and the provinces' adoption of various provisions of the CBCA.

In his excellent summary of the theory and evidence, Daniels (1991) suggests that competition for corporate charters has indeed played an important role in recent corporate law reforms in Canada. Daniels focuses on the enactment of the Canada Business Corporations Act in 1975 and traces its subsequent adoption by a plurality of Canadian provinces. He suggests that the provinces were effectively forced to copy the reforms embodied in the federal enactment or lose chartering business to the federal government. In this article, we will suggest an alternative view, which is that competition has only played a limited role in corporate law reform in Canada. Many of the factors that draw us to this conclusion are discussed by Daniels. In the end, what divides us is, to a considerable extent, a question of emphasis on matters of theory, institutional structure and interpretation of the evidence. In this article, legislative achievement of uniformity of corporate laws is argued to be more compelling account of the pattern of corporate law reform in Canada.

The positive assessment of the extent of competitive corporate law production in Canada provides a basis for further normative empirical research on the merits of different corporate law regimes. In the United States, there has been vigorous state competition for corporate charters, and event studies have indicated reincorporation tends to produce increases in firm value (Romano 1985). In contrast, to the extent that the evolution of corporate laws in Canada involves jurisdictions adopting laws irrespective of their value-maximizing properties, consistent increases in share prices around the event of announcement

respect to some corporate law issues but not with respect to others; see ibid., and Cumming and MacIntosh (1999b: section III.2).
of reincorporation are less likely [Romano (1987: section IV)]. Cumming and MacIntosh's (1999b) preliminary research on Canadian reincorporations indicates that some reincorporation transactions enhance firm value, but others are value decreasing for shareholders.

Our analysis of the Canadian incorporation market herein will be presented as follows. In section 7.2 we discuss theoretical aspects and conduct empirical tests of the supply side of the charter market. Both passive and active supply side responses are assessed and related to theories of legal evolution. Moreover, we consider an alternative to the Competition Hypothesis, the Uniformity Hypothesis, and discuss how political, legal, and institutional factors have impeded competitive corporate law production in Canada. In section 7.3, the demand side of the incorporation market is studied. Empirical tests involving demand equations are used to test for the existence of charter shopping on the basis of incorporation fees and the desirability of the corporate law reforms. Conclusions follow in section 7.4.

7.2. The Supply of Canadian Corporate Law

This section considers two theories of corporate law production in Canada: the Competition Hypothesis and the Uniformity Hypothesis. The Competition Hypothesis is presented in subsection 7.2.1 along with institutional factors that have impeded competitive corporate law production in Canada. The Uniformity Hypothesis is then presented in subsection 7.2.2. Empirical evidence is provided in subsection 7.2.3 and related to Markov models of legal evolution.

7.2.1. The Competition Hypothesis

A competitive market for corporate charters requires more than simply a demand for "good" corporate law. It also requires a supply side response, whereby the suppliers of the "product" -- in this case corporate law -- are responsive to demands for reform. Consequently, the Competition Hypothesis predicts that jurisdictions enact changes to their corporate law in order to entice firms to incorporate in their jurisdiction and thereby gain incorporation revenues. If suppliers are not responsive to demands for corporate reform, then there is no more a competitive market for corporate law reforms than there is a competitive market for consumer goods in a centrally planned socialist economy. This point cannot be overemphasized, for in our view a competitive market cannot be shown to exist by demonstrating only

that there is a demand for corporate law. Indeed, any of a great variety of legislative processes can produce differential codes and consequently jurisdiction shopping. But unless there is a corresponding supply side response, jurisdiction shopping will not tend to result in more efficient corporate laws.

7.2.1.1. Passive and Proactive Supply Side Responses

It is important to distinguish between two very different kinds of competitive supply side responses. On the one hand, provinces (or the federal government) might adopt the proactive stance of engaging in continuous search activity to identify superior corporate laws. This will likely involve, as in Delaware, a very close relationship between corporate managers, the corporate bar, and legislators, so that legislators can be sensitized to the needs of the corporate bar and managers. On the other hand, jurisdictions might adopt a passive strategy of defending their turf, so that if corporate law reforms elsewhere threaten to cause corporations to abandon the jurisdiction and incorporate somewhere else, these reforms will be defensively adopted.

Why would legislators ever adopt a passive strategy in preference to a proactive one? A foregone opportunity to capture a larger share of the charter market is an opportunity cost. In theory, such foregone opportunities should have an impact on legislators or administrators corresponding to that of the loss of incorporation business to another jurisdiction. In our view, there are nonetheless good reasons why a passive strategy might dominate. As we argue further below, the low political profile of corporate law in Canada has meant that corporate law reform has not been an issue for provincial or federal politicians. Thus, the inquiry must focus on the motives of administrative officials who oversee the application of corporate law. A proactive competitive strategy requires that these officials institutionalize contacts with the corporate bar and managers and engage in a constant process of determining what reforms are desired by managers. This requires a great deal of effort relative to a passive strategy, under which the bureaucrats need only keep track of corporate law reforms in other jurisdictions and whether corporations are exiting the local jurisdiction in response to these reforms. Like other employees, corporate law administrators will undoubtedly have a leisure preference: a passive strategy will much more successfully appeal to that leisure preference than a proactive one. Added to this is the fact that not all of the provinces will have the resources (either capital or human) necessary to institutionalize a
proactive strategy.4

The appeal of the passive strategy will be enhanced by the relatively small personal rewards that will result from increasing a province's market share of incorporation business. The state is the residual claimant, rather than the bureaucrat, attenuating the administrator's financial incentive. If rewards come at all to the corporate law official, they will come in the form of enhanced opportunities for promotion as well as enhanced prestige. However, individual incentives will be blunted for at least two reasons. First, the potential rewards will have to be shared with other members of the team that produced the successful corporate law innovations, since it will almost never be a single individual who drives the process. Second, seniority is often an important factor in promotions in the civil service. This too will create a brake on the extent to which an individual in the civil service can capture the fruits of her labours. Thus, individual rewards from success, and the commensurate incentives to engage in proactive corporate law reform, will be small. Although the benefit derived from a passive strategy will be even smaller, a passive strategy will require so much less effort that the ratio of benefits to costs is likely to be comparatively high.

The cost of passing up foregone opportunities (i.e. of failing to adopt an active strategy) will be considerably less in the public sector than in the private sector. In the private sector, foregone opportunities can lead to the business earning less than its cost of capital, which might ultimately lead to bankruptcy. Even if bankruptcy is not the proximate result, a business earning less than its cost of capital is much more likely to be taken over and its managers replaced by a new managerial team. This is a potent motivator. By contrast, in the public sector, foregone opportunities that lead to a suboptimal risk-adjusted return will result neither in takeover nor bankruptcy. Indeed, foregone opportunities are not even likely to be noticed within (or without) a bureaucracy, since few if any who are not corporate law academics or experts in the field will be aware that an opportunity has been passed up.

While this argument would appear to apply equally to failures to adopt active and passive competitive approaches, its potency is greater in relation to the former. The loss of incorporation business is more likely to attract adverse attention than a failure to capture new business. In the former case, there is a clear and compelling benchmark - last year's incorporation business. By contrast, there is

4. The limited role that corporate managers and the Canadian corporate bar have played in corporate law reform is discussed further in subsections 7.2.2. and 7.2.3.
no clear benchmark in the case of a failure to capture new business. Hence, failure to attract new business is less likely to jeopardize an individual’s chances for promotion.

More generally, there is evidence that gains foregone and losses incurred are not regarded as equivalent by risk averse individuals. A variety of experimental evidence suggests that the loss of utility associated with monetary losses exceed the gains in utility associated with monetarily equivalent gains [Kahnmann and Tversky (1979)]. This non-equivalence is likely to be of great importance in public sector decision-making. Civil servants are individuals who have self-selected into jobs with low yearly pay variance (and likely a lower probability of termination or lay off). By doing so, they demonstrate a relatively high degree of risk aversion. And, the greater the degree of risk aversion, the greater the non-equivalence of gains and losses. Highly risk averse civil servants are thus more likely to view losses of incorporation business as costly than gains in business as beneficial.

In short, administrators are likely to prefer a passive supply side strategy to an active one. The point may be reinforced by noting that those with an entrepreneurial bent are not likely to self-select into civil service jobs. A proactive strategy requires a certain degree of entrepreneurial zeal; a passive strategy does not (all that is required is to mimic what one’s competitors are doing).

Whether the competition we observe is of the proactive or passive variety is of the utmost importance. If most jurisdictions adopt a passive stance, then the connection between the demand for legal innovations and supply by legislating jurisdictions is greatly weakened. In fact, if the only process generating corporate law reform in the “competing” jurisdictions is a fear of loss of business, then the connection between the demand and supply sides is completely severed. Without any innovating jurisdiction (or some other process driving changes to corporate laws), the law is condemned to a condition of permanent stasis.

If competition is of the proactive variety, then the process of competition will lead at a much more rapid pace to the adoption and diffusion of efficient laws, as jurisdictions actively joust for incorporation business not only by defending their turf, but by seeking the counsel of business as to which laws are desirable, and actively experimenting to find the mix of laws most attractive to corporate

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5. Alternative theories of legal evolution have been considered by, for example, Cooter and Kornhauser (1980) and Romano (1987) and are related to the Canadian experience in subsection 7.3.2.
managers and shareholders. Without any assurance of responsiveness on the part of any competing jurisdiction, however, passive competition will fail to drive the legislative process at any but the most leisurely pace towards the adoption of efficient laws. A number of factors that have inhibited competition among Canadian jurisdictions are detailed in the following subsections. Empirical tests of passive and proactive competition follow in subsection 7.2.3.

7.2.1.2. Limited Financial Incentives

Importantly, the existence of competition in the charter market (whether of the proactive or passive variety) can only be demonstrated by showing that those who formulate the laws have appropriate incentives to seek out incorporation business (or to fear its loss). In the absence of such incentives, we can have no confidence that demand side pressure (to the extent that such pressure exists; see section 7.3) will result in correlative supply side responses, and hence no confidence that competition for corporate charters will play any important role in corporate law reform.

The most powerful legislative motivator -- and the one that drives the U.S. charter market -- is the revenue that is derived from attracting incorporation business [Romano (1985)]. Indeed, some 16% of Delaware's revenue is derived from franchise fees and state corporation taxes. This supplies a powerful incentive for Delaware legislators to maintain a cordial relationship with their corporate clientele, and to supply laws demanded by corporate managers. Indeed, as Romano has argued, Delaware's financial dependency is crucial not only in motivating the supply of laws by Delaware, but in creating the demand for Delaware incorporations. This is because there is a danger that, having attracted a large share of incorporation business, Delaware will act opportunistically to exploit its corporate clientele. It could do so in a number of ways. One would be to raise the franchise taxes charged by local corporations. Another would be to repeal the laws that initially motivated corporate managers to incorporate in Delaware, and to substitute laws that result in benefit to residents of Delaware but which are harmful to firms incorporated there. Or, Delaware could simply act in a way that is unresponsive to corporate demands. While it is always open to Delaware corporations to reincorporate elsewhere to escape such opportunistic conduct, the potential for such opportunism diminishes the net present value of

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6. See Romano (1985). The next most dependent state was Pennsylvania, at 9%; see ibid. Indeed, Professor Romano has indicated to the authors that this figure has recently increased to approximately one-quarter of Delaware's state budget.

7. Of course, one way in which Delaware could act opportunistically is by making reincorporation out of Delaware very difficult and costly. The potential for such behaviour exacerbates the problem of opportunism.
the stream of benefits that managers will anticipate from reincorporating in Delaware, if only because each act of reincorporation is costly. As stressed by Romano, Delaware's keen financial dependency on incorporation business mitigates this risk by making opportunistic behaviour of this character costly to Delaware. Any behaviour that might have the effect of driving corporations out of Delaware could have a serious effect on Delaware's revenues, and hence its ability to continue to fund governmental activities. The financial dependency creates a "credible commitment" that Delaware will continue to be responsive to corporate concerns, thus linking the supply and demand sides of the market [Romano (1985: section 3.1)].

The fact that Delaware is far more dependent on revenue from incorporation business than any other state, and is the outright winner of the chartering competition, is good evidence of the importance of this credible commitment. If financial dependency were not important, then other (less financially dependent) states could easily compete with Delaware by the simple expedient of copying Delaware's corporate code and stating a commitment to continue to copy all future reforms in Delaware. Indeed, there appears to be no reason why a state legislature could not also retrospectively adopt Delaware's judge-made corporate law. What other states cannot do, however, is replicate Delaware's financial dependency, and hence responsiveness to corporate concerns. It is perhaps not surprising therefore that, while some states -- like Nevada, Pennsylvania, and Virginia -- have adopted the proactive strategy of competing for incorporation business, and have adopted or even anticipated Delaware reforms, they have thus far achieved very modest success in their efforts to entice corporations away from Delaware.

We do not believe that there is a strong argument that proactive competition has played any large role in shaping corporate law in Canada. The chain of events relied upon by Daniels is the adoption of the CBCA in 1975 by the federal government and its diffusion to 9 provinces in the following 11 year period. One aspect of this process that fails to satisfy the criterion of a proactive competitive model is the fact that the legal "innovation" in question originated with the federal government (although some of the

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8. There are limits to the extent to which other states could immediately compete with Delaware on a one-to-one basis. Besides stressing Delaware's credible commitment to progressive law reform, for example, Romano (1985) emphasises the importance of the "first mover" advantage embodied not only in Delaware's deep body of case law (yielding a comparatively high level of certainty in Delaware corporate law), but in the institutional structures through which corporate demands are ultimately translated into law.

9. Romano's study (1985: section 3.1) indicated that Delaware was, in fact, the most responsive of the American states, either initiating corporate law reforms desired by corporations or quickly imitating successful corporate law reforms in other states.
reforms in the CBCA were anticipated by reforms in Ontario in 1970\textsuperscript{10} and in B.C. in 1973).\textsuperscript{11} Of all the governments in Canada, the federal government has the least financial stake in attracting incorporation business. The federal government incorporated approximately 9,500 companies in 1996. Based on the 1996 federal fee of $500, the federal government's revenue from incorporation activity is thus only $4,750,000. This is approximately one twenty-five-thousandth of the federal budget, too little to generate any but the most tenuous incentive for the federal government to engage in the chartering business. Of course, the federal government might well charter a larger number of incorporations by aggressively pursuing a proactive competitive strategy. There are now approximately 140,000 new incorporations nationwide each year, and it is not unreasonable to believe that by pursuing an aggressive policy of attracting incorporations the federal government might increase its share of this total. Some evidence of the approximate revenue increase that might be generated by an aggressive policy arises in the observation that the federal government increased its yearly incorporation activity from about 3,500 in 1975 to a peak of about 19,500 in 1983, an increase of about 16,000 incorporations per year. Some of this increase was likely due to a general increase in nationwide incorporation activity (which went from just under 58,000 incorporations in 1975 to a little over 97,000 incorporations in 1983). However, given that there are now approximately 140,000 new incorporations annually in Canada, we will generously assume that an aggressive proactive strategy would result in the federal government capturing 30,000 new incorporations annually. This would result in additional revenue of $15,000,000 annually, or still no more than approximately one ten-thousandth of the federal budget.

These stark numbers reveal the absence of any material financial dependency on chartering revenue at the federal level. With a degree of financial dependency several orders of magnitude less than that of Delaware (Delaware collects approximately one sixth of its state budget from incorporation activity), it is very difficult for the federal government to maintain any sort of credible commitment that it will continue to faithfully service its corporate clientele. The supply of corporate law reforms by the federal government — the catalyst in the recent reforms — must therefore be explained by some factor other than the demand pull of a corporate charter "market".\textsuperscript{12}

Nor is there evidence that any of the provinces has the kind of financial dependency exhibited by

\textsuperscript{10} See R.S.O. 1970, c.53.
\textsuperscript{11} See S.B.C. 1973, c.18.
\textsuperscript{12} Daniels (1991: 189-190, at note 100) acknowledges the lack of federal government responsiveness to its corporate constituents.
Delaware. Ontario, which incorporated about 56,000 corporations in 1988 and charged a fee of $220, generated revenue of about $12,320,000 in that year, a few thousandths of Ontario's yearly revenue. In the same year, Quebec incorporated about 25,000 corporations and charged about $300, generating revenue of about $7,500,000, a similar fraction of the Quebec's yearly revenue. At the other end of the spectrum, Prince Edward Island (P.E.I.) incorporated 432 corporations, and charged $150, generating revenue of $64,800. This is again a small fraction of P.E.I.'s annual revenue.

Could a small province, like P.E.I, become the 'Delaware of the North'? In order to do so, there would be significant start-up costs. Investment would have to be made in the institutional structures that service corporate clientele, and development of these institutional structures takes time, persistence, and money. A responsive commercial court, for example, cannot be created overnight. Judges with corporate law backgrounds must be found. A skilled local bar must be cultivated. A stock of precedents must be built up. Contacts with corporate managers must be fostered. These may be insurmountable hurdles for small provinces — like P.E.I. or Nova Scotia — in which there is a small and relatively unsophisticated local corporate bar, and an equally inexperienced bureaucracy. Further, the monetary resources to get started would be hard to come by, not only because the smaller provinces are not flush with cash, but because of the difficulty of selling the venture to legislators. Investments will have to be made over a start up period in which initial revenues are likely to be disappointing and the prospects for success (given factors referred to below) are not at all clear. In sum, added to the absence of direct revenue dependency is the fact that, unlike Delaware, impressionistic evidence suggests that no province currently has significant institutional investment in or economic spin-off from charter market activity (e.g. employment of lawyers and others servicing foreign corporate clientele incorporated in that jurisdiction). As such, indirect revenue and employment considerations do not seem to be a factor.

Thus, there is no province in Canada that currently has the financial dependency exhibited by Delaware. This is likely to weaken the demand for provincial law innovations, owing to the inability of any jurisdiction to make the type of "credible commitment" that Delaware can make. It also destroys the incentive of provincial legislatures to supply the law that is demanded by corporations: indeed, that is precisely why there is no credible commitment. The absence of a Canadian jurisdiction obtaining a high proportion of its revenue from incorporation fees is not a sufficient condition for the absence of

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13. Compared to Toronto, relatively few large corporate or financial transactions are handled in Halifax or Charlottetown.
competitive corporate law production. A commitment device other than financial dependency may be adopted to attract incorporation business. However, the necessary institutional structure to foster a credible commitment is absent in Canada, as discussed further in subsections 7.2.3-7.2.5 below.

In Canada, there is no well organized constituency championing the cause of corporate law reform. Unlike in Delaware, the relationship between the corporate bar and the corporate bureaucracy is quite loose. Proposed reforms often begin with the bureaucracy rather than the bar, and the bar is informally consulted. Occasionally, the government will appoint a blue ribbon panel to consider proposed changes. These panels are typically made up of representatives of the bar, the investment banking community, corporations, institutional investors and others. Nor is corporate law likely to capture the interest or imagination of the median voter, who will have little or no knowledge of, or interest in, corporate law. Given the tenuous political payoff, legislators are not likely to be easily persuaded to expend their valuable political capital on corporate law reforms. And indeed, it is a rare legislator who takes more than an episodic interest in the subject.

7.2.1.3. Absence of a Competitive Consciousness

As a practical matter, corporate legislation is written by the Ministry officials who are given control over corporate law matters by the governing legislation. The motives (and incentives) of bureaucrats are more important than the motives of legislators in determining whether there is any non-trivial probability that any Canadian province will seek to become the Delaware of the North.

One commonly accepted model of bureaucratic behaviour posits that bureaucrats derive utility

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14. While recognizing the artificiality of the distinction between corporate and securities law, it is nonetheless true that certain aspects of securities law issues have a much higher public profile, and attract much attention from well organized and well funded interest groups (like investment bankers, banks, and other institutional investors). Thus, except as noted below, we exclude securities law from this assessment (and in particular, regulation of primary and secondary market trading and registration of market professionals).

15. Greater regional, economic and cultural segmentation exists in Canada relative to the U.S.; consequently, budget growth among Canadian provinces has been primarily driven by representational imperatives -- work that bears significantly on a region or group (Campbell and Naults (1991: 85-118)). Corporate law has not been a salient issue in Canada and certainly not an issue for which a region or group can seek accommodation.

16. In focusing only on the corporate legislation, we are for the time being ignoring the "corporate law" that is increasingly being written by securities regulators through National and provincial policy statements. This does not mean that the formulation of corporate law policy by the securities regulators is unimportant: on the contrary, we argue below that formulation of corporate law doctrines by the regulators severely retards the degree to which provincial corporate law officials are able to engage in competitive corporate law reform. See infra, section 7.2.2. 
from expanding their spheres of influence and control [Niskanen (1971)]. In this context, this could easily translate into a desire to increase the number of domestic incorporations, since increasing the number of regulatees is one way of expanding one’s sphere of influence and control.

Despite the initial plausibility of this account of a non-financially motivated explanation for a responsive supply side to the market, in our view it is a much weaker explanation than that based on financial dependence. The bureaucrat’s utility function is likely to be a function of a number of variables, only one of which is her range of control and influence. For example, we would normally expect that, like other members of the labour force, bureaucrats generally favour leisure to work. Work is likely to be an increasing function of the number of incorporations in the jurisdiction, while the bureaucrat’s remuneration is likely to be relatively invariant with the number of incorporations. Thus, we would expect the leisure preference to exert a powerful brake on the extent to which a bureaucrat will expand her sphere of control by attempting to attract more incorporation business. In addition, as we argue below, the impulse to achieving uniformity of provincial laws (and, where there is overlapping provincial and federal jurisdiction, uniformity of both provincial and federal laws) has long been an important factor in shaping business law in Canada [Ziegel (1986); Anisman (1986)]. This is another motivational factor that will impair the bureaucratic drive to maximize the number of local incorporations. Thus, if the supply side of the charter market is driven only by a bureaucratic (rather than financial) incentive to increase the number of incorporations in the jurisdiction, we are not likely to observe a very robust market.

