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Entrepreneurial Equity Financing and Securities Regulation: An Empirical Analysis

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An Empirical Analysis[*]

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Résumé / *Abstract*

La réglementation des valeurs mobilières interdit généralement l'accès au marché boursier des entreprises en démarrage, afin de protéger les investisseurs. Des universitaires et les organismes de réglementation prétendent que des règles strictes et des exigences fortes sont nécessaires pour éviter l'échec du marché. Toutefois, ces contraintes peuvent limiter de façon exagérée les possibilités de croissance des entreprises émergentes. Nous exploitons la situation très particulière du Canada pour étudier l'effet du relâchement des contraintes réglementaires. Dans ce pays, les entreprises émergentes peuvent entrer en Bourse au moyen de prises de contrôle inverses, alors qu'elles ne rapportent pas de revenus et présentent une capitalisation minime. Elles peuvent même échapper à l'obligation de préparer un prospectus. Cette situation permet d'étudier des entrepreneurs inscrits sur un marché public d'actions. La qualité des entreprises, de même que leur performance après l'accès en Bourse et leur stratégie indiquent qu'il semble nécessaire de maintenir des exigences élevées. Leur relâchement ne semble pas correspondre à l'accès en Bourse d'entreprises de qualité orientées vers la croissance et le succès.

Mots clé : réglementation des valeurs mobilières, entrepreneurs, entreprises émergentes, émissions d'actions, prise de contrôle inversée, politique publique.

Securities regulation generally restrains entrepreneurial ventures from entering the stock market, to protect investors. Scholars and regulators contend that strong rules and requirements for listing are essential to prevent the stock market from failing. However, these constraints can also unduly impede the growth of new ventures. We use the exceptional case of Canada to examine the effects of the relaxation of regulatory constraints. In this country, firms can use the reverse takeover technique to list at a very early stage, without revenues, with a minimal size and even without writing a prospectus. This situation provides a unique opportunity to examine entrepreneurial ventures listed on a public market. The quality of firms, along with their post-listing operating performance and strategy, fate and market returns largely reinforce the view that strong listing requirements are essential. Easing these constraints does not seem to lead many good firms to growth and success.

Keywords: securities regulation, entrepreneurial ventures, equity financing, reverse takeover, public policy.

Codes JEL: G30, G32, L21, O16.

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INTRODUCTION

As underlined by Denis (2004), a large proportion of the research in entrepreneurial finance has examined companies financed by venture capitalists, even if these companies account for a trivial fraction of the market. Literature related to business angels supplements this analysis of the sources of equity for entrepreneurs (Mason, 2006). With the exception of Stoll (1984), very few papers have examined the third form of equity finance, provided by the stock market. This is because, in most countries, entrepreneurial ventures are simply unable to access this market. The stock exchanges generally set minimum requirements that prevent an emerging business from listing. The securities regulations usually require firms to produce a prospectus, a long and costly process that makes it difficult for small businesses to launch the initial public offering (IPO) needed to enter the stock market. However, Canada is a notable exception. We exploit the very particular situation that prevails in this country, where new ventures access the stock market at a pre-revenues stage, with a tiny capitalization of a few hundred Canadian dollars, and without being required to comply with the conventional IPO process. Indeed, new ventures can list using a "backdoor listing" method, namely a reverse takeover (RTO), whereby through private placement they obtain sums of money that are less than half a million Canadian dollars, amounts generally associated with the angel market (Sohl, 1999).

Whereas it is generally acknowledged that securities laws have an enormous impact on the ability of start-up companies to obtain equity finance, there is sparse empirical evidence of the real effects of regulatory constraints. As Cohn (1999 p. 365) notes, *statistical evidence does not exist regarding the extent to which small and developing companies have been impeded by federal and state securities laws from raising capital in a timely and sufficient manner*. Finding the right balance between investor protection and the financing of new ventures appears to be a worldwide concern (Friedman and Grose, 2006). In this paper, we analyze two opposing perspectives on the effect of securities regulation on entrepreneurial finance.

Numerous papers, summarized by Beck and Demirguc-Kunt (2006), evidence that access to finance is an important growth constraint for SMEs. Equity finance is generally associated with success of new ventures (Shane, 2003), whereas access to the public market is often considered a sign of the relaxation of the financing constraints faced by small businesses (Kim, 1999). As access to public equity is limited by securities regulation, entrepreneurs appear to be unduly constrained in their

abilities to develop their business. Several researchers call for an easing of the rules governing access of small business to the public market (Cohn, 1999; Moller, 2000). As this access is also crucial for private equity investors' and venture capitalists' exits, several authors advocate the creation of a 'small cap' market in Europe (Chiu, 2004; Maula and Murray, 2006). This implies easing the listing requirements that restrict the listing of small new firms. This vision is also largely present among practitioners and politicians. The president of the U.S. Congress sub-committee opened the hearings on the Securities and Exchange Commission's role in capital formation[1] by stating: *I am greatly distressed by the concerns that fundamental regulatory obstacles are inhibiting the flow of capital to and investor participation in the small and middle market business sector.* In the same vein, Huffman (2000, p.307) argues that *the past century of regulation has significantly disadvantaged small and emerging business relative to big and established business, resulting in significant losses in innovation and economic productivity.* In this paper, we use the term "entrepreneurial perspective" to designate the proposition that the growth of emerging business is unduly restrained by the securities regulation.

Eminent researchers in the fields of law and economics propose an opposite point of view, which has largely influenced regulators in the U.S. These authors consider that strong regulation, mainly surrounding IPOs, is a prerequisite to the establishment of a sound equity market and to a decrease in the cost of equity (Black, 2001; La Porta et al., 2006). Further, security issuance is subject to the "promoter problem," whereby entrepreneurs sell bad securities to the public (Mahoney, 1995). Regulation and disclosure, together with rigorous listing requirements, are thus essential components of the securities market. Indeed, the U.S. regulation appears to have been largely influenced by this perspective. The listing of firms issuing stocks with low nominal values (penny stocks) has been strongly reduced. The methods allowing firms to bypass the IPO process are generally associated with fraud, and are currently strictly regulated.

In this paper, we examine which of these perspectives prevails, using a particular context of very low regulatory requirements. According to the entrepreneurial perspective, allowing new ventures to access the stock market easily, and at a low cost, fosters the development of these firms. However under the regulators' perspective, such a market tends to become a "lemon" market,[2] because of the minimal disclosure and listing requirements. We also propose one of the first papers to analyze the financing of entrepreneurial ventures through the stock market. The literature relative

to penny stock IPOs and backdoor listing is indeed limited to a few papers that study "small firms" that cannot be considered as entrepreneurial ventures.[3] Our sample of RTOs, spanning two decades, is much larger than those of previous studies. We also contribute to the debate surrounding the nature of the equity gap. The observation of firms that do not face significant constraints to access a stock market can indeed indicate the extent to which the equity financing problem reported in several reports is due to a lack of investment readiness (Mason and Harrison, 2001; 2002) or to other demand side effects (Howorth, 2001).

