INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

MMS THESIS

**EXCHANGE LISTING AND SHAREHOLDER WEALTH:
CANADIAN EVIDENCE**

BY

Sami Al-hussieni. B.Comm.

**Thesis Submitted to
The Faculty of Graduate Studies and Research
In partial Fulfilment of the Requirement of the degree of
Master of Management Studies**

**Graduate School of Business
Carleton University
Ottawa, Ontario
Canada**

November 1998

© Copyright 1998, Sami Al-hussieni

National Library
of Canada

Acquisitions and
Bibliographic Services

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque nationale
du Canada

Acquisitions et
services bibliographiques

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-36920-X

The undersigned recommend to the faculty of Graduate Studies
and Research acceptance of the thesis

**EXCHANGE LISTING AND SHAREHOLDER WEALTH:
CANADIAN EVIDENCE**

Submitted by Sami Al-hussieni, B.Comm.
In partial fulfillment of the requirement for
The degree of Master of Management Studies

Thesis Supervisor

Director, School of Business

Carleton University
28 November, 1998

Abstract

This is an empirical study that examines the influence of exchange listing and exchange transfer on common stock return behaviour in the short-term and long-term for a sample of 179 firms that moved from the Canadian regional exchanges (ASE, ME, CDN, VSE) to the TSE during 1984 to 1996. It also investigates the liquidity gain hypothesis, which states that investors expect liquidity gains for less liquid newly transferred stocks but not for their more liquid counterparts after listing on the TSE. It also explores the role Seasoned Equity Offerings (SEOs) play in explaining the abnormal negative returns found in the post-listing period. Seasoned equity offerings have a hindering effect on stock performance due to ownership dilution. Newly-listed securities should not earn abnormal returns around the listing event. Thus, this study also provides evidence regarding Canadian capital markets efficiency in the semi-strong form.

The results are inconsistent with the semi-strong form of market efficiency in the short-term and long-term. The post-listing period provided clear evidence on the irregular return pattern around the listing event. The results also support the liquidity gain hypothesis by showing a significant difference between the two liquidity groups of stocks in the post-listing period. Thus, companies with high-liquidity are non-beneficiaries of the listing decision. The evidence suggests that the anomalous behaviour around listing is high-liquidity firm specific. This was supported by the fact that high-liquidity firms have higher propensity to issue additional financing, thus more likely to experience negative returns. Moreover, when excluding firms that issued SEOs after listing, abnormal long-term performance of newly-listed securities was absent.

Acknowledgements

I am indebted to a number of people for their help, support, and encouragement.

I thank my supervisor, Dr. Ashwani Srivastava for his on-going guidance throughout the process of this study. I especially appreciate his thoughtfulness in addressing my concerns.

I would like to thank other members of my committee: Dr. Bruce McConomy and Dr.

Allan Riding, whose comments and suggestions have been valuable for this research.

I wish to acknowledge the help and support of Michel Fuksa. I also wish to acknowledge the Montreal Stock Exchange and Alberta Stock Exchange for contributing data for the purposes of this research.

ABSTRACT.....	III
ACKNOWLEDGEMENTS	IV
TABLE, FIGURES, AND APPENDICES.....	VII
LIST OF TABLES	VII
LIST OF FIGURES.....	VIII
LIST OF APPENDICES.....	IX
CHAPTER 1: INTRODUCTION	10
1.1 INTRODUCTION.....	10
1.2 PROBLEM STATEMENT	2
1.3 RESEARCH OBJECTIVES.....	3
CHAPTER 2: LITERATURE REVIEW	7
2.1 EXCHANGE LISTING EVIDENCE AND PRELIMINARY ISSUES	7
2.1.1 <i>The Listing Procedure</i>	7
2.1.2 <i>Exchange Listing Evidence:</i>	10
2.1.3 <i>Possible Trading Strategy</i>	12
2.2 THEORETICAL JUSTIFICATIONS FOR OBSERVED BEHAVIOUR AROUND LISTING.....	13
2.2.1 <i>Liquidity Gain Hypothesis and Listing Behaviour</i>	15
2.2.1.1 Market Microstructure and Asset Pricing.....	16
2.2.1.2 Liquidity Gain Hypothesis	20
2.2.2 <i>Information Content Hypothesis</i>	25
2.3 CONTRAST BETWEEN INFORMATIONAL CONTENT AND LIQUIDITY GAIN HYPOTHESES	30
2.4 OTHER INTERPRETATIONS OF THE POST-LISTING STOCK PERFORMANCE	31
2.4.1 <i>Post-listing Performance and the Impact on Equity Offerings</i>	31
2.4.2 <i>Another Possible Explanation of Post-Listing Performance</i>	31
2.5 SYNTHESIS OF US STUDIES TO CANADIAN MARKETS.....	32
2.5.1 <i>Canadian Markets: Structure and Contrast to US Markets</i>	32
2.5.2 <i>Canadian Research Directions</i>	33
CHAPTER 3: HYPOTHESES.....	35
3.1 HYPOTHESES AND THEORETICAL FRAMEWORK.....	35
3.1.1 <i>Securities Behaviour Hypotheses</i>	35
3.2.2 <i>Understanding the Post-Listing Return Performance</i>	38
CHAPTER 4: DATA AND SAMPLE.....	40
4.1 SOURCES OF DATA	40
4.2 SAMPLE SELECTION CRITERIA.....	40
4.3 SAMPLE SIZE.....	40
CHAPTER 5: METHODOLOGICAL DESIGN	43
5.1 EVENT STUDY METHODOLOGY	43
5.1.1 <i>TSE Listing Procedure</i>	43
5.2 STOCK RETURNS	44
5.2.1 <i>Infrequent Trading Adjustment</i>	46
5.2.2 <i>Adjustment for Possible Shifts in Systematic Risk</i>	47
5.3 EXCESS RETURN MEASUREMENT.....	47
5.3.1 <i>Short-term Performance</i>	48
5.3.2 <i>Long-term Performance</i>	49
5.4 HYPOTHESES TESTING	51

5.4.1	<i>Return Behaviour of Canadian Securities around the Event of Listing and in the Long-run (Hypotheses 1-4)</i>	51
5.4.2	<i>Liquidity Gain Hypothesis Test (Hypotheses 5 and 6)</i>	53
5.4.3	<i>SEOs Testing Hypotheses (7 and 8)</i>	54
CHAPTER 6: EMPIRICAL FINDINGS		56
6.1	SECURITIES BEHAVIOUR AROUND THE LISTING EVENT	56
6.1.1	<i>Short-term Performance Findings</i>	56
6.1.2	<i>Long-term Performance Findings</i>	61
6.1.2.1	Wealth effect of TSE listing	65
6.2	THE LIQUIDITY FACTOR.....	68
6.3	THE SEOS FACTOR.....	73
6.3.1	<i>Liquid Firms Propensity to Issue SEO</i>	75
6.4	CONCLUSION	77
CHAPTER 7: BENEFITS AND LIMITATIONS		79
7.1	BENEFITS	79
7.2	LIMITATIONS	79
APPENDICES		82
REFERENCES		108

Table, Figures, and Appendices

List of Tables

TABLE 1: LISTING REQUIREMENTS.....	9
TABLE 2 : COMPARISON OF RESEARCH STREAMS.....	14
TABLE 3 : LIQUIDITY GAIN HYPOTHESIS: SELECTED STUDIES.....	20
TABLE 4: INFORMATIONAL CONTENT HYPOTHESIS: SELECTED STUDIES.....	25
TABLE 5: MONTHLY SAMPLE SIZE BY EXCHANGE AND YEAR.....	41
TABLE 6: DAILY SAMPLE SIZE BY EXCHANGE AND YEAR.....	41
TABLE 7: DAILY SAMPLE SCREENS.....	42
TABLE 8: RISK-ADJUSTED AND MARKET-ADJUSTED DAILY CARS OVER TIME INTERVALS SURROUNDING THE LISTING EVENT.....	56
TABLE 9: SAMPLE AND BY TRANSFER TYPE S-W BETA USED FOR RISK ADJUSTMENT.....	59
TABLE 10 : POST-LISTING MONTHLY CAR: 1984-1996.....	62
TABLE 11: POST-LISTING WR PERFORMANCE CATEGORIZED BY TRANSFER TYPE.....	66
TABLE 12: STOCKS AVERAGE PERCENTAGE SPREAD FOR ENTIRE SAMPLE AND BY TRANSFER TYPE.....	68
TABLE 13: HIGH-LIQUIDITY AND LOW-LIQUIDITY DAILY CAR AROUND THE LISTING EVENT.....	69
TABLE 14: BREAKDOWN OF THE MONTHLY SAMPLE BASED ON SEO ISSUANCE.....	73
TABLE 15: SEO AND SAMPLE AR T-TEST.....	74
TABLE 16: FIRMS CLASSIFICATION BY LIQUIDITY AND SEO.....	75
TABLE 4-17: DAILY RISK-ADJUSTED CAR AND AVERAGE AR FOR NEWLY-LISTED SECURITIES ON THE TSE FROM TRADING DAY -50 TO +50.....	88
TABLE 4-18: DAILY MARKET-ADJUSTED CAR AND AVERAGE AR FOR NEWLY-LISTED SECURITIES ON THE TSE FOR TRADING DAYS -50 TO +50: 1984-1996.....	91
TABLE 5-19: MONTHLY CAR AND AVERAGE AR FOR ENTIRE SAMPLE: 1984- 1996.....	94
TABLE 5-20: ME AND CDN MONTHLY CAR AND AR: 1984-1996.....	96
TABLE 5-21 : VSE MONTHLY CAR AND AVERAGE AR: 1984 TO 1996.....	98
TABLE 5-22 : ASE MONTHLY CAR AND AVERAGE AR: 1984 TO 1996.....	100
TABLE 6-23 : HIGH-LIQUIDITY CAR AND AVERAGE AR ON RISK AND MARKET-ADJUSTED BASIS FROM -50 TO +50 AROUND THE LISTING DAY.....	102
TABLE 6-24: LOW-LIQUIDITY DAILY CAR AND AR ON RISK AND MARKET-ADJUSTED BASIS FROM -50 TO +50 AROUND THE LISTING DAY.....	105

List of Figures

FIGURE 1 : LISTING PROCEDURE TIME INTERVALS. ADAPTED FROM GRAMMATIKOS AND PAPAIONNOU (1986)	8
FIGURE 2 : WEEKLY RETURN BEHAVIOR AROUND LISTING, ADAPTED FROM FABOZZI (1981).	11
FIGURE 3 : SPECIALIST PARTICIPATION RATE. ADAPTED FROM MANN AND SEIJAS (1991).	19
FIGURE 4 : CRITICAL EVENTS IN THE LISTING PROCESS ON THE TSE.	43
FIGURE 5 : DAILY CAR AROUND THE LISTING EVENT (-05,+50).....	58
FIGURE 6 : POST-LISTING DAILY CAR FOR NEWLY-LISTED SECURITIES.....	60
FIGURE 7 : POST-LISTING MONTHLY AVERAGE RETURNS:1984-1996.....	61
FIGURE 8 : MARKET-ADJUSTED AND INDUSTRY-ADJUSTED MONTHLY CARS:1984-1996.....	63
FIGURE 9 : MARKET-ADJUSTED MONTHLY CARS BY EXCHANGE AND TRANSFER TYPE.....	64
FIGURE 10 : WR MEASURE BY TRANSFER TYPE.....	65
FIGURE 11: HIGH-LIQUIDITY AND LOW-LIQUIDITY DAILY RISK-ADJUSTED CARS AROUND THE LISTING EVENT	70
FIGURE 12 : HIGH-LIQUIDITY ABD LOW-LIQUIDITY DAILY MARKET-ADJUSTED CARS AROUND THE LISTING EVENT.....	70
FIGURE 13 : POST-LISTING MONTHLY CAR BY SEO ISSUANCE.....	73

List of Appendices

Appendix 1: TSE listing requirements	82
Appendix 2: TSE listing application	85
Appendix 3: The TSE listing process	86
Appendix 4: Daily CAR and average AR for newly-listed securities on the TSE	88
Appendix 5: Post-listing monthly CAR and average abnormal returns: 1984 to 1996	94
Appendix 6: Daily CAR and average AR returns for high-liquidity and low-liquidity firms	

CHAPTER 1: Introduction

1.1 Introduction

Securities trading takes place mainly on two different types of market: over the counter markets (OTC) and the broader market or exchanges. Although both serve similar functions, which is to provide access to capital and liquidity to entrepreneurs and investors, their listing requirements are different. Regional exchanges and OTC (e.g., Vancouver, Alberta, Canadian Dealing Network¹) markets are less stringent in their listing requirements than major stock exchanges (e.g., New York, Toronto). This difference and the existence of two tier markets allow a broader spectrum of companies and investors access to capital, thus reducing transaction costs by creating a central market location for those companies. Market forces will ensure that, on average, all securities are traded at their fair value in equilibrium irrespective of the structure of the market. In this context, changing the listing or the trading location of a company's stock will not serve any useful purpose, from a theoretical perspective.

Evidently, many firms choose to change their stock's trading location from the OTC markets to the broader exchanges, and in many cases from one exchange to another. Firms justify this as a normal part of their growth; they view listing as a means to increase visibility and prestige. This behaviour has intrigued financial researchers for many years; they have questioned the rationale for shifting exchange listings. The many consequences of a firm's listing decision include changes to cost of capital, shareholders' wealth, and liquidity. Also, there is the broader issue of market efficiency, thus making exchange listing a worthwhile topic to research.

¹The CDN is an Ontario system. Currently there are 1,100 symbols entered in the CDN system, but its core market consists of approximately 525 quoted Canadian companies. There are 48 market-making firms that display their bid and ask quotations on the CDN's computer network.

1.2 Problem Statement

One must question the importance of researching small facets of market operations and not magnify disaffection for the efficient market hypothesis (EMH). Market behaviour has shown that unexplained price behaviour is not necessarily irrational, that irrational behaviour is not necessarily exploitable, and that exploitable behaviour is not necessarily worth exploiting. When we make proper adjustment for the average investor's difficulty to profit from these anomalies, diversified portfolios and EMH are hard to refute.

Indeed, market efficiency does not require that the market price be at equilibrium, equal to the firm's present value of expected cash flow, at all times. It is required, however, that errors in the market price be unbiased on average, that is, prices can be greater or less than the true value as long as these deviations are random². However, the literature has consistently observed the persistence of abnormal returns of securities around the transfer of their trading location, the listing event. This is a direct violation to the randomness in value errors; the systematic continuousness of residuals around this event makes the listing event both exploitable and irrational. The documented positive excess return before listing is typically attributed to the value of listing on a major exchange [e.g., Baker and Spitzfaden (1982), Fabozzi (1981)]; the market adjusts its valuation to the new information and market should stabilize around the new fair value or equilibrium. However, the post-listing behaviour exhibits negative excess returns that are not satisfactorily explained by any theoretical framework. The implications of exchange listing are important to markets and market participants, regulators, shareholders, and firms' decision makers, making the issue worth studying.

²i.e., there is an equal chance that stocks are under or overvalued at any point of time.

The issue is of great interest to corporate decision-makers. Exchange listing is costly. Firms' managers should carefully consider the trade-offs between the benefits of changing trading locations and the costs associated with doing so. Previous US-based studies [e.g., Baker and Spitzfaden (1982), Edelman and Baker (1990), Fabozzi (1981),] have revealed common patterns in stock returns. First, stocks rise abnormally before listing. And secondly, prices decline abnormally immediately after that; some evidence suggests that this abnormality is long-term in nature (Dharan and Ikenberry, 1995). That entails a higher cost of capital for newly-listed firms. This pattern of behaviour was predominant in every exchange listing article published for over 60 years beginning with Ule (1937) and more recently Dharan and Ikenberry (1995), Edelman and Baker (1993), McConell and Sanger (1984), and Fabozzi (1981). Still, studies did not present a satisfactory explanation for the abnormal behaviour around the listing event. The abnormal behaviour of security returns around the listing event is puzzling and induces researchers to explore it in depth. Aspects of this behaviour are not consistent with market efficiency in any form.