Competition requires what we will call “competition consciousness”. In the case of proactive competition, this requires that suppliers of laws consciously engage in a process of seeking out reforms that are attractive to corporations. In the case of passive competition, it requires only that legislators be aware of the connection between the failure to adopt corporate law reforms and the loss of incorporation business, and mimic reforms in other jurisdictions which have had the effect of siphoning off business. In either case, however, competition consciousness is an indispensable feature of a competitive charter market, for without it the nexus between demand and supply sides in the charter market is severed.

We would argue that the sort of competition consciousness necessary to sustain a proactive charter market has been lacking in Canada. Indeed, Daniels (1991: 170) indicates that his investigations disclosed “the hostility of Canadian policy-makers to competition in the corporate law field”, and we
believe his impression to be a correct one. The reaction of Canadian policy makers to the proposition that jurisdictions might compete for incorporation business is typically indeed one of hostility; policy makers like to think of themselves as taking a more "high-minded" approach to their job. At the very least, the reaction one encounters is typically that of surprise: the proposition that provinces might compete for incorporation business is simply an idea that most corporate statute drafters have not thought about in formulating legislative reforms.  

Cementing this perception of the absence of competition consciousness is the fact that, contrary to the U.S. experience, historically, the corporate bar has typically not been the impetus for corporate law reforms, nor have members of the bar been extensively consulted on proposed reforms. An essential feature of a proactive charter market is an institutionalized communications network through which corporate managers make known their corporate law preferences. Corporate law reforms in Canada have typically been initiated and formulated by administrators, sometimes with the help of academics, or a small number of academically-minded lawyers.

A notable exception to this is recent efforts by federal administrators to reform the federal corporate law. In assessing potential reforms, the federal bureaucracy has commissioned discussion papers, circulated these widely, and met with a wide variety of stakeholders across the country. Even so, this process compares poorly with Delaware's as a means for keeping corporate law up to date. Delaware's process is a continuous one involving close linkages between legislators, corporate lawyers, and corporate managers. Laws are updated in a timely manner as needed. By contrast, the Canadian process is episodic; the last major reforms of federal corporate law were enacted in 1975 - approximately a quarter of a century ago. Moreover, the current round of updating has been a very cumbersome and lengthy one. The current round of reforms, which began approximately four years ago, has yet to result in significant changes to the legislation. Thus, in net, the argument that there has been a proactive charter market in Canada appears to be a weak one.

The best evidence of either passive or proactive competition for corporate charters arises in the

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17. Of course, there may be a problem of preference revelation. Provincial corporate law officials may be reluctant to admit that they are concerned about maximizing the number of local incorporations. However, while our evidence (like that of Daniels, 1991) is anecdotal in character, the degree of hostility or incredulity that one typically encounters in posing the idea of provincial competition for incorporation business suggests that the administrators are genuine in their disavowals.

18. This is in contrast to the institutionalized (albeit informal) notice and comment procedures that characterize securities law reforms.
case of Quebec, and the evidence is at best ambiguous. It seems plausible that if corporate law reform has had an impact on the choice of jurisdiction of incorporation, this impact would have been most profoundly felt in Quebec. Before the reforms ultimately adopted by Quebec following upon the federal reforms, Quebec’s corporate code was the most antiquated of all the provincial codes. It was also sui generis in a number of important respects and hence out of step with the corporation law in the rest of the country. Those considering incorporation might well have concluded that incorporation in Quebec would result in the application of a cumbersome corporate code characterized by relatively great legal uncertainty, heightened by the fact that Quebec is a civil, and not a common law jurisdiction. When changes were made to the federal legislation in 1975, these served to increase the substantive gap between the Quebec and federal legislation. If law matters, then one would predict that the adoption of the federal changes would have led many of those who otherwise would have incorporated in Quebec to choose to incorporate federally.

And in fact, the total number of incorporations in Quebec dropped precipitously after the adoption of the CBCA in 1975, while the total number of federal incorporations rose rapidly [Daniels (1991: Table 2, at 158)]. Further, there is some anecdotal evidence that the Quebec government put pressure on the federal government to increase its incorporation fee, in order to stem the tide of incorporation business flowing from Quebec to the federal government [Daniels (1991: 169)].

However, the evidence that the dramatic outflow of incorporations from Quebec to the federal legislation was the result of substantive law reform is at best ambiguous [Daniels (1991: 167-168)]. The election of the Parti Québécois in 1976 may well have frightened Quebec entrepreneurs into believing that if Quebec separated from the rest of Canada, a heavy capital tax might be levied on Quebec incorporated companies, or that Quebec companies would be refused the freedom to carry on business in the rest of Canada. This, rather than a desire to incorporate under a superior law, may have caused an exodus to the federal legislation (just as it caused an exodus of business generally). Thus, any loss of incorporation business from Quebec to the federal government cannot unambiguously be attributed to the superiority of the CBCA over Quebec legislation.

However, supposing both that the attraction for Quebec entrepreneurs was in fact the substance of

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19. Because of the prospect that the federal legislation would be mimicked by a other provinces, the adoption of the CBCA reforms may also have prospectively heightened the gap between Quebec laws and the laws of other provinces.
the new federal legislation, and that amendments to the Quebec legislation were a direct response to the outflow of incorporation business, this does not constitute a generalizable demonstration of the existence of a supply side to the charter "market". The hypothesis that there is a charter market is predicated on the notion that provinces will amend their law to maximize incorporation revenue. However, the Quebec reforms might have been motivated by a political factor that is unique to Quebec: namely, that the governing Parti Québécois, devoted to the cause of Quebec's separation from the rest of Canada, found it politically embarrassing that many Quebec entrepreneurs preferred to incorporate federally rather than provincially. Widespread federal incorporation would create the wrong symbolism for a separatist party, and symbolism has been a powerful political motivator in Quebec politics [Lachapelle et al. (1993: chapter 3)]. Indeed, the 'we'll do it our way' mentality is much in evidence in the closely related field of securities regulation, in which attempts to create a national securities commission have foundered largely on Quebec's repeated refusals to participate [MacIntosh (1997)]. These refusals have been motivated primarily by nationalistic concerns to retain Quebec sovereignty in the area of securities regulation.

There is other evidence that political concerns, rather than concerns about incorporation revenue motivated the changes to Quebec's code. First, if there really is an active charter market, then Quebec would not have found it necessary to appeal to the federal government to raise its fees in order to recapture the incorporation business. It would simply have adopted the CBCA wholesale, as other provinces did, and/or lowered its own fees. Although Quebec ultimately modified its legislation to incorporate some of the key reforms, some important reforms were left out, and it is still sui generis in a number of important respects. It would appear that, for political reasons, Quebec policy makers made a deliberate decision to refrain from adopting the CBCA holus bolus, even though from a substantive point of view this would have been the best thing to do. Rather, Quebec's limited substantive response was supplemented by a blatantly political appeal to the federal government to raise its incorporation fees. If true, this bespeaks of highly constrained competition for corporate charters, on the basis of factors that are unique to Quebec.

Even if Quebec was indeed concerned about the revenue loss associated with loss of incorporation business, and amended its law in order to recapture this revenue, this does not in any case seem to support the existence of a proactive supply side to the market. It is at best evidence of a passive supply side response, since Quebec was merely responding to a loss in market share. Like most of the other provinces, Quebec did virtually nothing to update its legislation until after the federal reforms - i.e. it
responded to a push from without rather than within. As indicated in section 7.2, a passive supply side response is not likely to function as a very efficient engine of corporate law reform, especially in the absence of a strong innovating jurisdiction.

The Quebec case supplies further evidence of the limited nature of Canadian competition for charter business. If the federal government was a full competitor in the charter market, then it is very difficult to understand why it would accede (as it did) to Quebec's request to raise the federal incorporation fees, resulting in loss of federal revenues. Equally, it is difficult to explain why the Quebec government did not lower its incorporation fee when the loss of incorporation business became apparent. One might argue that the federal government's action is a special case; the federal government was willing to sacrifice revenue in order to appease Quebec, as part of its larger attempt to keep Quebec in Confederation. However, even this argument makes concessions to the view that the federal government cannot supply corporations with any credible commitment to service its corporate clientele, because it demonstrates that political concerns might easily trump corporate interests at the federal level. 20 Given the central role that the federal government played in the corporate law reforms of the past two decades, this is not good news for the Competition Hypothesis.

7.2.1.4. Voting on Changes to Corporate Codes

Part of Delaware's ability to make a credible commitment to its corporate clientele arises out of the fact that Delaware's constitution requires an affirmative vote of two-thirds of both houses of the legislature to revise its corporation code [Romano (1985: section 3.2.3)]. This tends to minimize the probability that the corporation code will be changed in ways inimical to corporate interests, particularly at the instance of non-corporate interests. No province in Canada (nor the federal government) has a similar provision. Indeed, it would appear that the provinces are constitutionally incapable of committing to a supra-majority voting mechanism [Hogg (1993: chapter 4)]. This further impairs the ability of any province to make a credible commitment to its corporate clientele.

20. Of course, corporations already incorporated under the CBCA suffered no loss when the federal government raised its incorporation fees. Nonetheless, the Quebec case demonstrates the possible intrusion of political motives into federal action. As Macey and Miller (1986: 490) argue, one of Delaware's attractions as an incorporation destination is that it is "a small state without many political pressures that could disrupt the orderly development of its corporate law." Even aside from the Quebec experience, one could easily conclude that the federal government has many issues higher on its agenda than corporate law, and might easily be willing to sacrifice the corporate law to service these other concerns.
7.2.1.5. The Canadian Common Law of Corporations

There is yet another important factor that suggests that it is unlikely that any vigorous charter market either has developed or will develop in Canada in the foreseeable future: the inability of any Canadian jurisdiction to develop an independent common law of corporations. In the United States, at least absent federal diversity or pendant jurisdiction, state appellate courts are the last court of appeal on matters of corporate law. Very few corporate matters find their way into the federal courts. This allows each state to develop its own unique corporate jurisprudence. In Canada, by contrast, provincial corporate law judgments are appealable to the Supreme Court of Canada, which thus has the ability to impose a common corporate jurisprudence on the entire country. Daniels (1991: 186-188) argues that this is not an important factor, both because there is no guarantee that the Supreme Court of Canada will hear an appeal in a matter of corporate law, and because constitutional case & & s have pushed commercial and corporate cases off the docket. While these points clearly have some force, it nonetheless remains true that no province can guarantee that its corporate jurisprudence will remain free from interference at the federal level. This greatly diminishes the credibility of any province's commitment to maintain a jurisprudence acceptable to corporate managers, even if there is no automatic right of appeal.

The importance of this factor cannot be overstated, as Romano's evidence indicates that Delaware's jurisprudence is a key attraction for firms incorporating in that state. Romano's survey disclosed that corporations typically reincorporate in Delaware from another state in anticipation of consummating three different types of transactions that might lead to litigation: going public, embarking on a merger and acquisition program, and adopting anti-takeover defenses. The attraction to Delaware is the reduced likelihood that such litigation will succeed in the courts. Romano (1985: 250) states:

"Mergers and acquisitions and projected antitakeover defenses are fraught with the potential for litigation, involving disputes over the fairness of the offer terms or the appropriateness of management's actions. The legal system also becomes important after a public offering... [F]irms going public, by the change in their capital structure, subject themselves to a greater likelihood of legal conflict under fiduciary rules."

Although the provisions of the corporate code are obviously important to corporations (and will no doubt be pivotal in some decisions to incorporate or reincorporate in Delaware), Delaware's principal drawing card is the fiduciary law fashioned by Delaware courts.

Both the absence of any unique provincial corporate law jurisprudence, and the difficulty a
province would encounter in fashioning such a jurisprudence, are evidenced by the routine judicial practice of citing and following even lower court decisions from other provinces. A startling case in point is Berger J.'s decision in Teck Corp. Ltd. v. Millar,21 a British Columbia lower court decision on the permissible range of managerial responses to a takeover bid. Despite the fact that this decision reversed nearly a hundred years of settled jurisprudence, it has been followed or cited with approval in at least 5 holdings in 3 provinces, including Ontario, and is now regarded as the "leading case" in Canada. This is illustrative of the fact that jurisprudence relating to fiduciary duties and the oppression remedy is a national, and not a provincial jurisprudence [MacIntosh et al. (1991: 96)]. In contrast to the Delaware experience, this implies that no single Canadian jurisdiction will attract incorporation business on the basis of its judiciary and corporate precedents. No Canadian jurisdiction can guarantee the content, predictability and stability of its common law of corporations. Given the small stock of corporate law precedents in Canada compared to the U.S., it is only natural for Canadian judges to turn to the courts of the other provinces for guidance.22 So long as the stock of precedents remains relatively small, this will likely continue to be the case -- although explosive growth in the jurisprudence under the corporate "oppression remedy" may well lead to the development of a more uniquely provincial jurisprudence (if only because it has greatly increased the volume of provincial corporate law decisions).23

The situation in the United States is quite different. While many states follow Delaware jurisprudence, Delaware's jurisprudence (like its corporate code) is the product of a competitive dynamic and is thus likely to be efficient law. Particularly given Delaware's first mover advantage and the difficulty of competing head-to-head with Delaware, it makes a great deal of sense for other states to follow this jurisprudence. In Canada, jurisprudence that is shaped at the federal level and binding on every court in the country is not the product of a competitive dynamic, and thus not as likely to be efficient law. Moreover, the judges in each state retain the freedom to follow Delaware's jurisprudence or not. In Canada, provincial judges have no such freedom. When the Supreme Court speaks, opting out is not an option. Uniformity of jurisprudence thus has different causes and consequences in the two countries.

Adding to the inability to craft a uniquely provincial jurisprudence is the fact that provincial

22. For whatever reasons (probably including an enhanced proclivity to sue, and significantly different costs, contingency fee and class action rules), Americans are more likely to litigate, generating a larger stock of state precedents, and giving state courts a larger pool of local precedents to draw on than Canadian courts.
securities regulators have increasingly moved into the domain of substantive corporate law, using their broadly framed discretionary powers to intervene in transactions on an ad hoc basis as well as through both provincial and National Policy Statements [Daniels (1991: 182-184); Anisman (1989); MacIntosh (1990)]. The recent ceding of rule making authority to securities regulators in a number of Canadian provinces has only solidified these provinces' ability to intervene in traditionally corporate law matters.

While the rules of conflict of laws establish that the applicable corporate law is that of the incorporating jurisdiction, securities legislation applies to any firm with a non-trivial number of shareholders in the province, no matter where that firm is incorporated. Indeed, a recent Ontario Court of Appeal holding suggests that securities laws may be applied (as is already the case in the United States) if an otherwise out-of-jurisdiction transaction merely has an affect on residents within a province.\

So long as securities laws are applied on this basis, efforts to craft a unique provincial jurisprudence are bound to fail, since the securities regulators of any province in which the firm has shareholders can always trump the provincial corporate law with stricter requirements. Indeed, the pace at which the securities regulators are moving into the domain of corporate law has greatly accelerated in the past 10 years [MacIntosh (1992)]. Through the Policy Statements, the regulators have extended their domain into areas such as communications with shareholders,25 going private and other interested party transactions,26 and who is entitled to attend shareholders' meetings and to receive financial statements and other corporate information.27 Perhaps more importantly, through their discretionary powers to act "in the public interest", the regulators have in effect superimposed their own code of fiduciary conduct on the applicable corporate law.28 Even where all applicable corporate and securities law has been complied with (including the Policy Statements) the regulators reserve the right to block any transaction through the exercise of the cease trade and denial of exemptions powers.29 Thus, any transaction that is not forbidden by the relevant corporate law (or possibly even a transaction expressly permitted by such law) may be vetoed by the securities regulators. This obviously puts a severe damper on any province's attempt to

27. OSC Policy 1.3.
craft a fiduciary code of conduct that is more congenial to corporate management, or to design its code in a relatively permissive manner, in an attempt to attract incorporation business.

The inability of any province to fashion a provincial jurisprudence is also a function of the manner in which judges are appointed. In Delaware, as in other states, judges are state appointees.\textsuperscript{30} This ensures that the state can choose judges who will be sympathetic to corporate managers. As Macey and Miller (1986: 502) observe, "[t]he members of the Delaware Supreme Court are drawn predominantly from firms that represent corporations registered in Delaware. The bar and the judiciary are tied together through an intricate web of personal and professional contacts." As a result, Delaware judges are specialized in resolving corporate law disputes and as a consequence, the state can offer firms access to a system of corporate law rules that is stable, predictable, and sophisticated relative to that of other states" [Macey and Miller (1986: 500)]. Moreover, because judicial appointments are a state matter, the state can decline to renew the appointment of a judge who does not decide cases in a manner suitably sympathetic to corporate concerns.

In Canada, judges are federal appointees who serve for life. Thus, provinces have little ability to shape their corporate jurisprudence through the selection of judges. Moreover, short of amending legislation to reverse particular judgments, provinces cannot remove judges. They thus have no indirect lever over judges to influence the substance of corporate law decisions.

The absence of separate commercial law courts is also an important difference from Delaware. In Canada, judges do not specialize in corporate law matters. A judge might hear a matrimonial dispute one day, a criminal case the next, and a corporate dispute the next. There are few judges with any special expertise in corporate law matters.

Ontario has gone part way towards creating a corporate court through the "Commercial List". While on the Commercial List, a judge hears only commercial law cases, although these may include anything from a contract dispute to a corporate case. The Commercial List, however, is a far cry from the specialist corporate judge system in Delaware. Judges on the Commercial List are largely self-selected, and have varying degrees of experience in corporate law matters. Some have no special

\textsuperscript{30} Judges are appointed by the Governor with the consent of the state senate, and serve 12 year terms (Macey and Miller (1986: 500-502)).
expertise at all. Their expertise generally falls far short of that of Delaware judges.

Why has no province created a specialist corporate court? Even if a province wished to engage in proactive competition for corporate charters, such a move might have limited effect. Once again, no province can guarantee that its judicial nominees will be selected by the federal government. This erodes the credibility of any purported provincial commitment to preserve a pro-corporation corporate law.

But in any case, there is little evidence from any province that the creation of a specialist corporate law court has been given serious consideration. Indeed, in the past, very few judges have been drawn from corporate law practice. This calls into question the desire of any provincial government to attract incorporation business by fostering an attractive corporate law. If there was indeed a competitive charter market, then one would expect that we would already have commercial courts like Delaware's, staffed with experienced corporate lawyers.

In sum, the lack of financial dependence on incorporation fees, the nature of the legislative mechanism for altering corporate codes, the absence of competitive consciousness and the lack of an independent common law of corporations all suggest that no Canadian jurisdiction can maintain a credible commitment to the interests of incorporators in Canada. The absence of commitment devices suggests that not only will there be no clear winner in the incorporation business in Canada, but also that the ability of any jurisdiction to attract and compete for incorporation business is severely impaired. In view of these institutional factors, an alternative hypothesis for the making of corporate law in Canada is provided in the following subsection.

### 7.2.2. The Uniformity Hypothesis

In evaluating empirical evidence on the charter market, it is vital to determine what empirical states of the world are consistent with the Competition Hypothesis, and only the Competition Hypothesis. If there are alternative hypotheses which are capable of generating the same or very similar states of the world as the Competition Hypothesis, then realization of these states does not unambiguously suggest that it is a competitive dynamic that is generating the observed outcomes.

One hypothesis that would seem to generate outcomes similar or identical to the Competition
Hypothesis is the *Uniformity Hypothesis*. Under the Uniformity Hypothesis, the legislative maximand is not the revenues derived from incorporation business, but rather the pursuit of uniformity in provincial laws. The obvious outcome of a push to achieve uniformity is likely to be uniformity. While there are many reasons why legislators may desire uniformity [Ziegel (1986); Palmer (1965); Anisman (1986)], the most salient is the desire to minimize costs. With uniform corporate laws, firms incorporated in different jurisdictions that transact with one another face fewer transactions costs and less scope for conflict of laws issues in the event of a legal dispute.

The result under the *Uniformity Hypothesis* (i.e., cost minimization for firms) is identical to the outcome that would be achieved under the *Competition Hypothesis* (i.e., profit maximization for jurisdictions) in a *perfectly* competitive charter market in which provinces vie for incorporation business. In such a competitive market, characterized by large numbers of buyers and sellers, costless entry and exit, zero or negligible transaction costs, and perfect information, the elasticity of demand for corporate law would be virtually infinite. Marginal deviations from the optimal corporate law would cause all firms to exit the jurisdiction and reincorporate elsewhere. Innovative reforms that improve upon the old law would cause all firms to immediately reincorporate to the innovating jurisdiction. The result will be perfect product homogeneity: i.e. identical corporate laws.\(^\text{31}\)

Relaxing the assumption of perfect markets, we would normally expect that the response to legal innovation in various jurisdictions will be spread out in time, rather than occurring instantaneously. Legislators in different jurisdictions will predictably adopt law reforms at different rates of speed, given that corporate law reform will compete for legislative time with other matters, and these other matters will vary in content and urgency from province to province. In general, a push towards uniformity may be achieved more quickly among larger jurisdictions with more legislators with time to devote to less salient issues like corporate law.\(^\text{32}\) However, political agendas are responsive to a variety of factors [see, e.g., Campbell and Nauills (1991)], and at any given point in time the number of pressing items at the top of the agenda will vary. Whether the government of the day has a majority or minority in the legislature will also result in variation in the speed of adoption of corporate law reforms, as will the political stripe of the ruling party. Some jurisdictions may be in the middle of election campaigns, again resulting in

\(^{31}\) This assumes that there are no "clientele" effects, in which different jurisdictions compete for different clientele. See, e.g., Baysinger and Butler (1985) (positing the existence of clientele effects); Posner and Scott (1980: 111) (similar). But see Romano (1985: section 3.2.1) (finding no evidence to support the existence of clientele effects in the U.S.).