The remainder of the paper is structured as follows: Section 1 discusses the specific features of the Canadian stock market and the RTO process. Section 2 describes the two perspectives on regulation and entrepreneurial finance and states our propositions. Section 3 presents data sources and stylized facts. The two propositions are juxtaposed with the operational dimension of the RTO process in Section 4, and with the fate of resulting companies in Section 5. We discuss the methodology of measuring market performance and our results in Section 6. Section 7 concludes the paper.

1 THE CANADIAN LISTING REQUIREMENTS AND THE RTO PROCESS

The Canadian stock exchange applies very lax initial listing requirements. For a listing on TSX Venture exchange (TSXV), a firm must have a stock price over CAN$0.15 and post-IPO net tangible assets and market capitalization higher than CAN$500,000. The TSXV has no requirements relative to issuers' profitability. As a result, the pre-listing median shareholders' equity of newly listed companies from 1986 to 2006 is CAN$260,000, and more than 80% of firms report negative earnings (Carpentier *et al.*, 2009). Entrepreneurial ventures can enter the Canadian stock market, although they cannot reach the other junior markets.[4] Moreover, on these markets, it is difficult for firms to circumvent the prospectus requirement and the significant associated costs (Stoll, 1984).

An RTO listing includes a merger between a public shell company, which is generally inactive, and an operating privately held firm. Figure 1 illustrates that the shell generally has a very low market value: CAN$100,000, comprised of 500,000 shares priced at CAN$0.20. Operating closed firms seeking listing usually have a higher value: for example 500,000 shares priced at CAN$1. The resulting firm, named here Result inc., comes from the merger of the two former firms, which entails an exchange of shares. Because of the difference in value between the shell and the operating firm, the shareholders of the private operating firm acquire the majority of the shares of

the resulting entity. This transaction is called an RTO because the shareholders of the private firm ultimately control the public firm. RTO listings are exempt from filing a prospectus and need not comply with the registration requirements prevailing for IPOs. During an RTO, the firm cannot issue equity publicly, because these transactions are not considered public offerings. The new venture gets the cash available in the shell, and often issues a private placement.[5] As a result, the private firm becomes public by buying the shell while circumventing the need to file a prospectus, sell new shares to the public or meet the minimum listing requirements.[6] "Classic" shells are once active companies that failed to develop and ceased or strongly reduced their activities, but have kept their status of public firm. "Manufactured" shells are created specifically from zero, using the Capital Pool Program (Carpentier and Suret, 2006). We restricted this study to the analysis of transactions involving classic shells, for the sake of generality: the CPC program, which involves very small amounts of cash, is specific to Canada, while classic shells can be found in other countries.[7]

Insert Figure 1 about here

According to the firms specializing in RTOs, the primary benefits of going public this way are mainly the significantly lower costs and less time required for an RTO than for an IPO.[8] Gleason *et al.* (2005) estimate that IPOs take a minimum of 6 months while RTOs take between 1 and 3 months, and that RTOs involve substantially lower costs than IPOs.[9]

2 THE TWO PERSPECTIVES ON SECURITIES REGULATION AND ENTREPRENEURIAL FINANCE

The entrepreneurial process is generally defined as a process leading to new firm creation and development, and entails recognizing the value of opportunities, collecting resources and exploiting them for economic success (Shane and Venkataraman, 2000; Shane, 2003). For most authors in this field, the economic motivation of the entrepreneur can be satisfied only by the development of a new venture. The literature thus provides a positive perspective of the entrepreneur, even if it acknowledges that the acquisition of external resources can be impeded by opportunism, excessive risk taking and adverse selection (Shane, p.165). In contrast, the regulators' perspective rests on a less positive view of the entrepreneur. This perspective insists on the promoter's willingness to exploit the asymmetry of information with the objective of transferring wealth from outside investors. For this reason, the regulators impose strict requirements for gaining access to the public

market and consider that the financing of emerging businesses should be assumed by specialized investors.

2.1 THE ENTREPRENEURIAL PERSPECTIVE

Emerging companies, particularly those that are new-technology based, are generally considered to be financially constrained. The relevant literature, summarized by Beck and Demirguc-Kunt (2006) relies principally on surveys like that of Westhead and Storey (1997). This constraint is assumed to have negative economic consequences. Carpenter and Petersen (2002, p.307), among others, evidence that the growth of most small firms is constrained by the availability of internal finance while *the small fraction of firms that make heavy use of new share issues exhibit growth rates far above what can be supported by internal finance*. The availability of external funding is thus a crucial determinant for economic development (Becchetti and Trovato, 2002), survival, growth and profitability of entrepreneurial ventures.[10]

To fill the assumed equity gap for emerging businesses, countries have implemented a large set of public programs generally intended to build a strong venture capital industry. However, venture capitalists finance only a very small proportion of the projects they analyze and usually limit their actions to a few high-growth segments of the industry. Countries have consequently attempted to fill this gap by putting in place specialized stock markets or specific segments of the main markets. However, even on the junior markets dedicated to emerging companies, accessing a stock market through a conventional IPO is a long and costly process. Moreover, the exchanges' minimum listing requirements constitute a formidable barrier for new companies in most developed markets. Indeed, Shane (2003) uses the achievement of an IPO as a measure of entrepreneurial performance.

Several authors contend that the securities regulation should be changed to ease the financing of emerging businesses. Chiu (2004) concludes that *Europe should consider the modification of its one-size-fits-all mandatory disclosure rules in securities regulation and adopt a tiered disclosure regime based on issue size (...) in order to facilitate small business access to the public equity markets.* Cohn (1999) illustrates this opinion by citing the many rules that the Wright Brothers would have had to follow had they attempted to start their business in the '90s in the U.S., and concludes that they would probably not have *gotten off the ground* because of the complexity and the weight of the securities regulations. The reasoning of the authors that propose a lax regulatory regime to promote small business' access to the stock market can be summarized as follows. First,

there are negative economic consequences to the financing constraints faced by emerging businesses. Second, the stock market is a source of equity finance, with lower limitations and costs than the venture capital sources. Moreover, as Cohn (1999) asserts, the equity provided by a stock exchange is permanent, while venture capital is provided only for a limited period of time. Accordingly, relaxing the rules that limit access to the exchange should have positive economic impacts.

This reasoning offers a rationale for the promotion of backdoor listings examined in this study. First, this listing method offsets the high costs of entering the market and requires less time and effort from management. Second, an RTO allows firms that do not meet the minimum listing requirements to list. Third, an RTO can be integrated in a financing strategy. After the RTO, the stock trading allows a price to be set by the market, before any public placement. In the U.K., a number of firms list without issuing equity and then do so shortly thereafter. Derrien and Kecskes (2007) argue that this two-stage offering strategy is less costly than an IPO because trading reduces the valuation uncertainty of these firms before they issue equity.

The proposition deriving from the entrepreneur's perspective on securities regulation is as follows. Proposition 1: The easing of the listing and disclosure requirements allows unduly constrained firms to obtain equity finance. The firms using an RTO to list (RTO firms) should exhibit, on average, the following characteristics:

     a) Sound financial characteristics at the listing time

     b) Improvement in operating performance

     c) High survival rate

     d) Significant post-listing financing activity

     e) Fair rate of return to investors

A totally opposite perspective is put forth by the authors that acknowledge the significance of the problems implicit in the large asymmetry of information prevailing between new ventures' owners and outside investors.