1.3 Research Objectives

This research examines the impact of exchange listing event on the return behaviour of securities and its implications for shareholder wealth. In addition, it will attempt to explore probable justifications for this behaviour. The research is conducted by using Canadian data and analysing the listing event on the Toronto Stock Exchange (TSE) from other Canadian trading locations. There are three major objectives of this study. These objectives are academic and practical.

The first objective of this study is to examine the return behaviour around exchange listing from a Canadian perspective. Exchange listing has been a topic of interest in the academe, and as such, has been the subject of many journal articles. The primary objective here is to replicate US studies using Canadian data. This will add to the body of empirical evidence on Canadian markets and contribute to our understanding of the differences in stock

market evidence between the two countries.

The second objective is to test a plausible reason for the post-exchange listing behaviour using agency theory and the listings literature. We will examine whether raising additional equity in the post-listing market affects securities' rates of return. Firms may view listing on a major exchange as a means to increase their stock's liquidity or to raise extra equity financing more easily. Market participants may view the listing event as costs being transferred to them represented by possible ownership dilution with additional equity financing. Hence, they will discount the pricing of securities that move to the TSE from secondary exchanges.

The third objective is to test the efficiency of the Canadian capital markets by examining abnormal returns around the listing event. Security returns should not vary with their trading locations, if markets are efficient. Security returns should not exhibit any significant seasoning process around the listing event. Non-zero abnormal returns should not be sustained. Event studies provide a direct test of market efficiency in discounting event information in stock prices especially in the case of daily data (Fama, 1991). Systematically non-zero abnormal security returns, which persist after an event, are inconsistent with the efficient market hypothesis. In addition, to the extent that the event is unanticipated, the abnormal performance at the time the event occurs represents the impact of the event on shareholder wealth. Any such abnormal performance is inconsistent with the notion of market efficiency.

In summary, this study examines exchange listing's impact on firm value in an attempt to determine whether previously documented anomalous behaviour exists in Canadian equity markets also. If it does, we will also examine whether the ability to raise additional equity offering or higher liquidity explains this phenomenon.

Although Canadian securities returns are highly correlated with US returns, the extension of US-based research to Canada is uncertain. Micro-level variations between the two markets will not allow for unqualified extensions. Also, there are major differences between the two countries outside the capital markets. Examples of these differences include that before 1972 Canada had no capital gains tax, dividends of Canadian stocks are taxed at a favourable rate versus interest income, and that stock ownership in Canada is not as broad as in the US. In addition, Canadian investors are more conservative in their attitudes. Canadian research on the behaviour of securities around exchange listing is of interest to Canadian practitioners, regulators, and academics.

The research observed surprisingly poor post-listing stock returns in the short-term and long-term. Newly-listed securities abnormally decline in the short-term post-listing period. However, the pre-listing period performance varied depending on the return adjustment model used. The empirical evidence indicates that the Canadian capital markets displays inconsistent behaviour with semi-strong form of market efficiency. The long-term results pointed to the same conclusion, as the short-term abnormal performance pattern. However, the abnormal discount is shorter than that reported earlier in the US financial literature. Possible explanations to this anomalous behaviour include liquidity and equity issuance factors. The liquidity gain hypothesis, which states that investors expect liquidity gains for less liquid stocks but not for their more liquid counterpart after transferring to the TSE, and equity issuance factors have succeeded in providing an acceptable rationale to this behaviour. The evidence shows that the market behaviour of newly-listed firms differ according to their individual attributes.

The rest of the thesis is organized as follows. Chapter 2 reviews the theories and evidence previously documented in the finance literature with respect to the listing event and related issues. Chapter 3 specifies hypotheses in line with the objectives of this research. Chapter 4 describes the data, the sample selection criteria, and the expected sample size. Chapter 5 addresses issues pertaining to methodological design. Chapter 6 discusses the research

findings and conclusions. Finally, chapter 7 outlines the benefits and limitations of this study.

CHAPTER 2: Literature Review

2.1 Exchange Listing Evidence and Preliminary Issues

2.1.1 The Listing Procedure

This section presents a general overview of the listing procedure on major exchanges. The listing procedure on various exchanges such as the American Stock Exchange (AMEX) and the New York Securities Exchange (NYSE) is similar.

Usually, firms will request a preliminary review before the formal application to list. The purpose of seeking preliminary eligibility opinion is to determine whether the exchange will recommend the company for listing. These opinions are confidential. Thus, information leakage is not a concern. After the preliminary opinion, a formal application to the exchange's governing body is filed. Firms that go through these steps, and obtain a favourable preliminary opinion generally obtain an approval 99 % of the time (Fabozzi, 1981). The exchange will disclose the application in its weekly publication. The purpose of this disclosure is to encourage feedback from the investment community about the applicants. The exchange body grants approval at their weekly meetings. The AMEX, for example, has its meeting each Thursday. The approval comes after a few days of the bulletin, and the exchange notifies the public immediately.

The listing procedure as above contains four critical events. These events are: the application day, announcement day, approval day, and listing event. Equally important are the periods around these events. The above events and periods are summarized in Figure 1. The research design of Fabozzi (1981), Grammatikos and Papaioannou (1986), and others centred around these dates. The listing research interest is generally devoted to the stock return behaviour surrounding these periods. The monetary fees of listing does not seem critical in the listing decision³ (Fabozzi, 1981). However, the inherent costs of listing

³Listing fees, usually, include a flat fee amount plus an additional fee per listed

are much greater. Listed firms have to satisfy the listing requirements, or face delisting subsequently. O'Donnell (1969) found that delisting of a firm's stock resulted in a decline in value by 9%. Sanger and Peterson (1990) also found a decline of 8.5% on announcement day. Also, issues of ownership, voting restructuring, and corporate governance to meet exchange requirements are sometimes costly to adhere to. In the rest of this paper the references to the cost of listing will include monetary and other costs as explained.

Figure 1 : Listing procedure time intervals. Adapted from Grammatikos and Papaionnou (1986)

Listing requirements vary across exchanges, the most stringent being on the NYSE. Table 1 displays the listing requirements on the major OTC exchanges⁴. Listing standards would materially enhance the threshold criteria necessary to qualify for listing on an exchange.

share. The NYSE has the highest listing fees, followed by AMEX, and the NASDAQ. The NYSE, TSE and NASDAQ have a cap on listing fees of \$500,000, \$50,000 and \$5,000 respectively. On the other hand, AMEX does not have a cap.

⁴Listing requirements change over time pending on trading volume growth and other developments.

Exchanges have an obligation to maintain a commensurate level of quality and protection for investors. It is extremely important not only to ensure that all exchange companies warrant listing by virtue of their compliance with the applicable qualification requirements, but also that the qualification requirements themselves are in fact appropriate and designed to foster the protection of investors.

Table 1: Listing Requirements

(Dollar figures in millions \$)

	AMEX	NYSE*	TSE	VSE	ASE	NASDAQ
Number of shares publicly held in millions	.5	1.1	.2			1.1
Market value of public shares	\$3	\$18	\$.35			\$8
Number of stockholders owning 100 shares or more	800	2,000	200			400
Pretax income last fiscal year	\$.75	\$2.5	profitability is a minimum requirement ⁵ / \$.2	no minimum	\$.025	\$1

⁵ As of 1987. On the TSE there is a distinction made for mining and oil and gas companies from their industrial counterparts for the speculative nature of their operations. The above requirements are for industrial companies. Please see Appendix 1 for the comprehensive listing requirements by the TSE. Please see Appendix 2 for a copy of the TSE listing application, which identifies all the necessary information and requirements.

	AMEX	NYSE*	TSE	VSE	ASE	NASDAQ
Pretax income last two years	\$.75	\$2	cash flow minimum \$.5			\$1
Net tangible assets	\$6	\$18	\$5	no minimum	\$.25	\$6

* NYSE requirements as of 1990

2.1.2 Exchange Listing Evidence:

Exchange listing research dates back to the Ule's (1937) study of price behaviour of newly-listed stocks. His sample contained 29 stocks listed on the NYSE from the OTC market, during the 1934-1937 period. He found that the sample stocks earned positive abnormal returns from the application date to the listing date. However, after the listing event, stocks declined significantly. The study was the first building block in this field. However, the research design lacked the sophistication and technical tools to ensure robustness of research results (Baker 1991).

Ying *et. al.* (1977) was the first to incorporate risk adjustment in their methodology and compensate for the shortcomings of previous research. A sample of 248 companies was selected over the period from 1966 to 1968 from firms transferring to the NYSE or AMEX from the OTC market. The study used the beta risk-adjusted measure of abnormal returns. They found that stocks earn significant positive abnormal monthly returns during the 24 months before listing. Moreover, fourteen of the twenty-four months were significantly positive. However, the securities declined in the subsequent couple of years. Considering the application procedure as in Section 2.1.1, Ying *et.al.*'s use of monthly periods was ill suited to capture the intra-month behaviour (Baker and Meeks, 1991).

Fabozzi (1981) used weekly risk-adjusted returns to study the behaviour of transferring to the AMEX from the OTC during 1972-1975. The results were similar to Ying *et.al.* (1977); positive abnormal returns were documented in the period between the application week and the week of listing. Then, the trend reversed eliminating most of the early gains prior to listing (See Figure 2).

A recent study by Edelman and Baker (1993) found consistent results as in earlier studies. They examined firms transferring from the NASDAQ to NYSE during 1981-1989.

The risk-adjusted return climbed before the listing date, only to decline significantly afterwards. McConnell and Kadlec (1994), and Grammatikos and Papaionnou (1986a, 1986b) have validated these results.

McConnell and Sanger (1987) investigated this behaviour employing an extensive sample of 2482 common stocks that transferred to the NYSE from AMEX and NASDAQ. The sampling period ranged from 1926 through 1982. The post-listing

average market-adjusted monthly returns were negative. Stocks earned significantly negative returns in the three months following listing. Their evidence was conclusive on the abnormality of the post-listing return behaviour of newly-listed securities.

Compared to pre-listing return behaviour, the abnormal post-listing behaviour is larger in magnitude and occurs over a longer period as noted by Dharan and Ikenberry (1995). Most of the studies reviewed above dealt with short-term post-listing effect. Dharan and Ikenberry (1995) used a less sensitive procedure for performance measurement over 36

Figure 2 : Weekly Return behavior around listing, adapted from Fabozzi (1981).

months after listing. They used a size-adjusted return to calculate abnormal returns; the size portfolios were re-ranked annually to allow change in benchmarks for a given firm. Then, abnormal returns are averaged across the different portfolios in event time. The benefit from this procedure is to deal with market wide forces; systematic market impacts are suppressed from influencing statistical tests. Also, portfolio rankings are necessary to control for size effects when calculating security returns.

The post-listing behaviour for the 2,889 firms moving from the NASDAQ to either the AMEX or NYSE or from the AMEX to the NYSE from 1962 to 1990 was consistent with findings of the previous studies. However, the negative abnormal returns were prolonged, the pattern lasted for more than a period of three years. The cumulative abnormal return (CAR) at the end of the 36 months period was significantly negative at - 12.39 %. The negative return, however, was smaller and insignificant during the last six months of the study. This behaviour was found consistent over sub-periods between 1962 and 1990. They also found that this negative post-listing behaviour was evident in most industries; 18 out of 20 industries researched exhibited the same behaviour.

In summary, prior studies show a similar pattern of return behaviour. Returns tend to climb, abnormally, from the application period to the listing date, and decline significantly in the post-listing period. Edelman and Baker (1993,1992,1990); Sanger and McConnell (1987,1986,1984); Grammatikos and Papaionnou (1986a, 1986b); Bahandari *et. al.* (1989) and many others, all present similar evidence on this behaviour. The consistency of these findings is overwhelming.

2.1.3 Possible Trading Strategy

The behaviour around listing does present an opportunity to construct a trading strategy to earn excess returns consistently. Investors can establish a long position in stocks that will list on major exchange on the application date. The long position is liquidated at the time of listing transfer and, simultaneously, a short position in the same stocks is opened

for six weeks. McConell and Sanger (1984) tested this trading rule by including 72.5% of firms that had moved to the NYSE from OTC over the January 1966 to December 1977 period. The study used a standard event methodology using weekly data and S&P 500 as the benchmark. The findings were consistent with previous research. Abnormal returns existed both pre- and post-listing. Furthermore, the trading strategy yielded an average annualized trading profit (in excess of the S&P 500 return) of 12.83 % after accounting for a transaction cost of one percent. The abnormal excess return persisted even after the introduction of the NASDAQ system. The average annualized trading profit was 5.75% after transaction costs in the post-NASDAQ period.

Van Horne (1970) argued against the possibility of exploiting the listing event for abnormal profits. He argued that arbitrage will eliminate the abnormal behaviour, and the market will discount new information in the prices immediately. He tested his hypothesis on stocks moving from the OTC to NYSE or AMEX over the 1960 through 1967 period. His findings were consistent with most of the patterns found in the literature. However, he found that after transaction costs, the average return of newly-listed stocks would not be significantly different from zero. Although test results supported the hypothesis, they are suspect since average returns unadjusted for risk were used to arrive at the results.

2.2 Theoretical Justifications for Observed Behaviour around Listing

Two hypotheses offer competing rationales for the observed behaviour around listing (see Table 2). The liquidity gain hypothesis argues that changing trading location is "thing of value" (Fabozzi, 1981) because it increases the liquidity of a firm's stock, hence, improving assets returns. Amihud and Mendelson (1986) argue that the bid-ask spread has an inverse relation with security returns. Therefore, moving to a major exchange with larger number of market participants will improve liquidity and subsequently firms' value. On the other hand, the information content or signalling hypothesis rationalizes the firm's motivation for listing as the ability to increase its visibility to investors or to signal forthcoming "good news" to the market. This hypothesis states that increase in visibility will provide an

increase in institutional coverage that typically produces more accurate valuation and faster discovery of growth prospects that generates interest from investors, thereby, reducing a firm's risk and cost of capital.

Table 2 : Comparison of research streams

Concepts	Informational Content Hypothesis	Liquidity Gain Hypothesis
Key idea	Listing signals to the market a firm's future "good news," thus, listing is a "thing of value"	Listing in major exchange provides more visibility to institutional and individual investors, improving assets liquidity, hence, increasing assets values
Theory	Signalling Hypothesis: Management confidence in future results leads to list on major exchange, more available information results in reduction of risk. Support for Merton's (1987) market equilibrium model with incomplete information	Market microstructure and asset pricing: reducing bid-ask spread and investor transaction costs will improve liquidity.
Methodology	Case event study: observing cumulative abnormal returns around event day	Case event study: observing cumulative abnormal returns around event day
Findings	Weak results: most of the evidence supports EMH	For higher liquidity stocks, listing behaviour is consistent with EMH. Abnormal results for lower liquidity stocks

The informational content premise is not popular with researchers particularly since the introduction of NASDAQ. NASDAQ attracts similar institutional coverage⁶ as the broader NYSE, and it demands comparative listing requirements to the broader exchanges (refer to Table 1). Thus, information should be fully and accurately reflected in prices, and

⁶ The growth in NASDAQ share volume is more than two folds than the growth of the NYSE since 1976 (NASDAQ fact book).

the listing event should not provide a strong signal to account for the significant price performance. This rationale has pushed research to concentrate more on the liquidity gain framework to explain the observed stock price behaviour both pre- and post-listing.

One would expect that the introduction of NASDAQ would also end the liquidity question, since it provides a complete market for OTC stocks. NASDAQ, indeed, enhanced trading and liquidity for OTC firms. Studies (e.g., Reinganum, 1990) have found that there is no significant difference between liquidity on the major exchanges and NASDAQ for large capitalization firms. In recent history, the trading volume, on average, for the NASDAQ market is higher than the NYSE. However, the abnormal behaviour of security returns has continued. Issues of market microstructure have become more relevant and influence asset pricing. Reinganum (1990) found that an exchange dummy variable acts as a proxy for effects in asset pricing. For example, the NYSE market is suitable for high volume transaction to realize transactions cost economies of scale. However, the NASDAQ market offers competitive service for small sized securities that otherwise has to incur higher transaction costs on the NYSE due to low trading volume. Later studies [e.g., Edelman and Baker (1990), Grammatikos and Papaionnou (1986a), Sanger and McConnell (1986)] have found that firms with certain attributes sustained the abnormal returns, while others conformed to the semi-strong form of the EMH (liquid vs. illiquid stock). A contrast between the two hypotheses is presented toward the end of this chapter pointing to the narrowed scope of the listed securities returns abnormality.