\(^{32}\) Although the existence of a larger number of legislators may result in the legislature taking more time to act. This
Thus, in an extremely competitive, but no longer perfectly competitive charter market, we might predict that non-innovating jurisdictions will adopt legal innovations according to the "S" shaped diffusion process that obtains both in the U.S. [Romano (1985: section 3.2.1)] and Canada [Daniels (1991: 152-155)]. However, the Uniformity Hypothesis would generate a diffusion process that is virtually indistinguishable from that generated by a competitive charter market. Where uniformity is the maximand, adoption of a uniform act will not occur instantaneously in all jurisdictions, for all the factors indicated above. Rather, adoption will be spread out over time according to the different agendas of provincial legislators. In this manner, a Uniformity dynamic could result in the same "S" shaped diffusion pattern as that observed in a competitive charter market. Thus, in two important respects -- the end result of uniformity, and the diffusion pattern whereby uniformity is achieved -- the Uniformity Hypothesis yields empirical predictions that appear to be the same as those of a pure Competition Hypothesis.

What is the origin of the asserted legislative/bureaucratic impulse toward uniformity? We have been unable to formulate any satisfactory explanation for the push toward uniformity. It is more likely that the drive toward uniformity has had much more to do with Canadian culture than with a satisfying theoretical account based on current economic paradigms. Nonetheless, the important role that the drive to achieve uniformity has played in shaping Canadian commercial law has been exhaustively catalogued by Ziegel and Palmer [Ziegel (1986); Palmer (1965)]. With equal rigour, Anisman (1986) has traced the impact of the drive toward uniformity on provincial securities laws. Although the goal of achieving an abiding uniformity in either commercial or securities law has proved illusive, the pursuit of uniformity has clearly been an important motivating force.33

It is not, therefore, a stretch to suggest that the pursuit of uniformity has been a motivating factor in corporate law. Indeed, in enacting the federal reforms of 1975, Parliament specifically indicated that one of the main purposes of the new Canada Business Corporations Act was "to advance the cause of

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33. The drive toward uniformity was in fact successful in achieving substantially similar provincial securities legislation in Ontario and the four western provinces in the early 1970s [Anisman (1986)]. The uniformity achieved was not a particularly lasting one, however; *ibid.*
uniformity of business corporation law in Canada".  

Is the high degree of uniformity of provincial corporation laws achieved since 1975 more likely to be a product of a charter market, or a drive to uniformity? We would argue that, prima facie, it is more likely to be the latter. As noted, perfect competition will tend to lead to perfect uniformity of laws. We would argue, however, that the stringent conditions necessary to achieve perfect competition, and hence perfect uniformity, are so far from being met in the Canadian charter "market" that the high degree of uniformity that exists must be explained by some other process. The American charter market -- in which states like Delaware and Nevada vigorously compete for incorporation business -- is far more competitive than the Canadian charter market. This competitive dynamic has produced a great deal of uniformity in United States corporate laws [Carney (1996), Romano (1985, 1987)]. However, we feel comfortable in asserting that the degree of heterogeneity observed in the U.S. is greater than that now observed in Canada. It does not seem plausible that less rigorous competition in Canada over a much shorter period of time could have produced relatively great uniformity. Hence, the emergent uniformity of Canadian corporate law is in our view most likely attributable more to the Uniformity Hypothesis than the Competition Hypothesis.

7.2.3. Supply Side Empirical Evidence

After the implementation of the Canadian Business Corporations Act (CBCA) in 1975, many of its major provisions were adopted by the provinces between 1976 and 1986 [Daniels (1991)]. The supply side tests first address the question of whether these reforms were motivated by concerns regarding incorporation revenues in subsection 7.2.3.1. In subsection 7.2.3.2, the evidence is viewed in light of the literature on legal evolution using models of Markov processes [Cooter and Kornhauser (1980); Romano (1987)].

34. CBCA s.4.

35. These include a very large number of sellers and buyers, selling a standardized product, possessing perfect information about prices and product characteristics, with free entry to and exit from the market, and the absence of transaction costs in the market.

36. While we have no systematic evidence for this assertion, and risk bootstrapping the argument, we would nonetheless maintain that it is uncontroversial that the U.S. charter market is, and has been for a hundred years, much more competitive than the corresponding Canadian market.

37. For example, Carney (1996: 169) documents a bi-polar distribution of adoption rates of corporate law provisions in the U.S.: of 131 European Community directives on company law, 14 were in effect in all USA states, 95 were in effect in no USA jurisdiction, and 22 were adopted by an apparently random number of states. Carney, (1996: 172-183) also provides a detailed account of the diffusion of various U.S. corporate law provisions. In Canada, most of the provincial codes are now
7.2.3.1. Passive and Proactive Supply Side Tests

Both behavioral postulates discussed in subsection 7.2.1 -- passive and proactive competitive supply side responses -- are tested. The methodology for the supply side tests is based on that employed by Romano (1985: 235-242). The passive supply side response is tested by evaluating the effect that incorporation revenues (as a percentage of total fiscal revenues) have on the responsiveness of the provinces in their adoption of the federal corporate law provisions. (We also test for the possibility that jurisdictions have maximized total incorporation revenues -- i.e., not as a percentage of fiscal revenues.) The proactive supply side response, on the other hand, predicts a causal relationship in the opposite direction such that incorporation revenue is a function of responsiveness [Romano (1985: note 15)]. Note that "responsiveness" in both the passive and proactive models is determined by the number of reforms adopted and the number of years until the reforms are implemented, as discussed below.

The passive supply side response model is summarized by equations (1) and (2); the proactive model is depicted by equation (3).

\[\text{Responsiveness}_i = \alpha + \alpha \text{Revenue}_i + \alpha \text{Legislature}_i + \varepsilon_i\] \hspace{1cm} (1)

\[\text{Responsiveness}_i = \Gamma + \Gamma \text{Revenue}_i + \Gamma \text{Legislature}_i + \varepsilon_i\] \hspace{1cm} (2)

\[\text{Revenue}_i = \beta_0 + \beta_1 \text{Responsiveness}_i + \varepsilon_i\] \hspace{1cm} (3)

The regression coefficients are denoted by \(\alpha\), \(\Gamma\), and \(\beta\), and the \(\varepsilon\)'s are independent and identically distributed residuals. The variable Responsiveness is equal to 0 if the number of years to reform (since the introduction of the CBCA in 1975) the corporate code in province \(i\) is greater than or equal to the cutoff number of years after which a province is not considered responsive. (The cut-off number of years, denoted "z", is estimated for 6, 8, 10 and 12 years to show the robustness of the results.) Otherwise,
*Responsiveness* is equal to \([-1/2] \times (\text{Number of Years to Reform}) + 1\) \times (\text{Number of Reforms}) if "z" is less than the number of years to reform the provincial corporate code. This definition of the responsiveness variable is the same as Romano’s (1985: note 17) specification.

*Revenue* in equation (1) is the average of (incorporation revenues)/(total provincial fiscal revenues) between 1975 and the year of corporate law reform in province *i*. *Revenue* in equation (2) is the average of incorporation revenues (in total dollars and not as a fraction of total revenues) between 1975 and the year of corporate law reform in province *i*. In equation (3), the variable *Revenue* is the average of (incorporation revenues)/(total provincial fiscal revenues) for the six year period after the year of legislative reform in province *i*. Periods other than six years were also considered but did not materially affect the results, as discussed below. There was also no significant difference in the results from using total dollars instead of market shares. Note that the way in which the variables are defined (i.e., average revenues prior to legal reform in equations (1) and (2) and average revenues after legal reform in equation (3)) negates the possibility of endogenous right-hand-side variables. Durbin-Wu-Hausman tests [Davidson and MacKinnon (1993: 237-242, 389-395)] did not indicate endogeneity problems. 39

Equations (1) and (2) also include the *Legislature* variable depicting the number of legislators in each jurisdiction. We conjectured (see subsection 7.2.2 above) that legislatures with more legislators (i.e. large provinces) would have more time to devote to corporate law issues, which were argued to be less salient than other issues (see subsections 7.2.1 and 7.2.2 above), and would therefore be able to achieve uniformity more quickly than their smaller counterparts. (Note that a negative relation would indicate more legislators take more time to act.) The number of legislators, however, has no direct relation to incorporation revenues; therefore, the *Legislature* variable is not an independent variable in equation (3).

The data 40 are summarized in Table 1. All of the provinces except British Columbia adopted at

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39. Regardless, instrumental variable estimation (e.g., in equation (3) a suitable instrument was the size of the legislature) did not materially affect the qualitative results.

40. The data comprises the period 1975-1997. The total government revenue data was obtained from Cansim’s database. Provincial incorporation data was obtained from Daniels (1991: Tables 1 and 2 at 153, 154 and 158). Note that all values have been scaled to constant 1986 dollars using the Cansim’s consumer price index. Total revenue data was measured in millions of dollars in the equation estimates (this scaling affects only the magnitude of the estimated coefficients and not their statistical significance). For other data sources, see infra, subsection 7.3.2.
least one of the major provisions of the CBCA between 1976 and 1986. Because the CBCA inspired the other provincial reforms, it is plausible that financially motivated provinces considered incorporation revenues after 1975. However, because Canadian incorporation statistics were not recorded until 1975, it is unlikely that jurisdictions considered incorporation revenues prior to 1975.

Daniels (1991: Graph 1, at 152) identified an 's-shaped' diffusion pattern in the total number of reforms plotted against the year of the reform. A similar pattern was found in the United States [Romano (1985: Figure 1 at 234)]. Daniels (1991: 152-156) interprets this as evidence in support of the Competition Hypothesis. However, as argued above, this evidence is ambiguous. Table 1 shows that the Canadian provinces are not financially dependent on incorporation revenues; therefore, none of the jurisdictions can offer a credible commitment to corporate concerns on the basis of their finances (see subsection 7.2.1 above). Moreover, the estimates of equations (1), (2) and (3) do not indicate the existence of a financial motivation for corporate law reforms in Canada, as discussed below.

The passive supply side response hypothesis predicts $\alpha > 0$ in equation (1) and $\beta > 0$ in equation (2). That is, provinces with greater incorporation revenues are more responsive than other provinces. The proactive supply side response hypothesis predicts $\beta > 0$ in equation (3). In the proactive model, aggressive provinces seek to generate incorporation revenue (relative to total fiscal revenue) by producing corporate law reforms that have the effect of increasing incorporation business.42

Equations (1) and (2) were estimated using ordinary least squares. Tobit (censored regression) was also employed because the dependent variable is bounded. The qualitative results were not affected by the econometric method, as indicated in Table 2. The estimated coefficient on the Revenue variables in equations (1) and (2) for the different cut-off periods ("z" as defined above) were either statistically insignificant, or significant but with a negative sign. This is strong evidence against the passive competition hypothesis. (Note that estimates of equations (1) and (2) without the Legislature variable

41. British Columbia modified its corporate code in 1973, two years prior to the federal CBCA. Daniels (1991: 151, note 49, and 154-155) documents the fact that British Columbia's reforms were not made with a view to compete with the CBCA. The federal government in fact initially tried to enlist the provinces to help in the development of the CBCA in the early 1970s (which suggests a drive toward uniformity, not competition); however, the coordinated effort failed at that time [Daniels (1991: 151 at note 49)].

42. This postulate was alternatively formulated by an equation (not presented in Table 2) which predicts that aggressive provinces that make more reforms sooner than other provinces will increase their proportion of incorporation revenues more than other provinces (i.e., the revenue variable is expressed as a difference of average revenues before and after the legislative reforms). However, this alternative specification did not materially change the results.
yielded similar qualitative results.) In contrast, the Legislature coefficient was positive and statistically significant for most specifications of "z". The evidence therefore suggests that non-financial factors, possibly including concern for uniformity among legislatures with more legislators to devote time to corporate law issues (subsection 7.2.2), have inspired corporate law reforms in Canada.

The estimates for equation (3) are presented in Table 2 for the Revenue8 averaged over 6 years after the corporate law reforms in each of the jurisdictions (with "z" equal to 12, but different cut-off periods did not materially affect the results). The estimated responsiveness coefficient was negative and insignificant, which suggests that responsive provinces did not realize greater increases in their proportion of fiscal revenues from incorporation business than their less responsive counterparts. There was no significant difference in the results from averaging over other periods or from using total dollars instead of shares. For reasons explored earlier, and in light of the plausibility of the uniformity hypothesis, we do not find the absence of empirical evidence in support of proactive competition surprising.

In sum, there is no empirical support for financially motivated competitive corporate law reform in Canada. The size of the legislature appeared to be the only significant factor in predicting a jurisdiction's responsiveness. Before turning to the formal treatment of the demand side econometric evidence, we conclude our review of the supply side of the Canadian incorporation market by relating the evidence to previous research on Markov models of legal evolution.

7.2.3.2. Markov Models of Legal Evolution and the Canadian Experience

A Markov process is a probabilistic model that can be used to array assumed forces of legal evolution into a matrix. The matrix is used to determine the processes' stationary distribution of probabilities of being in specific states. Romano (1987: s.IV) compares the stationary distributions of five different processes of legal evolution: random, weak value-maximizing, strong value-maximizing, "Delaware", and "strong-Delaware". Under a random process, legislators do not consider value-maximizing laws and therefore have an approximately equal probability of staying in each state an equal amount of time. Legislators following the weak value-maximizing process will be more likely to adopt value-maximizing laws than to repeal such laws. Weakly-optimizing legislators are also more likely to adopt laws for which value-maximizing properties cannot be identified when such laws have been adopted by other jurisdictions. The weak value-maximizing system tends towards states in which more
jurisdictions adopt most or all the laws under consideration irrespective of whether such laws are value maximizing. In contrast, legislators following strong value-maximizing process have a greater probability of spending more time in states where only value-maximizing laws are adopted. The "Delaware" process considered by Romano is one in which a lead jurisdiction has a higher probability of innovating (adapting a law that no other jurisdiction has adopted) and the other jurisdictions have a higher probability of following the lead of the innovator. Finally, the "strong Delaware" system combines the properties of the Delaware and strong value-maximization systems and yields even greater probabilities for states whereby only value-maximizing laws are adopted.

How does the Canadian experience compare with the different Markov processes of legal evolution identified by Romano? While near uniformity has been achieved across the jurisdictions' corporate codes [Daniels (1991: Table 1 at 153-154)], the preliminary results from our related research indicate that not all the provisions adopted have been value-maximizing [Cumming and MacIntosh (1999b)]. The strong value-maximizing and strong Delaware systems therefore seem to be inappropriate characterizations of the evolution of Canadian corporate law. In addition, our supply side empirical tests rejected both the passive and proactive financially motivated corporate law reform hypotheses. We have argued that the Uniformity Hypothesis may be a more plausible interpretation of the evidence than the weak value-maximization (i.e., passive) Competition Hypothesis. We have also documented a variety of political, legal, and institutional factors that make it difficult for any province or the federal government to succeed in attracting incorporation business through financially motivated corporate law reform.

At this stage it is necessary to consider the demand side evidence to more precisely evaluate the relative merits of the passive or weak value-maximization Competition Hypothesis and the Uniformity Hypothesis. As discussed, the demand for corporate charters is fundamentally linked to the interpretation of the supply side evidence. If corporations (and their legal and financial advisors) do not attach significance to the differences in the laws across jurisdictions, then legal content is not an attribute of importance and legislators will not change laws with a view to increasing their incorporation business. It is important to stress that evidence of jurisdiction shopping on the basis of differential laws is not strong evidence in favour of the Competition Hypothesis. As discussed in subsection 7.2.2, jurisdiction shopping is compatible with a variety of underlying supply side motivations. In particular, the Uniformity Hypothesis may hold even in the presence of vigorous jurisdiction shopping. At best, the existence of jurisdiction shopping is a necessary (but not sufficient) condition of the existence of a charter market.
7.3. The Demand for Canadian Corporate Law

Do incorporators (and their advisors) compare different corporate law regimes and/or incorporation fees before deciding where to incorporate (i.e. do they engage in jurisdiction shopping)? In this section, we conduct empirical tests to test the hypothesis that jurisdiction shopping exists in Canada (the "Jurisdiction Shopping Hypothesis"). The Jurisdiction Shopping Hypothesis is broken down into two parts. The first -- the Law Shopping Hypothesis -- tests whether corporations and their legal advisors are motivated to choose a jurisdiction of incorporation on the basis of the corporate law in competing jurisdictions. The second -- the Fee Shopping Hypothesis -- tests whether corporations and their legal advisors are motivated to choose a jurisdiction of incorporation on the basis of the relative incorporation fees in competing jurisdictions.

7.3.1. The Demand Equations

Demand equations are employed to test the Fee Shopping and Law Shopping Hypotheses. There are two approaches to demand analysis in econometric literature. First, there is the utility-based approach whereby the demand equation is derived from the maximization of an assumed utility function subject to a budget constraint [see, e.g., Deaton and Muellbauer (1980), and Theil and Clements (1987)]. Second, the pragmatic approach involves the direct specification of the demand equation as some intuitively plausible function of income and prices without reference to an assumed utility function. This latter, more traditional approach, which goes back to Cassel (1932), has been used extensively in the econometric literature [see, e.g., Stone (1954); Johnson et al. (1984)] and will be employed herein in order to capture the institutional features particular to Canadian incorporations.

In order to test the Fee Shopping Hypothesis and the Law Shopping Hypothesis, the following two econometric specifications of the demand equations are utilized:

\[ \text{Provinci} = \alpha_0 + \alpha_1 \text{Provfees} + \alpha_2 \text{Fedfee} + \alpha_3 \text{Otherfees} + \alpha_4 \text{Provgdp} + \alpha_5 \text{Trend} + \alpha_6 \text{Dum}_2 + \alpha_7 \text{Dum}_3 + \varepsilon_i \]
(5) \[ \ln(\text{Provinci}) = \beta_0 + \beta_1 \ln(\text{Provfee}) + \beta_2 \ln(\text{Fedfee}) + \beta_3 \ln(\text{Otherfees}) + \beta_4 \ln(\text{Provgdp}) + \beta_5 \ln(\text{Fedfee})(\text{Dum2}) + \varepsilon_i \]

where \( \alpha \) and \( \beta \) are regression coefficients, \( i = 1, \ldots, 10 \) refers to province, \( \varepsilon \) is a vector of error terms, and a constant is used in each equation in order that the errors have zero mean. These two demand equations have been frequently used in the microeconometric literature and will be described below, after the variables have been defined.

\[ \text{Provinci}, \] the dependant variable in the above equations, is the number of provincial incorporations per annum in province \( i \). The notation \( \ln() \) refers to the natural logarithm of the variable. The independent variables in the above equations are described as follows. \( \text{Provfee} \) is the provincial incorporation fee per annum in province \( i \), discounted by that province's consumer price index (CPI). \( \text{Fedfee} \) is the federal incorporation fee per annum discounted by Canada's CPI. \( \text{Otherfees} \) is the average consumer price index-discounted incorporation fees in the other jurisdictions (except province \( i \) and the federal jurisdiction). \( \text{Provgdp} \) is the real gross domestic product per annum in province \( i \). \( \text{Trend} \) is a time trend that begins at one in the first observation and increases by one each year.

Three dummy variables are employed in the regressions. First, \( \text{Dum} \) is the "immediate effect" dummy variable.\(^{44}\) It is zero in any year preceding the year in which the new legislation is adopted by the legislature (the "adoption year"). It is one in the adoption year and the year in which the legislation became effective (the "effective year"). (In some cases, these were the same year). It is zero in every year thereafter. This dummy variable should pick up changes in provincial incorporation activity that occur in the adoption year and/or the effective year. The inclusion of the adoption year in this dummy was based on the assumption (driven by rational expectations theory) that if there is jurisdiction shopping on the basis of the substantive corporate law, new incorporation activity can be expected to increase in the adoption year, even before the law is declared effective, if the probability of adoption is high (which it

\[ \text{footnote:} \]

\[ \text{footnote:} \]

43. Notice that equations (6) is a Box-Cox transformation of equation (5) [Box and Cox (1964)].

44. The dummy variables are based on major provincial corporate law reforms identified by Daniels (1991: 152-156). The alternative specifications of the dummy variables are an attempt to model the uncertainty associated with the timing of the response to changes in corporation law. The dummy variables may be referred to as 'differential intercept coefficients' in equation (4), whereas in equations (5) they are used to estimate the 'differential slope coefficient' [Gujarat (1988: chapter 14)]. The dummy variables have been defined on a binary zero/one scale. Periods of pre-legislative reform have been assigned the value zero and may therefore be referred to as the 'control period'. The control category is compared to the post-legislative reform period, which has been assigned the value of one. As such, if the post-legislative reform period has a greater intercept or slope coefficient (depending on the equation being estimated) than the control period, then the coefficient on the dummy
will invariably be once the law has been adopted). The second dummy variable in equation (4), dum1, is the "enduring effect" dummy variable. It is one in every year following (but not including) the effective year, and zero in every preceding year. The second dummy variable is designed to pick up any enduring change in the level of incorporation activity following the legal reform. Finally, Dum2 is a "combined effect" dummy used in equation (5). It is zero in every year preceding the effective year, and one in the effective year and every year thereafter. Thus, the combined effect dummy captures both any immediate and enduring effect of a change in corporation law on incorporation activity.

The reason for the inclusion of these variables in the equations (4) and (5) is now discussed. A discussion of the data sources, estimation method and results follows.

Equation (4)

Equation (4) is a variant of the demand equation known as Powell's system of additive preferences in the microeconometric literature. The model was chosen because it appeared, prima facie, to be a plausible demand system for the incorporation market. Moreover, we estimated a number of different demand systems and this specification yielded the most favourable results (which was expected, for reasons outlined below). As we have approached this study from the view that there is no incorporation market, we felt obliged to present the results that most favourably indicated otherwise.