2.2 THE REGULATORS' PERSPECTIVE

A critical barrier that stands between issuers of common shares and public investors is asymmetric information. The superior knowledge that the entrepreneur has about the firm creates a possibility for opportunistic behavior that puts the investor's money at risk. The informational disadvantage of

outside investors is particularly severe in the case of young innovative firms. The agency problem is most acute in the context of a newly formed firm selling shares to the public for the first time. According to Mahoney (1995) the promoter may wish to channel the profit-making opportunities identified. This creates the "promoter problem."

Black (2001) advances that *securities markets are a vivid example of a market for lemons. This lemon problem is especially serious for small companies and companies that are selling shares to the public for the first time because the asymmetry of information is large at this time*. For these reasons, Black argues that there are two essential prerequisites for strong public securities markets: good information about the value of a firm's business; and confidence that the firm's insiders will not cheat investors out of most or all of the value of their investment. Failure to implement such conditions produces a "lemon" equilibrium, where honest companies cannot issue shares because they are set at a low price that reflects the investors' inability to separate good from bad prospects. For Black, if the regulatory requirements are not strong enough, entrepreneurs and other insiders involved in the venture will have an incentive to exploit the investors' confidence. Dishonest entrepreneurs will become dominant, because they can sell stocks above their true but unknown value. Without the implementation of sound listing requirements, disclosure rules and the involvement of reputable intermediaries, the market will lead to a lemon equilibrium where only firms of poor quality list. As Klausner and Litvak (2001 p.55) concludes, *the anticipation of the lemons dynamic prevents the formation of a market for entrepreneurial finance from the outset*. If, as Mason and Harrison (2002) maintain, there is a shortage of "investment ready" new ventures, the proportion of new listed companies of good quality will be particularly low, and the promoter problem will be more acute. In the U.S., the regulatory actions have been largely influenced by this second perspective. In line with Black's argumentation, our second proposition is as follows.

Proposition 2: the market of RTO firms will attract mainly firms of poor quality that deliver a low rate of return. Managers will attempt to list for motivations other than developing their business. More specifically, we expect to observe, if the proposition is true:

      a) Poor financial characteristics at the listing time

      b) No improvement in operating performance

      c) Low survival rate

      d) Little post-listing financing activity

      e) An abnormally low rate of return to investors

2.3 PREVIOUS STUDIES

The academic literature on RTO is limited to a few papers that study the U.S. market. Gleason *et al*. (2005) conducted an explanatory study of 121 RTOs, largely concentrated during the technology bubble. They focus on the operational characteristics and effects of the RTO announcements on the stock market. The resulting companies report median assets (capitalization) of US$24.49 million ($33.10 million) but negative and decreasing returns on assets (ROA) and returns on equity (ROE). Over fifty percent (53.7%) of RTO listed companies disappear in the two years following the listing. For Gleason *et al*., RTOs generally involve lower quality firms. In a second paper based on the same sample, Gleason *et al*. (2006) provide estimations of the long-run stock returns following RTOs and compare these listings with self-underwritten IPOs. The authors find that when they go public, firms that use alternative mechanisms tend to be less profitable than contemporaneous IPO firms of comparable size in the same sector. Two years after going public, they have significantly increased debt, and experience declines in profitability and balance sheet liquidity. Adjei *et al*. (2007) show that RTO users are smaller, younger and have poorer average performance than IPO users. Forty-two percent of firms resulting from RTOs are delisted within three years. Interestingly, only 1.4% of their RTO sample does not meet the initial listing requirements of any of the exchange standards. They conclude that the inability to list is not a driving force in choosing an RTO.

A related field of research is devoted to the junior markets, whose lenient listing requirements allow younger companies to list. These markets are generally deemed failures (Giudici and Roosenboom, 2004). Locke and Gupta (2008, p.89) analyze the recently created New Zealand Alternative Exchange, and discover that the *returns on the portfolio of entrepreneurial companies appear to be less than those for other small companies and for the market overall*. This result is consistent with the regulator perspective we present above. However, most of the previous literature does not deal with true entrepreneurial ventures.

3 DATA AND SAMPLE DESCRIPTION

3.1 SOURCES

RTO listings in Canada are not available in any database. To construct an accurate list of RTOs associated with new listings, we used four sources. The first is the RTO section of the monthly reviews of TSXV, available since 2001. Second, to detect the RTOs prior to 2001, we first use a

key word search programmed on all the fields of the accounting database (Thomson's CanCorp Financials). We then analyzed each of the mentions of reverse merger, reverse takeover and associated terms to determine the cases where this operation was indeed associated with a new listing. Third, we scanned the stock market database (Datastream) to track the typical pattern of shells involved in an RTO: a penny stock increases sharply in value for a few months before a trade suspension, and trading generally restarts under a new symbol. The fourth step entailed scanning the Canadian business newspaper databases (via Factiva and Eureka.cc) to identify all mentions of reverse merger or reverse takeover. We cross-checked these four methods of detection, and we ascertained that the detected cases indeed consist of RTOs associated with new listings. We detected a total of 892 RTO new listings from 1988 to 2006, for which we identify the shell, the entrant and the resulting companies, using SEDAR[11] and several Internet search tools. We extracted the accounting data from successive versions of Thomson's Cancorp Financials and from SEDAR. We obtained this information for 75.34% of the shells and 68.27% of the resulting companies. Accounting data and date of first incorporation related to the entrant companies are generally unavailable because of the private status of the firms before the merger, but the analysis of all the proxies transmitted to the shell shareholders provides sufficient information in 283 cases (31.73%).

Several RTO firms make a private placement several weeks or months after the listing. The new placements were tracked in SEDAR or in the Financial Post databases of new issues, the press releases, the Management Proxy Circular and the financial statements. We also collected the information related to the financing activity of the newly listed companies from the FPinfomart.ca database, including private placements and public offerings, from the RTO to the end of 2006. We carefully analyzed two series of returns for each RTO. The first series is composed of the returns of the shell and the second includes those of the resulting firm. When a series of returns ceases before the end of our period of analysis, we investigate the causes and circumstances of this delisting. We analyze each transaction to determine the acquisition price or, in case of exchange of stocks, the value of the shares obtained by the former shareholders.

3.2 **SAMPLE DESCRIPTION**

RTOs constitute approximately 50% of conventional new listings in Canada,[12] with an average frequency of 47 per year from 1988 to 2006. Resulting firms generally do not obtain significant amounts of cash from investors at the listing time. The median gross proceeds of the private

placements surrounding the listing are CAN$0.75 million, and 31.61% of the resulting firms do not raise any funds. However, the proceeds increase during our analysis period, from CAN$450,000 at the beginning of the '90s to CAN$2.10 million between 2001 and 2006. The proportion of RTOs without financing fell sharply, from 71.24% in the 1980s to 5.49% at the beginning of the 21st century (Table 1). This pattern is probably associated with the sharp increase in resource prices since 2000, because most of the RTO users are resource-based firms. RTOs are concentrated in a few sectors: oil and gas (16.4%), minerals (25.7%), technologies (17.5%) and services (19.7%). Since 2001, the first three sectors have represented 79.2% of Canadian RTOs.