2.2.1 Liquidity Gain Hypothesis and Listing Behaviour

The liquidity gain hypothesis was introduced as a plausible explanation for the exchange listing behaviour in the 1980s. Amihud and Mendelson (1986), who researched market microstructure and asset pricing, were the originators of the liquidity gain hypothesis. This section will also present an overview of the major differences between the market microstructure of the NASDAQ and the NYSE exchanges.

2.2.1.1 Market Microstructure and Asset Pricing

The usual gauge of market quality is its liquidity with the added requirement of low volatility (Amihud and Mendelson, 1987). A market is liquid when it has a sufficiently large number of securities and participants so that any investor can trade near the equilibrium value of the asset. Trading costs consist of two elements: commissions paid to brokers and the bid-ask spread. The bid-ask spread is a major element in the transactional efficiency of the market. An efficient market operates on the assumption of frictionless transactions and the liquidity of assets. The bid-ask spread is a major source of noise and friction in security trading. Thus, illiquid stocks, i.e., the ones with higher bid-ask spreads will command higher required returns.

Amihud and Mendelson (1986) concluded that market microstructure will determine asset returns. They observed that equilibrium has the following characteristics:

1. Market-observed average returns are an increasing function of the spread;
2. Asset returns to their holders, net of trading costs, increase with the spread;
3. There is a clientele effect, whereby stocks with higher spreads are held by investors with longer holding periods; and
4. Due to the clientele effect, returns on higher-spread stocks are less spread sensitive, given rise to concave return-spread relation.

Thus, liquidity-enhancing financial decisions can reduce a firm's cost of capital, and provide propositions for the value of enhancements in the trading and exchange process.

Brennan and Subrahmanyam (1996) investigated the empirical relation between monthly stock returns and measures of illiquidity obtained from intra-day data. A significant relationship was found between required rates of return and these measures after adjusting for the Fama and French risk factors. Models of price formation in security markets imply that privately informed investors create significant illiquidity costs for uninformed

investors, suggesting that the required rates of return should be higher for securities that are relatively illiquid.

Most of the exchange listing research centers around firms transferring from the NASDAQ to the NYSE. An understanding of the makeup of both exchanges is imperative to gain a proper perspective on the research and its conclusions.

The NYSE is a continuous auction market. A continuous auction market combines the characteristics of a dealer market and an auction market. Investors, represented by their brokers, have the opportunity to trade directly with each other in an auction context to the extent they are present at the same time at the same place. However, they can also trade with the specialist, who maintains continuity by her willingness to buy at her bid price and sell at her ask price. Each stock is assigned to one specialist, making the NYSE a monopoly dealer market.

On the other hand, the NASDAQ is a competitive dealer market. In this market, any dealer may make a market in any number of NASDAQ securities. Also, there is no limit on market makers that can represent a particular stock. Dealers are ready to buy and sell securities from their own inventory. Thus, the spread on the NASDAQ is expected to be lower. However, earlier empirical findings of Newton and Quandt (1979) had been contrary to this intuitive conclusion. Newton and Quandt (1979) concluded that the quoted spreads on the NASDAQ were higher than those comparable securities on the NYSE. The inside quote⁷ in the NASDAQ was found to be .5 % of the stock price, greater than that on the NYSE. However, recent empirical research has examined the differences between the two exchanges (Reinganum, 1990) and has refuted their conclusions.

⁷The inside quote in NASDAQ is the lowest ask price of any dealer in the stock minus the highest bid price of any dealer in this stock.

Reinganum (1990) researched NYSE and NASDAQ securities, asset pricing, and the impact of market microstructure. He segmented the 1973-1988 securities from the two exchanges into 10 comparable portfolios based on their size. He used the gross differential liquidity premium (GDLP)⁸ as a measure to test his hypothesis that, among smaller firms, the differences in liquidity premiums arise because of differences in the market microstructure. He found that the GDLPs decreased for larger capitalization stocks concluding that there were no differences in transaction costs, liquidity, and asset pricing in large stocks between the NYSE and NASDAQ. This conclusion was upheld even after controlling for various risks and other liquidity-related factors. Moreover, he observed that the NASDAQ offered better liquidity for smaller firms than the NYSE. Thus, liquidity advantage is a function of the security capitalization.

The NYSE-specialist market is no longer monopolistic; thus, the GDLP and bid/ask spreads were indistinguishable between the NASDAQ-dealer market and the NYSE-specialist market. Mann and Seijas (1991) offered the following reasons for the increased competition in the NYSE:

1. NYSE specialist faces direct competition from five electronically linked regional stock exchanges as well as "third market" dealers

⁸GDLP is the difference between the average monthly portfolio returns of NYSE and NASDAQ firms of roughly equivalent size, unadjusted for risk or other potential liquidity factors.

- who are part of Intermarket Trading System (ITS);
- 2. Competition from block trading desks;
- 3. Bid-ask spread is constrained by regulatory rules; and
- 4. All stocks on the NYSE have fluctuation guidelines based on price and average daily volume. Thus, the specialist's quoted price must be reflective of this liquidity standard.

Consequently, the specialist has little discretion over the spread of the bid-ask quotation. Further, the specialist participation rate in deals is lower than in the past (see Figure 3). The steady decline implies that the investors meet each other approximately 81% of the time to set the spread.

Figure 3 : Specialist participation rate. Adapted from Mann and Seijas (1991).

A last observation on the listing patterns of the exchanges is from the long-term exchange listing performance research. Dharan and Ikenberry (1995) concluded that significantly negative post-listing performance was persistent over the 36 months post-listing for the three exchange transfer types, AMEX to NYSE, NASDAQ to NYSE, NASDAQ to

AMEX. Overall, firms moving from NASDAQ to AMEX experienced the largest negative abnormal returns among the three transfers. The return behaviour changed somewhat for transfers during the 1962-1990 period. Firms transferring from AMEX to NYSE experienced fading abnormal returns, the worst being from 1962 to 1972. On the other hand, in NASDAQ to AMEX transfers, negative abnormal returns were magnified. This difference in magnitude of abnormal returns could be attributed to changes in preferences for exchanges, automation of the OTC market, and firms' attitudes and preferences toward some exchanges.

In summary, there exist some differences between OTC and other major capital markets. OTC markets provide better liquidity to small capitalization firms, however, the NASDAQ market has been comparable in liquidity for larger issues to the NYSE. Thus, firms, in various sizes, may not benefit from the listing decision, because it imposes unnecessary costs on firms' operations.

2.2.1.2 Liquidity Gain Hypothesis

Table 3 presents a summary of the major exchange listing research testing the liquidity gain hypothesis.

Table 3 : Liquidity gain hypothesis: selected studies

Study	Sample	Measure	Key Results
Kadlec & McConnell (1994)	NASDAQ to NYSE firms from 1980-1989.	Abnormal returns as a function of spread, number of shareholders.	Largest increase in value is for firms that exhibited the largest increase in number of shareholders and reduction of bid-ask spread.
Baker & Edelman (1992)	AMEX to NYSE transfers from 1982-1989.	Standard event methodology: abnormal returns sample split to subs according to volume.	Market responds favourably to low volume stocks that list on NYSE. AMEX high volume stocks displayed abnormal negative returns after listing consistent with EMH.
Cowan et. al. (1992)	NASDAQ to NYSE from	Regression analysis of various financial measures	Improved market spreads for low-liquidity stocks

Study	Sample	Measure	Key Results
	1973-1990.	tests performance measures along with trading characteristics.	The longer eligible firms stay on NASDAQ the smaller the probability they will switch to NYSE. Strong signaling from newly-listed firms.
Baker & Edelman (1990)	NASDAQ to AMEX from 1982-1987.	Standard event methodology -Liquidity measured as average percent spread.	Listing does not enhance value for all firms, market differentiate between firms based on liquidity characteristics.
Grammatikos & Papaionnou (1986a)	OTC to NYSE from 1975-1981 split to low and high-liquidity sub samples.	Event type methodology Average percent spread as measure of liquidity.	-Liquidity gains from less liquid stocks. -OTC system suitable for actively traded issues, NYSE specialists system suitable for less active issues.
Dubofsky & Groth (1984)	OTC to NYSE or AMEX 1975-1981.	-Amivest liquidity ratio ⁹ .	OTC to NYSE experience decline in liquidity AMEX to NYSE increases in liquidity.

Dubofsky and Groth (1984) defined liquidity as the time to execute trades at market price and the price concession that must be offered to sell shares within a given time. They used the Amivest ratio as a proxy to liquidity. Their sample consisted of newly-listed securities on the NYSE moving from AMEX or OTC, and on the AMEX moving from OTC between 1975 and 1981. The results were mixed. Securities that transferred to the NYSE from OTC experienced a 36 % decline in liquidity after listing. The AMEX to NYSE

⁹ It measures the average dollar volume of trading per percent of price change. Thus, the liquidity of stock i , on

$$\text{day } t, L_{it}, \text{ is estimated as } L_{it} = \frac{\sum P_{it}V_{it}}{1000 \sum |\% \Delta P_{it}|}$$

where P_{it} is the price of security i at day t and V_{it} is trading volume of security i at day t . High value of L_{it} means that many shares are traded with little change in price.

sample realized an increase in liquidity after the listing date, followed by a gradual decline to previous liquidity levels. The OTC to AMEX sample increased by 26 % in liquidity before listing. However, after listing, the decline offset prior gains in liquidity. Dubofsky and Groth attributed the difference to the trading mechanisms used in the exchanges. They described OTC as a competitive market and the NYSE as run by monopolist specialists.

However, the Amivest ratio is argued to be an inadequate measure of liquidity by Merton and Grossman (1988), Bernstein (1987), and Marsh and Rock (1986). The measure does not offer a fair representation of each size class. In addition, it fails to capture the immediacy that the market's structure offers. Exchanges differ in the type of transactions that predominate trading: large transactions occur predominately for large stocks in the NYSE market; small transactions occur predominately for small stocks on the AMEX; and large transactions predominate in medium-sized stocks in the OTC market. The ratio of dollar volume of transactions to change in price will automatically rise as average trade size rises; the dollar volume will grow faster than the price change. Those measures used by Dubofsky and Groth (1984) bias the results to favour the dealer markets such as NYSE. Hence, no meaningful comparison between exchanges' liquidity can be inferred.

Subsequent research did not attempt to measure liquidity of transferred securities to avoid the measurement problems. However, average percent spread was used instead to classify securities into high and low-liquidity groups and then their behaviour around listing studied.

Edelman and Baker (1990) and Grammatikos and Papaionnou (1986a) researched the liquidity characteristics of the OTC firms and behaviour around listing. Both used a standard event methodology and the average percent spread¹⁰ over the estimation period

¹⁰ Average percent spread is given by:
$$S = \frac{1}{150} \sum_{t=-51}^{-200} \frac{(P_{at} - P_{bt})}{(P_{at} + P_{bt})/2}$$

as a proxy for liquidity to classify the sample to high and low-liquidity.

Their results were mixed. Grammatikos and Papaionnou (1986a) observed that the low-liquidity sample experienced positive abnormal returns before listing due to investors' expectation of higher liquidity. On the other hand, the high-liquidity group experienced negative abnormal returns prior to listing. The EMH suggests this; high-liquidity firms incurred costs for no apparent benefit. Baker and Edelman's (1993) findings did support the existence of a significant difference between the two liquidity groups. However, no statistically significant abnormal returns were found in both liquidity groups around listing. Therefore, their findings did not support the anomalous behaviour for both liquidity groups around the listing event previously documented by Grammatikos and Papaionnou (1986a).

Cowan, Carter, Dark, and Singh (1990) combined measures of financial performance and liquidity to explain the firm's choice to list on the NYSE from NASDAQ during the 1973-1990 period. Their sample consisted of two groups: one choosing to list and the other (the control group) which included firms that were eligible to list on the NYSE, but did not. The comparison of both groups produced interesting results. Both groups differed significantly on 12 out of 17 measures used to represent microstructure and performance variables. The differences were significant in both the listing year and the year before listing. Firms that tend to transfer listing from NASDAQ to the NYSE have the following characteristics:

1. Smaller in capitalization;
2. Fewer shareholders;
3. Smaller public float;
4. Smaller average trades;

where P_{it} =ask price, and P_{bt} =bid price.

5. Lower price per share;
6. Fewer market makers; and
7. Higher betas than the control group.

The researchers run simple and multiple logistic regression to examine the impact of trading characteristics and performance on the decision to list. Trading and performance measures were supported marginally¹¹. Nevertheless, the most significant factor was the number of years the company was qualified for listing; the longer a firm is qualified to list the less likely it will. Cowan *et.al.* (1990) argue that the number of qualified years spent on the OTC market is a proxy for the information generated about the firm. Thus, exchange listing is not attractive as explained by informational content hypothesis. Liquidity motivates the listing decision for OTC firms to move to the NYSE.

In summary, the liquidity gain hypothesis contributes to the understanding of the exchange listing return behaviour. Although market microstructures for OTC and the major exchanges seems comparable and have no significant affects, asset pricing depends on the firm's liquidity level. Low-liquidity firms are expected to gain from listing on a major exchange, immediate price adjustment must take place after the listing announcement as the EMH suggests. The improved liquidity is the result of the specialist support for demand and supply in the stock. However, the abnormal negative returns of low-liquidity stocks after listing are still inconsistent with any form of the EMH. Investors should be relieved from demanding liquidity premiums subsequently lowering their required returns; however, this is not what the empirical evidence indicates. High-liquidity securities also earn significant negative returns; however, this result is consistent with EMH. High-liquidity securities do not gain any benefit from listing on major exchanges, but they do incur costs. These costs are translated to higher required rates of returns by investors, thus decline in firm's value. Further research needs to be done in the area of liquidity and

¹¹ The p-value was $.10 > p > .05$

market microstructure to understand these issues completely.

2.2.2 Information Content Hypothesis

The information content hypothesis posits that the pre-listing events, starting with the exchange listing application, signal management confidence in the firm, thereby raising market expectations. The new signal to the market is the listing application, and not the listing event itself. As mentioned earlier in Section 2.1.1, the formal listing application is equivalent to the actual approval for listing, once a favourable preliminary opinion is obtained. Table 4 presents a summary of major empirical research carried under the information content theme.

Table 4: Informational content hypothesis: selected studies

Study	Sample	Performance Measure	Key Results
Kadlec & McConnell (1994)	NASDAQ to NYSE firms from 1980-1989.	Stock abnormal returns. Merton's investor's recognition factor (I).	Merton's model that increasing investor base through recognition provides value is supported.
Bahandari et.al.(1989)	OTC to AMEX or NYSE from 1965-1984 Sample is compared with a control group.	Market model Systematic and unsystematic risk.	Newly-listed stocks have higher risk than the control group post-listing.
Papaioannou & Grammatikos (1986b)	OTC to NYSE from 1975-1981.	Abnormal returns measured as defined by CAPM. Abnormal returns measured for high and low performers based on EPS.	Low performers have positive abnormal returns between application and approval, and negative abnormal returns post-listing.
Baker & Spitzfaden	Wilcoxon matched samples	Beta as measure of firm's riskiness	The listing event has a significant effect on the cost of

Study	Sample	Performance Measure	Key Results
(1982)	of NASDAQ and AMEX or NYSE from 1978-1980.	Availability of information is measured by the number of news items appearing in the Wall Street Journal.	<p>equity of transferred firms.</p> <p>No significant difference between NYSE and NASDAQ firms in news availability.</p> <p>Firm's riskiness is not different between NASDAQ and major exchanges.</p> <p>Supports EMH view of listing, which does not differentiate between listed and unlisted securities.</p>
Ying et.al. (1977)	OTC to NYSE or AMEX 1966-1968	Risk-adjusted abnormal returns.	Listing is a positive signal for future corporate news performance.