The number of provincial incorporations per annum in province i, i = 1, ..., 10, is assumed to be a function of its price (the incorporation fee from province i), the price of the substitute products (such as the federal incorporation fee), and the real gross domestic product from province i. The Fee Shopping Hypothesis predicts that when the federal fee becomes high relative to the provincial fee, an incorporator is less likely to select the federal legislation. Thus an increase (decrease) in the federal fee, and a decrease (increase) in the provincial fee, are expected to be associated with a rise (fall) in the number of

variable should be positive and significant.

45. Engel aggregation, symmetry, and homogeneity are not satisfied in equation (4) [Johnson et al. (1984)]. Demand equations for which these conditions are satisfied fail to capture the particular institutional features of the Canadian incorporation market and yield less significant results. Most "goods" are not bought by all firms (firms incorporate in one jurisdiction and tend not to reincorporate) [Cumming and MacInosh (1999b)] and therefore aggregate demand is not viewed as coming from a representative consumer [see Deaton and Muelbauer (1980: chapter 6)]. As we have approached this study from the view that there does not exist an incorporation market in Canada, we felt it was appropriate to specify equation (4) so that the results most favourably indicate otherwise. Note that one of the differences between the specification in equation (4) and Powell's model is that the income in each jurisdiction is used in equation (4), whereas Powell used total income levels
incorporations in province $i$.

The assumption that incorporation fees matter in the selection of jurisdiction of incorporation seemed plausible after a casual inspection of the data. For example, the incorporation fee more than tripled from 1981 to 1982 in Alberta and the federal fee remained constant, while the number of Alberta incorporations decreased by about 50%. From 1984-1985, the federal incorporation fee more than doubled and Quebec's incorporation fee remained constant; incorporations in Quebec increased by about 70%. Moreover, our data set is dominated by small firms incorporating for the first time, for which the incorporation fee would often be a non-trivial consideration.

Although incorporation fees seem to matter, in Canada taxes do not systematically affect a corporation's choice of jurisdiction. Taxes are paid on the basis of where business is actually conducted, rather than the jurisdiction of incorporation. An Alberta corporation, for example, that conducts business in British Columbia, Alberta, and Ontario, will pay taxes in each of these provinces depending on how much of the corporation's business is conducted in each province.

It is important to note that in each equation, only the provincial fee and the federal fee are included as independent variables, and the incorporation fees from other provinces ("extra-provincial incorporation fees") were averaged in a separate variable. In a typical demand system variables for the price of all the substitute goods should be included in each equation. This was not done here for four primary reasons. First, it was not possible to separate the effects of all the prices of the substitutes because there exists exact multicollinearity across a combination of some of the incorporation fees. Second, there are only 23 observations in the sample (1975-1997) and it would be inappropriate to have almost as many estimated coefficients as observations. Third, the Schwartz and Akaike information criteria both indicated that to include the incorporation fees for the other provinces would result in misspecification of the demand functions [Judge et al. (1988: chapter 20.4)]. In effect, although including the extra-provincial incorporation fees would not cause bias in the estimated coefficients, it may cause inefficiency, thereby possibly leading to unwarranted rejections of the Fee and Law Shopping Hypotheses.

The fourth, and most important reason for not including separate variables for extra-provincial

[Powell (1966); Johnson et al. (1984: chapters 4-5)].
incorporation fees in the demand equations, relates to the transaction costs of incorporating extra-provincially. The assumption that lies behind the specification of the equations is that jurisdiction shoppers will elect primarily between the local provincial legislation and the federal legislation. This assumption is supportable in view of the fact that the transaction costs of incorporating either locally or federally will be similar, and every provincial lawyer is qualified to give advice on federal law. By contrast, the transaction costs of incorporating in other provinces is relatively high, and lawyers qualified in one province are not qualified to give advice on the law of another province (thus requiring a local incorporator to hire an out-of-province law firm to oversee an out-of-province incorporation, at relatively greater cost).

This fourth reason why incorporation fees from other jurisdictions are not included in each equation relates to the relatively protectionist posture of the provincial Law Societies. According to Macey and Miller (1986: 493), "[a]n attorney does not need to be a member of the Delaware bar in order to provide advice on that state's law." Thus, an attorney will not lose a corporation's business by recommending incorporation in Delaware. This stands in marked contrast to the situation in Canada. Provincial Law Societies do not permit lawyers who have not been called to the bar of a province to give advice on that province's laws. Moreover, the Law Societies do not make it easy for a lawyer from another jurisdiction to qualify locally, by requiring that out-of-province lawyers go through the full rigour of passing the local bar exams.

Daniels (1991) argues that many of the larger corporate firms in Canada now have affiliates in other jurisdictions, and will not therefore fear a loss of business when they recommend incorporation in another jurisdiction. The business will simply be referred to the extra-provincial affiliate. Whether this is true, however, will depend to a very great extent on the degree to which affiliated firms share billings. As a general rule, affiliated law firms in different provinces do not operate on a profit sharing

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46. That is, an attorney will at least not lose business relating to the solicitor function [Macey and Miller (1986: 493)].
47. See Daniels (1991: 137 at note 15). Indeed, the Law Society of Upper Canada has in at least one case known to the authors not permitted a lawyer called to the Ontario Bar to give advice on Ontario law, simply because the lawyer is employed by an American firm.
48. Daniels (1991: 137, 184-186). Some difference arises as between cases where a lawyer acts as a solicitor and as a barrister. In the latter case, both the Canadian provinces and the U.S. states require that a locally called barrister argue a case before the local courts. Both provinces and states have rules that permit barristers called in other jurisdictions, with the permission of the court, to argue single cases before local courts [Daniels, ibid.; Macey and Miller (1986: 493-497)]. Thus, in relation to litigation work, the institutional structures that prevail in the U.S. and in Canada are very similar. Obviously, these institutional structures have not prevented Delaware from capturing a very large share of the U.S. charter market. Hence, we rest our argument on the deficient incentives of Canadian counsel to recommend incorporation elsewhere when this costs them
arrangement: local profits are divided amongst local partners, and many of the "mergers" that have occurred are in fact glorified agency relationships [Daniels (1993)]. Referral of business to an affiliate may therefore deprive the referring firm of the business of the client, perhaps permanently. This need not be a concern so long as there is an equal amount of referral business flowing in both directions. However, supposing that a Canadian province succeeded in becoming the Delaware of the North, the referral business would not in fact flow in both directions: it would tend to flow from the less desirable incorporation destinations to the more desirable destination. Thus, the incentive of the local firm may well be to retain the client's business in the jurisdiction, even if some other jurisdiction has more favourable rules. Perhaps more importantly, the proportion of firms that advise on matters of incorporation and that have affiliates in other provinces will be small. Affiliation tends to be a practice restricted to large firms [Daniels (1993)]. The bulk of the incorporation work, however, is done by small law firms.

Will competition in the provision of legal services force firms to give the best advice about where to incorporate? Our view is that it would not necessarily do so. If the alternatives are (1) recommending that the client incorporate under the local, less efficient law, and possibly later losing the client to a competitor, or (2) recommending that the client reincorporate, and immediately losing the client, the first alternative would seem to be preferable. Moreover, competitor firms within the local jurisdiction will gain little by pointing out the inadequacy of their competitor's advice, since they will not themselves gain business: a firm in another jurisdiction will. Extra-provincial competitors, located in distant locales, will frequently not have sufficient contact with potential out-of-jurisdiction clients to entice them away. Moreover, there will be a severe informational asymmetry between firms and their clients: a lawyer's recommendation about where to incorporate cannot easily be evaluated by the client. Added to this is the fact that it is costly to change lawyers. The longer existing counsel has serviced the firm, the more that counsel will have developed firm-specific knowledge of the client's affairs. Transferring the firm's business to a new counsel will result in start-up costs for the new lawyer, costs which will be passed on to the client in the form of increased billings, slower service, and possibly less effective advice (at least through the start-up period).

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49. As we have argued above, even if there is an affiliate firm in another jurisdiction, this will not create adequate incentives to give efficient advice, if there is no mechanism to share profits between the two firms, and the incorporation referral business flows in one direction.
While we did not include a separate fee variable for extra-provincial incorporations for each province, we nevertheless did include the variable Otherfees, which averages the provincial incorporation fees of the provinces other than the domicile jurisdiction $i$. This variable accounts for the possibility of fee shopping among provincial jurisdictions without incurring the loss of degrees of freedom that would result if a fee variable for each province was included in each equation.

Changes in total incorporations per period are driven by scale effects and substitution effects, and it is important to distinguish between the two. The scale (or 'income') effect arises in that increases (decreases) in gross domestic activity are likely to have an important positive (negative) influence on incorporation activity in any given year. In determining the effects of changes in corporate law on the preferred jurisdiction of incorporation (the substitution effect), it is important to control for this scale effect by including provincial real gross domestic product (denoted by Provrgdpc) as an independent variable.

The trend variable is included to account for any increases in incorporation activity over time unrelated to the contribution to real gross domestic product from a particular province. By the Frisch-Waugh-Lovell (FWL) Theorem [Frisch and Waugh (1933)], there is no difference between detrending the data first and including the trend term in the regression. Powell (1966) suggests including a trend term in order to account for changes in consumer tastes.

The dummy variables, Dum and Dum1, are used to test the Law Shopping Hypothesis. Under the Law Shopping Hypothesis, when a province changes the substance of its corporate code in a significant and beneficial way, persons resident in that province will be more likely than previously to incorporate under the provincial corporation code rather than the federal code. Thus, favourable (unfavourable) changes in corporate law should be associated with an increase (decrease) in the number of provincial incorporations per annum in that province.

Equation (5)

Equation (5) is commonly known in the microeconometric literature as the double log demand function [Johnson et al. (1984: 75)]. This demand system cannot be derived from the maximization of a plausible utility function [Wold and Jureen (1953: 105-107)] and the Engel aggregation, symmetry, and
homogeneity properties do not hold. Nevertheless, the system was chosen because of its popularity, the possibility that it may 'fit' the data better than equation (4), and the immediate and economically interesting interpretation of the parameters. Equation (5) is equation (4) expressed in terms of natural logarithms. In equation (5) notice that $\beta_1$ is the 'own-price elasticity of demand', $\beta_2$ and $\beta_n$ are the 'cross-price elasticities of demands' for the federal and other provincial fees, respectively, and $\beta_a$ is the 'income elasticity of demand' (Johnson et al. (1984: 75)).

The coefficient on the dummy variable in equation (4), $\beta_a$, is a differential slope coefficient: it measures the effect of legislative reform on the value of the $\beta_2$, the federal cross-price elasticity of demand. The differential slope coefficient was estimated only for the federal fee, for two primary reasons. First, using differential slope coefficients for both the federal and provincial incorporation fee variables would create serious multicollinearity problems. Second, differential slope coefficients for the provincial fees were statistically less significant than the differential slope coefficients for the federal fee.

7.3.2. The Data

Annual data from 1975 to 1997 were used. Data on provincial gross domestic product and consumer price indices were obtained from Statistics Canada. Data on provincial incorporation activity were taken from Daniels' study, as were data on the incorporation fees charged by the various incorporating jurisdictions (Daniels, (1991: Table 6, at 169)). Data on incorporation activity and fees were also independently obtained from the various provinces, and updated to 1997. Minor discrepancies in this data and the data appearing in Daniels' study were resolved in favour of the data that was independently obtained. Some of the provinces use a method of calculating fees based on a fixed component plus a graduated supplement based on corporate capitalization. In these cases, the incorporation fee will vary from one incorporation to another depending on the capitalization of the company. It was not possible to obtain figures for any province for the average of the fee charged; thus,

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50. Johnson et al. (1984: 75). However, this is not a significant concern in light of the institutional features particular to Canadian incorporation discussed above; see also supra, note 46.
51. Equation (6) is the basis of Stone's (1954) expenditure system.
52. It would not be realistic to distinguish the initial effect and enduring effect of the corporate law reforms with the differential fee coefficients. Therefore, $\text{Dum}2$ is used in place of $\text{Dum}$ and $\text{Dum}1$.
53. See Statistics Canada's annual report: Provincial Gross Domestic Product by Industry. The GDP and CPI data for this study was obtained directly from CANSIM off the Internet at the University of Toronto Data Centre.
54. Daniels (1991: Table 2, at 158). Daniels himself obtained the data from the Canadian Federation of Independent Business.
it was necessary to use the fixed portion of the fee only in the regressions. This may not be a serious problem, however, in that the provincial administrators routinely indicated that the largest part of the fee was the fixed component. Indeed, since the incorporations were predominantly of small companies, in most cases the fixed component will constitute the entire fee charged.

It should be noted that there is a registration fee for companies doing business in a province but not incorporated in that province. This fee is proportional to the incorporation fee itself in all of the provinces except Quebec. Until 1992, the registration fee in Quebec was roughly four times the size of its incorporation fee. This created an incentive for small companies wanting to do business in Quebec to either incorporate under the Quebec legislation or to not do any business in Quebec. The heightened importance of the out-of-province registration fee in determining the demand for Quebec charters (compared to other provinces) makes it less likely that the regressions will yield evidence of fee shopping in Quebec. 55

Dummy variables based on important legislative reforms in provincial corporate law were also based on Daniels' (1991: Table 1, at 153-154) findings concerning the timing of major law reforms in the various provinces (see Table 1 above). 56 In most cases, the legislative reform in question was the adoption of the federal model (the CBCA) in virtually its entirety, although as indicated in the Daniels study, only parts of the CBCA were adopted in Quebec and Nova Scotia. Data on the number of federal incorporations from each province were obtained from the Corporations Branch of Consumer and Corporate Affairs Canada. 57

Total incorporation data may be less than entirely satisfactory for the purpose of testing for jurisdiction shopping for a few reasons. One is that the pool of firms that engage in jurisdiction shopping is likely to be only a subset of the firms that are incorporated in any given year. It is highly probable that

55. Indeed, the absence of meaningful coefficients for the Quebec fee variables could be viewed as empirical support for the idea that fees matter and that the demand equations have empirical validity. Quebec abandoned its exorbitant registration fee in 1992. It is plausible that the Quebec legislature realized that charging such lofty fees was harmful to business activity in Quebec. The fact that this fee was abandoned, but only after many years, lends at best weak support to the Competition Hypothesis. See also subsection 7.2.3 above.

56. Because British Columbia modified its corporation code prior to 1975, and incorporation data was not available prior to 1975, the dummy variable technique could not be used for British Columbia. Suitable proxies for the dummy variables for British Columbia were not found. Nevertheless, British Columbia is still included in the analysis in order to test for fee shopping in British Columbia.

57. Daniels (1991: Table 5, at 166) also has data for federal incorporations by jurisdiction, but covering the period 1980-1987. Thus, supplementary data was obtained from the Corporations Branch, Consumer and Corporate Affairs, Canada.
many persons who choose to incorporate small businesses will simply choose to incorporate under either
the local or the federal statute. In many cases this choice will probably be made without the benefit of
legal advice and without considering the benefits that may arise from incorporating in another province.
Even where legal advice is obtained, the benefits of jurisdiction shopping may be minimal for small
businesses, given the often custom-crafted nature of the arrangement binding the shareholders and
directors, and the unification of managerial and shareholder roles [Daniels (1991: section III)]. These
minimal benefits might easily be outweighed by the transaction costs of incorporating in another province.
Tests conducted on total incorporation data will not distinguish between the behaviour of small and large
firms in the sample.

Relatedly, total incorporation data does not distinguish between incorporations of previously
unincorporated businesses, and reincorporations of businesses previously incorporated in another
jurisdiction. It will often be the case that different motivations will underlie an initial decision to
incorporate versus a decision to reincorporate elsewhere. However, our related research indicates that
firms that reincorporate, especially as between two provinces, have not necessarily been more concerned
with substantive corporate law differences than those obtaining initial incorporations [Cumming and
MacIntosh (1999b)]. Moreover, reincorporation is a relatively infrequent event compared to initial
incorporation [Cumming and MacIntosh (1999b)].

7.3.3. Empirical Methodology

The standard econometric approach to the estimation of demand systems in the econometric
literature is to employ seemingly unrelated regression (SUR) methodology [Zellner (1962)].
Simultaneous equation estimation of a SUR model will produce an asymptotic gain in efficiency unless
there is no contemporaneous correlation among the error terms or unless the regression functions are
linear and identical across all equations in the system.\footnote{58} Equations (4) and (5) appear to be natural
candidates for SUR estimation. Although equations (4) and (5) are linear, the regression functions are not
identical across all equations of the system. As such, there is potential for asymptotic efficiency gains by

\footnote{58. See Davidson and MacKinnon (1993: chapter 9.7). The greater the contemporaneous correlation among the error
terms, the greater the potential for efficiency gain from using SUR instead of equation-by-equation estimation [Greene (1990:
512)].}

\footnote{59. If the regression functions are linear and identical in a SUR model then Kruskal's Theorem applies; equation-by-
equation estimation and system estimation generate numerically identical parameter estimates and system estimation produces
no asymptotic gain in efficiency [Davidson and MacKinnon (1993: 313)].}
system estimation. The unobserved features in the incorporation markets of the different provinces will likely be contemporaneously related to one another. For example, free trade agreements and unforeseen changes in federal government regulation and foreign policies are all potential sources of such contemporaneous correlation. Likelihood ratio (LR) tests for diagonal covariance matrices in equations (4) and (5) provided some evidence of contemporaneous correlation among the residuals across jurisdictions. There was also some evidence of heteroscedasticity in each equation.

While asymptotic theory suggests that OLS estimation will not produce the most efficient estimates (although they will still be consistent), there are only 23 observations in the sample from each province. A bootstrap experiment was therefore used to analyze the asymptotic properties of alternative estimation methods given the finite sample (see the Appendix).\(^{60}\) The bootstrap experiment indicated that the standard errors of the estimates tend to be minimized using OLS with a HCCME [White (1980)]. As a result, the OLS estimates of equations (4) and (5) using a HCCME are presented in section 7.3.4. Because we have approached this study from the view that there does not exist a charter market in Canada, we felt it was appropriate to use the demand equations and econometric methods that most favourable indicate otherwise.

### 7.3.4. Empirical Results

OLS regression estimates using a HCCME for equations (4) and (5) are presented in Tables 3 and 4, respectively. The t-statistics for the estimated coefficients are in parentheses. The adjusted coefficient of determination ($R^2$) is also presented in the tables. The suitable adjustments to the value of $R^2$ in equation (5) have been made to enable a direct comparison to equation (4) [Gujarati (1988: 183-184)]. In addition, the reported loglikelihood values for equation (5) have been corrected in order to account for the Jacobian of the transformation [Davidson and MacKinnon (1993: chapter 14.2)]. This enables a direct comparison of the loglikelihood values in equations (4) and (5), and the use of likelihood ratio test statistics for the purpose of model selection.

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60. In addition to the methods presented in the Appendix, other methods of estimation were explored, including for example a switching regression model [Judge et al. (1988: 431-433)]. Note, however, the switch occurs at the time of legislative change. As a result, it would be impossible to estimate the parameters prior to legislative change (because, for example, Manitoba and Saskatchewan would only have one and two observations respectively in the pre-legislative reform period). The post-legislative change sample results, as well, were fairly meaningless in some of the jurisdictions, and have not been included in the presentation of the results.
There is some evidence of fee shopping arising from equation (4). The *Provfee* coefficient is negative, as expected, in British Columbia, Alberta, Saskatchewan, Ontario, Nova Scotia, Newfoundland, and Prince Edward Island. The British Columbia and Prince Edward Island *Provfee* coefficients are statistically significant at the .05 level of significance. The *Provfee* coefficient in Quebec, on the other hand, is statistically significant with a positive sign.  

The *Fedfee* coefficients in Table 3 were expected to be positive in every jurisdiction except the federal jurisdiction (in the federal jurisdiction, the federal fee is its 'own price' and is therefore expected to be negative). The estimated coefficients have the expected sign in five jurisdictions, and are statistically significant at the .05 level of significance in Quebec, Prince Edward Island, and the federal jurisdiction. The coefficient for Nova Scotia is statistically significant at the .1 level of significance. The *Otherfees* coefficients were positive and significant in British Columbia and Prince Edward Island.

The Law Shopping Hypothesis is tested by considering the coefficients on the dummy variables *Dum* and *Duml*. The immediate impact dummy variable, *Dum*, has the expected sign in six jurisdictions and is statistically significant in Alberta, Saskatchewan, Manitoba, Ontario and Newfoundland at the .05 level of significance. The enduring effect dummy variable, *Duml*, has the expected sign in every jurisdiction except Nova Scotia, and is statistically significant in Alberta, Saskatchewan, Manitoba, Quebec and Newfoundland at the .05 level.

The coefficients on *Real GDP* have the expected sign in all jurisdictions except Nova Scotia and are statistically significant at the .05 level of significance in seven jurisdictions.

In sum, there is some support for the Fee Shopping Hypothesis. The level of the federal fee appears to be slightly more significant than the provincial fees in driving incorporation activity. Evidence in support of the Law Shopping Hypothesis is somewhat stronger: five of the nine jurisdictions showed support for the conjecture that the quality of corporate law matters to a firm in its selection of a

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61. Recall (see section 7.3.2, supra, under the description of the data) that until 1992 Quebec had an extra-provincial registration fee much greater than that of the other provinces - about four times the size of its incorporation fee. While various dummy variables were employed to account for this change in the Quebec equation, none yielded meaningful results.

62. Because British Columbia modified its corporate code in 1973, two years prior to the adoption of the CBCA, and because Canadian incorporation data was first recorded in 1975 in most Canadian jurisdictions, dummy variables have not been defined for British Columbia.
jurisdiction of incorporation. The most important factor driving incorporation activity in equation (4), however, is the level of real gross domestic product in each jurisdiction, as indicated by the significant coefficients in eight jurisdictions. These results are consistent with the preliminary results from related research on Canadian reincorporations indicating that, for the majority of Canadian reincorporations, corporate law content was not as important as economic activity in the choice of jurisdiction of incorporation [Cumming and MacIntosh (1999b)].