In Table 2, we refine the analysis of fundraising around RTOs. Only a small proportion of the resulting firms (16.14%) raised amounts higher than CAN$5 million. The proportion of RTOs actually associated with the financing of significant growth opportunities is very low. The median gross proceeds are lower than CAN$1 million. We detect two very large placements of more than CAN$100 million. Except for a very small minority, users of the RTO listing method generally do not have significant investment projects to finance, even if they seek external funding.

Insert Tables 1 and 2 about here

4 THE OPERATIONAL DIMENSION

Analyzing the operational performance surrounding RTOs is a challenging task because of the involvement of three entities: the shell, the entrant and the resulting firms.

4.1 BEFORE THE RTO

Table 3 (Panel A) shows that shell are micro-capitalization firms with median total assets (shareholders' equity) of CAN$0.36 million (CAN$0.14 million). Non-operating firms represent 67.26% of the sample. The majority of shell report losses. Approximately one quarter of the shells report revenues but negative earnings. A small proportion (7.89%) of shells is active and profitable, with a median ROE of 14.13%. They report median total assets of CAN$1.65 million and median shareholders' equity of less than CAN$1 million.

Panel B of Table 3 reports the characteristics of the entrant firms, the entrepreneurial ventures. They are very small firms with median assets (shareholders' equity) of CAN$1.27 million ($0.35 million). We can group these firms into three categories. Forty percent of entrant firms report no revenues and significant annual losses of CAN$0.16 million. The median loss represents more than

50% of shareholders' equity, and their life expectancy without a cash injection can be expressed in months. A second group (36% of the sample) reports both revenues and losses. For this group, total assets are higher than in the first category (median of CAN$1.94 million), but shareholders' equity is merely CAN$0.26 million. Their median loss is CAN$0.62 million, and the life expectancy of these firms is also very short. Less than a quarter of entrant firms are profitable, although they are micro-capitalization firms with median assets (shareholders' equity) of CAN$2.83 million ($0.63 million). The fairly high median ROE of 19.75% is very likely explained by the small size of equity. Statistics Canada defines an SME as any business establishment with 0 to 499 employees and less than CAN$50 million in revenues. We estimate that approximately 2% of private firms using RTOs in Canada are not SME in the strict sense. The majority of RTO firms can be considered entrepreneurial ventures.[13]

Table 4 describes the adjusted ROA and ROE, estimated as follows. First, we purged the Canadian universe of firms included in the CanCorp Financials database, by omitting RTO firms for the three years following the listing. From this sample, we then estimated the median of the ratio for six size groups (estimated by the book value of equity) and by sector (2 SIC digits). The abnormal performance of a firm is estimated by its raw return minus the median ratio of its size and sector matching group. To calculate the raw return, we used the data of the entrant firms, and when this data was not available, we use the data of the resulting firm for the first year ended after the RTO. Table 4 shows that the operating firms involved in RTOs perform significantly poorly (estimated by ROE and ROA) than their industry and size peers.

We observe a paradox: most of the entrant firms report no earnings, and several of them are still in the development stage and report no revenues. They appear strongly financially constrained, and the tiny capitalization of the shell cannot supply enough funds for enduring operations. Nonetheless, only a small proportion of newly listed firms issue significant gross proceeds around the listing time. The private placements issued by RTO firms do not contribute to establishing a liquid market for the stock that can reduce the cost of equity and ease subsequent offerings. These observations, added to the extremely poor operating performance of the majority of the entrant firms, are consistent with part a of proposition 2, namely that RTO firms can be considered low quality firms.

Insert Tables 3 and 4 about here

4.2 POST-LISTING OPERATIONAL PERFORMANCE

In Table 5, we report the operational characteristics of the resulting firms for the three years following the RTO. For comparison purposes, we also report the corresponding values for the entrant firms before the listing, adjusted for the main characteristics of the shell. As several shells are active firms, we add the data for the shell to those of the corresponding entrant firm to provide a valid base of comparison with the resulting firm. Even after the merger between the shell and the private firm, the firms resulting from RTOs are still micro-capitalization firms. Their median shareholders' equity is CAN$1.83 million. In addition, these firms are poor performers: the proportion of negative earnings is 80.30% after the RTO, and 33.66% of the newly listed firms report no revenues. The median ROE is -20.12%.

Operating performance fails to improve after the listing. Because several firms disappear in the first few years following the RTO, we report the post-RTO operating performance indicators for the whole sample and for a constant sample composed of the surviving firms for which accounting data are available in times 0 and 3. We also test for differences between the distributions of continuous variables using the Wilcoxon rank test and between the proportions (for the dummy variables) using a Z test. For the whole sample, median revenues increase significantly whereas the proportion of firms reporting no revenues increases slightly, from 33.66% to 34.47%, three years later. This change is not significant. The proportion of negative earnings decreases, but this change is not significant either. It is worth noting that at the end of the third complete financial year following the RTO, 78.42% of firms report negative earnings. The newly listed firms also fail to increase their capitalization: after rising slightly, the median shareholders' equity returns to the post-RTO level three years later (CAN$1.88 million vs. $1.83 million) and the two distributions do not differ significantly. The median ROE and margin are less negative at year three than at year 0. Globally, the results obtained on the constant sample are very similar to those observed for the whole sample. Even the survivors fail to significantly increase their earnings, and the proportions of firms without revenues or earnings are the same after three years as at the time of the RTO. These observations are consistent with part b of proposition 2: the post-RTO operating performance is low, and the RTO firms exhibit a minimal growth rate.

Insert Table 5 about here

5 SURVIVAL AND SUCCESS

5.1 THE FATE OF RESULTING FIRMS

We considered as non-surviving (failures) the firms whose stocks were delisted by the exchange, along with failed firms that are not yet delisted and those whose stocks are traded only over the counter. We also extended the analysis of the delisting by detecting and correctly classifying the "living dead" firms. Generally, stock exchanges delist firms whose stocks do not satisfy minimum ongoing requirements based on price, capitalization or volume. During the years covered by our analysis, firms that fell below TSXV's ongoing listing standards were designated inactive and given 18 months to meet the standards or be delisted. However, the delisting is not systematic. To align our delisting definition with previous studies, we consider as a failure any stock that maintains a price lower than CAN$0.10 for seven consecutive months. We use the 10-cent limit because Canadian IPO prices are, on average, one tenth of prices in the U.S.

Several acquisitions appear to be profitable for the investors, whereas others are clear failures, mainly after the burst of the technology bubble. When a merger is mentioned, we assume that the merged firm is a continuation of the resulting firm. The status is then one of a merged firm. In the case of acquisitions, we collected the acquisition prices per share (including the value of share exchanges) and qualified as failures the cases where the acquisition price is lower than CAN$0.10, in line with our definition of living dead in non-merger situations. The opportunity to graduate is pivotal to the promotion of actions organized by the TSXV to attract new listings. Consistent with the TSXV, we consider that a resulting firm succeeds when it "graduates" to the main exchange, the TSX, or a foreign exchange.