It was expected that the empirical testing of the informational content hypothesis would rationalize the abnormality of the listing behaviour. This is intuitive for several reasons:

- # NYSE specialist system is structurally superior to the NASDAQ in assimilating information, in costs and speed. The specialist can observe large trades more readily than one of many NASDAQ dealers can. The specialist, due to his central position in the market, can detect informational motivated trades, thereby allowing her/him to adjust the spread before they occur. Thus, NYSE is more informational efficient than the NASDAQ (Stoll, 1985).
- # The introduction of NASDAQ has regulated the OTC market, and improved its efficiency and liquidity by providing automated and instantaneous quotes that lowered the transaction cost. The research around the impact of NASDAQ has provided two reasons for the improved liquidity of the OTC market. First, it lowered the search costs for investors, thus, prompting additional searches.

Subsequently, dealers are forced to offer competitive spreads to attract participants, and lower trading costs. Second, dealers' ability to analyse the shifts in other dealers' quotes, enables her/him to adjust inventories. This reduces the risks and costs for the dealer, as well as the spread for investors.

Kadlec and McConnell (1994) empirically tested the Merton model of capital market equilibrium with incomplete information, as an analytical foundation for the information content hypothesis. The only distinctive feature of Merton's model from CAPM is the unequal access to information across investors. The asymmetric information will induce investors to invest in firms which are known to them. A smaller investor base¹² will result in a smaller and weaker secondary trading market in the firm's securities. Firms will adopt financial policies that will increase the size of the firm's investor base, subsequently lowering investors' expected return and increasing the market value of the firm's shares. Hence, exchange listing is a mechanism to obtain investors' recognition and expand the investor base.

In Merton's model, the distinction is not obvious between the effect of informational content and liquidity on asset prices. There is an interaction between liquidity and investor recognition. Therefore, the research controlled for liquidity to test the investor recognition hypothesis¹³.

The investor recognition hypothesis was supported. Investor base had increased for newly-listed firms on the NYSE. Thus, as Merton (1987) suggested, firms that undertake decisions that will result in the largest increase in the number of shareholders will display

¹²The number of investors that hold the firms' stock.

¹³ The hypothesis states that an increase in the size of a firm's investor base will lower investors' expected returns and increase the market value of the firm's shares. Thus, corporate decision has to be geared toward increasing investor base. A way to increase the investor base is to list on major national exchange.

the greatest increase in stock price.

However, investor recognition, in McConnell and Kadlec's study, is an ex-post rationalization. Given that price gain occurs before the listing date, and investor base increases after listing, it would not account for the post-listing positive abnormal returns. One can say that, out of the eligible firms for listing, the ones experiencing the largest price increase will also have a higher increase in their investor base.

Baker and Spitzfades's (1982) study did not support the information content hypothesis and rejected it as an explanation for the abnormal behaviour around exchange listing. They studied the differences across exchanges in terms of information dissemination and the cost of equity as measured by the systematic risk of the company's stock, and the standard deviation of the distribution of security returns. The informational content hypothesis suggests that changes in risk characteristics before and after listing might be a plausible explanation for the abnormal security returns post-listing. The decrease in risk post listing is a result of an increase in exposure and the availability of information about the firm, thus, resulting in a decrease in the expected returns by investors. The study used a Wilcoxon matched sample based on Standard Industrial Classification Code, asset size, and debt ration of NASDAQ firms with NYSE or AMEX stocks between the period 1978 to 1980. Although listed firms on AMEX and NYSE have, on average, more information reported in the Wall Street Journal, there was no statistically significant difference in the news items reported. Moreover, the cost of equity and risk seemed to be not affected by the trading location. This conclusion is consistent with previous observations by Sanger and McConnell (1986) and Fabozzi (1981).

Bhandari *et.al* (1989) objected to the methodology used by Ying *et.al.* (1977), Sanger and McConnell (1987), Fabozzi (1981), and Baker and Spitzfaden (1982) to estimate risk around the listing event. They argued that ignoring the change in risk immediately following listing would produce biased estimates of beta. They hypothesized that the

temporary change in risk after listing may explain the post-listing performance of newly-listed securities. They used data covering the 1965-1984 period from stocks transferred from OTC to NYSE or AMEX. The post-listing return behaviour confirmed previous findings. The risk of newly-listed stocks was found significantly higher than pre-listing averages. Also, it was found to undergo a seasoning process and was found to adjust toward lower values in the days immediately following the listing. Although they did not prove their hypothesis, they concluded that the post-listing anomaly was actually worse than had been previously recognized.

Grammatikos and Papaionnou's (1986) study tried to distinguish between the listing signals based on firms' attributes. They classified eligible firms for listing as strong and poor performers and hypothesized that the stock's abnormal behaviour for poor performers will be stronger. Poor performers listing on a major exchange would send a stronger signal and indicate management confidence in future results compared with strong performers. Their findings do not support the signalling hypothesis. Additional analysis was conducted to control the effect of other company- related announcements; securities were dropped from their sample if they appeared in the Wall Street Journal between the application and listing day. This did not change their conclusions.

In summary, except for McConnell and Kadlec's (1994) test of Merton's investor recognition factor, other research does not offer any concrete evidence to back up the informational content hypothesis. Differences in cost of equity and risk across OTC and major exchanges seem to be negligible and the information seems to be disseminated efficiently.

2.3 Contrast between Informational Content and Liquidity Gain

Hypotheses

The information content hypothesis studies did not present comprehensive evidence. The liquidity gain hypothesis was more successful in explaining the abnormal securities behaviour around listing. By comparing tables 3 and 4, the majority of liquidity gain hypotheses research has been developed after 1971, the time of the introduction of NASDAQ system. On the other hand, information content research did not deliver the empirical results conceptualized by researchers. The evidence presented in the previous section ranged from complete rejection to the hypothesis (Baker and Spitzfaden 1982) to offering only tentative and weak proof (Grammatikos and Papaionnou, 1986b).

In addition, as discussed earlier, Reinganum (1990) concluded that the trading system is not a factor. Neither NASDAQ nor NYSE was exceptional in providing liquidity. Nevertheless, liquidity advantages are a function of the security capitalization. Thus, the liquidity gain hypothesis as a function of the firm's attributes is presented as the most logical answer to the question of securities' listing behaviour.

In summary, the informational content view was rejected as an explanation for listing behaviour. Baker and Spitzfaden (1982) evidence on the failure of informational content hypothesis to explain exchange listing provided support for EMH. The liquidity hypothesis offered a rationalization for high-liquidity stocks moving from OTC to a major exchange. The listing will reduce shareholder's wealth due to the cost associated with listing as opposed to no benefit from the listing. However, the puzzle of the abnormal negative post-listing return remains unsolved for low-liquidity firms.

2.4 Other Interpretations of the Post-Listing Stock Performance

2.4.1 Post-listing Performance and the Impact on Equity Offerings

Dharan and Ikenberry (1995) investigated the possible effect recent initial public offerings (IPOs) or seasoned equity offerings (SEOs) on the stock performance of a firm around listing. Ritter (1991) has documented the negative long-run performance of IPOs. SEO are also associated with a similar pattern of abnormal negative returns [Loughran and Ritter (1995), Nelson (1994), Mikkelsen and Shah (1994), and Spiess and Affleck-Graves (1995)]. Thus, for such firms may be the negative abnormal returns is just an artifact of a recent IPO or SEO. By grouping firms into two groups: one IPO or SEO issuance, and the other without, they concluded that the fact that firms made a SEO seems to have explained some portion of the post-listing downward drift among firms moving from the NASDAQ to NYSE. However, a significant unjustified portion remained.

McConnell and Sanger (1987) also explored this hypothesis. Their conclusions were in line with Dharan and Ikenberry (1995).

2.4.2 Another Possible Explanation of Post-Listing Performance

The post-listing performance can be attributed to market participants' adjustment for overreacting to the listing event. In other words, prices decline due to a 'correction'. According to this explanation, firms that experienced the largest positive reaction on the date of listing announcement should experience the largest decline in the post-listing period. McConnell and Sanger (1987) investigated this proposition, however, the tests failed to support this explanation.

Other hypotheses by McConnell and Sanger (1987) to justify the post-listing performance included:

1. Negative post-listing stocks returns are due to the loss of market-maker support,
2. Negative post-listing stock returns are due to peculiarities of the NYSE, and

3. Negative stock returns are due to insiders "dumping" the stock.

None of these was supported in explaining the post-listing performance.

2.5 Synthesis of US studies to Canadian Markets

2.5.1 Canadian Markets: Structure and Contrast to US Markets

Most of the studies on exchange listing in particular and capital markets in general have used US data. The conclusions and findings of these studies can not necessarily be generalized to a Canadian context. Therefore, a review of Canadian capital markets, similarities and differences between the US and Canadian markets, is essential for judiciously applying the findings to Canada's securities markets. This section will review the basic characteristics of Canadian capital markets, beginning with the return behaviour and systematic trading patterns. This will be followed by the applicability of the asset pricing models to Canadian markets.

Robinson and Smith (1993) studied the monthly return behaviour of TSE securities from 1950 to 1987, and daily returns from 1975 to 1987. They found that, like US stock returns, daily returns are not normally distributed. However, unlike US monthly returns, Canadian monthly returns are not normally distributed.

Furthermore, Canadian markets are more thinly traded than US markets. Fowler, Rorke, and Jog (1979, 1980) analysed the trading patterns on the TSE during the period of 1970 to 1979. They discovered that, of the 1,800 stocks continuously listed for at least 12 months, 1,043 or 58 % did not trade in one or more months. In contrast, the percentage of US stocks that do not trade on an average day is 1.6 % of all NYSE stocks, and 15.9 % of all AMEX stocks (Robinson and Smith, 1993). A more recent study on TSE occasional trading shows that trading infrequency is directly related to the price level of the individual stock (Robinson and Smith, 1993). The infrequent trading percentages were significantly different across both the day of the week and the security price level. This implies that thin

trading adjustments will have to be used to estimate risk.

Another critical point to examine is how well does Canadian markets conform to the standard asset pricing model, in particular the market model and CAPM. Robinson and Smith (1993) determined that the market model generally holds for Canadian securities data and "is useful and well-specified."

However, both markets share the same market structure as for trading systems. The TSE and US exchanges are characterized as continuous market with matching systems and order books¹⁴. Both employ a specialist/market maker support for listed securities. Canadian and US exchanges also offer similar services. This implies that price reaction, volatility changes, and volume patterns differences between the two markets will not be attributed to structural or regulatory differences.

In summary, Canadian and US capital markets have their similarities and differences. The return behaviours are generally similar, although when measured daily, they tend to differ. Canadian markets are less liquid than these in the US. This implies that US findings may not be directly extended to the Canadian markets.

2.5.2 Canadian Research Directions

The evidence on the existence of exchange listing behaviour across the two markets is limited. Insights are limited for financial practitioners pursuing global investment opportunities. Global market evidence supporting US findings will provide robustness and generalization of their conclusions. Providing an empirical perspective on markets outside the US is important, as globalization has become the rule rather than an exception in the investment world today. By presenting the Canadian evidence on exchange listing, one

¹⁴Transactions can occur whenever the orders of two traders cross. Although both markets are continuous, they open the trading day with batch trading, where orders over a period are stored and transacted together in a multilateral transaction.

hopes that this research will improve our knowledge of stock returns across markets, and provide some valuable insights to market participants, including investment managers, regulators, and academics.

CHAPTER 3: Hypotheses

3.1 Hypotheses and Theoretical Framework

3.1.1 Securities Behaviour Hypotheses

The first three hypotheses are designed primarily to verify whether the documented anomalous behaviour around exchange listing exists in the Canadian markets. These hypotheses will also measure the magnitude and the significance of the return behaviour around the listing event. The event type is an informational content and it is defined as the period between the announcement of listing and the beginning of trading in MSE, VSE, CDN, and ASE stocks on the TSE. However, the research is interested in examining a window of returns around the listing event. The pre-listing period is the period before the listing day, while post-listing is the period after the listing day. Here, the purpose is to assess the information content in an announcement by analysing excess returns prior to and including the date of the event. In addition, it is to test market efficiency, where price behaviour following an event is assessed. Studying the post-listing price behaviour reveals how immediate markets adjust for new information.

The basis for these hypotheses follows from the efficient market hypothesis¹⁵. The semi-strong EMH implies that investors cannot devise a trading strategy based on the listing event to earn excess profits. In this context, the trading location of securities is not an issue.

¹⁵ Fama (1970) defined the notion of capital market efficiency by articulating three types of efficiency, namely the strong form, the semi-strong form, and the weak form, each of which is based on a different notion of exactly what type of information is understood to be relevant in the phrase "all prices fully reflect all relevant information". The weak form implies that no investor can earn excess returns by developing trading rules based on historical price or return information. The semi-strong form of efficiency also asserts that no investor can earn excess returns from trading rules based on any publicly available information, while the strong-form efficiency suggests that no investor can earn excess returns using any information, whether publicly available or not.

H1: Securities that transfer exchange listing to the TSE, on average, will not experience significant abnormal rates of return in the short-term (e.g., 50 trading days immediately before the listing day¹⁶).

H2: Securities that transfer exchange listing to the TSE, on average, will not experience significant abnormal rates of return on the listing day.

H3: Securities that transfer exchange listing to the TSE, on average, will not experience significant abnormal rates of return in the short-term immediately after the listing day¹⁷.

The long-run performance of newly-listed securities is more indicative of market efficiency. Short-term variation from an equilibrium price is possible, due to variety of systematic influence on market returns, which will cause the Canadian markets to appear inefficient or "irrational" in the short-term. However, in the long-run these influences should disappear or "averaged out," thus the market is efficient and rational in the semi-strong form of the EMH. Also, in the long-run after market, the determination of investor uncertainty surrounding the event will reflect in the disappearance of any excess returns that accrue in the event period. An additional hypothesis to test the notion of Canadian market efficiency in the long-run must be stated. If markets are efficient, the full impact of listing should be captured on the announcement date, or at least disappeared in a short period afterwards. The rejection of this hypothesis is more problematic than the first three hypotheses. This will imply that the Canadian markets are inefficient in the semi-strong form.

¹⁶ The sample consists of stocks moving from VSE, ASE, MSE or CDN to TSE. For sample properties see Chapter 4.

Significant abnormal rate of return is defined in Section 5.3.1 and 5.4.1.

¹⁷ 50 trading days from the listing date define the short-term, see methodology Section 5.3 for details.

H4: Securities that transfer exchange listing to the TSE, on average, will not experience long-term significant abnormal rates of return after listing.¹⁸

The next two hypotheses aim to replicate in Canadian context the current findings of the literature with respect to the difference that exists between high and low-liquidity stocks. The liquidity gain hypothesis states that investors expect higher liquidity gains for less liquid OTC stocks, but not as much for their liquid counterparts after listing on the bigger exchange. Liquid securities have narrower spreads and lower costs for investors [Amihud and Mendelson (1986)]. Thus, higher liquidity reduces the required return by investors and the firm's cost of equity, thereby enhancing the firm's value.

Low-liquidity firms view listing as a "thing of value", and are expected to experience positive abnormal returns. On the other hand, high-liquidity firms are expected to suffer negative abnormal returns due to the imposed costs of the listing decision without any apparent benefits.

H5: Securities that transfer exchange listing to the TSE with pre-listing high-liquidity levels, on average, will not experience significant abnormal rates of return in the short-term after the listing day.

H6: Securities that transfer exchange listing to the TSE with pre-listing low-liquidity levels, on average, will not experience significant abnormal rates of return in the short-term after the listing day.

The company's previous trading location may not have an impact on the return behaviour. The documented evidence [Dharan and Ikenberry (1995) and Sanger and McConnel

¹⁸ The long-term is defined by 36 month after the month of listing, see Section 5.3.1 of methodology.