Table 4: HCCME Estimates of Equation (5)

Recall that the coefficients in equation (5) are interpreted as elasticities. The \( \ln(Provfee) \) coefficient is the own-price elasticity of demand (for the federal jurisdiction, the own-price elasticity is the coefficient on \( \ln(Fedfee) \)). The estimates for this coefficient tend to be less than zero, as expected. The own-price elasticities are statistically significant in Alberta, Saskatchewan, and Prince Edward Island at the .05 level of significance. The own-price elasticity is also significant in the federal jurisdiction. The estimated values of the own-price elasticities are greater than -1.0, except in the federal jurisdiction. This is an interesting result, because it suggests that if the federal administrators are interested in maximizing total revenue from incorporation business, they should decrease the federal incorporation fee. On the other hand, provincial administrators would profit by increasing incorporation fees since the own-price demand elasticities across the provinces appear to be inelastic.

The cross-elasticities of demand are estimated by the coefficient on \( \ln(Fedfee) \). If the provincial and federal incorporation codes are close substitutes (i.e. the coefficients on \( \ln(Fedfee) \) are significantly greater than zero), then the relative prices of a provincial and federal incorporation will have a large impact on relative incorporation rates. The coefficients are significantly greater than zero at the .05 level of significance only in Quebec and Prince Edward Island. Nevertheless, it is plausible that the federal fee became a more relevant decision variable after the provinces modified their corporate codes, as discussed above. This conjecture was tested by means of the differential slope coefficient on the variable \( Dums*ln(Fedfee) \). As Table 4 shows, this coefficient has the expected sign in every jurisdiction (except Nova Scotia and Prince Edward Island) and is statistically significant at the .05 level of significance in Alberta, Manitoba and Newfoundland (and is significant at the .10 level in Saskatchewan). This confirms the heightened importance of the relative provincial/federal fees after provincial law changes mimicking the federal code.
Finally, the coefficient estimates on the \( \ln(\text{Real GDP}) \) variable are all greater than zero, as expected, and are statistically significant for British Columbia, Alberta, Saskatchewan, Ontario, Quebec, New Brunswick, Nova Scotia, Newfoundland and Prince Edward Island. These coefficients are interpreted as income elasticities. They are greater than one in Ontario, Quebec, Nova Scotia and Newfoundland. This suggests not only that these corporate codes are a 'normal' commodity (i.e. they are in greater demand when income increases) but also a 'luxury' (i.e., a higher proportion of income is spent on the commodity when income increases). Businesses appear more likely to register as corporations than as sole-proprietorships or partnerships when real gross domestic product increases.

In contrast to equation (4), the Law Shopping Hypothesis cannot be directly tested with equation (5). Equation (5), however, does provide additional support, in conjunction with equation (4), for the Fee Shopping Hypothesis. Note, however, that the data generally favours equation (4) over (5) by the likelihood dominance criterion.63

7.4. Conclusion

In order to demonstrate the existence of a charter market, in which corporate law is supplied in response to competitive pressures, it is necessary to demonstrate the existence of both demand for charters based on differences in corporate law, and the responsiveness of suppliers to these demands. On the demand side, we find evidence in support of the hypothesis that corporate law content is a significant variable in the selection of a jurisdiction of incorporation. However, this evidence is mixed, given that support for the Law Shopping Hypothesis was found in only five jurisdictions (although the use of total incorporation data may mask a significant degree of jurisdiction shopping by some subset of the population of incorporating (or reincorporating) firms - especially larger firms). The level of economic activity appears to be a significantly more important factor in determining the number of incorporations in each jurisdiction.

It is noteworthy that our empirical tests of the demand side of the incorporation market offer

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63. One can verify that the loglikelihood values in Tables 3 and 4 yield likelihood ratio statistics that generally favour equation (4) over equation (5) (Pollak and Wales (1991); Sargan (1984); Davidson and MacKinnon (1993: 490-492)). Note that the Jacobian of the transformation has been accounted for in reported loglikelihood values for equation (5) so that a direct comparison can be made with equation (4).
confirmation of the hypothesis that residents of a given province choose between the various corporate codes on the basis of the relative incorporation fees. The importance of relative fees appears to have grown over time as the provincial corporate codes have been changed to mimic the federal code, eliminating differences in substantive content. Of particular interest to corporate law administrators is the finding that provincial administrators could realize greater total incorporation revenue, in the face of inelastic demand, by increasing incorporation fees. Federal administrators, however, could increase total incorporation revenues by lowering the federal incorporation fee.

On the supply side, however, we found no statistical evidence to support the hypothesis that the substantive content of corporate law is motivated by a desire to maximize incorporation revenues. Rather, the theory and evidence support the Uniformity Hypothesis, under which corporate law administrators (and legislators) adopted the federal corporate law reforms of 1975 not to increase their market share of incorporation business, but to serve the goal of uniformity in corporate legislation across Canada. Under the Uniformity Hypothesis, corporate law reforms will be adopted irrespective of their value-maximizing properties. Thus, there can be less confidence that Canadian corporate laws will tend toward efficiency than American laws. This is consistent with the preliminary results from our related research [Cumming and McIntosh (1999b)] which indicate that some reincorporations in Canada are value enhancing, but others are value decreasing for shareholders.

The absence of a supply-side response to demands for better corporate law is consistent with our theoretical prediction. The ability of any province to attract incorporation business is greatly impaired due to the ability to appeal any corporate law to the Supreme Court of Canada, which makes it difficult or impossible for any province to craft a uniquely provincial corporate jurisprudence. Without being able to guarantee the content, predictability and stability of a central feature of corporate law -- the common law of corporations -- the range of product differentiation that can be offered by any province is severely reduced. The inability of provinces to make their own judicial appointments, and the intrusion of securities regulators into matters of corporate law only exacerbate the difficulty of making a credible commitment to maintain a superior corporate law. Moreover, Canadian lawyers have deficient incentives to recommend that their corporate clientele incorporate in another provincial jurisdiction, given that this will result in a loss of business.

In addition, anecdotal evidence suggests that provincial administrators and legislators have lacked
the sort of competitive consciousness that is necessary to create a supply side response. More importantly, there is little financial incentive to develop such consciousness, given that incorporation fees generate a trivial percentage of any province's annual budget.

Taken together, the demand and supply side evidence suggests that if there is a charter market in Canada, it is limited in extent and not as competitive as that observed in the United States. The Uniformity Hypothesis appears to be a more compelling account of the observed pattern of Canadian corporate law reform. Given this positive evidence of limited competitive corporate law reform in Canada, empirical research on the normative effect of reincorporation for shareholders of Canadian corporations is warranted.

Appendix. Bootstrap Experiment

This Appendix presents a bootstrap experiment that compares the efficiency of alternative methods to estimate the demand equations.64 Means and standard errors of the coefficient estimates were computed from the estimated distributions of the coefficients. Having recalibrated the coefficients 1,000 times, the approximation error of the coefficients' standard errors will roughly be 3.16%.65 Table 5 presents the mean and standard errors of the estimated coefficients of the bootstrapped regression coefficients under four alternative estimation methods (OLS, OLS with a HCCME, OLS with a HACCE [Newey and West (1987)], and SUR estimation using feasible generalized least squares)66 for equation (4). Numerous other methods were also tested but did not yield more efficient estimates than those obtained by the methods presented. The results in Table 5 indicate that with a sample of 23 observations, asymptotic corrections involving system estimation and/or corrections for heteroscedasticity and autocorrelation do not improve the efficiency of the estimated coefficients using OLS with a

64 Although the justification of the bootstrap procedure is itself asymptotic, it has become quite popular for testing asymptotic properties in finite samples in a variety of contexts [Davidson and MacKinnon (1993: chapter 21.8)].

65 The approximation error is approximately equal to \(1/\sqrt{1000}\), where 1000 is the number of replications [Davidson and MacKinnon, ibid.].

66 The details of each method of estimation are readily available in most econometrics textbooks and easily implemented using the SHAZAM econometrics computer program. Note that the qualitative results from the bootstrap experiment were invariant to a large number of alternative specifications of the demand equations (see the discussion supra, note 46 and accompanying text). The form of the HCCME chosen was that with \(\phi^2\) as the \(t^\text{th}\) diagonal element in the \(\Omega\) matrix that appears in the estimated covariance matrix of the coefficient estimates given by the matrix \((X'X)^{-1}X'\Omega X(X'X)^{-1}\) in the case of OLS estimation is the HCCME, where \(X\) is a matrix of independent variables. Other variants of the HCCME [see MacKinnon and White (1985)], such as the "jackknife", were used but did not significantly affect the qualitative results.
OLS with a HCCME also outperformed the standard OLS estimates for the majority (but not all) of the estimated coefficients. As a result, the Fee and Law Shopping Hypotheses were evaluated on the basis of the OLS estimates of the demand equations using a HCCME.

It should be noted, however, that it may not be the case that the use of the method which provides the lowest standard errors is best. It could be that the true standard errors are larger than the asymptotic approximation would imply. If the bootstrap provided larger standard errors closer to the "truth" for a particular estimation method then that particular method would be better. Nevertheless, because we have approached this study from the perspective that there does not exist a charter market in Canada, we believe that it is appropriate to present the results that most favourably indicate otherwise.

67. The bootstrap experiment with equation (5) was also performed, yielding similar qualitative results in support of the use of OLS with a HCCME.
<table>
<thead>
<tr>
<th>Year</th>
<th>Jurisdiction</th>
<th>Legislative Reform</th>
<th>Number of Reforms in Response to CBCA*</th>
<th>Size of Legislature</th>
<th>Revenue Before Reform**</th>
<th>Revenue After Reform***</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>British Columbia</td>
<td>S.B.C. 1973, c.18</td>
<td>0</td>
<td>75</td>
<td>0.0184738%***</td>
<td>0.04281%</td>
</tr>
<tr>
<td>1976</td>
<td>Manitoba</td>
<td>S.M. 1976, c.40</td>
<td>1</td>
<td>57</td>
<td>0.00342%</td>
<td>0.02138%</td>
</tr>
<tr>
<td>1977</td>
<td>Saskatchewan</td>
<td>S.S. 1976-77, c.10</td>
<td>2</td>
<td>58</td>
<td>0.00383%</td>
<td>0.00972%</td>
</tr>
<tr>
<td>1979</td>
<td>Quebec</td>
<td>S.O. 1979, c.31</td>
<td>3</td>
<td>125</td>
<td>0.00436%</td>
<td>0.00865%</td>
</tr>
<tr>
<td>1980</td>
<td>Quebec</td>
<td>S.O. 1980, c.28</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>Alberta</td>
<td>S.A. 1981, c.B-15</td>
<td>6</td>
<td>83</td>
<td>0.00832%</td>
<td>0.02117%</td>
</tr>
<tr>
<td>1981</td>
<td>New Brunswick</td>
<td>S.N.B. 1981, c.B-9.1</td>
<td>6</td>
<td>58</td>
<td>0.00551%</td>
<td>0.01168%</td>
</tr>
<tr>
<td>1982</td>
<td>Ontario</td>
<td>S.O. 1982, c.4</td>
<td>7</td>
<td>130</td>
<td>0.01106%</td>
<td>0.02915%</td>
</tr>
<tr>
<td>1982</td>
<td>Nova Scotia</td>
<td>S.N.S. 1982, c.17</td>
<td>8</td>
<td>52</td>
<td>0.00738%</td>
<td>0.01280%</td>
</tr>
<tr>
<td>1983</td>
<td>Nova Scotia</td>
<td>S.N.S. 1983, c.19</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1984</td>
<td>Prince Edward Island</td>
<td>S.P.E.I. 1984, c.14</td>
<td>9</td>
<td>51</td>
<td>0.00700%</td>
<td>0.01055%</td>
</tr>
<tr>
<td>1986</td>
<td>Newfoundland</td>
<td>S.N. 1986, c.12</td>
<td>11</td>
<td>52</td>
<td>0.00471%</td>
<td>0.01242%</td>
</tr>
</tbody>
</table>

* See Daniels (1991: Table 1) for details.
** Average [(incorporation revenue)/(total provincial revenue)] from 1975 to the year of corporate law reform.
*** Statistic for 1975 figures (the first year that incorporation statistics were recorded).
**** Average [(incorporation revenue)/(total provincial revenue)] from year of corporate law reform to six years hence.
<table>
<thead>
<tr>
<th>Equation Number -- Estimation Method</th>
<th>Dependent Variable</th>
<th>Constant</th>
<th>Average Incorporation Revenue / Total Revenue*</th>
<th>Size of Legislature</th>
<th>Responsiveness Variable**</th>
<th>Cut-off number of yrs after which prov not responsive (z)**</th>
<th>Adjusted R² (Tobit: Variance of the Estimate)</th>
</tr>
</thead>
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*(Incorporation Revenue) / (Total Revenue) variable averaged from 1975 to year of legislative reform.

** Responsiveness = \([-1/2] \times (\text{Number of Years to Reform}) + 1\) \times (\text{Number of Reforms}) \text{ if } z < \text{(Number of Years to Reform)}, \text{ and Responsiveness} = 0 \text{ otherwise.}

*** Independent variable is the average incorporation revenues in total dollars, not as a fraction of total provincial revenues. Other z's did not materially affect the results.

**** Dependent variable averaged over the 6 year period after the year of legislative reform in each province. Other periods did not materially affect the results.
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UMI
Chapter 8: The Rationales Underlying Reincorporation and Implications for Canadian Corporations

8.1. Introduction

The economic analysis of corporate law as a product can be divided into two questions. The first is positive: has interjurisdictional competition for corporate charters played a significant role in shaping the corporate law in competing jurisdictions? In the United States, the role of interjurisdictional competition in shaping corporate law has been well documented [Romano (1985); Cary (1974); Macey and Miller (1986); Dodd and Leftwich (1980); Bebchuk (1992)]. In Canada, however, Cumming and MacIntosh (1999c) have argued that there has been at most only passive competitive corporate law production in Canada. The second question is normative: does jurisdiction shopping for corporate charters enhance firm value? The aim of this empirical study is to address this second issue in the Canadian context by evaluating the rationales underlying firms’ decision to reincorporate, and by assessing the effect of reincorporation on firm value. This empirical study is the first of its kind in Canada.

Studies that have addressed the second question in the U.S. have been instrumental in the debate over whether the competitive model of corporate law production is a "race to the bottom" or a "race to the top". Cary (1974), on one hand, saw the competition for incorporation business as competition in laxity and urged federal intervention to avoid a "race to the bottom". In Cary’s view, Delaware's success at attracting incorporation business (Delaware charters 43% of the NYSE firms and 50% of the fortune 500 firms), was the result of managers acting opportunistically at the expense of shareholders because Delaware’s corporate code has anti-takeover defense provisions and laxer fiduciary constraints, among other things. Jurisdiction shopping, from this perspective, facilitated managerial opportunism at the expense of shareholders [hereafter "the agency problem"; see Berle and Means (1933)]. On the other hand, Winter (1977) and Romano (1985) have argued that the market for state charters is no different than any other market. Corporate managers would not reincorporate in a laxer jurisdiction unless it was in their shareholders interest because the constraints imposed by the market, especially the managerial labour market, would preclude any possible gains from opportunistic behaviour. Econometric event studies that focus on share prices confirm this "race for the top" perspective: jurisdiction shopping has generally had positive effects on firm value in the United States [Romano (1985)].

Although Cumming and MacIntosh (1999c) argued that the role of interjurisdictional competition
in shaping corporate law has been quite limited in Canada, they did find some demand-side empirical evidence of jurisdiction shopping on the basis of incorporation fees and corporate law reforms. The purpose of this article is to address two additional demand-side issues pertaining to firms that have reincorporated (i.e., changed jurisdiction of incorporation at least once during their lifetime) in Canada. First, the rationales underlying firms' decisions to reincorporate from one jurisdiction to another are examined. Second, the issue of whether jurisdiction shopping affects firm value is empirically assessed by means of an econometric event study. To this end, we discuss the results of a survey sent to firms listed on a Canadian stock exchange that reincorporated after 1975, and analyze the movement in share prices of those firms in our sample.

This study adds to the literature by providing a more detailed insight into the rationales underlying reincorporation and by more completely examining the effect of different types of reincorporation transactions on firm value. This innovation is particularly important for the Canadian context. If Canadian corporate law provisions were adopted by different jurisdictions for reasons of uniformity or under weak value-maximizing passive competition [Cumming and MacIntosh (1999c)], then share prices should not consistently rise around the event of reincorporation [Cumming and MacIntosh (1999c); Romano (1987)]. In contrast, within the more competitive U.S. corporate law market, share prices have increased around the event of reincorporation [Romano (1985, 1987)].

The analysis of the two issues addressed in this paper proceeds sequentially. The rationales underlying reincorporation in Canada are surveyed in section 8.2. In section 8.3, the implications of reincorporation on firm value are assessed by means of an econometric event study. Concluding remarks follow in section 8.4.

8.2. Reincorporation in Canada

8.2.1. The Nature of the Canadian Incorporation Market

In Canada, there are 11 jurisdictions in which a firm may incorporate: 10 provinces and the federal jurisdiction. All of the corporate statutes in the 11 jurisdictions allow for both immigration (reincorporation into the new jurisdiction; see for example s. 180 of the Ontario Business Corporations
Act¹ [hereafter OBCA], and s.187 of the Canadian Business Corporations Act² [hereafter CBCA]) and emigration (continuation of the business under the laws of a different jurisdiction; see for example s.181(9) of the OBCA, and s.188 of the CBCA).

In most jurisdictions, however, there are restrictions on reincorporation. First, in order to reincorporate, a special resolution is required (2/3 majority vote); see, for example, OBCA s. 181(3), CBCA s. 188(5). Moreover, s.181(9) of the OBCA and ss. 187(7) and 188(10) of the CBCA state that a corporation cannot be continued under the laws of a new jurisdiction unless the new jurisdiction's corporate statute provides that (a) the property of the corporation continues to be the property of the body corporate, (b) the body corporate continues to be liable for the obligations of the corporation, (c) an existing cause of action, claim or liability is unaffected, (d) civil, criminal, or administrative procedures may be continued, and (e) conviction against a corporation (or judgement order) may be enforced. Finally, note that when a corporation elects to move to a new jurisdiction of incorporation, most statutes (for example, s.185 of the OBCA and s.190 of the CBCA) provide shareholders the option of exercising the appraisal remedy. The appraisal remedy is the right of a shareholder to have his or her shares purchased back by the corporation at an appraised price if the company takes a certain action that is deemed to be against the interests of the minority shareholder.³

There are generally no residency requirements associated with incorporation.⁴ For example, a corporation may be incorporated under the laws of Saskatchewan and only do business in British Columbia. Each jurisdiction, however, does have an extra-provincial registration fee (between $300-$500) for corporations carrying on business in jurisdictions in which they are not incorporated.⁵ Moreover, any corporation carrying on a business in a jurisdiction in which it is not incorporated is required to have a licence; the granting of this licence is discretionary and it does not exempt the corporation from the various filing requirements.

¹ R.S.O. 1990, c. B.16.
² R.S.C. 1975, c. C-44.
³ The appraisal remedy may also be invoked when a company amends its articles, amalgamates, or when a substantial portion of the company’s assets are sold.
⁴ Residency requirements do exist but are very rare; see, infra, section 8.2.2.2.
⁵ Note that Quebec had a substantial extra-provincial registration fee of about $2000 (roughly four times that of any other jurisdiction) until 1992; the implications of this fee is discussed by Cumming and MacIntosh (1999c: s.III).
Daniels' (1991) study on Canada's incorporation market focused on the enactment of the CBCA in 1975 and the provinces' adoption of its various provisions. These corporate statutes were adopted in the various jurisdictions as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Jurisdiction</th>
<th>Legislative Reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>Manitoba</td>
<td>S.M. 1976, c.40</td>
</tr>
<tr>
<td>1977</td>
<td>Saskatchewan</td>
<td>S.S. 1976-77, c.10</td>
</tr>
<tr>
<td>1979</td>
<td>Quebec</td>
<td>S.Q. 1979, c.31</td>
</tr>
<tr>
<td>1980</td>
<td>Quebec</td>
<td>S.Q. 1980, c.28</td>
</tr>
<tr>
<td></td>
<td>New Brunswick</td>
<td>S.N.B. 1981, c.B9.1</td>
</tr>
<tr>
<td>1982</td>
<td>Nova Scotia</td>
<td>S.N.S. 1982, c.17</td>
</tr>
<tr>
<td>1986</td>
<td>Newfoundland</td>
<td>S.N. 1986, c.12</td>
</tr>
</tbody>
</table>

The core CBCA reforms that were adopted by the various provinces after the introduction of the CBCA are:

1. non-discretionary incorporation by articles,
2. the ability to operate one-director corporations,
3. specific provision for the adoption of pre-incorporation contracts,
4. the eradication of the *ultra vires* doctrine by endowing the corporation with the power of natural persons,
5. the ability of the corporation to repurchase its issued and outstanding shares,
6. simplified director removal provisions,
7. codified general standards of conduct for directors and officers,
8. provisions for shareholder requisition of special meetings,
9. the capacity of directors to convene meetings by telephone, and
10. the introduction of the oppression remedy.