Table 6 reports the status of resulting firms 10 years (Panel A) or 5 years (Panel B) after the RTO, by cohort. After five years, only 66.62% of RTO firms are still present on the exchange, and the proportions of failures and successes are 33.38% and 4.23%, respectively. We can compare this failure rate with the rate found for IPO listings. In the U.S., Demers and Joos (2007) report a 5-year failure rate of 16.7%. In Canada, Carpentier and Suret (2008) find a non-surviving rate of 11.60% after 5 years. Espenlaub *et al.* (2008) report a delisting rate of 21.68% after two years on the AIM.

After 10 years, 57.63% of RTO firms can be considered failures. A slight proportion of 6.14% of newly listed firms migrate toward the main exchange. Fama and French (2004) show that the 10-

year delisting rate of their sample of small U.S. IPOs is 40.5%. Carpentier and Suret (2008) report a non-surviving rate of 28.29% after 10 years. In Canada, RTO listings have produced nine failures per success. The probability of survival of RTO firms is low, which is consistent with part c of our second proposition. However, we cannot provide statistical tests because the estimation methods and the time of estimation are not the same among the various studies.

Insert Table 6 about here

5.2 FINANCING STRATEGY

Table 7 summarizes the financing activity of RTO firms. If using an RTO is part of a financing strategy, we should observe that these firms launch seasoned equity offerings (SEO) after the market has set a price for their stocks. A large proportion of the firms analyzed had no financing activities following the listing, while 44.26% of the firms issue neither private nor public equity. The reasons such firms list are unclear, but they definitely do not list to finance their growth. A proportion of 32.79% of the firms issue private placements exclusively. In this case as well, the reason for listing is not apparent. Typically, a private firm should contemplate listing to create a public market for its shares, and to ease the exit of private investors. However, if the firm never raises public offerings, its stock liquidity will remain too low for the private investors to exit. A small proportion of approximately 10% of the sample obtain private placements on a regular base (three or more placements). The total financing obtained by the 203 firms involved in private placement is low. The total obtained is CAN$3.5 billion, or CAN$17.3 million of financing per firm, over an average time frame of 10 years. However, this average is influenced predominantly by a few large firms. The median total private placement is CAN$10 million, if we consider only the firms that launch private placements after an RTO.

Less than 23% of the firms procure financing through an SEO, and the mean (median) time elapsed between the RTO and the SEO is 11-15 months (3 to 8). These values are close to the 1.1 years (0.9 for the median) estimated by Derrien and Kecskes (2007) in their analysis of UK two-stage firm offerings. We cannot rule out the possibility that for this sub-sample of RTO firms, the strategy was to reduce underpricing by letting the market set a price. The average proceeds are CAN$27.81 million per firm, but the median is CAN$7 million, indicating the influence of several huge placements and a timid use of the public market.

Our observations only very partially affirm part d of proposition 1. However, for the majority of the RTO firms, the RTO does not appear to be used to reduce the cost of issuing new shares, in line with part d of proposition 2.

Insert Table 7 about here

6 STOCK MARKET PERFORMANCE

We estimate abnormal returns using the buy-and-hold (BHAR) method, that provides an estimation of the return of investors involved in each RTO. To take the market fluctuations into consideration, we subtract the return of a portfolio of firms of comparable size and growth expectations from the return of each RTO firm. To assess the robustness of our analysis to the choice of the benchmark, we also use the stock market index as a benchmark (S&P TSX). We reported in Appendix 1 the technical description of this estimation, which is commonly used in similar contexts (Gleason et al., 2006; Locke and Gupta, 2008). We estimate equally-weighted (EW) returns, where an equal weight is given to each firm, and value-weighted (VW) portfolio returns, where weights are proportional to the capitalization. We use both weighting schemes to override the problem induced by the distribution of market capitalizations. In effect, the VW results could be largely influenced by a small sub-sample of large firms.

We report BHAR results for the whole sample in Table 8, Panel A, for the pre- and post-RTO periods.[14] Before the RTO, the reported abnormal returns are those of the shell. During the post-RTO period we follow the stocks of the resulting firm. The abnormal return for the shell shares is positive and significant during the 12 months preceding the RTO announcement. The EW return is 39.47% (52.66% if the S&P TSX is the benchmark) and 23.53% (24.93%) if a VW scheme is applied. The differences indicate that the returns are, on average, larger for the smaller shells. However, the large majority of the shell shareholders earn significant positive returns several months before any announcement. The abnormal return is 21.78% six months before the event. In Canada, a number of investors seem to be informed of the transaction several months before the press release concerning the RTO. The observation of a significant run-up months before any required announcement has strong implications on the regulatory side. It seems that the actual level and timeliness of the reporting in such transactions is not sufficient to allow all stakeholders to earn a "fair" return.

Post-RTO abnormal returns are economically and statistically significant. The three-year average abnormal returns are -69.77% and -44.57% depending on the benchmark used, on an equally based scheme. VW abnormal returns remain significant and negative, ranging from -36.43% to -37.85%, depending on the benchmark. The difference between the EW and VW return is large, and can be traced to a few large RTOs: one raises CAN$500 million, another CAN$130 million and, in total, the twelve RTOs with the largest gross proceeds account for 30% of the amounts collected around the transaction. Accordingly, the VW results strongly reflect the returns of these twelve transactions, which can then be excluded from the entrepreneurial venture universe.

Panels B, C and D of Table 8 report the abnormal performance for each group based on the resulting firm capitalization. Micro-capitalization firms report capitalization below CAN$2.8 million.[15] Compared with the reference portfolio, the abnormal returns are -102.45% (EW) to -115.47% (VW) for the micro-capitalization firms. Corresponding values are -61.06% to -63.38% for the small firms and -46.56% to -31.93% for the larger firms. For these firms, the pre-RTO run-up ranges from 34.50% to 69.22% depending on the weighting scheme. The possible use of the shell for a large transaction is viewed very positively by the shell owners. The smallest RTOs are not preceded by a significant run-up. The novelty of our results is the huge magnitude of the underperformance. The average returns of below -100% for the micro-capitalization firms indicate that for the majority of investors the stock prices fall to zero while the market or the reference portfolio generates a positive return. All results related to the stock market performance are consistent with part e of proposition 2: the RTO market provides investors with abnormally low returns.

Insert Table 8 about here

7. CONCLUSION

Several researchers and professional associations contend that the securities regulation is too restrictive and unduly impedes the development of new ventures. Concomitantly, regulators and many scholars argue that without strong listing and disclosure requirements, a lemon market will emerge, on which only firms of poor quality will list. We analyze these two perspectives in a context of lax minimal requirements, where firms can list using an RTO, with minimal disclosure. Our results indicate that managers use RTOs to list lower quality firms without real growth opportunities, which do not survive in the market.