(1987)] indicates that similar pattern of return performance, positive abnormal returns before listing and negative abnormal returns after listing, is exhibited in all exchange to exchange listings. Observing the securities return behaviour for various Canadian markets is beneficial. Thus, sub-samples of Montreal, Alberta, Vancouver and CDN to TSE will be used to examine its conformity to the proposed hypotheses. Hypotheses 1 through 4 will be tested for each sub-sample.

3.2.2 Understanding the Post-Listing Return Performance

One of the frequently mentioned motives to obtain exchange listing is the desire to issue new shares (Goulet, 1974). Thus, the Seasoned Equity Offerings (SEO) effect is a probable explanation to the post-listing negative reaction. Evidence by Dharan and Ikenberry (1995) indicates that the presence of seasoned equity offerings explains the negative post-listing returns of newly-listed firms that made the offerings. The two leading explanations for this behaviour are (a) negative information signals from the offering about firm financial health and (b) the extra shares represent excess supply of securities that leads to downward pressure on the firm's stock price¹⁹. Therefore, when allowance is made for SEO effect, it is expected that post-listing abnormal return behaviour will disappear.

Moreover, when testing for the long-term performance of sample securities (H4), SEOs may explain the abnormal negative reaction in the long-run. This hypothesis is designed to verify that the negative reaction, if any, is not merely an artifact of SEOs.

H7: Securities that transfer exchange listing to the TSE, on average, will not experience significant abnormal rates of return in the long-term post-listing period even when excluding securities that issued SEOs after listing.

¹⁹ Harris and Gurel (1986) research indicated the existence of price pressure when stocks

The listing event for high-liquidity firms may be a signal of the intention to make new equity offerings. Newly-listed firms can be seen belonging to two groups: one, whose listing decisions are driven by liquidity enhancing motives; and another, whose listing decisions are driven by equity raising motives. The listing decision of highly liquid firms on major exchanges is counterintuitive, since those firms will expose themselves to additional costs and restrictions for no obvious benefit. Thus, raising additional equity financing may motivate them to obtain listing. The market will consider the listing decision as a signal of future equity offerings and reduce the price. However, low-liquidity stocks are more likely to be prompted by liquidity enhancing reasons. Thus, the propensity to issue additional equity is expected to be higher for high-liquidity firms and lower for low-liquidity firms.

H8: Securities that transfer exchange listing to the TSE with high-liquidity levels will not have a higher propensity to issue SEOs than the low-liquidity firms after the listing day.

In summary, research hypotheses are divided into two main areas. The first area is to document the behaviour around exchange listing, both the long and short-term behaviour. The second area is to provide a possible explanation of this behaviour, if it is indeed abnormal. Liquidity enhancing motive and SEOs are the proposed motivation behind listing. The research examines how pre-listing liquidity levels effect return behaviour after listing. In addition, the study investigates whether the negative returns associated with SEOs account for the post-listing abnormal negative reaction.

are added or deleted from the S&P 500 Index.

CHAPTER 4: Data and Sample

4.1 Sources of Data

Newly-listed securities on the TSE will be identified by examining the TSE Monthly Review and the TSE listing Statement over the 1984 -96 period, which lists all new securities added to the TSE with their listing dates, original market, and industry classification. The daily returns data for this study will be gathered directly from existing databases, the TSE/Western Database and the Canadian regional exchanges including Montreal Stock Exchange (ME), Alberta Stock Exchange (ASE), and Vancouver Stock Exchange (VSE), and the Canadian Dealing Network (CDN). The TSE/Western file also contains market index values. The pre-listing daily returns for the CDN, ASE, ME, and VSE firms will be gathered from their exchange databases.

4.2 Sample Selection Criteria

To qualify for the study, newly-listed firms must meet the following criteria:

- 1) The firm must be listed on the CDN, Alberta, Vancouver or Montreal exchanges before moving to the TSE in the period 1984 to 1996;
- 2) The firm must have daily return data available for a given 344 days around the listing event; 172 days before and after the listing date. The firm must also have daily return data available for the given period under consideration, in the TSE/Western database.
- 3) The firm must have 36 months of closing prices in the TSE/ Western database and the TSE monthly review.

4.3 Sample Size

Table 5 and 6 present the samples gathered for this study after the selection screens in Section 4.2. The total number of firms which pass all the selection criteria for the monthly sample are 179 stocks. However, the daily sample's selection criteria are more restrictive, thus it is smaller. Table 7 shows the daily sample selection criteria.

Table 5: Monthly sample size by exchange and year

From	84	85	86	87	88	89	90	91	92	93	94	95	96	Total
VSE	3	2	2	7	5	9	6	3	3	7	13	1	1	62
ASE	2	-	1	4	2	1	1	4	7	14	10	8	16	70
ME	-	-	-	-	-	1	1	-	3	3	4	3	3	18
CDN	-	-	-	-	-	-	-	-	-	2	11	6	10	29
Total	5	2	3	11	7	11	8	7	13	26	38	18	30	179

*Note that the CDN was established in 1993 as an OTC organized market. Companies were traded on the COATS system before the CDN

Table 6: Daily sample size by exchange and year

From	84	85	86	87	88	89	90	91	92	93	94	95	96	Total
VSE	-	-	1	5	5	5	4	1	3	7	4	-	1	36
ASE	1	-	-	2	1	-	-	3	5	9	2	6	4	33
ME	-	-	-	-	-	1	1	-	3	3	1	2	2	13
CDN	-	-	-	-	-	-	-	-	-	-	5	5	7	17
Total	1	-	1	7	6	6	5	4	11	19	12	13	14	99

Table 7: Daily sample screens

	VSE	ASE	ME	CDN	Total
Total companies eligible for research	76	77	18	30	201
Firms available on TSE/ Western	53	70	16	26	165
Firms with post-listing period of 172 trading days	44	33	13	20	110
Firms with pre-listing period of 172 trading days, and research final sample, and final sample:	36	33	13	17	99

CHAPTER 5: Methodological Design

5.1 Event Study Methodology

Standard event methodology is the primary methodology being used here. The event of interest is the listing of CDN and other regional exchanges, (Montreal, Vancouver and Alberta) shares on the TSE. The event being studied is the impact of the information generated from the company's announcement/ conditional approval of obtaining a TSE listing.

5.1.1 TSE Listing Procedure

The listing procedure implies three critical dates and periods. These dates are the application date²⁰, announcement/ conditional approval date, and listing date. Equally important are the periods around those dates. An excerpt from the TSE listing manual regarding the listing process is found in

Figure 4 : Critical events in the listing process on the TSE.

²⁰The application is accepted by the TSE on confidential basis, thus the research will disregard the application day and exclude it from specific testing. The following is a quote from TSE officials regarding this matter:

"All application for listing on the TSE are accepted on a confidential basis until a company becomes conditionally approved. Conditional approvals are released to the public by the TSE in the Daily Record which is a TSE publication that is subscribed to by various participants in the investment community. It is only at conditional approval time that market participants in the investment community. It is only at conditional approval time that market participants would officially know that a company has applied."

Appendix 1. The above dates and periods are summarized in Figure 4. The listing research interest is generally devoted to the stock return behaviour surrounding these periods.

No new information is revealed on the actual listing date. The market already discounts information concerning the transfer from the application date and abnormal share price response, if any, should be experienced on the announcement / conditional approval date. However, the event date in this research will be the listing date, $t=0$, due to the difficulty in obtaining the announcement/ conditional approval date from the TSE publications.

Conditionally approved securities are announced immediately in the TSE daily record. However, the announcement date is not disclosed in the TSE listing statement, where the firm detailed information, original trading location, and TSE listing date is made known. Research eligible companies were identified from the TSE Listing Statement and the TSE Review. The difficulty in obtaining the announcement date is that there is no reference point between the two. Moreover, the information is contained in hard copy media, which made it difficult to locate sample companies. Hence, the listing date was selected as the defining point of the research event. However, the announcement date is typically 3–4 weeks before listing, which is well within the testing period (See Appendix 3 for details of the TSE listing process).

5.2 Stock Returns

The return-generating model used in this research is Sharpe's (1963) market model, as given by:

$$R_{i,t} = \alpha_i + b_i R_{m,t} + e_{i,t} \quad ,$$

Where

$R_{i,t}$ = the observed return for security i on day t ,

α_i = a constant that represents that portion of security i 's return that is unchanged from period to period,

b_i = a constant that reflects the sensitivity of security i 's return to changes in the

market return,

$R_{m,t}$ = the observed return on the market proxy on day t ²¹ ²², and

$e_{i,t}$ = residual return that captures the reaction of the security's return to company-specific information rather than to information about market-wide factors.

The market model is preferred to the CAPM in the Canadian context. This is because the market model is better specified than the CAPM using Canadian data. Robinson and Smith (1993) empirically examined and compared the market model and CAPM, they concluded that the market model holds better using Canadian data than does the CAPM.

The estimated market model is given by: $R_{i,t} = a_i + b_i R_{m,t} + e_{i,t}$, where a_i and b_i are the ordinary least square (OLS) regression coefficients (assumed constant), subject to the normal regression assumptions: $E(e_{i,t}) = 0$ and $(e_{i,t}, e_{j,t}) = 0 \forall i \neq j$ and estimated by regressing a time series of security returns on that of the market portfolio; $e_{i,t}$ is an error term that captures any variability in $R_{i,t}$ unexplained by changes in $R_{m,t}$. The OLS parameter estimates are determined for individual securities.

²¹The TSE/ Western database equally weighted return-index will be used as a market proxy for the daily return-generating model estimates. The index is the most suitable among other known indices like the TSE 200, the TSE 300 or total return index. The TSE 200 index includes small capitalization and junior issues, which resemble the sample researched. However, the index started in 1993, which is well after the start of this study. The TSE 300 index is dominated with "fat" stocks with high-liquidity, which are not representative of the research sample. The TSE/Western equally weighted return-index is composed of the rate of return of all issues on file and calculated on an equally-weighted basis. The index is available from January 1975 to date.

²²The CDN market does not calculate an index for its traded issues, or report any kind of market activity, thus a market proxy must be estimated to calculate stock returns. The same market proxy as in note 21 will be used to calculate the pre-listing S-W beta.

5.2.1 Infrequent Trading Adjustment

The market model beta coefficients estimated from Canadian time series may be biased due to thin trading (Calvet and Lefoll, 1981 and Fowler *et.al.* 1979). This may introduce serious difficulties to the research (Scholes and Williams, 1977). Thin and non-synchronous trading will cause the market model to underestimate the true beta of securities and this underestimation is larger the less frequent the stock trades. The widely used Scholes-Williams (1977) approach will be applied to estimate beta. Hence, the abnormal risk and market-adjusted return for security i on day t , A_{it} , is given by

$$A_{it} = R_{it} - \hat{a}_i - \hat{b}_i R_{mt},$$

where a_i and b_i are the Scholes and Williams parameter estimates (S-W) for security i and estimated as follows

$$\bar{a}_i = \frac{1}{T-2} \sum_{t=2}^{T-1} R_{it} - \bar{b}_i \frac{1}{T-2} \sum_{t=2}^{T-1} R_{mt},$$

$$\bar{b}_i = \frac{b_i^- + b_i + b_i^+}{1 + 2\rho_m},$$

where ρ_m is the estimation period value for the first-order autocorrelation coefficient of the equally weighted market index. The estimation period is defined as $t=-171$ to $t=-51$ days before listing and $t=51$ to $t=171$ after listing, please see Section 5.2.2 for a discussion of parameters estimation period. b_i^- (the lagged beta estimate) and b_i^+ (the lead beta estimate) are based on the following OLS estimation period values of

$$\frac{\text{cov}(R_{it}, R_{mt-1})}{\sigma(R_{mt})\sigma(R_{mt-1})} \quad \text{and} \quad \frac{\text{cov}(R_{it}, R_{mt+1})}{\sigma(R_{mt})\sigma(R_{mt+1})}$$

respectively. The lagged beta estimate is the parameter estimate obtained from the simple OLS regression of R_{it} on the lagged market return $R_{m(t-1)}$. The lead beta estimate is obtained from the simple OLS regression of R_{it} on the lead market return $R_{m(t+1)}$.

5.2.2 Adjustment for Possible Shifts in Systematic Risk

The assumption of constant model parameters α_i and β_i -Scholes and Williams model parameters may bias post-listing excess return measurement. A change in the post-listing systematic risk in relation to its pre-listing levels would bias the abnormal performance, although Sanger and McConnell (1983), Fabozzi, Hershkoff (1979), Ying *et.al.* (1977), and McConnell and Sanger (1986) find no significant shifts in the OLS parameter estimates of the market model following listing using monthly and weekly data. However, with daily data being used here a temporary shift in systematic risk level in the period immediately surrounding the listing date is possible, which may introduce a bias in the results.

To eliminate the possibility of this type of bias Scholes-Williams beta will be estimated twice. For the pre-listing period, the Scholes-Williams beta will be estimated from $t = -171$ to $t = -51$ relative to the application day and the estimated parameters are used to calculate excess returns from $t = -50$ until one day before the listing day. For the post-listing period, the market model will be estimated from $t = +51$ to $t = +171$, and excess returns are calculated from $t = 0$ to $t = +50$ relative to listing day. When a security does not have sufficient data for model estimation, it will be excluded from the analysis.

5.3 Excess Return Measurement

Excess returns are measured for two time horizons: the long-term and short-term performance. The short-term is defined as being 100 trading days around the listing date, which is $t=0$. The long-term performance is defined as 36 trading months following the

listing month²³.

5.3.1 Short-term Performance

Excess returns are defined as the realized returns less expected returns as calculated by the market model. Thus, risk adjusted excess returns for security i at day t are given by:

$$\varepsilon_{it} = R_{it} - (\hat{a}_i + \hat{b}_i R_{mt}).$$

To ensure the robustness of excess return measurement²⁴, an additional definition of excess returns, e_{it} , is adopted. The market adjusted returns model is consistent with the market model if all securities have a beta of one²⁵. Market adjusted excess returns are

²³ The listing month was excluded from analysis to the possible seasoning process by newly listed securities during this time.

²⁴ Alternative excess returns measurement is necessary. The models mentioned are not completely free from shortcomings to warrant its exclusive use in this study. The market-adjusted model is useful in a well-diversified sample with a beta of one. However, it is a very crude method, because it disregards individual stock's risk. As a result of the high percentage of natural resource companies in the weight of the TSE 300, the market model parameter estimation is likely to introduce bias to the CARs that follow from favourable surprises such as the application for listing.

²⁵ The model also assumes a zero intercept.

measured by

$$\varepsilon_{it} = R_{it} - R_{mt}$$

The daily portfolio abnormal return is an equally-weighted average of individual securities' abnormal returns (AR_t) for day t .

$$\overline{AR_t} = \sum_{i=1}^{N_t} \frac{\varepsilon_{it}}{N_t},$$

where N_t is the number of securities in the portfolio on day t . With daily data, the research will examine the event-time period which begins -50 trading days before the listing event date ($t=0$) and ends 50 trading days after the event.

5.3.2 Long-term Performance

The purpose of this section is to assess the long-term performance and wealth effect of newly-listed firms during the 36 month, following the first month of listing. To examine the long-term wealth effect of listing, the study will use cumulative average abnormal returns CAR and Wealth Relative measure. This methodology was employed by Ritter (1991) and Levi (1993) to examine the long-run performance of initial public offerings. However, to avoid the problems of matching and delisting, with its attendant portfolio re-balancing, this study will employ a variant of market adjusted abnormal return methodology. The total return on the i th security from the listing month to t trading months after the event, R_{it} , is computed as

$$R_{it} = \frac{P_{it}}{P_{io}} - 1,$$

where P_{it} = the closing stock price in month t and

P_{io} = the closing price in the listing month.

Similarly, the return on the market index during the same period, R_{mt} , is also computed as

$$R_{mt} = \frac{P_{mt}}{P_{mo}} - 1$$

where P_{mt} = the closing market index value at month t and

P_{mo} = the closing market index of the listing month.