Daniels (1991) argued that the provinces adopted the various CBCA provisions in order to minimize the loss of incorporation business to the federal government; in other words, interjurisdictional competition prompted the corporate law reforms across the provinces. Cumming and McIntosh (1999c),

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6. British Columbia adopted the provisions before the federal CBCA with a view towards uniformity. See Daniels (1991: 151); see also Ziegel (1973).
on the other hand, have argued that the building blocks for the competitive model are missing in Canada for a number of reasons. The first reason is as follows. Although Canada does not have a national securities commission like the SEC in the U.S., the Ontario Securities Commission (OSC) tends to act as a national securities commission because of the importance of the Ontario securities market. In fact, it has been argued that the OSC has broader powers and greater discretion than the SEC [Ziegel et al. (1994: 106)]. As such, securities regulators in Canada often intervene in corporate law issues, thereby diminishing the significance of the choice of jurisdiction of incorporation for publicly traded corporations. Second, no Canadian jurisdiction is financially dependent on incorporation revenues and therefore cannot credibly commit to serving corporate interests. This is sharp contrast to Delaware which obtains approximately 16% of its state revenues from franchise fees and state corporation taxes [Romano (1985)]. Financial incentives are necessary to enable a jurisdiction to pre-commit to proactive legal reforms and build a reputation for responsiveness to corporate interests [Romano (1985: 226-227)]. In Canada, however, the theory and statistical evidence suggests that corporate law reforms were made, at most, on the basis of passive supply-side responses to financial concerns [Cumming and MacIntosh (1999c)]. Third, lawyers are only qualified to give advice on the provincial corporate law in their home province and the federal law, and there is little incentive for lawyers to refer corporate clients to law firms in other jurisdictions. Fourth, there is a transaction costs for registering a business extra-provincially, therefore, inter-provincial jurisdiction shopping tends to be confined to the provinces in which a corporation carries on its business. Fifth, provincial corporate jurisprudence in Canada is not free from interference at the federal level. In contrast, the state court of appeal is the highest appeal court for corporate disputes in the U.S. Relatedly, unlike U.S. state courts, provincial courts often turn to other provinces for precedents. Delaware judges, for example, have become highly specialized in corporate jurisprudence, whereas Canadian judges are relatively inexperienced in the area of corporate law. Finally, Cumming and MacIntosh (1999c) empirically demonstrate that there is an absence of the requisite degree of jurisdiction shopping for competitive corporate law production in Canada. The number of incorporations appear to be driven more by economic factors in each jurisdiction, rather than the substantive content of each jurisdiction’s corporate code.

7. Note that some of these missing building blocks for competitive corporate law production in Canada were also recognized by Daniels (1991); however, Daniels placed less emphasis on their significance.
8. It was recently suggested by Romano to the authors that this figure is now approximately 25%.
9. The cost of extra-provincial registration tends to be about half the cost of incorporation in most Canadian jurisdictions [Cumming and MacIntosh (1999c)].
The focus herein extends previous Canadian research by surveying firms that have actually reincorporated in order to ascertain the rationales for reincorporating and effect on firm value. The rationales underlying a firm's decision to reincorporate should be considered in light of the institutional barriers to interjurisdictional competition for corporate charters in Canada highlighted by Cumming and MacIntosh (1999c). The survey results are discussed in the following section.

8.2.2. The Rationales Underlying Reincorporation

8.2.2.1. Data

To ascertain the rationales underlying reincorporation, a 19 question reincorporation questionnaire was devised. The questions asked for both specific answers (i.e., to choose a, b, or c, etc.) as well as for qualitative descriptive responses. The purpose of the questionnaire was to gain an understanding of the types of businesses that are attracted to the different jurisdictions, the types of transactions that tend to lead to reincorporations, and the characteristics of the corporate laws that are important factors in attracting corporations to the different jurisdictions of incorporation.10

The incorporation questionnaire was sent to 644 firms listed on a Canadian stock exchange (the TSE, VSE, ASE, CDN, or MSE). The list of firms was obtained from the Financial Post Surveys (FPS) database on Quicklaw. The FPS database indicates the date of the firms' initial incorporation and the date and location of the latest incorporation. The location of the original jurisdiction of incorporation is not indicated on the FPS database; therefore, it was not possible to distinguish a priori between firms that reincorporated to a different jurisdiction and those that simply filed articles of continuance under the same jurisdiction. A firm may have filed an article of continuance in the same jurisdiction in two different scenarios. First, firms that were federally incorporated before 1975 prior to the changes in the Canada Business Corporations Act were required to file articles of continuance under the new CBCA. Note, however, that provincial jurisdictions did not have an analogous requirement. Second, if a firm merged with another, articles of continuance may have been filed in the same jurisdiction. For example, the one reincorporation in Quebec in the sample was a merger of two firms which were initially located in Quebec and filed articles of continuance under the same Quebec legislation.

10. Survey data on file with the authors.
As it was not possible to distinguish a priori between firms that filed articles of continuance under the same jurisdiction and firms that relocated from one jurisdiction to another, we sent the surveys to all the 644 firms that had both an initial and new incorporation date. After two mailings of the survey (June 1995 and June 1997) and follow-up phone calls, we received 69 responses from firms that actually reincorporated (and 35 responses from firms that filed articles of continuance in the same jurisdiction). Follow-up research and phone calls, however, revealed that the majority of the firms in the sample did not respond to the questionnaire because they filed articles of continuance and did not in fact reincorporate.

The original and destination jurisdictions of incorporation for the 69 firms in the sample are presented in Table 1. Table 2 indicates the location of the head offices of the reincorporating firms. Note that there are 35 reincorporations to the federal jurisdiction, 25 reincorporations to various provincial jurisdictions, and 9 reincorporations to foreign jurisdictions (6 Caribbean and 3 U.S. reincorporations). The majority of the respondents have their head offices in Ontario (26), British Columbia (18), and Alberta (11). A total of 5 respondents had their head offices located outside of Canada (Anguilla, Bermuda, Texas, California, and Western Australia).

Table 1 indicates that the majority of the reincorporations were from British Columbia (24), Alberta (17), and Ontario (14). British Columbia's corporate law reforms were in 1973, two years prior to the federal corporate law reforms in 1975. Many respondents felt that BC's statute was antiquated. This fact, coupled with other factors discussed below, explain the multitude of reincorporations from BC. Table 1 also indicates that the majority of the reincorporations were to the federal (35), Alberta (7), and Ontario (11) jurisdictions. Cumming and MacIntosh (1999c: s.III) also found econometric evidence of jurisdiction shopping on the basis of incorporation fees and the quality of corporate law in these jurisdictions. Nevertheless, as discussed below, other factors have played a role in firms' decisions to reincorporate.

8.2.2.2. The Transaction Costs and Law Shopping Hypotheses

The rationales underlying reincorporation can be broken down into two hypotheses. The first is the Law Shopping Hypothesis: corporations and their legal advisors change their jurisdiction of
incorporation strictly on the basis of the corporate law in competing jurisdictions. The second is the Transaction Costs Hypothesis: corporations and their legal advisors change their jurisdiction of incorporation strictly on the basis of the transaction costs associated with incorporating in competing jurisdictions. Note that Romano (1985: 249-261) postulates a similar transaction costs theory of reincorporation; however, her theory focuses on the fact that transactions costs are lower in Delaware, for example, because the corporate law in that state is more congenial. In contrast, the transaction costs considered here include incorporation fees, extra-provincial registration fees, taxation, legal costs, and other costs incidental to incorporating in the competing jurisdictions.  

Statistical tests of the Transaction Costs and Law Shopping Hypotheses are presented in Tables 3 through 5. The statistical tests in these tables indicate that provincial reincorporations are primarily motivated by transactions costs, whereas federal reincorporations are primarily motivated by law shopping. The survey results also indicate that law shopping has both an optic and substantive component. In other words, while some federal reincorporations were made on the basis of real expected benefits from incorporating under the federal statute, other federal reincorporations were considered simply because the firm felt that shareholders and the public at large viewed the federal statute to be superior to their original jurisdiction of incorporation even though the firm itself did not believe there existed significant differences between the two statutes.

Our analysis of the results is organized as follows. Evidence of the Transaction Costs Hypothesis is discussed in subsection (i). The Law Shopping Hypothesis is examined in subsection (ii). A summary of the results follows.

(i) The Transaction Costs Hypothesis

Table 3 presents a number of hypotheses, statistical tests, and p-values14 regarding provincial

11. In Canada, corporations must pay an extra-provincial registration fee for carrying on business in each province except the jurisdiction of incorporation. Firms incorporated federally must pay an extra-provincial registration fee in every province in which they operate.
12. In Canada, firms generally pay tax in the jurisdiction in which they operate. Tax is generally not based on the firm's jurisdiction of incorporation; however, there are a few exceptions, noted infra.
13. These "other" costs will be discussed below for the different jurisdictions in our sample.
14. A p-value is the smallest significance level at which the given sample of observations support a rejection of the null hypothesis; see Kmenta (1986).
reincorporations. The first test in Table 3 shows that more than 90% of the reincorporations to the provincial jurisdictions occurred subsequent to the change in the jurisdictions' corporate law. On the other hand, the second test in Table 3 shows that more than 80% of the reincorporations from the provincial jurisdictions occurred subsequent to the change in the jurisdictions' corporate law. There are three possible explanations for this result. First, our sample may be biased towards recent reincorporations. However, the contemporaneous correlation coefficient between the number of actual reincorporations in our survey results each year (which comprises a significant proportion of all the reincorporations, as discussed above) and the number of potential reincorporations in the FPS data each year is equal to 0.82. Second, the provincial corporate law reforms may not have met the firms' expectations or needs, thereby prompting a move to a different jurisdiction. Because the provincial corporate laws are now very similar to the federal code, this explanation is somewhat dubious. Table 3 also indicates (with a p-value of .01099) that more than 50% of provincial reincorporations do not consider the federal law to be different from the provincial statutes.

The third and most plausible explanation for the majority of reincorporations from the provincial jurisdictions occurring subsequent to the change in the jurisdictions' corporate law is that provincial reincorporations have been motivated by transaction costs. The strongest support for the conjecture that the Transaction Costs Hypothesis is applicable to the provincial reincorporations is evidenced by the fact that all provincial reincorporations were to jurisdictions in which the firms do their most business and/or where their head office was located, and not where they felt that the most suitable corporate law was found. In Canada, the transaction costs are lower not because of the congeniality of the corporate law in the competing jurisdictions, but rather because of the institutional barriers of maintaining an extra-provincial incorporation. In effect, the transactions cost rationalization of inter-provincial reincorporations is consistent with Cumming and MacIntosh's (1999c) conjecture that there exists institutional barriers to inter-provincial jurisdiction shopping in Canada. A Saskatchewan corporation, for example, is unlikely to consider reincorporating in B.C. because of extra-provincial transaction costs, among other things, associated with the extra-provincial incorporation. However, if a Saskatchewan corporation expands its business to B.C., and/or moves its head office to B.C., then the same extra-provincial transactions costs that discouraged the B.C. reincorporation may now be encouraging such a reincorporation. Indeed, with such changes in its business, it may be less costly for this firm to reincorporate in B.C. than to maintain a Saskatchewan charter.
Because inter-provincial reincorporations facilitate lower transaction costs of carrying on a business, the fact that a majority of the reincorporations went to provinces with the most economic activity (Alberta, British Columbia, and Ontario) is not a surprising result. Note that Cumming and MacIntosh (1999c: s.III) also found statistically significant econometric evidence that the total number of incorporations in each jurisdiction were significantly correlated with real GDP in virtually each jurisdiction.

Note also that provincial reincorporations were typically suggested by management and accountants and not by outside or inside legal counsel. In so far as management and accountants pay more attention to transactions costs of incorporation than legal counsel, this offers further support for the Transaction Costs Hypothesis. In contrast to inter-provincial reincorporations, federal reincorporations were typically suggested by inside or outside legal counsel (see Tables 3, 4 and 5, and the discussion of the Law Shopping Hypothesis, infra).

Those corporations that are not already federally incorporated were asked if they had ever considered reincorporating federally. Only four firms had ever considered reincorporating federally, and two of these respondents commented,

"The federal statute is a more modern statute than that in B.C. [firm reincorporated from Ontario to BC]."

"At request of the parent corporation who acquired control [firm reincorporated from Manitoba to the federal jurisdiction]."

In contrast, a firm that reincorporated from B.C. to Alberta indicated that they had never considered reincorporating federally because the firm’s directors were

"... fearful of more socialistic/communistic governmental control and regulation [!]."

Many firms, however, were apathetic to reincorporating federally. For example, the B.C. corporation that filed articles of continuance in B.C. stated:

15. Most notably is the fact that Calgary, a city of only 767,059 persons in 1996, has the head offices of 92 of The Financial Post top 750 firms (listed by 1995 revenues), whereas Toronto, a city which is roughly 5 times the size and the commercial centre of Canada, has only 118. See Nemeth (1997).
"If we had considered it, it was short lived and I never heard of it."

That the majority provincial reincorporations did not consider reincorporating federally is a statistically significant result (see Table 3; p-value is equal to 0.0000).

Respondents were also asked to indicate how the laws of the province in which they were incorporated differed from the federal statute. More than half of the provincial reincorporations did not consider the provincial statutes to be different from the federal law (Table 3). This is not a surprising result as the federal CBCA and the provincial statutes are now quite similar. Nevertheless, 12 provincial reincorporations did consider the laws in competing jurisdictions to be significantly different. One respondent commented as follows:

"Disclosure requirements while we were private [firm reincorporated from the federal jurisdiction to Ontario]."

In contrast to provincial reincorporations, most (6 of 9) foreign reincorporations did consider the foreign statute to differ markedly from the federal law and/or such factors are an important factors for not incorporating federally. One respondent indicated the differences between the Nevada and Canadian federal law as:

"Shareholder resolution/approval of significant transactions, securities legislation, financing flexibility, employee stock purchase/tax consequences [firm reincorporated from BC to Nevada]."

Respondents were asked whether they had ever considered reincorporating in the United States. Fifty-four respondents had not and 13 had considered reincorporating in the United States. Table 5 indicates that there is no statistically significant difference in the proportion of federal reincorporations and provincial reincorporations that considered reincorporating in the U.S. Some of the comments from firms that had considered reincorporating in the U.S. were as follows:

"... majority of shareholders and major business interests U.S. based [firm reincorporated from B.C. to Alberta]"

"Nevada; taxation and because the general U.S. climate for business is more friendly: in general the U.S. welcomes and promotes private enterprise; Canada deters [firm reincorporated from B.C. to Alberta]"
"Delaware; takeover defence strategy [firm filed articles of continuance in the federal jurisdiction]"

"Delaware - NASDAQ listing [firm reincorporated from BC to Alberta]."

"Wyoming because it has a treaty with BC which makes incorporation easy. By submitting an application you extend the BC jurisdiction into U.S.A. [firm reincorporated from BC to Wyoming]."

"Parent company a Pennsylvania corporation [firm reincorporated from Alberta to the federal jurisdiction]."

One of the respondents that had not considered reincorporating in the U.S. explained:

"... we have separate corporations in the U.S. but [Canada] is still our principal manufacturing location [firm reincorporated from federal jurisdiction to Ontario]."

Again, these comments generally support the Transaction Costs Hypothesis.

**Tax Consequences of Reincorporation**

The majority of the reincorporations did not consider the tax consequences of reincorporation to be significant (see Tables 3 and 4). Most of the respondents that indicated otherwise were foreign reincorporations. Some of the respondents that indicated the tax consequences were significant were as follows:

"Extremely significant -- subsidiaries -- to produce a common jurisdiction for amalgamation -- to utilize tax losses [firm reincorporated from Alberta to the federal jurisdiction]."

"Deemed disposal of Canadian property by Canadian shareholders. Capital/business loss carry-forwards of co. [firm reincorporated from BC to Nevada]."

"Barbados - international business corporation (federal treaty and favourable rates). Switzerland - favourable treaty and European business [firm reincorporated from Ontario to Barbados]."

"Elimination of future Canadian tax consequences once our international business increased in value; majority of shareholders were non-residents of Canada [firm reincorporated from an unknown jurisdiction to Bermuda]."

"Corporate group tax rates were significantly reduced [firm reincorporated from BC to Anguilla]."

One respondent that indicated the tax consequences were not significant also noted the following:
"But [the tax consequences of reincorporation] would be of significant importance were we to reincorporate to the U.S. [firm reincorporated from BC to Alberta]."

Reincorporation in Canada by itself generally does not have any implications for tax planning. That is, a corporation pays taxes on the basis of where it carries on business regardless of its jurisdiction of incorporation. Nevertheless, the tax consequences of reincorporation may come into play in two different contexts. First, if a corporation has a subsidiary with losses, the corporation can amalgamate with its subsidiary in order to utilize such losses to reduce the total taxable income of the two corporations. This scenario was evident in some of the survey responses, as indicated by some of the above quotations.

Second, there are unique tax advantages offered by the Nova Scotia corporate statute. The tax advantages of reincorporating as a Nova Scotia Unlimited Liability Corporation (N.S.U.L.C.) are available to companies doing business in both Canada and the United States. Such companies are often referred to as "Canadian hybrid entities". These entities are treated as Corporations for Canadian tax purposes, but if properly organized, can be considered as Partnerships for U.S. purposes. This is essentially the same concept as a U.S. Limited Liability Company (U.S.L.L.C.), but the entity is situated in Canada. In order to utilize the tax benefits from a N.S.U.L.C., two alternative routes may be taken. First, one could continue the operating company into Nova Scotia and amalgamate with a N.S.U.L.C. Second, one could reincorporate as a N.S.U.L.C. and acquire property in Nova Scotia. Both routes pertain to the tax benefits of reincorporating in Nova Scotia.

Section 9 of the Nova Scotia Companies Act allows for incorporation with unlimited or limited liability of its members. In particular, the memorandum of association can (1) limit liability to the amount unpaid in respect of shares; (2) limit liability to a specified amount; or (3) not limit the liability of its members. The entity must fail to meet two of the following tests to avoid being classified as a Corporation for U.S. purposes: (1) limited liability; (2) free transferability of interests; (3) centralized management; and/or (4) continuity of life. First, limited liability fails under the memorandum of association if the liability of the members is unlimited. Second, transferability of interest is deemed to be

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16. The authors owe a special thanks to Derek Cumming of Filmore & Riley, a Winnipeg law firm with approximately 60 lawyers, for indicating that there does exist tax advantages associated with reincorporation to Nova Scotia and for explaining the intricacies of the tax benefits of forming a Nova Scotia Unlimited Liability Corporation.
restricted if for unrelated shareholders transfer would require unanimous or near unanimous approval as set out in the articles or memorandum of association. The third consideration, centralized management, is usually difficult to fail. Finally, continuity of life fails if death, insanity, bankruptcy, etc., causes dissolution.

Some of the significant tax opportunities to be realized for Canadian hybrid entities are as follows. First, there is an opportunity of cross-border loss utilization. Losses of the N.S.U.L.C. would be available to members resident in the United States. Second, there are opportunities for S-Corporations. An S-Corporation cannot own 80% or more of the stock of another corporation and therefore an S-Corporation cannot have a Canadian subsidiary. An S-Corporation, however, could be a member (shareholder) of a N.S.U.L.C. Third, there is an opportunity for a "basis bump" for certain entities. An amalgamation of a Canadian operating company with a N.S.U.L.C. would be considered as a dissolution into a Partnership for U.S. purposes. This is not a tax-free event for U.S. purposes and results in a bump in basis. This can be used in planning for a move to the U.S.  

In spite of the tax advantages associated with a N.S.U.L.C., three issues are worth noting. The first is administrative: it is necessary to compute the income under both Canada and U.S. rules, using both Canadian and U.S. capital cost allowances, depreciation, etc. Second, attention must be paid to the substantial economic effect — the U.S. will look to the substance of the transaction and, therefore, transferring an existing business will require economic commitment by the U.S. resident. Third, this type of reorganization may increase the directors' and shareholders' exposure to liability above that which  

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17. In the U.S., there are S-Corporations and C-Corporations, and they are treated differently for tax purposes. An S-Corporation is a flow through entity; it is like a partnership where income (losses) are reported by the shareholders. A C-Corporation is like the Canadian concept of a corporation; a C-Corporation is a separate legal entity.

18. A numerical example of such benefits of a N.S.U.L.C. for a resident in the U.S. who owns operating entities in Canada is as follows.

<table>
<thead>
<tr>
<th>Pre Tax Income</th>
<th>Current Structure</th>
<th>N.S.U.L.C. Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Corporate tax</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Dividend to U.S. individual</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Canadian withholding tax @ 15%</td>
<td>(90)</td>
<td>(90)</td>
</tr>
<tr>
<td>U.S. Personal Tax @ 40%</td>
<td>(240)</td>
<td>N/A</td>
</tr>
<tr>
<td>U.S. Personal tax (1,000 @ 40%)</td>
<td>N/A</td>
<td>(400)</td>
</tr>
<tr>
<td>Foreign tax credit</td>
<td>90</td>
<td>400</td>
</tr>
<tr>
<td>After Tax Cash Retained</td>
<td>$360</td>
<td>$510</td>
</tr>
<tr>
<td>Effective tax rate</td>
<td>64%</td>
<td>49%</td>
</tr>
</tbody>
</table>
exists under their entity’s current structure.

In sum, whether there exists tax advantages from reincorporation is highly dependent on the characteristics of a firm’s business. A jurisdiction that offers tax advantages to one firm may not yield the same advantages to another. Moreover, the intricacies of the tax advantages of reincorporation can be quite complicated and therefore may remain unknown and unexploited by many firms.

Other Cost Considerations

Tables 3, 4, and 5 indicate that fewer than half of the federal and provincial reincorporations did not consider other costs associated with reincorporation, while more than half of the foreign reincorporations did consider other costs. Some of the respondents that did consider other costs added the following comments:

"... cost of maintaining corporate jurisdiction in BC while all management and staff - corporate head office - located in Alberta [firm reincorporated from B.C. to Alberta]"

"... it would have been considerably more expensive to become a public company with stock exchange listing from "ground up". Through a reverse takeover and subsequent reincorporation, we became a public company with a listing on the TSE at much less expense [firm reincorporated from Newfoundland to the federal jurisdiction]"

"Securities (U.S. and Canada) - stock exchange approval; legal assist.; audit costs - CDN/U.S. GAAP reconciliation; U.S. transfer agent [firm reincorporated from BC to Nevada]."