Only a small proportion of newly listed firms raise significant gross proceeds around the listing time. They fail to establish a liquid market for the shares, which could reduce the cost of equity and ease subsequent offerings. However, these firms can generally be considered micro-capitalization and poor quality firms. They differ statistically from their peers in terms of operational and market performance, and they fail to significantly increase their performance and equity size after the listing. They must contend with costly disclosure requirements and other disadvantages of being a publicly traded firm but they do not obtain the advantages of this listing. The implication for managers is that an RTO listing has costs but apparently few advantages, except if their objective is to disinvest. The observation of publicly traded entrepreneurial ventures is consistent with the finding of Locke and Gupta (2008) on the New Zealand market.

Our results have implications in terms of regulation and public policies. The firms using RTOs are predominantly very small, fail to grow, generally provide negative returns to the investors and frequently delist. This is particularly true for the smallest firms, for which the proportion of success is very low compared with the high failure rate. Our observations are definitely not in line with the propositions that the securities regulation should be changed to allow the financing of entrepreneurial ventures, but they confirm the lemon proposition stated by Black (2001), or with the readiness argument developed by Mason and Harrison (2001). The RTO experimentation evidences that very few good quality projects would have been impeded from procuring financing if more stringent regulation had been applied. This observation suggests that the financial constraints faced by new businesses have been overstated.

ENDNOTES

[1] "The SEC's role in capital formation: Help or Hindrance" is available online at: http://commdocs.house.gov/committees/bank/hba73742.000/hba73742_0f.htm

[2] This expression refers to Akerlof (1970), who, in his seminal paper, uses the market for used cars as an example of the problem of quality uncertainty. Because of asymmetric information the buyers cannot distinguish between good used cars and defective used cars ("lemons"). Buyers will be willing to pay only the price of an average quality car. As a result, high quality car sellers will leave the market. Only lemons will be offered, the average market quality will deteriorate and the market will shrink and eventually disappear.

[3] For example, Gleason *et al.* (2006, p.6) consider 121 RTO firms with a median market value of equity of CAN\$50 million (US\$ 33 million) at the end of the year in which the RTO occurs (p.17). We use 892 firms with a median shareholders' equity of CAN\$500,000 before the listing.

[4] The "new" markets in Europe devoted to growing companies generally require minimum gross proceeds of roughly CAN\$8 million (Euro5 million). Several junior markets apply principles-based listing requirements. They do not require a quantitative threshold but the entrant must hire a sponsor. According to Derrien and Kecskes (2007) the average size (gross proceeds) of the IPO firm joining the Alternative Investment Market (AIM) from 1995 to 2004 is equivalent to CAN\$15 million. On First North, the mean market capitalization was equivalent to CAN\$85.53 million. In January 2009, the 34 small firms listed on the New Zealand Alternative Exchange had a total capitalization of NZ\$633 million, for an average (post-crisis) capitalization equivalent to CAN\$12.5 million. Even if they use principles rather than rules, these exchanges do not list entrepreneurial ventures at an early stage.

[5] Accessing the information about the characteristics of the investors is very difficult, and we conducted the analysis on a sub-sample of RTOs covering two years. The investors are mainly individuals, and do not seem to be related to the business team. Very few institutional investors are involved, and few investors appear among the important shareholders after the RTO. These investors cannot be considered business angels. We have left their characteristics, and rationality, for further studies.

[6] The disclosure requirements for these transactions vary over time and between provinces. In 2005, the exchange modified the policy to require prospectus-like disclosure. We do not consider the intricacy of the various methods or the regulatory dimension of RTOs. Interested readers can see Feldman (2006) or Sjostrom (2008) for a detailed presentation of these dimensions.

[7] On the AIM, the Investment Companies can be considered equivalent to the CPC, although they must raise a minimum of £3 million in cash. In the U.S., the Special Purpose Acquisition Companies (SPACs) play a similar role, but for large transactions (Berger, 2008).

[8] See http://www.reversemergers.net/overview.html (last visited Dec. 4, 2008; Costs are less, time is less), or http://www.venturea.com/shell.htm (last visited Dec. 4, 2008; "saves time" "saves money"). These economies are largely linked to the non-requirement of a prospectus. When an RTO agreement is reached, the company must submit a comprehensive news release. The news release must contain a description of the transaction, including the target assets and the terms of the RTO, together with a summary of any available significant financial information. The information the shareholders receive is scant compared with the information required for an IPO.

[9] The total direct costs of new Canadian issues under CAN\$10 million has been estimated in the vicinity of 46% (Kooli and Suret, 2003). For high-tech ventures seeking external equity finance, Carpentier and Suret (2006) report that the total direct and indirect costs can reach 50% of the financing round.

[10] See Shane (2003 pp.162-164) for a survey of the empirical evidence of the importance of financial resource acquisition for entrepreneurial ventures.

[11] The System for Electronic Document Analysis and Retrieval (SEDAR), developed for the Canadian Securities Administrators, is the Canadian equivalent of the U.S. EDGAR system.

[12] Carpentier and Suret (2006) report 1,051 IPOs in Canada (excluding IPOs of CPCs) between 1991 and 2001. We report 522 RTOs during the same period.

[13] Freear et al. (2002) define entrepreneurial venture creation as *a dynamic process undertaken by entrepreneurs founding high-growth, often technology-based ventures. It is defined less by absolute size, more by growth and the potential for future returns. Commonly, however, entrepreneurial ventures with high growth potential require funding far beyond that supplied by the founders*. We consider that the firms in our sample are entrepreneurial ventures and not classic small businesses for the following reasons. The large majority are small, still not profitable and often at a pre-revenue stage. They are closely held before the RTO, and the median age since the incorporation is less than three years. Some of them exhibit a huge growth rate, but a large proportion of these firms will fail, indicating a high level of risk. Most of these firms are seeking outside equity. This indicates that the growth rate cannot be sustained with the funds available to the promoter.

[14] Cumulative abnormal return (CAR) results (not reported) are similar and available from the authors.

[15] The estimation of the abnormal returns incorporates several variables, including book-to-market, size and raw returns. We are able to estimate these returns for 346 observations only. The reduction in the sample is more severe for the smallest companies. For the initial sample, the median shareholders' equity is CAN\$1.83, whereas in the sample available for the return analysis, the first tercile limit of market capitalization is CAN\$2.83 million.

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FIGURE 1: Illustration of the reverse takeover listing method.