The market adjusted abnormal returns for each newly-listed firm, i , on the TSE in month t , AR_{it} , is then computed as

$$AR_{it} = \left[\frac{(1 + R_{it})}{(1 + R_{mt})} - 1 \right] \times 100$$

The average market adjusted return on a portfolio of N_t stocks for month t is the equally weighted-arithmetic average of the market-adjusted returns

$$\overline{AR}_t = \frac{1}{N_t} \sum_{i=1}^{N_t} AR_{it}$$

And the cumulative market adjusted after-market performance from the listing month to any period is the summation of the average market adjusted returns, cumulative average returns, CAR_t ,

$$CAR_t = \sum_{i=1}^{36} \overline{AR}_i$$

Alternatively, to attest whether the listing decision is a wealth creating one over the long-run, that is, newly-listed firms performed better than the market in the long term, a wealth

relative performance measure, WR , will be computed as

$$WR = 1/N \sum_{i=1}^N \frac{1 + (1/36 \sum_{t=1}^{36} R_{it})}{1 + (1/36 \sum_{t=1}^{36} R_{mt})}$$

A wealth relative greater than 1 implies that the listing decision is value added, since newly-listed firms outperformed the market and the reverse is true.

For the purpose of completeness and robustness, the above measures will be recalculated using industry sub-group indices. The sample will be grouped into sub-samples as to the definition of the TSE/Western database, and these sub-samples will be matched to the TSE industry sub-group indices to calculate abnormal returns and WR measure. For example, R_{mt} will be defined as the return on the paper and forest index during the post-listing period for stock i , and will be calculated as above.

5.4 Hypotheses Testing

As indicated by the null hypotheses for this study (see Section 3.1), the fundamental task for this study will be to assess the return behaviour around the listing event. In addition, it will provide an explanation to this behaviour. The following are analytical techniques adopted to test these hypotheses.

5.4.1 Return Behaviour of Canadian Securities around the Event of Listing and in the Long-run (Hypotheses 1-4)

To test the null hypothesis that the newly-listed securities produce the same abnormal rates of return as the market portfolio, excess returns will be grouped and organized with the identification of the listing date as identified in Figure 4. To test for the statistical significance of the average abnormal return (AR_t) on the listing date (H2), the following parametric test will be employed (Brown and Warner, 1985), and it is computed as

$$\frac{\overline{AR_t}}{\frac{\hat{S}(\overline{AR_t})}{\sqrt{N_t - 1}}},$$

where

$$\hat{S}(\overline{AR_t}) = \sqrt{\sum_{t=-50}^{t=+50} (\overline{AR_t} - \overline{\overline{AR}})^2},$$

$$\overline{\overline{AR}} = \frac{1}{101} \sum_{t=-50}^{t=+50} \overline{AR_t},$$

and N_t is the number of sample securities at day t .

To test the post and pre-listing periods for abnormal returns, event windows will be used to group average abnormal returns. Average abnormal returns for an event window is summed to make cumulative average abnormal returns (CAR_{t_1, t_2}),

$$CAR_{t_1, t_2} = \sum_{t=t_1}^{t_2} \overline{AR_t},$$

where CAR_{t_1, t_2} will be calculated for the following, t_1 and t_2 : (-50,+1), (-31,+1), (-11,+1), (-1,0), and (-1,+1)(H1). Alternatively to test the post-listing period (H3), CAR_{t_1, t_2} will be calculated for the following t_1 and t_2 : (0, +1), (-1, +11), (-1, +31), and (-1, +50). Statistically²⁶ significant CAR_{t_1, t_2} implies abnormality in that event window.

²⁶T-test will be used to test for the CAR_{t_1, t_2} significance for event windows used.

When testing for the long-term performance (H4), monthly data are used. Thus, the event period begins with the first month, $t=1$, after listing month, $t=0$, and ends 36 months after the event.

5.4.2 Liquidity Gain Hypothesis Test (Hypotheses 5 and 6)

To test the liquidity gain hypothesis, sample securities will be grouped based on their pre-listing liquidity levels. The sample will be split into two groups: firms that enjoyed high-liquidity during the pre-listing period, therefore, have low potential for liquidity gains, and firms that had low-liquidity during the pre-listing period and, therefore, have high potential for liquidity gains when they move to the TSE. The classification of each firm into the two groups is based on the average percent median spread during the pre-listing period. The average percent spread (S) is calculated over the estimation period (from -100 to -51 trading days before the listing day), and it is calculated as follows

$$S = \frac{1}{50} \sum_{t=-100}^{-51} \frac{P^A_t - P^B_t}{(P^A_t + P^B_t)/2}$$

where P^A_t = ask price, and
 P^B_t = bid price.

Companies are ranked in increasing order of spread and the median spread is used to split the original sample into two groups, the high-liquidity (low spread) and the low-liquidity

The t-test is computed as $\frac{\frac{CAR_{11,2}}{\hat{S}(CAR_{11,2})}}{(t_2 - t_1 + 1)^{1/2}}$

(high spread) firms to allow a separate event analysis on the two groups.

5.4.3 SEOs Testing Hypotheses (7 and 8)

To explore Hypothesis 7 and Hypothesis 8, sample securities will be split to two samples: first, a sample with securities that did not issue SEOs, and the second sample is of securities that issued SEOs within two years of the listing day. Firms are classified as having had a new issue (or not) if the number of shares outstanding increased by 20% (less than 20%) to its pre-offering float within two years from listing. The increase in number of shares must be attributed to equity offering to the public only, i.e., stock splits and employee stock option plans do not qualify as SEO for the purposes of this research. Both samples post-listing returns will be compared; the abnormal returns for both samples are compared by testing for statistical significance. The t test statistic is computed as

$$\frac{\overline{AR1_t} - \overline{AR2_t}}{\sqrt{S_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

where

$\overline{AR1_t}$ = is the average post-listing abnormal returns for the complete sample,

$\overline{AR2_t}$ = is the post-listing average abnormal returns for sample securities with SEOs,

S_p = is the pooled variance estimate²⁷ given by

$$S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2},$$

where

S_1 = the standard deviation for the average post-listing abnormal returns for the complete sample,

S_2 = the standard deviation for the average post-listing abnormal returns for sample

²⁷ Sample variances will be tested for equality.

securities with SEOs. And n_1 and n_2 are their sample size respectively.

Insignificant difference will indicate that the issuance of SEOs after listing, H7, does not explain the negative abnormal returns in the post-listing period.

To test Hypothesis 8, a statistical inference to the significance of the difference in the propensity to issue SEOs between high and low-liquidity groups. Sample firms with SEOs are newly-listed firms with equity offering within two years of listing²⁸. The firms are then cross-referenced to their respective liquidity levels at the time of listing. A non-parametric test is used since the probability percentages are drawn from unknown distribution. The McNemar test is employed to investigate the null hypothesis. The test is calculated as

$$\chi^2 = \frac{(|H - L| - 1)^2}{(H + L)},$$

where

H = number of high-liquidity firms with SEOs, and

L = number of low-liquidity firms with SEOs.

²⁸Reviewing the TSE monthly review and stock guide for change in equity will identify firms with SEOs.

CHAPTER 6: Empirical Findings

6.1 Securities Behaviour around the Listing Event

The following will examine newly-listed securities around the listing event, that is, Hypotheses 1 to 4. The first Section, 6.1.1, will examine the short-term performance of those securities. Next, in Section 6.1.2 the long-term performance and wealth creation of the listing decision will be investigated. Both the short-term and long-term return behaviour were examined using two return adjustment methodologies to ensure robustness and validity of conclusions.

6.1.1 Short-term Performance Findings

Table 8 summarizes the daily cumulative average abnormal returns (CAR) findings and statistical significance for newly-listed securities for selected intervals around the listing day. The first column shows the risk-adjusted CARs and their corresponding t-test. For each firm, average abnormal returns are summed during the specified event window, and then averaged across all firms. The second column presents corresponding values for market-adjusted CARs and their statistical significance. See Appendix 4 for the daily average abnormal return and cumulative average abnormal returns around listing; Table 4-17 displays risk-adjusted returns, and Table 4-18 shows the corresponding market-adjusted values.

Table 8: Risk-adjusted and market-adjusted daily CARs over time intervals surrounding the listing event

Event Window	Risk Adj. CAR	t-test	Mkt. Adj. CAR	t-test
(-50,+1)	-0.017735643	-1.3603261	0.116708029	4.445186
(-31,+1)	0.000579401	0.0354022	0.086394251	2.621376
(-11,+1)	0.011657159	0.4470528	0.049953584	0.9513184
(-1,0)	-0.004364525	-0.0656518	0.001828944	0.0136616
(-1,+1)	-0.002755333	-0.0507609	0.003347892	0.0306281
(0,+1)	0.001555905	0.0234041	0.001679963	0.0125488
(-1,+11)	-0.043231315	-1.6579238	-0.04098633	-0.7805456
(-1,+31)	-0.061829532	-3.77787	-0.062252301	-1.88886
(-1,+50)	-0.084495588	-6.48082	-0.085203076	-3.24522

The data shows that newly-listed stocks experience a significant discount in the post-listing period. This observation is valid for both model adjustment methodologies, the risk-adjusted returns and market-adjusted returns. The risk-adjusted CAR for the post-listing period (-1 to +50) was -8.4%, and it was significant at the .05 level. It was also negative and statistically significant at the .05 level for event window (-1 to +31). These results are consistent with the market-adjusted CARs as it was negative and statistically significant at the .05 level. Therefore, results are in-line with rejecting the null hypothesis that newly-listed securities will not earn significant abnormal returns after the listing day.

The magnitude of the abnormal performance is, nevertheless, of interest. As seen in Table 8, CARs for newly-listed securities are negative throughout all post-listing event windows tested. However, abnormal returns seem to intensify during the earlier trading days of the post-listing period, and fade toward the later trading days of the research period. Most of the decline occurred in the earlier trading days of the post-listing period. Event window (-1 to +11) CAR is negative, albeit statistically insignificant, and it accounted for about half of the entire post-listing decline. The last 20 trading days accounted for only - 2% the discount.

The abnormal performance reasserts that newly-listed securities have performed poorly compared to the market. In support of these findings, US based studies also report significant negative returns after the listing date. For example, Baker and Edelman (1992) find a significantly negative CAR in all test periods after the listing day for firms transferring from the AMEX to NYSE. Fabozzi (1981) also finds significant negative abnormal returns for the first and eighth weeks after listing. However, there are some minor inconsistencies in the pre-listing behaviour between literature findings and the research results.

The pre-listing abnormal return analysis varies between the two return adjustment methodologies. During the pre-listing period, the risk-adjusted CAR does not display any

notable discount or premium, and the statistical tests for all pre-listing intervals are insignificant. Therefore, pre-listing results are consistent with the semi-strong market efficiency hypothesis. Correspondingly, the pre-listing returns of newly-listed securities show no reason to reject the null hypothesis that those securities will not earn significant abnormal returns before the listing day, H1. However, market-adjusted returns analysis leads to a different conclusion.

The newly-listed securities sample, on a market-adjusted basis, earned positive abnormal returns before listing. For the pre-listing interval window (-50 to +1), sample firms earned more than 11% compared to their respective markets. This statistically significant abnormal performance at the .05 level suggests that listing on the TSE was a "thing of value" and affirmed previous literature findings [Edelman and Baker (1993,1992,1990); Sanger and McConnell (1987,1986,1984); Grammatikos and Papaionnou (1986a, 1986b); Bahandari *et. al.* (1989)] that newly-listed securities in the pre-listing period have performed well compared to the market. Accordingly, pre-listing results are consistent with rejecting the null hypothesis that newly-listed firms will not gain significant abnormal returns before listing on the TSE.

Figure 5 : Daily CAR around the listing event (-50,+50)

Figure 5 shows the daily CARs for the full sample for ± 50 trading days around the listing day ($t=0$). The results are consistent with the summarized intervals, as reported in Table 8, and show that CARs increase before listing, only on a market-adjusted basis, but decrease after listing, using both adjustment models. Although market-adjusted CAR does not reach negative values at the end of the research period, the accumulated returns earned after the listing day are equal to the risk-adjusted ones (See Figure 6). The contrast in conclusions, particularly in the pre-listing period, between model adjustment methodologies may be explained by the S-W beta shift.

Table 9: Sample and by transfer type S-W beta used for risk adjustment

	Sample	ME	CDN	ASE	VSE
Pre-listing	0.66	1.07	0.63	0.63	0.56
Post-listing	0.11	0.54	0.54	0.10	-0.19 ²⁹

Table 9 shows the average S-W betas for the full sample and by exchange for the pre-listing and post-listing estimation periods. The beta drift between the post-listing and pre-listing periods needs qualification.

The reduction in beta can be attributed to decrease in perceived riskiness of newly-listed stocks by the market. Lower betas, or company risk, can be the result of market confidence in the tighter regulation of the TSE compared to those of Canadian regional exchanges. Moreover, TSE listed companies are more scrutinized and covered by securities analysts compared to when they were listed on the smaller exchanges. Thus, investors required returns are lower for newly-listed stocks, and therefore lower beta.

²⁹ Using the TSE index to estimate beta of VSE companies in the post-listing period may have produced negative beta. VSE listed stocks are mainly resource companies. Commodity prices did not perform as well as the overall market in some periods of this research. Thus, when VSE companies made the transfer to the TSE their performance continued to lag the TSE index, which were used to estimate beta in the post-listing period.

The high level of pre-listing beta compared to post-listing beta (pre-listing beta was five times the post-listing one for the overall sample) may have affected newly-listed securities gains before listing. Thus, conclusions may diverge depending on the model adjustment used. In fact, when CAR was measured for the post-listing period only, it was highly comparable and statistically indifferent at the .05 level between the risk-adjusted and market-adjusted models. Figure 6 displays the post-listing CARs for both models. Both series display similar return behaviour and discount, which may suggest that beta shift has an impact on CAR behaviour before listing.

Figure 6: Post-listing daily CAR for newly-listed securities

In conclusion, the mixed results obtained from both return adjustment models may cast some doubt on research findings robustness particularly for the pre-listing period.

However, the post-listing abnormal behaviour for newly-listed securities is evident; newly-listed securities earn negative abnormal returns after listing. That is, the Canadian capital market behaviour is not consistent with EMH in the semi-strong form, and therefore Hypothesis 3 is rejected.

6.1.2 Long-term Performance Findings

Figure 7: Post-listing monthly average returns: 1984 to 1996

Newly-listed securities' post-listing performance displayed a deep discount on a market and industry adjusted basis for the first 21 months following the TSE listing. Figure 7 plots the market-adjusted and industry-adjusted average AR series for newly-listed companies on the TSE during January 1984 to December 1996. Companies produced negative average ARs up to the 21 months after listing. The first month abnormal discount of 1.67% was not statistically significant at the .05 level. However, the discount intensified at increasing rates. During the abnormal discount period of 21 months, there were 12 months of statistically significant negative abnormal AR at the .05 level. The market-adjusted abnormal discount deepened and topped at -6.9% in month 19, which was statistically significant at the .05 level (t-value of -2.813), with only 29.8% of sample stocks having positive returns. The discount increased in size during the two years after listing when abnormal returns were measured on an industry-adjusted basis (see Table 5-19 in Appendix 5 for the monthly average AR and their t-tests). The discount reached 10% in month 19 and was statistically significant at the .05 level (t-value of -4.465), and there

were 18 out of 24 months of statistically significant negative average AR at the .05 level. The abnormal discount was absent afterwards. The discount was eliminated by month 22 on market-adjusted basis, and in month 24 on industry-adjusted basis. The discount pattern resembles the US long-run negative drift of post-listing stock returns reported by Dharan and Ikenberry (1995). However, Canadian post-listing discounts lasted 22-24 months, while the US post-listing drift persisted for 36 months.

Table 10 : Post-listing monthly CAR: 1984-1996.