"Administration costs increased because of the federal continuance as federal annual fees and other filing costs are payable. As well, extra-provincial registration in those provinces where business is carried on is required - adding an additional layer of cost [firm reincorporated from Ontario to the federal jurisdiction]."

"Legal fees and shareholder approval costs; however, they were immaterial relative to the overall transaction costs [firm reincorporated from BC to Ontario]."

"Legal and securities commission regulations [firm reincorporated from BC to the federal jurisdiction]."

These comments indicate that there are transactions costs associated with reincorporating to all jurisdictions. It will be argued below, however, that such costs were dominated by other considerations for federal reincorporations.
In light of Transactions Costs, What Motivates the Decision to Reincorporate?

Table 6 provides a breakdown of reincorporations by the underlying transaction type. The responses were, from lowest to highest frequency, a takeover bid (6.6%), an IPO (7.9%), a change in business (7.9%), a merger where the sole reason for reincorporating was that the merged entity would be incorporated under the same statute (9.2%), a merger whereby reincorporation occurred for other reasons (9.2%), a move of the business (9.2%), additional public financing (10.5%), a move in the head office (10.5%), and other reasons (28.9%). Some of the following comments were added:

"Dealing with the Alberta Securities Commission as lead in financings is much better than dealing with the British Columbia Securities Commission [firm reincorporated from B.C. to Alberta]"

"The political climate - from a socialist to a conservative regime [firm reincorporated from B.C. to Alberta]"

"The modern corporate law in 1987 (the CBCA [Canadian Business Corporations Act]) - follow up modern legislation in Saskatchewan came a few years later [firm reincorporated from Saskatchewan to the federal jurisdiction]"

"We have not considered reincorporating the parent company in another jurisdiction but we do it with subsidiaries [for tax write-offs]. Ontario is the preferred jurisdiction mainly because it is easier to get the name. [firm reincorporated from B.C. to Ontario]"

"...constitutional law antagonism between OBCA [Ontario Business Corporations Act] and the Telecommunications Act - Regulations on Foreign Ownership... [firm reincorporated from Ontario to the federal jurisdiction]."

"Securities regulatory compliance - access to capital in Alberta [firm reincorporated from Manitoba to Alberta]."

"Continued federally primarily to facilitate a short-term vertical amalgamation pursuant to the provisions of the CBCA [Canadian Business Corporations Act] [firm reincorporated from Ontario to the federal jurisdiction]."

As before, note that these comments generally support the fact that inter-provincial reincorporations have been based on reducing transaction costs, whereas federal reincorporations have been made to seek out the best corporate law. Note, however, that the preference for the federal law seems to be based on substantive factors in some cases but also on optic factors in others, as discussed in the following section.

(ii) The Law Shopping Hypothesis
As discussed above, the *Transaction Costs Hypothesis* predicts that choice of jurisdiction of incorporation depends upon the direct transaction costs associated with incorporating in the various jurisdictions. The *Law Shopping Hypothesis*, in contrast, predicts that choice of jurisdiction depends on the quality of the corporate laws across jurisdictions.

Most federal reincorporations were considered at the suggestion of outside or inside legal counsel (see Table 4). In so far as legal counsel better understands substantive differences in the corporate laws across jurisdictions, this supports the Law Shopping Hypothesis. Note that some respondents preferred the federal jurisdiction where the provincial corporate code was antiquated. However, others preferred the federal jurisdiction simply because they felt that it is more favourably perceived by shareholders even though they believed there was no significant difference between the provincial and federal codes. There therefore appears to exist both a substantive and optic component to law shopping in Canada.

*The Optic Component of Law Shopping*

A number of hypotheses and statistical tests regarding the characteristics of federal reincorporations are presented in Tables 4 and 5. The results in Table 4 indicate, at the 5% level of significance, that most federal reincorporations have divisions, subsidiaries, property, plants, or offices in more than one Canadian jurisdiction, as well as outside Canada. Table 5 indicates that more federal reincorporations have plants, etc., in more than one province and outside Canada than provincial reincorporations (a result that is significant at the .01 level of significance). In addition, at the 10% level of significance it is possible to say that a greater proportion of federal reincorporations operate in more than one line of business than provincial reincorporations (see Table 5). In sum, the data indicate that federal reincorporations are generally more geographically dispersed and operationally diversified than provincial reincorporations. Some federal reincorporations were therefore concerned about projecting a national image, as indicated by the following comments:

"[Co name] became an international company [firm reincorporated from B.C. to the federal jurisdiction]"

"Intrinsically a federal charter is viewed more positively (this is of course a form not a substance issue) [firm reincorporated from B.C. to the federal jurisdiction]"
"I understand the corporation wished to project a "National" image at home and overseas. (firm reincorporated from Alberta to the federal jurisdiction)"

"There is very little real advantage between for example an Ontario and federal charter at the public company level other than the [public perception that] a federal charter is viewed more positively (firm reincorporated from B.C. to the federal jurisdiction)"

"We wished to operate across Canada and overseas. It seemed more appropriate to be a Canadian corporation (firm reincorporated from Alberta to the federal jurisdiction)."

Because some federal reincorporations wanted to project a national image to customers both in Canada and in foreign countries, such firms decided to reincorporate to the federal jurisdiction.

*The Substantive Component of Law Shopping*

While some federal reincorporations were considered for optic reasons, others had a more substantive law shopping component. The issue of whether there were features of the corporate law that were an important factor in attracting the respondent's firm to its jurisdiction of incorporation were addressed in the questionnaires. The responses are categorized in Table 7. Four respondents (one from the British Columbia, Alberta, Ontario and the federal jurisdiction) indicated that the quality of service provided by the corporate law administrators attracted their firm to its destination jurisdiction of incorporation.

Twelve firms indicated that significant factors were the absence of a requirement that the corporation may have a majority of Canadian directors and other residency/citizenship requirements for directors (see Table 7). The authors have discussed this issue with a number of different lawyers who also feel that this is a very significant issue. For example, a Manitoba Queen's Court lawyer indicated that Japanese companies often want to send directors to Canada to be the director of their Canadian subsidiary. If the subsidiary is federally incorporated then there cannot be a majority of foreign directors; however, if the company is a Manitoba corporation then there can be a majority of foreign directors. Note that in the survey data there were both firms that indicated the desirability of the Canadian director requirement (5 federal reincorporations), and other firms that considered it undesirable: Yukon (2), Anguilla (3), Wyoming (1), and Nevada (1).

Only 4 respondents (1 BC, 1 Alberta, and 2 Ontario) indicated that the amount of financial
disclosure was a significant factor. This is likely related to the fact that most of the firms in the sample were listed on the TSE, and are therefore subject to the continuous disclosure requirements of the Ontario Securities Commission (OSC). Nevertheless, a Manitoba Queen's Court lawyer indicated that in her experience the different requirements for filing financial statements was a significant factor on deciding where to incorporate for private corporations (all public corporations must make their financial statements publicly available). Private federal corporations are required to make their financial statements publicly available; however, private Manitoba corporations are not required (the Manitoba Business Corporations Act does require this but this part of the Act has yet to be proclaimed). In addition, a few commentators have suggested that the financial disclosure requirements are also the reason why the T. Eaton Company and the Bata Shoe Company are incorporated in Ontario and not the federal jurisdiction.

One respondent (now an Alberta corporation) suggested the financial assistance rules (e.g. regarding loans to directors or officers) were significant. Six respondents (4 federal, 1 Alberta, 1 Anguilla) indicated that the ability to conduct meetings by telephone was important. Note that the capacity of directors to convene meetings by telephone is embedded into the corporate laws of every jurisdiction except British Columbia, Nova Scotia, and Prince Edward Island [Daniels (1991: 153-154)].

Seven respondents (3 federal, 2 BC, 1 Nevada, and 1 Delaware) stated that managerial flexibility (i.e., fewer restrictions on managerial freedom to undertake transactions, formulate compensation arrangements, etc.) was also an important consideration. Note, however, that the federal CBCA has more restrictions on managerial conduct than any other provincial statute [Daniels (1991: 153-154)].

Eleven respondents said that the predictability and stability in the corporate law were important factors in attracting them to their jurisdiction of incorporation. Most of these respondents (6 of 11) are now incorporated in the federal jurisdiction; the others are all in foreign jurisdictions. It is noteworthy that not a single provincial reincorporation felt that stability in the corporate law was an important concern. Eleven respondents (5 federal, 2 Alberta, 1 Ontario, and 3 foreign) stated that the political stability and stability in the incorporating jurisdiction were also important factors.

In Canada there are 2 principal differences between corporate legislation and securities legislation [Ziegel et al. (1994: 103)]. First, corporate legislation applies to the province of incorporation; however,
securities legislation applies to corporations regardless of where the issuer incorporated. Second, rights and duties under corporate legislation are usually privately enforced. On the other hand, securities legislation typically has the assistance of a powerful watchdog, such as the Ontario Securities Commission (OSC). Nine respondents (4 federal, 1 BC, 3 Alberta, and 1 Bermuda) indicated that the degree of overlap with securities regulation was an important factor in their selection of jurisdiction of incorporation. Some of these respondents offered the following comments:

"So that we could offer shares for sale throughout Canada [firm reincorporated from Newfoundland to federal jurisdiction]"

"Dealing with the Alberta Securities Commission as lead in financings is much better than dealing with the British Columbia Securities Commission [firm reincorporated from B.C. to Alberta]."

"It may have been a requirement of securities law regulatory bodies that the company be extra-provincially registered to ensure the corporation met with applicable local governance rules [firm reincorporated from Manitoba to Alberta]."

"Compatible laws for protection of shareholders [firm reincorporated from an unknown jurisdiction to Bermuda]."

Finally, 18 respondents indicated that some other factor led their firm to its new jurisdiction of incorporation in their response to question 16. Some of the comments added are as follows:

"A number of the above items were factors (particularly (e) [the ability of directors to conduct meetings by telephone], (f) [predictability and stability in the corporate law], and (i) [the degree of overlap with securities regulation]). In principle, the Saskatchewan legislation was a bit antiquated, the company was a nation-wide operation and the new CBCA was progressive. [firm reincorporated from Saskatchewan to the federal jurisdiction]"

"Most were considered in light of becoming public company. Would not say any one item was important by itself in the overall scheme of things. [firm filed article of continuance in the federal jurisdiction]"

"Specific features of the federal corporate law were not factors in motivating the decision to [reincorporate]. In fact, there were some aspects of the federal legislation that are more onerous than the original incorporating jurisdiction legislation, thereby providing a disincentive [firm reincorporated from Ontario to the federal jurisdiction]."

"A socialist separate Parti Quebecois [firm reincorporated from Quebec to the federal jurisdiction]."

"Needed more flexibility in the structure of the Board of Directors due to international presence [firm reincorporated from BC to the Yukon]."

"Double reporting to securities commissions (BC and Quebec) [firm reincorporated from BC to the federal jurisdiction; head office is in Quebec]."
Corporate Governance and Law Shopping

What are the corporate governance characteristics of the firms that reincorporated? Most federal (Table 4) reincorporations had a shareholder with at least 10% of the voting rights, unlike provincial reincorporations (Table 3). It is interesting to note that a greater percentage of federal reincorporations had a higher percentage of outside and unrelated directors than provincial reincorporations (see Table 5); these differences were statistically significant at the 5% level of significance. While these figures provide some insight into the characteristics of the firms and their destination jurisdiction of incorporation, a more detailed analysis of the relationship between controlling shareholders, and unrelated and outside directors and the associated benefit (or cost) to the firm will be considered below in section 8.3 of the paper.

(c) Summary

The survey data indicate that transactions costs are the primary rationale for provincial reincorporations. Provincial reincorporations have been exclusively to the province in which the firm's head office is located or where the firm does most of its business. Provincial reincorporations also tend to have been suggested by management or an accountant, whereas federal reincorporations were typically suggested by legal counsel.

In contrast to provincial reincorporations, federal reincorporations tend to be motivated by law shopping. The preference for the federal legislation has both an optic and a substantive component. Some respondents felt that a federal incorporation was "more prestigious" and although they noted that they did not believe there are substantive advantages to the federal legislation, they believed that their shareholders would view federal reincorporation favourably. Federal reincorporations also tend to be

19. An unrelated director is defined as "a director who is independent of management and is free from any interest and any business or other relationship which could, or could reasonably be perceived to be, materially interfere with the director's ability to act with a view to the best interests of the corporation, other than interests and relationships arising from shareholding"; see The Report of the Toronto Stock Exchange Committee on Corporate Governance in Canada, sometimes referred to as the "Dey Report". This definition of "unrelated" directors was provided at the end of the questionnaire for the benefit of the respondents.
more geographically and operationally dispersed than provincial reincorporations, and some federal reincorporations considered reincorporation simply to project a national image. On the substantive side, the most desired aspects of the federal corporate law appear to be the requirement for Canadian directors, the ability to conduct meetings by telephone, the stability of the corporate law, and the overlap with securities regulation.

Most provincial and federal reincorporations did not consider reincorporating to the U.S. Our survey data did however contain responses from 9 foreign reincorporations (3 to the U.S. and 6 to Caribbean countries). Foreign reincorporations were driven by reasons of managerial flexibility, corporate law and political stability, and an absence of a required percentage of Canadian directors.

The following section assess the effect of reincorporation on firm value. The analysis adds to the existing empirical literature on jurisdiction shopping and firm value not simply by providing additional evidence. A more detailed look at the different transaction types discussed above is provided and statistically related to the effect on share prices. It is therefore possible to clearly distinguish value-increasing from value-decreasing reincorporation transactions.

8.3. The Effect of Reincorporation on Firm Value

In the United States where there has been significant competitive corporate law production, empirical event studies generally indicate that reincorporation makes shareholders better off [Romano (1985, 1987)]. These event studies support the "race for the top" view of the competitive model of corporate law production. There is little evidence of an agency problem whereby managers act against the interests of shareholders by reincorporating in jurisdictions that are alleged to favour managerial interests over those of shareholders.

In Canada, however, empirical evidence suggests that there has not been competitive corporate law production; rather, corporate law provisions have been adopted irrespective of their value-maximizing properties [Cumming and MacIntosh (1999c)]. As such, we do not expect share prices to consistently rise around the event of reincorporation. Through the integration of the share price and reincorporation survey data, we provide a detailed analysis of the effect of different types of reincorporation transactions
on firm value. The effect of reincorporation on firm value has never been addressed before in the Canadian context.

An event study is employed to assess whether shareholders benefit from reincorporation. The critical date in the event study is the date of announcement of intention to reincorporate from one jurisdiction to another. In this study, the "event window" is defined as the time period covering 3 days prior to the announcement of intention to reincorporate (to account for the possible leakage of information), the date of announcement, and the day after the announcement date. The "estimation window" comprises approximately the 120 period prior to reincorporation. The methodology employed herein follows that outlined by Campbell et al. (1997: c.4).

Our study uses the sample of survey respondents discussed in the previous section. In addition to the survey results to categorize the type of reincorporation transaction, rates of return data was obtained from the Daily Rates of Return File from The TSE/Western Database. While there were 69 responses in our survey data, there are only 26 firms that were suitable for the event study. The other firms were not publicly traded at the date of the reincorporation announcement (or reincorporated to facilitate an initial public offering).

The event study involves a two-step econometric estimation procedure. In this event study the "market model" was employed because there is "no good reason to use an economic model [such as the CAPM or APT] rather than a statistical model [such as the market model] in an event study" [Campbell et al. (1997: 157); see also Brown and Weinstein (1985)]. Note, however, that it may be argued that the riskiness of firms change as firms reincorporate from one jurisdiction to another. Search routines [see Goldfeld and Quandt (1972; 1973: 475-485; 1976); see also Kane and Unal (1988)], however, suggested the betas of most firms in our sample were quite stable and therefore switching-regression techniques were not warranted.

In the first step of the event study, the following "market model" was estimated:

20. This is a standard event window length for daily returns data; see generally Campbell et al. (1997: c.4).
21. The TSE/Western Database, 3rd Floor Economics, 2 First Canadian Place, Toronto, ON, M5X 1J2.
22. Copeland and Weston (1988: c.7). The specification actually requires the weights in the market portfolio (the TSE 300) to be constant over time. Studies generally suggest that this assumption does not materially affect empirical work; see Campbell et al. (1997).
(1) \[ R_i = \alpha_i + \beta^i R_{m+k} + \varepsilon_i \]

where \[ E(\varepsilon_i) = 0, \quad \text{Var}(\varepsilon_i) = \sigma^2 \]

where \( R_i \) is the return to security \( i \), \( R_{m+k} \) is the return on the market portfolio at time \( t+k \), and \( \varepsilon_i \), unknown at the beginning of time \( t \), is the abnormal return or unexpected component of the return (the residual in the regression). The residuals, \( \varepsilon_i \), are assumed to be homoscedastic, independent and identically distributed; standard tests did not reject these assumptions.\[23\]

The market model was first estimated over the estimation window to obtain the vector of parameter estimates \( \beta_k \), \( k=1,\ldots,26 \). The parameter estimates were then used to construct the vector of abnormal returns:

(2) \[ \varepsilon^* = R^* - \sigma 1 - \beta^i R_{m} = R^* - X^* \Phi^* \]

where \[ E(\varepsilon^* | X^*) = 0, \quad \text{Var}(\varepsilon^* | X^*) = V_i = I\sigma^2 + X^*+(X^*X)^{-1}X^*\sigma^2 \]

where \( \alpha \) and \( \beta \) are parameter estimates from the market model (italics are used to denote estimates), \( \Phi^*=[\sigma \beta]^t \), \( 1 \) is a vector of ones, \( I \) is the identity matrix, \( R_{m}^* = \) is the vector of market return observations, \( R^* = \) is the vector of event window returns, and \( X^* = [1 \ R_{m}^*] \). Note that the abnormal return vector is unbiased as it has an expectation of zero. The variance term is the sum of the variance from future disturbances plus the additional disturbance due to sampling error in \( \Phi^* \). The second term in the variance causes serial correlation among the error terms as discussed by Campbell et al. (1997: 159).

Under the null hypothesis (\( H_0 \)) that the event has no impact on the returns,

(3) \[ \varepsilon^* \sim N(0, V_i) \]

\[23\] Thin trading was evident with a couple of firms in the sample. We tried various methods to account for thin trading. For example, we added lagged and leading values of the market return; see Fowler et al. (1979). While the results reported herein are from the basic OLS estimation of the market model (they may be replicated without ambiguity), alternative methods generally yielded results that were not materially different. In addition, note that we ignored observations for which a firm's share price was not recorded (e.g., weekends).
The vector of abnormal returns is aggregated across all the observations to provide a vector of cumulative abnormal returns ("CARs"; that is, the sum of the \( e_i \)'s across \( t \)) for each firm from the market model in the time period comprised by the event window. Define \( \text{CAR}(\tau_1, \tau_2) \) as the cumulative abnormal return for security \( i \) from \( \tau_1 \) to \( \tau_2 \) where \( \tau_1 < \tau_1 \leq \tau_2 \leq \tau_2 \) and \( \tau_1 \) is the start date of the event window and \( \tau_2 \) is the end date. Define \( \delta \) be a vector of ones in the first \( \tau_1-T_1 \) to \( \tau_2-T_2 \) positions, and zero elsewhere. Therefore,

\[
\text{(4) } \quad \text{CAR}(\tau_1, \tau_2) = \delta' \delta
\]

\[
\text{(5) } \quad \text{Var}[\text{CAR}(\tau_1, \tau_2)] = \sigma_i^2(\tau_1, \tau_2) = \delta' V \delta
\]

\[
\text{(6) } \quad \text{CAR}(\tau_1, \tau_2) \sim \text{N}(0, \sigma_i^2(\tau_1, \tau_2))
\]

Inferences can be drawn from an aggregate cumulative abnormal return vector by using one of two approaches. The first approach gives equal weighting to the abnormal return vectors,

\[
\text{(7) } \quad \bar{\varepsilon} = (1/N) \sum_{i=1}^{N} \varepsilon_i
\]

\[
\text{(8) } \quad \text{Var}(\bar{\varepsilon}) = V = (1/N^2) \sum_{i=1}^{N} V_i
\]

where \( N \) is the number of reincorporations in the sample. The cumulative average abnormal return from \( \tau_1 \) to \( \tau_2 \) is

\[
\text{(9) } \quad \text{CAR}(\tau_1, \tau_2) = \delta' \bar{\varepsilon} = (1/N) \sum_{i=1}^{N} \text{CAR}(\tau_1, \tau_2)
\]

\[
\text{(10) } \quad \text{Var}[\text{CAR}(\tau_1, \tau_2)] = \delta' \Sigma \delta = (1/N^2) \sum_{i=1}^{N} \sigma_i^2(\tau_1, \tau_2)
\]

where \( \text{CAR}(t_1, t_2) \sim N(0, \sigma^2(t_1, t_2)) \). Using a consistent estimator of \( \sigma^2 \), \( H_0 \) is tested using

\[ J_1 = \frac{\text{CAR}(t_1, t_2)}{[\hat{\sigma}^2(t_1, t_2)]^{1/2}} \sim N(0, 1) \]

which is only asymptotically distributed as a standard normal when a consistent estimator of the variance is used.

The second approach gives equal weighting to the standardized cumulative abnormal return vectors,

\[ \text{SCAR}(t_1, t_2) = \frac{\text{CAR}(t_1, t_2)}{\sigma^2(t_1, t_2)} \]

\[ \text{SCAR}(t_1, t_2) = \left( \frac{1}{N} \right)^{1/2} \sum_{i=1}^{N} \text{SCAR}(t_1, t_2) \]

The null hypothesis \( H_0 \) is tested under this second method using

\[ J_2 = \left( \frac{N(L_i-4)}{(L_i-2)} \right)^{1/2} \frac{\text{SCAR}(t_1, t_2)}{\sigma(\text{SCAR})} \sim N(0, 1) \]

where \( L_i \) is the number of days in the estimation window.