Former shell's shareholders: 100,000 / 600,000 = 16.67%
Former operating company's shareholders:
500,000 / 600,000 = 83.33%

Result inc.
value: $600,000
600,000 shares x $1

Management

5 for 1

1 for 1

Public shell
value: $100,000
500,000 shares x 0.20$

Private operating company
value: $500,000
500,000 shares x $1

Shell initiates RM
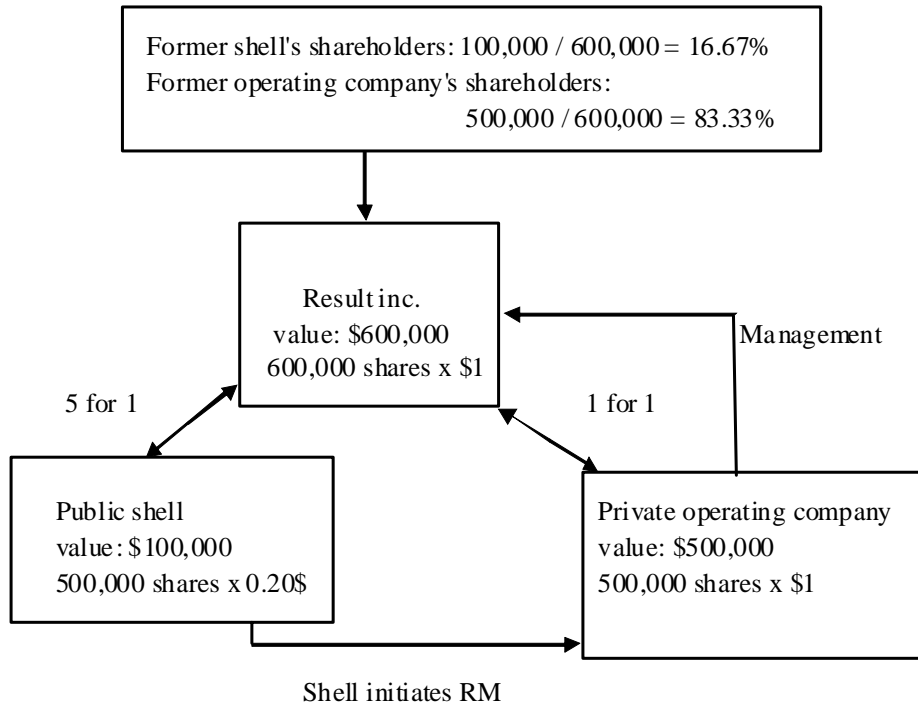
TABLE 1 Main characteristics of new listings by reverse takeover (RTO) in Canada, excluding those linked to the Capital Pool Companies Program. Gross proceeds (GP) are the total of the amounts collected at the time of the RTO, or during the 12 following months. Stocks issued to acquire the shells are not considered. Gross proceeds are expressed in CAN$ million ($M). Nb means number of companies.

Year	Nb	Total GP $M	Mean GP $M	Median GP $M	GP = 0, %
1988-1990	164	45.22	0.28	0.00	71.34
1991-1995	258	473.34	1.83	0.45	47.29
1996-2000	215	606.82	2.82	1.01	13.49
2001-2006	255	1,977.21	7.75	2.10	5.49
1986-2006	892	3,102.59	3.48	0.75	31.61

TABLE 2 New listings by reverse takeover in Canada, by category of gross proceeds (GP), expressed in CAN$ million ($M). Nb means number of companies.

Class of gross proceeds	Nb	% Total	Mean ($M)	Median ($M)	Sum ($M)	% Total
GP >= $10 M	66	7.40	28.94	15.00	1,910.36	61.57
$5 M <= GP < $10 M	78	8.74	6.54	6.28	510.13	16.44
$1 M <= GP < $5 M	255	28.59	2.25	2.00	573.61	18.49
$0.5 M <= GP < $1 M	120	13.45	0.68	0.68	81.79	2.64
GP < $0.5 M	91	10.20	0.29	0.30	26.70	0.86
GP = 0	282	31.61	0.00	0.00	0.00	0.00
Total:	892	100.00	3.48	0.75	3,102.59	100.00

TABLE 3 Main characteristics of shells and entrant companies involved in a reverse takeover in Canada between 1988 and 2006. Amounts are expressed in CAN$ million (M$). Nb means number of companies. EPS means earnings per share. SE means shareholders' equity.

	Nb	%	Median total assets ($M)	Median SE ($M)	Median Revenues ($M)	Median earnings ($M)	Median ROE (%)	Median net Margin (%)
Panel A: Shells								
Without revenues	452	67.26	0.18	0.05	0.00	-0.12	-41.71	-
With revenues, EPS <= 0	167	24.85	1.00	0.34	0.22	-0.32	-46.33	-100.00
With revenues, EPS >= 0	53	7.89	1.65	0.96	1.08	0.12	14.13	15.18
Total	672	100.00	0.36	0.14	0.00	-0.13	-30.96	-76.72
Not available	220							
Panel B: Entrant companies								
Without revenues	114	40.28	0.65	0.25	0.00	-0.16	-27.64	-
With revenues, EPS <= 0	103	36.40	1.94	0.26	0.59	-0.62	-30.58	-100.00
With revenues, EPS >= 0	66	23.32	2.83	0.63	3.48	0.20	19.75	9.49
Total	283	100.00	1.27	0.35	0.09	-0.13	-11.29	-15.25
Not available	609							

TABLE 4 Adjusted return on assets (ROA) and adjusted return on equity (ROE) of the entrant companies involved in a reverse takeover in Canada between 1988 and 2006. ROA (ROE) is net income divided by total assets (shareholders' equity). The adjusted performance of a firm is estimated by its raw return minus the median ratio of its size and sector matching group.

	Adjusted ROA	Adjusted ROE
Number	557	470
Mean	-13.36%	-6.15%
T value	-4.27***	-1.69*

*** significant at 1% level; ** significant at 5% level; * significant at 10% level.

TABLE 5 Changes in operational characteristics of companies listed by reverse takeover in Canada. In year -1, we compute the sum of the revenues, earnings and total assets of the shell and of the entrant company. Numbers for years 0 to 3 are those of the resulting companies. All amounts are expressed in CAN$ million ($M). SE means shareholders' equity. Nb means number of observations. P value from Wilcoxon Signed-rank test for change in variable (p value of z test of comparison of proportions) from year i to year j.

	Whole sample				Constant sample			
Year	Median Revenues ($M)	% without revenues	Median earnings ($M)	% negative earnings	Median Revenues ($M)	% without revenues	Median earnings ($M)	% negative earnings
-1	0.15	40.28	-0.23	69.61	0.10	42.06	-0.15	64.29
0	0.22	33.66	-0.50	80.30	0.20	34.12	-0.39	80.42
1	0.40	32.53	-0.73	79.85	0.46	32.94	-0.63	79.23
2	0.45	33.62	-0.61	79.70	0.48	33.83	-0.48	78.04
3	0.40	34.47	-0.58	78.42	0.61	32.94	-0.54	77.45
	p value	p value	p value	p value	p value	p value	p value	p value
0; 1	0.11	0.34	0.02**	0.43	0.12	0.37	0.04**	0.35
0; 2	0.04**	0.49	0.08*	0.40	0.03**	0.47	0.18	0.22
0; 3	0.04**	0.60	0.45	0.24	0.01***	0.37	0.12	0.17

	Median SE ($M)	Median ROE (%)	Median net margin (%)	Nb	Median SE ($M)	Median ROE (%)	Median net margin (%)	Nb
Year								
-1	0.50	-16.66	-28.24	283	0.44	-16.22	-7.45	126
0	1.83	-20.12	-43.47	609	1.48	-18.94	-36.82	337
1	1.85	-21.48	-44.22	541	1.27	-18.87	-34.05	337
2	2.22	-17.77	-36.40	473	1.75	-14.01	-23.50	337
3	1.88	-15.31	-28.12	380	1.83	-15.12	-24.56	337
	p value	p value	p value		p value	p value	p value	
0; 1	0.55	0.93	0.65		0.47	0.97	0.54	
0; 2	0.91	0.64	0.40		0.98	0.35	0.17	
0; 3	0.29	0.31	0.06*		0.83	0.49	0.10*	