Months	Six-mo. CAR	CAR
1 to 6	-2.60%	-2.60%
7 to 12	-16.10%	-18.80%
13 to 18	-20.80%	-39.60%
19 to 24	-1.40%	-41.00%
25 to 30	53.90%	12.90%
31 to 36	-9.40%	3.50%

Table 10 reports post-listing CARs for 179 firms that listed their common stock from the Canadian regional exchanges (ASE, CDN, VSE, or ME) during the period from January 1984 to December 1996. Market adjusted abnormal returns are reported for six-months intervals (Six-mo. CAR) as well as cumulatively (CAR) beginning in the first calendar month following listing. Newly-listed stocks accumulated 2.6% abnormal discount in months 1 through 6, and were statistically significant at the .1 level. However, larger and more significant abnormal discounts³⁰ occurred in months 7 to 12 and 13 to 18. Months 25-30 produced a significant positive six-months CAR of 53.9%, which erased all previous negative returns. It is interesting to note that this gain was not attributed to data outliers, if the return behaviour was spread out across all securities during that period.

³⁰ At the .01 level.

Figure 8 plots the market-adjusted and industry-adjusted CAR series beginning with month 1 following the listing month, for newly-listed securities sample during January 1984 to December 1996. The figure shows clearly that the poor performance of newly-listed securities lasted for approximately two years. The market-adjusted CAR reached its lowest level at -48.08% in month 21 and was statistically significant at the .05 level, and ended at 3.4%, however it was statistically insignificant in month 36 at the .05 level. The discount disappeared afterwards with no significant observable trend. However, this abnormal discount was not robust across all types of exchange listings as shown in Figure 9.

Figure 8: Market-adjusted and industry-adjusted monthly CARs 1984-1996

Figure 9 plots the post-listing CARs over 36 months for sample firms that moved to the TSE from the Canadian regional exchanges during January 1984 to December 1996 by transfer type. The post-listing discount was only evident in the CDN and VSE stocks, and it was larger in magnitude and longer in duration compared to the overall sample. Newly-

listed companies originating from the OTC market were displaying an increasingly large abnormal discount in each month. The same was true for VSE companies, though to a lesser extent. CDN companies accumulated their largest discount by month 36 (market-adjusted average ARs were - 60.02%), while the VSE companies accumulated -21.4% discount by month 36. Both were significant at the .05 level. ASE and ME companies displayed an opposite behaviour to those of the CDN and VSE companies. ASE and ME newly-listed companies on the TSE accumulated abnormal gains of 18.8% and 62.8% respectively by month 36. Both figures were statistically significant at the .01 level. Both sub-samples had much higher gains throughout the 3-year period. ME companies in month 32 accumulated a 130% gain, while the ASE companies premium was 56% with 45% of the sample having positive returns. A possible explanation of this divergence in behaviour is that the market still perceives the VSE and CDN companies as penny/ speculative stocks, the same perception as if they were listed on their original exchanges. That is, it is highly unlikely that the market will consider these stocks as viable investment opportunities, and therefore suffer from "neglect" when they list on the TSE. Tables 5-20, 5-21, and 5-22 in Appendix 5 lists the monthly average ARs and CARs up to 36 months

Figure 9: Market-adjusted monthly CARs by transfer type

for newly-listed companies on the TSE by the originating exchange.

Both the overall results and the sub-samples evidence indicate that the Canadian markets are not consistent with the notion of semi-strong form of efficiency. Sub-sample results showed consistent abnormal behavior, whether it was a discount or a premium. The abnormal performance was evident during the 36 months research period, with distinct attributes for each specific type of listing. The systematic abnormality of sub-samples leads to the rejection of Hypothesis 4.

6.1.2.1 Wealth effect of TSE listing

Figure 10: WR by transfer type

The wealth relative measure for all types of listing is marginally greater than one. Figure 10 displays the wealth accumulation for the overall sample, and for the type of exchange listing. The overall results do not show significant wealth creation and they are very sensitive to the market and securities return measurement computation. A more conventional stock return measurement³¹ resulted in a WR measure of .995 for the overall

³¹ The alternative rate of return measurement for market and stock prices was computed as follows: $R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}}$

sample. Although the difference between the two values is small, it clearly defines the listing decision as a value-added one or not. The negative CAR associated with listing decision curbed wealth creation in the long-run for sample securities.

A closer examination of the WR measure reveals that wealth creation is dependent on the type of exchange listing (Refer to Figure 10). The ASE and ME have WR measures significantly greater than one. Companies originating from those exchanges have created wealth for their shareholders by listing on the TSE. The ASE and ME companies' WR measures averaged 1.30 and 1.22 respectively. On the other hand, the CDN and VSE companies have not realized comparable wealth creation as the ASE and ME by listing on the TSE. Overall, 39% of all sample companies created wealth for shareholders. This percentage is more than 50% for the ME and ASE companies (See Table 11). Investors clearly discriminate between companies according to their previous trading location, however the basis of this distinction is unclear. However, stock manipulation schemes and weak governing laws have plagued both the CDN and VSE exchanges. In addition, the typical VSE company profile is a junior, speculative, or penny stock. Investors, especially money managers, may avoid those types of firms as unsound investment opportunities.

Table 11: Post-listing WR performance categorized by transfer type

To TSE from	Companies with WR>1	Companies with WR<1
ME	10 (55.5%)	8
VSE	19 (30.6%)	43
CDN	6 (20.6%)	23
ASE	36 (51.4%)	34
Total	71 (39.6%)	108

In conclusion, the long-term findings confirm the short-term findings - Canadian markets are inconsistent with EMH in the semi-strong form. However, the abnormal behaviour is shorter than that earlier reported in US literature. Hypothesis 4 is therefore rejected.

6.2 The Liquidity Factor

Testing the liquidity gain hypothesis is facilitated by splitting the sample into two groups. The first group consists of firms with low-liquidity before listing. These firms are expected to have a high potential for liquidity gains when they move to the TSE. The second group contains firms with high-liquidity before listing. These firms are expected to have a low potential for liquidity gains upon TSE listing.

Table 12: Stocks average percentage spread for entire sample and by transfer type

Average Spread	Sample	ASE	CDN	ME	VSE
S<1%	0	0	0	0	0
1% <= S < 5%	32	12	5	10	5
5% <= S < 6%	17	5	1	2	9
6%<=S<7%	13	4	2	1	6
7%<=S<8%	8	2	1	0	5
8%<=S<9%	10	2	6	0	2
9%<=S<10%	3	2	0	0	1
10%<=S<11%	5	1	0	0	4
11%<=S<12%	2	0	0	0	2
12<=S<13%	1	1	0	0	0
S>13%	8	4	2	0	2
N	99	33	17	13	36
Average % S	6.62676%				
Median % S	5.42362%				

Table 12 shows the average bid-ask spread distribution of sample firms. The average spread for the 10 most liquid firms is less than 2%. The least liquid firms have a spread of more than 13%. After ranking the companies in an increasing order of spread, the median spread of 5.42% was used to split the sample into 55 low-liquidity and 44 high-liquidity firms³². Using the median to split the sample is arbitrary, but the limited sample size precluded splitting the data further.

³² Liquidity groups are not equal in numbers although the median spread was used, due to elimination of some data points after the split. This was necessary due to missing stock prices.

Although the research hypotheses focused on post-listing behaviour, the market behaviour before the listing day is also of interest. Table 13 presents the CARs for various intervals around the listing event for the high-liquidity and low-liquidity groups. Intervals (-50 to +1) and (-31 to +1) show that the risk-adjusted CAR for the low-liquidity group, while on the Canadian regional exchanges, appears to follow a somewhat different pattern from high-liquidity firms. That is, the risk-adjusted CARs of low-liquidity firms are positive however statistically insignificant, while the CARs of the high-liquidity firms are negative with event window (-50,+1) statistically significant at the .05 level. Moreover, although the market-adjusted CARs are positive for both groups, low-liquidity firms are three times those of high-liquidity firms for the pre-listing period and statistically significant at the .05 level. Figures 11 and 12 display the CARs on risk-adjusted and market-adjusted bases for high-liquidity and low-liquidity firms. Appendix 6 contains Table 6-23 and Table 6-24, which present daily CAR for both liquidity groups.

Table 13: High-liquidity and low-liquidity daily CAR around the Listing Event

Event Window	High-Liquidity Sample				Low-liquidity Sample			
	Risk Adj. CAR	T-test	Mkt. Adj. CAR	T-test	Risk Adj. CAR	T-test	Mkt. Adj. CAR	T-test
(-50,+1)	-0.0427	-2.2431	0.0505	1.7677	0.0037	0.4169	0.1613	6.1340
(-31,+1)	-0.0084	-0.4426	0.0472	1.6531	0.0079	0.8921	0.1116	4.2428
(-11,+1)	0.0098	0.5167	0.0397	1.3892	0.0124	1.4039	0.0547	2.0788
(-1,0)	-0.0037	-0.1956	0.0020	0.0686	-0.0046	-0.5176	0.0016	0.0609
(-1,+1)	-0.0103	-0.5412	-0.0050	-0.1741	0.0036	0.4089	0.0099	0.3757
(0,+1)	-0.0068	-0.3568	-0.0066	-0.2301	0.0082	0.9351	0.0083	0.3148
(-1,+11)	-0.0508	-2.6660	-0.0555	-1.9454	-0.0369	-4.1832	-0.0295	-1.1202
(-1,+31)	-0.0967	-5.0763	-0.1077	-3.7712	-0.0336	-3.8124	-0.0260	-0.9901
(-1,+50)	-0.1337	-7.0190	-0.1598	-5.5959	-0.0448	-5.0817	-0.0257	-0.9762

* Bolded T-tests are statistically significant at the .05 level.

Figure 11: High-liquidity and low-liquidity daily risk-adjusted CARs around the listing Event

Figure 12: High-liquidity and low-liquidity daily market-adjusted CARs around the listing event

The t-statistic shows that pre-listing risk-adjusted CARs for all event windows for the low-liquidity group are statistically indifferent from zero at the .05 level. However, for the high-liquidity group, the negative CARs for event window (-50 to +1) are statistically different from zero at the .05 level. Furthermore, the two-sample t-test of CARs for the low-liquidity and high-liquidity groups is statistically different at the .05 level for event

window (-50 to +1). The market-adjusted CARs amplify this observation. The two-sample t-test for market-adjusted CARs are significantly different at the .05 level for event windows (-51 to +1) and (-31 to +1). These results reinforce the claim that market behaviour differs significantly between the two groups around the listing event.

The pre-listing return behaviour for both liquidity groups indicates that there is a market adjustment to security valuation after the announcement date based on the liquidity characteristic of the to-be-listed firm. Due to data limitation, the announcement date could not be determined. Nevertheless, given an estimate of 3–4 weeks from the listing day, it would be within the research test period, $t = -50$ to $t = 0$. The return behaviour of liquidity groups suggests a significant market reaction based on the liquidity profile of listing firms. Market participants penalize high-liquidity firms for taking a costly decision with no notable benefits, but this devaluation is not evident with the low-liquidity group.

Table 13 displays the post-listing CARs for both liquidity groups, and it shows a continuation of the same trend: low-liquidity firms decline, however at a lesser magnitude than high-liquidity firms. The results reveal significant negative risk-adjusted CARs during the 50 trading days after the listing day. The post-listing CAR for high-liquidity firms is -13% and it is significantly different from zero at the .05 level. Moreover, all sub intervals, (-1 to +11) and (-1 to +31), are significantly different from zero at the .05 level. Low-liquidity firms did not show any significant trend in the post-listing period. Both the risk-adjusted and market-adjusted CARs were insignificant at the .05 level. The two-sample t-test also shows a significant difference (-1 to +31) and (-1 to +51) between the two groups in the post-listing period. The abnormal negative returns around the listing event is high-liquidity firms specific.

The severe decline of high-liquidity firms after the listing day is puzzling and inconsistent with semi-strong market efficiency. The semi-strong form predicts that immediate adjustment will take place when new information is released to the public, in this case the

listing decision. However, the high-liquidity firms intensified their decline after the listing day, indeed, the post-listing risk-adjusted CARs were -13.4% compared with pre-listing CARs of only -4.3%.

These results reinforce the liquidity gain hypothesis and the conclusions of Baker and Edelman (1992, 1990) and Grammatikos and Papaionnou (1986a). However, some results of this study differ from their findings. They report a significant positive market reaction for the low-liquidity firms during the pre-listing period. Also, Edelman and Baker (1990) McConnell and Sanger (1987) did not find any anomalous behaviour in the post-listing period, and concluded that the post-listing market anomaly has disappeared, and the listing event was consistent with market efficiency. The rationale for these differences is unclear but may stem from the different characteristics of US exchanges and Canadian exchanges.

The findings present mixed evidence on the semi-strong form of market efficiency in Canadian capital markets. Based on the result Hypothesis 5 concerning the adherence of high-liquidity firms' return behaviour to the efficient market hypothesis is rejected. However, there is no reason to reject Hypothesis 6, since the low-liquidity group did not show any significant abnormal behaviour after listing. There is no apparent justification for this split.

6.3 The SEOs Factor

The influence of SEO on the post-listing return behaviour is examined by splitting the monthly sample into two groups: (a) firms which issued a SEO within two years of listing and (b) firms that did not. Table 14 displays the break down of sample firms that issued SEO. These firms are expected to account for the post-listing abnormal behaviour, since SEOs have a negative impact on firms' share prices.

Table 14: Breakdown of the monthly sample based on SEO issuance

	ME	CDN	VSE	ASE	Total
Firms with SEOs	9	12	30	48	99
No SEOs	9	17	32	22	80
Total	18	29	62	70	179

Table 15 displays the t-test results for Hypothesis 7. The abnormal average returns were significantly different between the research sample and sample securities with SEOs at the .05 level. Indeed, there were 25 months where AR was statistically significant, at the .05 level, out of the 36-month research period. Figure 13 shows CAR over the examination period for three series: (a) the entire sample, (b) sample securities which issued SEO and

Figure 13: Post-listing monthly CARs by SEO issuance

(c) sample securities that did not issue SEO. Firms with SEO's performance influenced CAR for the entire sample significantly.

The post-listing negative performance is in fact due to the poor return of firms with SEOs. When those firms were excluded from the research sample, the post-listing drift for transferred securities disappeared. Figure 13 shows that CAR for firms that did not issue SEO did not exhibit any abnormal behaviour. In fact, there was no statistically significant AR after listing for those firms. The conclusion reached here is much stronger and definite than the evidence viewed in the literature. The research of Dharan and Ikenberry (1995) revealed only a partial explanation for the post-listing drift. The presence of SEO explained only one type of listing transfer, NASDAQ to NYSE, while other transfers, e.g., NASDAQ to AMEX, displayed the same unexplained behaviour. Hypothesis 7 is therefore rejected. It is evident that SEOs explain the abnormal return behaviour of the monthly sample for the post-listing period. In conclusion, the long-term abnormal discount is related to a firm's financing decisions after listing.

Table 15: SEO and Sample AR t-test

Month	AR1	AR2	t-test ³³
1	-0.01675	-0.018982	0.214923
2	-0.02107	-0.034768	1.317998
3	-0.025954	-0.050475	2.36164*
4	-0.014604	-0.05041	3.44859*
5	0.025243	-0.017229	4.0731*
6	0.026674	0.008228	1.76906
7	-0.00595	-0.035576	2.84128*
8	-0.029656	-0.04901	1.84011
9	-0.024117	-0.01956	-0.433285
10	-0.028918	-0.032235	0.314023
11	-0.024435	-0.015685	-0.828311
12	-0.048413	-0.059565	1.0535
13	-0.046493	-0.066607	1.86874
14	-0.035249	-0.101418	6.07814*
15	-0.030879	-0.120585	8.24021*

³³ There was no significant difference between the variance for entire sample and the sample variance for firms with SEOs at the .05 level.

16	-0.014107	-0.079883	6.03541*
17	-0.026844	-0.080448	4.87341*
18	-0.054295	-0.103508	4.42642*
19	-0.069361	-0.130272	5.39824*
20	-0.008518	-0.063143	4.79348*
21	-0.010386	-0.039504	2.55198*
22	0.001618	0.001515	0.008977
23	0.027577	0.094454	-5.7107*
24	0.044698	0.114856	-5.9506*
25	0.054129	0.138085	-7.1112*
26	0.077881	0.150356	-6.0294*
27	0.112601	0.22784	-9.6531*
28	0.119682	0.298273	-14.833*
29	0.093369	0.172625	-6.4613*
30	0.081784	0.231411	-12.127*
31	0.039169	0.214623	-13.922*
32	0.056838	0.304377	-19.275*
33	-0.021673	0.105662	-9.6727*
34	-0.077246	-0.022027	-4.1735*
35	-0.056518	-0.021271	-2.622749*
36	-0.035022	-0.024196	-0.7984

*Statistically significant at the .05 level.