The choice between \( J_1 \) and \( J_2 \) will depend on the power of the tests. \( J_2 \) will have a higher power if the true abnormal returns are homoscedastic across the firms in the sample. On the other hand, if the true abnormal returns are heteroscedastic then \( J_1 \) will have greater power. The sensitivity of the results to the use of \( J_1 \) and \( J_2 \) is presented below.

In addition to \( J_1 \) and \( J_2 \), we also present two non-parametric tests. The first is the sign test, which is based on the sign of the abnormal returns. The sign test is given by \( \text{[Campbell et al. (1997: 172-173)]} \):

\[ J_3 = \left( \frac{N^+}{N} - .5 \right) N^{1/2} \sim N(0, 1) \]
where $N^*$ is the number of cases where the abnormal return is positive. The second test is the rank test, which is given by [Campbell et al. (1997: 173)]:

$$J_2 = \frac{1}{N} \sum_{i=1}^{N} \left( K_0 - \frac{.5(L_2 + 1)}{s(L_2)} \right) \sim N(0,1)$$

where $s(L_2) = \left[ \frac{1}{L_2} \sum_{r=T_1+1}^{T_2} \left( \frac{1}{N} \sum_{i=1}^{N} \left( K_0 - \frac{.5(L_2 + 1)}{s(L_2)} \right) \right) \right]^{1/2}$

where $T_1$ is the start date of the event window, $L_2$ is the number of observations from $T_1 + 1$ to $T_2$, and $K_0$ is the rank of the abnormal return of security $i$ for the time period $t$.

Table 8 presents the four test statistics for all the reincorporations in the sample that were publicly traded prior to reincorporation. The results indicate that on average reincorporation has had a negative effect on firm value for firms traded on the TSE. In light of the transactions costs associated with reincorporation, this is not an altogether surprising result. However, note that only $J_2$ was statistically significant. Because the abnormal returns were not homoscedastic, the power of the $J_2$ test is quite low and $J_1$ is preferred to $J_2$. As a result, the data does not conclusively indicate that reincorporation, on average, has a statistically significant impact on firm value for TSE firms. In other words, on average there does not exist an agency problem between managers and shareholders associated with jurisdiction shopping. However, the results are not robust across the different types of reincorporation transactions, as discussed below.

While previous reincorporation event studies in the U.S. either grouped all the data [Dodd and Leftwich (1980)], or sorted the data by reincorporation type [Romano (1985: s.3.2.2)], this study goes one step further by regressing out the various transaction types. This step is the second stage of the event study. The following regression was estimated:

$$\text{CAR}_i = \alpha + \beta_1 \text{Fed} + \beta_2 \text{Prov} + \beta_3 q_1 + \beta_4 q_2 + \beta_5 q_3 + \beta_6 q_4 + \beta_7 q_5 + \beta_8 q_6 + \beta_9 q_7 + \beta_{10} q_8 + \beta_{11} q_9 + \beta_{12} q_{10} + \beta_{13} q_{11} + \beta_{14} q_{12} + \beta_{15} q_{13} + \beta_{16} q_{14} + \beta_{17} q_{15} + \beta_{18} q_{16} + \epsilon$$

where $\alpha$ and $\beta_k$, $k=1,\ldots,10$, are regression coefficients. $\text{CAR}_i$ is the cumulative abnormal return as
defined in equation (9). The \( q \) variables are dummy variables equal to 0 where the reincorporation was not associated with a particular type of transaction, and equal to 1 where the reincorporation was associated with a particular type of transaction ("q" signifies that this information was solicited in the survey questions). In particular, Fed is equal to 1 for federal reincorporations and zero otherwise; Prov is equal to 1 for provincial reincorporations, and zero otherwise; \( q_I \) is equal to 1 where the decision to reincorporate was prompted by a takeover bid; \( q_2 \) is equal to 1 for merger transactions; \( q_3 \) is equal to 1 if the reincorporation was prompted by the firm's additional public financing; \( q_4 \) is equal to 1 for changes in the type of business; \( q_5 \) is equal to 1 for changes in the location of the head office; \( q_6 \) is equal to 1 if there was a change in the place where business was carried on; \( q_7 \) is equal to 1 where the firm indicated the desirability of the absence of a Canadian director requirement; \( q_8 \) is equal to 1 where the firm indicated a preference for the ability to conduct meetings by telephone; \( q_9 \) is equal to 1 where the firm indicated a preference for the stability of the corporate law; \( q_{10} \) is equal to 1 where political stability was indicated; \( q_{11} \) is equal to 1 for firms that indicated a preference for managerial flexibility; \( q_{12} \) is equal to 1 for firms that sought an overlap with securities regulation; \( q_{13} \) is equal to 1 if the firm had a shareholder with more than 10% of the voting shares; and \( q_{14} \) contains the firms' percentage of outside directors.

As this is an exploratory econometric exercise, Schwartz and Akaike information criteria [Judge et al. (1988: c.20.4)] were used to confirm the appropriateness of the included transaction types in equation (17). 25 Note that some of the questions were omitted where there were no responses from the firms that were publicly traded at the time of reincorporation. In addition to drawing upon existing research, our null hypotheses regarding the signs of the coefficients in equation (17) are based on the Law Shopping and Transaction Costs Hypotheses, as developed above in section 8.2. The null hypotheses are outlined below.

Hypotheses Regarding Law Shopping, Transaction Costs, and Jurisdiction Choice: 26

(H1) \( \beta_1 > 0 \): overall substantive/optic legal advantages associated with federal incorporation enhance firm value;

(H2) \( \beta_2 > 0 \): overall lower transactions costs associated with provincial reincorporations enhance firm value;

25. Note that some reincorporation categories, such as foreign reincorporations, were omitted by necessity in order to avoid exact multicollinearity. The results in Tables 9 and 10 are quite robust to the specification of equation (17).

26. Importantly, given the specification in equation (2), the first three hypotheses capture residual transaction costs and law shopping effects not picked up by the other variables.
(H5) $\beta_1, \beta_2 > 0$: joint hypothesis that both federal and provincial reincorporations enhance firm value;

**Transaction Costs Hypotheses:**

(H4) $\beta_3 < 0$: reincorporations that facilitate takeover defence strategies diminish firm value when managers protect their own interests at the expense of shareholders;

(H5) $\beta_4 > 0$: mergers generate synergies and therefore enhance firm value;

(H6) $\beta_5 < 0$: reincorporation for the purpose of obtaining additional public financing dilutes the value of current shareholdings;\(^{27}\)

(H7) $\beta_6 < 0$: announcement of reincorporation to facilitate a change in the type of business signals problems with current operations, and expenses must be incurred to facilitate such a change;

(H8) $\beta_7 < 0$: announcement of reincorporation to facilitate a change in the location of head offices diminishes firm value because there will exist current expenses with unmatched and unforeseeable gains;

(H9) $\beta_8 > 0$: reincorporation to facilitate a change in the place where business is carried on will result in greater share values as a result of lower transactions costs of maintaining an extra-provincial reincorporation, and where the market expects increased demand for the firm's product;

(H10) $\beta_9, \beta_5, \\
\beta_6, \beta_7 < 0, \\
\beta_8, \beta_9 > 0$: joint hypothesis of transactions-motivated reincorporations;

**Law Shopping Hypotheses:**

(H11) $\beta_9 < 0$: reincorporation to avoid Canadian director requirements diminishes firm value;

(H12) $\beta_9 > 0$: the ability to conduct meetings by telephone will enhance firm value;

(H13) $\beta_{10} > 0$: corporate law stability enhances firm value;

(H14) $\beta_{11} > 0$: reincorporation to a political stable environment enhances firm value;

(H15) $\beta_{12} < 0$: managerial flexibility will lower firm value where managers are free to pursue their own interests at the expense of shareholders;

---

\(^{27}\) New equity results in a dilution of the benefits associated with future investment opportunities, and therefore a new public equity issue is interpreted as a signal that there are no promising future investment opportunities; see Myers and Mjeluf (1984).
\((H_{16})\) \(b_{14} > 0\): reincorporation to jurisdictions where corporate law and securities regulation overlap enhances firm value because transactions costs of compliance, among other things, are lower;

\((H_{17})\) \(b_{9}, b_{13} < 0, \ b_{10}, b_{11}, \ b_{12}, b_{14} > 0\): joint hypothesis of law-shopping reincorporations;

**Hypotheses Regarding Controlling Shareholders and Unrelated Directors:**

\((H_{18})\) \(b_{15} > 0\): controlling shareholders reincorporate for value-enhancing reasons;\(^{28}\)

\((H_{19})\) \(b_{16} < 0\): firms with a greater percentage of unrelated directors do not reincorporate for value-enhancing reasons as fewer directors have a vested interest in the stake of the firm;\(^{29}\)

\((H_{20})\) \(b_{15}, b_{16} > 0\):

- joint hypothesis that both controlling shareholders are value enhancing, but outside directors make value-diminishing decisions.

Because the residuals from OLS estimates exhibited heteroscedasticity, OLS using White’s (1980) heteroscedasticity-consistent covariance matrix (HCCME) was used to estimate equation (17). The HCCME coefficient estimates from equation (17), t-ratios and p-values are summarized in Table 9. In addition to the coefficient estimates, Bayesian inequality restrictions were utilized using a quadratic loss function and a non-informative prior (proportional to a constant) to provide additional insight into the tests of the null hypotheses (see Table 10).\(^{30}\)

The HCCME estimates provide strong support for the first three hypotheses regarding law shopping, transaction costs, and jurisdiction choice. Both federal and provincial reincorporations enhance firm value through greater law quality and lower transactions costs, respectively. The joint hypothesis \((H_3)\) in Table 10 indicates that both effects will result with 98.25% probability.

---

28. There are actually two possible competing effects. First, controlling shareholders are generally more effective monitors of managers and therefore only approve reincorporation transactions that are value increasing. Second, controlling shareholders may only approve reincorporation decisions that may facilitate their own asset stripping, which would lower firm value. For example, Morck et al. (1998) provide empirical support for the conjecture that controlling shareholders in Canada (that obtained control through inherited wealth) have objectives other than creating value.

29. Similarly, Yermack (1996) shows an inverse relation between board size and firm value.

There is some support for the particular transaction costs hypotheses (H4 through H10). Reincorporation to facilitate mergers (H4) and changes in the place where business is carried on (H5) enhanced firm value (but only the latter result is significant at the 5% level). Reincorporations inspired by a change in the type of business (H7) (signalling bad information) diminished firm value (p-value equal to 0.02550). Reincorporations that facilitated additional public financing lowered firm value, a result consistent with Myers and Majluf's (1984) theory (see H6).

There is also some support for the particular law shopping hypotheses (H11 through H17). Reincorporations for reasons of corporate law stability (H11) and political stability (H14) had a positive effect on firm value (both significant at the 5% level), whereas reincorporations for reasons of greater managerial flexibility (H13) had a negative effect (p-value equal to 0.01110). However, the test of the joint hypothesis for the law-shopping motivated reincorporations yielded a low POR of 0.41300; see Table 10.

Finally, the results provide insight into the hypotheses regarding controlling shareholders and unrelated directors. On one hand, there was a negative effect on firm value upon reincorporation among reincorporations with greater percentages of unrelated directors (H18) (p-value equal to 0.01550). On the other hand, controlling shareholders effected reincorporations that enhanced firm value (H19) (p-value equal to 0.00140). The results herein regarding controlling shareholders and unrelated directors are consistent insofar as they indicate that parties with a direct stake in the outcome of their actions are likely to make better decisions.

8.4. Conclusion

The theory, evidence and institutional structure all suggest that interprovincial reincorporations have been made on the basis of transactions costs, whereas federal reincorporations have been made on the basis of law shopping. Interprovincial reincorporations have facilitated a reduction in the transaction costs of carrying on a business after a reorganization. Federal reincorporations, on the other hand, tend to have been motivated by a preference for the federal CBCA. The survey respondents indicated that preference for the federal legislation was substantive in some cases but only optic in others.

31. The result that reincorporations for reasons of greater managerial flexibility yielded lower share prices is inconsistent
The results of the event study indicate that the effect of reincorporation on the value of Canadian corporations on average has been negligible. However, our results delineate those reincorporations that enhance firm value and those that reflect agency costs. Reincorporations due to mergers and changes in the place where business was carried on enhanced firm value, whereas reincorporations to facilitate a change in the type of business and additional public financing diluted share prices. Firm value increased where the reincorporation was brought about for corporate law and political stability, but declined where greater managerial flexibility was desired. Finally, our results indicate that controlling shareholders made value-enhancing decisions to reincorporate, but the effect of greater percentages of outside directors on the firm's board did not contribute at all to firm value in the reincorporation decision.

In contrast to the competitive charter market in the United States, institutional barriers have limited the extent of competitive corporate law production in Canada [Cumming and MacIntosh (1999c)]. In light of previous research indicating increases in share prices around reincorporation in the more competitive U.S. charter market [Romano (1985, 1987)] it is not surprising that reincorporation in Canada has not consistently had a positive effect on firm value. The absence of vigorous competition in the Canadian charter market appears to have fostered a regime in which laws are adopted irrespective of the value maximizing properties [Cumming and MacIntosh (1999c)], and reincorporation decisions are not necessarily made with a view to enhancing shareholder value.
Table 1. Reincorporations of Firms Traded on a Canadian Stock Exchange*

<table>
<thead>
<tr>
<th>Jurisdiction from ...</th>
<th>Federal</th>
<th>BC</th>
<th>AB</th>
<th>SK</th>
<th>MB</th>
<th>ON</th>
<th>PQ</th>
<th>NB</th>
<th>NFLD</th>
<th>Missouri</th>
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<td>69</td>
</tr>
</tbody>
</table>

*Source: Financial Post Surveys Database on Quicklaw.

**Original jurisdictions were not listed on the Financial Post Surveys; they were obtained from the survey data and follow-up phone calls.
Table 2. Reincorporations Classified by Location of Home Office and Destination Jurisdiction of Incorporation*

<table>
<thead>
<tr>
<th></th>
<th>BC</th>
<th>AB</th>
<th>SK</th>
<th>MB</th>
<th>ON</th>
<th>PQ</th>
<th>NB</th>
<th>NFLD</th>
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</table>

*Source: Financial Post Surveys Database on Quicklaw.
<table>
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<th>Table 3: Provincial Reincorporation Hypotheses and Their Statistical Significance</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Null Hypothesis (H₀)</th>
<th>Alternative Hypothesis (H₁)</th>
<th>Test Statistic (t)</th>
<th>P-Value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reincorporations to provinces occurred before the provinces' corporate law reform</td>
<td>More than 50% of reincorporations occurred subsequent to the change in the jurisdiction's corporate law</td>
<td>3.16228</td>
<td>0.00270</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>Reincorporations from provinces occurred before the provinces' corporate law reform</td>
<td>More than 50% of reincorporations occurred subsequent to the change in the jurisdiction's corporate law</td>
<td>3.97363</td>
<td>0.00022</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>5.27046</td>
<td>0.00001</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>5.65685</td>
<td>0.00000</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>2.44349</td>
<td>0.01099</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>6.16441</td>
<td>0.00000</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>1.14421</td>
<td>0.08507</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>13 of 25</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>22 of 25</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>11 of 25</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Provincial reincorporations were to the jurisdiction with the most suitable corporate law</td>
<td>More than 50% of firms reincorporated provincially did not</td>
<td>10 of 25</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* The test statistic for testing whether the proportion (P) is greater than or equal to some number (P₀) is given by: (P - P₀) / (P₀(1-P₀)) / (n), where n is the total number of survey responses.

** N/A indicates that the test statistic is undefined.

*** At the 5% level of significance.

Excluding British Columbia and the Yukon.
<table>
<thead>
<tr>
<th>Alternative Hypothesis (H₁)</th>
<th>Null Hypothesis (H₀)</th>
<th>(H₁) Survey Responses</th>
<th>Test Statistic</th>
<th>P-Value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 50% of firms with divisions, subsidiaries, property, plants, or offices in more than one province reincorporated to the federal jurisdiction</td>
<td>Most firms with plants (etc.) in only one province did not reincorporate federally</td>
<td>27 of 43</td>
<td>4.69042</td>
<td>0.0001</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>More than 50% of federal reincorporations have divisions, subsidiaries, property, plants, or offices in other countries</td>
<td>Federal reincorporations do not have plants (etc.) outside Canada</td>
<td>23 of 35</td>
<td>4.69042</td>
<td>0.0002</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>More than 50% of firms that operate in more than one line of business reincorporated to the federal jurisdiction</td>
<td>Firms that do not operate in more than one line of business reincorporated federally</td>
<td>9 of 21</td>
<td>N/A</td>
<td>N/A</td>
<td>Do Not</td>
</tr>
<tr>
<td>More than 50% of firms that considered reincorporating to the United States decided to in fact reincorporate federally in Canada</td>
<td>Firms that considered reincorporating to the US actually reincorporated federally</td>
<td>4 of 13</td>
<td>N/A</td>
<td>N/A</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>More than 50% of federal reincorporations were considered at the suggestion of outside or inside legal counsel</td>
<td>Federal reincorporations were suggested by management, an accountant, or investment banker</td>
<td>19 of 35</td>
<td>2.44949</td>
<td>0.00906</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>More than 50% of federal reincorporations considered the tax consequences of reincorporation to be insignificant</td>
<td>Federal reincorporations considered the tax consequences of reincorporation to be significant</td>
<td>29 of 35</td>
<td>6.78233</td>
<td>0.00000</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>More than 50% of federal reincorporations considered other costs associated with reincorporation</td>
<td>Other costs were not considered by federal reincorporations</td>
<td>12 of 35</td>
<td>N/A</td>
<td>N/A</td>
<td>Reject H₀</td>
</tr>
<tr>
<td>More than 50% of federal reincorporations have a shareholder that controls more than 10% of the firm's voting rights</td>
<td>Federal reincorporations do not have a shareholder with &gt;10% of the voting rights</td>
<td>15 of 35</td>
<td>N/A</td>
<td>N/A</td>
<td>Do Not</td>
</tr>
</tbody>
</table>

* The test statistic for testing whether the proportion (P) is greater than or equal to some number (P₀) is given by: \((P - P₀) / (P₀(1-P₀)/n)^{1/2}\) where n is the total number of survey responses, and P is the proportion of respondents with the same response to the question. See Paul Newbold, Statistics for Business and Economics, 2nd ed. (New Jersey: Prentice Hall, 1988), ch.9.

N/A indicates that the test statistic is undefined.

** At the 5% level of significance.
Table 6. Statistical significance of the differences between federal and provincial and territorial perceptions.

<table>
<thead>
<tr>
<th>Decision</th>
<th>Hypothesis (H1)</th>
<th>Federal</th>
<th>Provincial</th>
<th>Test Decision</th>
</tr>
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<tbody>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H0: The means are the same</td>
<td>The means are the same</td>
<td>0.9566</td>
<td>0.5144</td>
<td>p &gt; 0.05</td>
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<tr>
<td>H1: The means are different</td>
<td>The means are different</td>
<td>0.0269</td>
<td>0.2478</td>
<td>p &lt; 0.05</td>
</tr>
</tbody>
</table>

The test statistic for the equality of means (H0) is given by: 
\[ t = \frac{\bar{x}_1 - \bar{x}_2}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \]

where \( \bar{x}_1 \) and \( \bar{x}_2 \) are the means of the samples, \( n_1 \) and \( n_2 \) are the sample sizes, and \( s_p \) is the pooled standard deviation.

The null hypothesis is rejected if the p-value is less than the significance level (e.g., 0.05).
<table>
<thead>
<tr>
<th>Jurisdiction to ...</th>
<th>Takeover Bid</th>
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<th>Merger - Same Statute</th>
<th>Merger - Other Reasons</th>
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<th>Additional Pub. Financing</th>
<th>Change in Business</th>
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*Source: Financial Post Surveys Database on Quicklaw.

**Does not sum to 69 because some respondents indicated more than one reason for reincorporation.
Table 7: Reincorporations Classified by Important Corporate Law Features and Destination Jurisdiction of Incorporation.

<table>
<thead>
<tr>
<th>Quality of Service</th>
<th>BC</th>
<th>AB</th>
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<th>NL/NT</th>
<th>YK/YT</th>
<th>Alberta</th>
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<th>Newfoundland</th>
<th>Prince Edward</th>
<th>Quebec</th>
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<th>Financial</th>
<th>Meetings</th>
<th>Stability</th>
<th>Political</th>
<th>Flexibility</th>
<th>Other</th>
<th>Total</th>
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<table>
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<td>Total</td>
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*Source: Financial Post Survey Database on Quicklaw.

**Does not sum to 69 because some respondents indicated more than one important corporate law feature.
<table>
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<tr>
<th>Statistical Test</th>
<th>Test Statistic</th>
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<td>CAR Test: $J_1$</td>
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<td>SCAR Test: $J_2$</td>
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<td>Sign Test: $J_3$</td>
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<td>Rank Test: $J_4$</td>
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<td>Coefficient</td>
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<td>Additional Public Financing</td>
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<td>Change in Type of Business</td>
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<td>Change in Place where Business Carried On</td>
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<tr>
<td>Managerial Flexibility</td>
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<tr>
<td>Overlap with Securities Regulation</td>
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<tr>
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<tr>
<td>Hypothesis on Coefficient(s)</td>
<td>Probability Restriction is True</td>
<td>Numerical Standard Error</td>
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Bibliography


Economic Council of Canada. Intervention and Efficiency (Ottawa, 1982).


Gelfand, B.Z. (1933). Regulation of Financial Institutions (Toronto: Carswell).