*** significant at 1% level; ** significant at 5% level; * significant at 10% level.

TABLE 6 Status of the companies following a reverse takeover, after 10 years (Panel A) and 5 years (Panel B)

Year	Surviving, successful		Surviving, unsuccessful		Non-surviving		Total
	Nb	%	Nb	%	Nb	%	Nb
Panel A: Sample restricted to RTO prior to 1997-01-01 (10 years)							
1988	1	1.59	20	31.75	42	66.67	63
1989	2	2.99	25	37.31	40	59.70	67
1990	4	11.76	13	38.24	17	50.00	34
1991	1	2.94	18	52.94	15	44.12	34
1992	3	5.45	22	40.00	30	54.55	55
1993	5	7.35	25	36.76	38	55.88	68
1994	3	5.77	16	30.77	33	63.46	52
1995	5	10.20	15	30.61	29	59.18	49
1996	5	10.00	17	34.00	28	56.00	50
Total	29	6.14	171	36.23	272	57.63	472
Panel B: Sample restricted to RTO prior to 2002-01-01 (5 years)							
1988	0	0.00	35	55.56	28	44.44	63
1989	2	2.99	44	65.67	21	31.34	67
1990	3	8.82	20	58.82	11	32.35	34
1991	0	0.00	29	85.29	5	14.71	34
1992	1	1.82	46	83.64	8	14.55	55
1993	4	5.88	40	58.82	24	35.29	68
1994	3	5.77	35	67.31	14	26.92	52
1995	3	6.12	41	83.67	5	10.20	49
1996	3	6.00	34	68.00	13	26.00	50
1997	2	4.88	26	63.41	13	31.71	41
1998	0	0.00	23	60.53	15	39.47	38
1999	1	3.45	13	44.83	15	51.72	29
2000	4	7.02	23	40.35	30	52.63	57
2001	3	6.12	19	38.78	27	55.10	49
Total	29	4.23	428	62.39	229	33.38	686

TABLE 7 Summary of the financing activity of firms resulting from a reverse takover (RTO), from the RTO date to December, 2006

	# of firms	%	Mean time in months	Median time in months	Total gross proceeds in CAN$ million
No financing	274	44.26	-	-	-
Private placements					
1 financing	91	14.70	28.06	13.86	868.54
2 financings	53	8.56	18.17	10.51	779.16
3 financings	27	4.36	14.14	5.75	525.12
>=4 financings	32	5.17	17.15	6.97	1,339.24
Total	203	32.79	21.91	9.40	3,512.05
Seasoned public offerings					
1 financing	95	15.35	19.95	7.82	1,098.37
2 financings	21	3.39	10.85	2.40	1,061.27
3 financings	13	2.10	15.16	8.48	1,110.18
>=4 financings	13	2.10	7.49	3.32	680.43
Total	142	22.94	17.02	6.80	3,950.25
All RTO	619	100.00			

TABLE 8 Abnormal returns of companies resulting from a reverse takeover (RTO). Abnormal returns are computed as Buy-and-Hold Abnormal Returns (BHAR) relative to size/book-to-market reference portfolios (reference portfolio) or to the S&P TSX index (S&P index). Panel A presents the whole sample, for which market data are available. Panel B, C and D present the sample restricted respectively to the micro-cap, small sized and larger sized resulting companies. The size is estimated using terciles of post-listing market capitalization. Nb means number of observations. Amounts are expressed in CAN$ million ($M).

		Abnormal returns, Reference portfolio			Abnormal returns, S&P TSX index	
	Nb	BHAR, Mean, equally weighted, in %	BHAR, Mean, value weighted, in %	Nb	BHAR, Mean, equally weighted, in %	BHAR, Mean, value weighted, in %
Panel A Whole sample						
Pre listing (-12; -1)	177	39.47	23.53	177	52.66	24.93
T value		4.83***	3.41***		6.18***	3.50***
Post-listing (+1, +36)	346	-69.77	-37.85	346	-44.57	-36.43
T value		-9.97***	-5.93***		-7.88***	-6.30***
Panel B Micro-cap companies (post-listing market capitalization $2.83 M)						
Pre listing (-12; -1)	42	0.90	-50.51	42	16.65	-48.55
T value		0.07	-5.02***		1.23	-4.36***
Post-listing (+1, +36)	111	-102.45	-115.47	111	-51.46	-68.13
T value		-7.35***	-9.47***		-4.80***	-7.54***
Panel C Small sized companies ($2.83 M <= post-listing market capitalization< $11.85 M)						
Pre listing (-12; -1)	67	33.86	2.69	67	45.46	3.76
T value		2.88***	0.29		3.45***	0.38
Post-listing (+1, +36)	126	-61.06	-63.38	126	-38.54	-48.60
T value		-5.11***	-5.25***		-3.88***	-4.86***
Panel D Larger sized companies (post-listing market capitalization >= $11.85 M)						
Pre listing (-12; -1)	68	69.22	34.50	68	81.95	35.93
T value		4.61***	3.08***		5.33***	3.11***
Post-listing (+1, +36)	109	-46.56	-31.93	109	-44.53	-37.42
T value		-4.94***	-2.73***		-5.24***	-3.51***

*** significant at 1% level; ** significant at 5% level; * significant at 10% level.

APPENDIX 1: Estimation of abnormal returns

We estimate abnormal returns using the BHAR method, as follows. The returns are estimated against reference portfolios composed of companies of comparable size and book-to-market ratio. To construct the reference portfolios, we extract Canadian firms' book-equity from the accounting database and estimate the book-to-market ratios after matching the stock market and accounting databases. To construct the size control portfolio, all Canadian stocks are ranked each month according to their market capitalization, and three portfolios are formed. Independently, all Canadian stocks are also ranked according to their book-to-market ratios, and three portfolios are formed. The returns of the nine monthly rebalanced portfolios are calculated as the value-weighted average of the individual-firm monthly returns in each of the size/book-to-market intersections. Each RTO firm is then assigned a control portfolio based on its market capitalization and book-to-market ratio over the performance test period examined. BHAR is based on the calculation of the average abnormal return from a buy-and-hold strategy ($\overline{BHAR_{1\,to\,q}}$) from the RTO month (1) to the month q (36):

$$\overline{\text{BHAR}_{1\,\text{to}\,q}} = \sum_{i=1}^{\text{Nq}} w_{i,q}^{*} \text{BHAR}_{i,1\,\text{to}\,q} \text{ , where } \text{BHAR}_{i,1\text{to}q} = \prod_{s=1}^{q}(1+R_{i,s}) - \prod_{s=1}^{q}(1+R_{bi,s}) \quad (2)$$

Thus, BHARs measure the average multiyear returns from a strategy of investing in all Canadian RTO firms, and selling at the end of a particular holding period, versus a comparable strategy using a benchmark (R_{bi}). BHARs are similarly estimated for the [-12, -1] months before the RTO.