AR1 is the average post-listing abnormal returns for the complete sample

AR2 is the average post-listing abnormal returns for sample securities with SEOs.

6.3.1 Liquid Firms Propensity to Issue SEO

The McNemar test result rejects Hypothesis 8. High-liquidity firms have higher propensity to issue SEO than low-liquidity firms. Table 16 displays sample firms classification by liquidity and SEO issuance.

Table 16: Firms classification by liquidity and SEO

	High-liquidity Firms	Low-liquidity Firms
Firms with SEO	32	30
Firms with no SEO	12	25
Total	44	55

There were 72% of high-liquidity firms which issued SEO within two years of listing on the TSE. However, there was a split percentage for the low-liquidity group. Highly liquid companies seem to view exchange listing on the TSE as an opportunity to raise capital, or perhaps their sole reason to list on the TSE could be to raise additional financing from a larger investor base. On the other hand, low-liquidity firms are probably motivated by a desire to enhance their stock's liquidity, thus creating wealth for their shareholders. This rationale is consistent with the abnormal discount associated with the high-liquidity firms reported in Section 6.2. That is, market participants anticipate that these firms will issue additional equity and thus dilute any investment made at the time of listing. Therefore, investors lower their valuation for the high-liquidity firms that transfer to the TSE. This finding lends much credibility to the previous conclusion that the post-listing drift is high-liquidity firm specific.

6.4 Conclusion

Listing on the TSE from the Canadian regional exchanges is a frequent event. Yet as common as this event is, post-listing stock returns are surprisingly poor in the short-term and long-term. Newly-listed securities abnormally decline on average in the short-term post-listing period. However, the pre-listing period performance varied depending on the return adjustment model used. The inconsistent findings obtained from return adjustment models may cast some doubt on conclusion robustness, particularly for the pre-listing period. However, the post-listing abnormal behaviour for newly-listed securities is evident; newly-listed securities earn negative abnormal returns after listing. That is, the Canadian capital markets behaviour is inconsistent with the EMH in the semi-strong form.

The long-term results pointed to the same conclusion, as the short-term abnormal performance pattern: Canadian markets behaviour is inconsistent with the EMH in the semi-strong form. However, the abnormal discount is shorter in duration than that reported earlier in the US financial literature. Although sub-sample return results were mixed, either discount or premium, the evidence dismisses the notion of a semi-strong form of market efficiency.

Researchers continue to examine why it is that abnormal short-term and long-term performance persists over time. The liquidity gain hypothesis, which states that investors expect liquidity gains for less liquid stocks but not for their more liquid counterpart after transferring to the TSE, and equity issuance factors have succeeded in providing an acceptable rationale for this behaviour. The evidence shows that the market behaviour of newly-listed firms differ according to their individual attributes. The implication of this is clear. The listing decision does not enhance value for all firms. On average, the market tends to respond negatively to high-liquidity firms that apply for listing on the TSE. Such firms incur additional costs by listing for no apparent liquidity benefit. Moreover, those firms are perceived by the market as more than likely candidates to issue additional equity.

In fact, high-liquidity firms have a higher propensity to issue SEO than low-liquidity firms. Thus, investors may require higher expected returns on those firms at the time of listing in anticipation of new financing. Moreover, when excluding firms that issued SEOs, the abnormal performance was absent from sample results. This leads to the conclusion that the abnormal performance can be best explained by liquidity and capital structure attributes of newly-listed securities.

CHAPTER 7: Benefits and Limitations

7.1 Benefits

There are several benefits from the research. The first two are academic in nature. First, this study adds to the body of Canadian literature on market microstructure. Secondly, this study provides a plausible explanation for the listing phenomena. In addition, no other published study has examined the wealth impact of the listing event.

Subject to the limitations set out below, practitioners can view this research as a tool with which to build a profitable trading strategy. Investment professionals may be able to devise and implement successful trading strategies that exploit the listing event. Moreover, corporate managers can use this research to shape their policies regarding exchange listing in order to maximize shareholders' wealth.

7.2 Limitations

The research has several limitations that can severely confine our generalizations and conclusions.

First, the amount of data available for the study is limited. This is a common problem in an OTC to the TSE type of listing, which is the focus of most of the exchange listing literature. Edelman and Baker (1993), McConnell and Sanger (1984), and others used samples that included large percentage of OTC transfers, while this study had about 9% of this type of listings. This will limit our ability to conduct and reach robust conclusions based on powerful statistical evidence. In addition, OTC data was limited even for sample eligible firms in two ways. First, the pervasiveness of thin trading in OTC stocks is more problematic than other exchanges. Section 5.2.1 explained the use of the S-W procedure to compensate for this problem. However, the results for CDN data are highly questionable, and it was looked at with caution. The CDN market is not broad enough to be compared to the likes of NASDAQ and OTC in the US. Professional investors infrequently follow or participate in this market, due to illiquidity, limited investment

opportunities, and the speculative nature of CDN companies. This may greatly hamper the applicability and violate several assumptions of the EMH to the CDN market, such as information dissemination and stocks prices discount of all available information. Thus, abnormal return measurement may be biased, and no meaningful conclusions can be reached. Second, CDN companies had limited trading days for the pre-listing period. There were only 13 companies out of 22 eligible firms for the research that had specified trading days for the pre-listing period.

Another difficulty encountered when measuring CDN risk and daily market-adjusted abnormal performance was the absence of a CDN market proxy. The Canadian OTC market does not calculate any type of market index for its traded-companies. To overcome this, as explained in Section 5.2, the TSE/Western equally weighted average return was used as a market proxy. The suitability of this step is arguable due to differences in liquidity, market structure, trading participants, and other differences between the TSE and the CDN market.

Secondly, a significant number of the companies did not maintain their listing status on the TSE. Most delistings occurred as a result of violation of the TSE listing requirements. Several companies were suspended within the first 3 years of trading on the TSE, and delisted subsequently. A significant issue of those delistings is the built expectations of performance inferiority in market participants' minds about newly-listed securities, which could cause or magnify the post-listing negative discount.

Thirdly, most sample companies are junior emerging companies, which may not be eligible as a potential investment opportunity for professional money managers.

Fourthly, the research sample consists of mostly VSE and ASE companies that usually apply for dual domestic listing of their shares. Dual domestic listing occurs when a firm whose stock is listed on a broader or national exchange, i.e. the TSE, then lists on a

domestic regional exchange such as the ME, ASE, or VSE, or vice versa. Khan et.al. (1993) reported that the market reacts negatively to dual listing of common stocks on US regional exchanges. Hence, the negative drift in post-listing performance may be attributed to the competitive multi-specialist structure that was created by dual listing. This negative drift may bias the post-listing results and induce incorrect conclusions about the efficiency of capital markets. The negative drift produced by dual listing is rationed by the increase of explicit and implicit costs of listing that may drag on stock performance. While this conclusion does not violate the EMH, an anomalous conclusion about post-listing negative abnormal returns of newly-listed firms without controlling for dual listing is false.

The large shift in S-W beta used in return adjustment is arguable and could have been caused by infrequent trading (See Table 9). Although the research methodology has used S-W betas to adjust for infrequent trading bias, the bias may still affect the findings and research conclusions. Batholdy and Riding (1994) concluded that even after using the S-W methodology to correct for infrequent trading, abnormal return bias was still evident. It is expected that the transfer to a major exchange like the TSE would reduce the perceived risk of the firm by market participants. Since firms adhere to stricter listing requirements and increased public scrutiny, strategic business decisions are well thought out and executed, thus ensuring a better return to investors and decrease in stock volatility. Under this scenario, S-W beta reduction will lead to reliable hypothesis rejection or acceptance. However, if the reduction in beta is a direct result of infrequent trading on the regional exchanges the research conclusions can be misspecified.

Appendices

Appendix 1: TSE listing requirements

Basic Requirements for All TSE Listings

The TSE has set minimum public distribution requirements to help provide a liquid market. To list on the TSE, a company must have at least 1 million freely tradable shares with an aggregate market value of \$2 million. These shares must be held by at least 300 public shareholders, each with one board lot or more.

Management

Quality of management is a crucial consideration when the TSE assesses a company's suitability for listing. All officers, directors and holders of more than 10% of the company's stock must provide details of their background, business experience and industry knowledge.

Sponsorship

Member firms play a key role in creating and supporting the market for a listed company's stock. Accordingly, a sponsorship letter from a TSE member firm can be particularly helpful for a company that only narrowly meets the numerical listing requirements. The letter describes the member firm's assessment of the company, while addressing any specific concerns the TSE may have.

Financial condition and prospects

Recognizing that companies in different sectors have distinctive characteristics, the TSE has established separate financial criteria for three types of company: industrial, oil and gas, and mining. Within each category, there are two levels of financial standards. The first applies to established companies with strong balance sheets that have met prescribed levels of pre-tax profitability and cash flow in the previous year. The second level relates to more junior companies that may have lower levels of net tangible assets, cash flow or profit. Once listed, such junior companies are subject to close regulation by the TSE; for example, these companies require the TSE's consent before making any material change to the company's business or affairs.

Listing requirements for industrial companies:

In addition to the basic listing requirements, Senior industrial companies must meet the following minimum requirements:

- # net tangible assets of \$5,000,000;
- # net earnings of \$200,000 before taxes and extraordinary items, in the fiscal year immediately preceding the filing of the listing application;
- # pre-tax cash flow of \$500,000 in the last fiscal year; and
- # adequate working capital and capitalization to carry on the business.

Companies that are more junior may also be eligible to list by demonstrating adequate working capital and capitalization to carry on the business and by satisfying one of three different combinations of requirements:

- # net tangible assets of \$1,000,000; pre-tax earnings of \$100,000 and pre-tax cash flow of \$400,000 in the prior year;
Or
- # net tangible assets of \$5,000,000; and evidence indicating reasonable likelihood of profitability;
Or
- # pre-tax earnings of \$200,000 and pre-tax cash flow of \$500,000 in the prior year.

Listing Requirements for Mining companies:

In addition to the basic listing requirements, all applicants in the mining sector must submit technical reports prepared by qualified, independent authorities. The TSE then engages professional geologists to review the reports.

Senior mining companies must have proven reserves to provide a mine life of at least three years, calculated by an independent technical expert. In addition to having adequate working capital and capitalization, the company must have

been profitable in the last fiscal year, with pre-tax cash flow of \$350,000. Pre-tax cash flow must have averaged at least \$300,000 for the last two fiscal years, with net tangible assets of \$5 million.

Companies that have the necessary proven reserves but not the cash flow, profits, or net tangible assets to meet the senior company tests can be listed as junior companies. The TSE also accepts applications from exploration and development companies. To be eligible, a company must have net tangible assets of \$2 million and an advanced property with an exploration program prepared by qualified, independent geological authority. The company must also have sufficient funds for the next phase of exploration or development, and for general, administrative (at least \$500,000) and capital expenditures over the coming 18 months.

Listing Requirements for Oil and Gas companies:

In addition to the basic listing requirements, all listing applicants in the oil and gas sector are required to submit technical reports by qualified, independent authorities. These reports are scrutinized by geological experts engaged by the TSE.

Senior companies in the oil and gas sector must have proven developed reserves of \$5,000,000, calculated as the net present value of future cash flows before income taxes (prepared on a constant dollar basis and discounted at a prescribed rate). In addition, the company must have been profitable in the last fiscal year with pre-tax cash flow of \$500,000. Over the past two fiscal years, pre-tax cash flow must have averaged at least \$400,000.

Junior companies must have definitive exploration programs that can be reasonably expected to boost their reserves and sufficient funds to carry out those programs. A junior company with proven developed reserves of \$5,000,000 may be accepted if annual pre-tax cash flow is at least \$200,000. Alternatively, a company with proven developed reserves of \$2,000,000 may be eligible if working capital is sufficient (at least \$500,000).

Appendix 2: TSE listing application

Toronto Stock Exchange

Listing Application

The Toronto Stock Exchange has established separate financial requirements for three categories of companies: industrial, mining, and oil and gas. Every company applying to list can use this application. Only item 4.4 applies specifically to mining and oil and gas companies.

In this application, *shares* is used as a general term for the securities that are to be listed. If the applicant is applying to list securities other than shares, please adjust the reference to *shares* accordingly.

Please prepare applications for listing shares using the format set out below. Questions should not be omitted or left unanswered; nor should the sequence be altered.

Answers by way of reference to a supporting document will not be accepted without prior TSE approval. Where the listing application is being submitted at the same time as shares are being qualified for distribution by way of prospectus, the company can use the preliminary prospectus as the disclosure document to obtain conditional approval. As part of the final listing materials, the company must, however, submit an executed listing application. This listing application may be completed by reference to the final prospectus, which must be attached to, and form part of this listing application.

A list of supporting documents to be filed with the listing application is included. This application form is available in electronic format. For more information or to request a diskette version, please call (416) 947-4728 or e-mail listings@tse.com.

1. GENERAL INFORMATION ABOUT APPLICANT

1.1 Legal name of applicant

1.2 Head office address (if the head office address differs from the principal office address, provide both addresses. Please include telephone number, facsimile number, and e-mail address if available.)

1.3 Standard Industrial Classification (SIC) code

Provide SIC codes for the major sectors in which the applicant operates. Statistics Canada provides a list of SIC codes in catalogue 12-510E. For more information, please call Statistics Canada at (416) 973-6586.

1.4 Class(es) of shares to be listed

TSE

Toronto Stock Exchange

3. INFORMATION ABOUT APPLICANT'S SHARES

3.1 Share capital

The following information is dated as at:

Date

Shares to be listed

Total authorized shares—number and class

Issued shares (A)

Shares authorized to be issued for a specific purpose (B, this number should correspond with the number of shares in Item 3.5)

Total shares to be listed (A+B)

Other shares

Total authorized shares (number and class)

Issued shares

Shares authorized to be issued for a specific purpose

If the applicant has acquired its own shares and the shares have neither been canceled nor reissued, provide the following details:

Transaction date

Shares acquired (number and class)

Total purchase price

Reason for acquisition

3.2 Share provisions

For all classes of shares, including those to be listed and others – except for common shares if applicant has only one authorized class of common shares – describe any rights, preferences, and conversion or other privileges and priorities.

If there have ever been any changes to the authorized capitalization, give details, including dates.

3.3 Shares sold for cash

For each class of shares, provide the following information for each share issuance sold for cash (shares issued more than five years before the date of this application may be added together):

- Date
- Method of sale
- Price per share
- Number of shares
- Net amount received by applicant
- How proceeds were used
- Name of dealer or firm which acted as agent or underwriter, if applicable

3.4 Shares issued for non-cash payment

For each class of shares, provide the following information for all shares issued for non-cash payment (shares issued more than five years before the date of this application may be added together):

- Date
- Number of shares
- Class of shares
- Value of the payment
- Consideration received

3.5 Shares authorized for issuance for a specific purpose

For all shares authorized to be issued for a specific purpose, provide the following information: (the shares must be identified in this section or the TSE will not consider them as authorized for issuance for a specific purpose as at the date of this application)

- Class of shares
- Number of shares authorized to be issued
- Purpose of authorization (e.g., stock option plan)
- Description (include dates of agreements or option grants, exercise or conversion prices, and expiry dates. State if, as a result of exercise or conversion, a person or company would acquire a voting position in the applicant of greater than 10%.)

3.6 Issued capital

Complete for each class of shares to be listed:

	Number of registered shareholders	Number of shares
Freely tradable		
Held by public shareholders	_____	_____
Held by officers or directors of the applicant, or by persons or companies who own or control, directly or indirectly, more than a 10% voting position in the applicant	_____	_____
	Number of registered shareholders	Number of shares
Not freely tradable (e.g., escrowed or pooled shares) The number of shares not freely tradable equals <i>the total number of shares subject to agreements as of the date of this application</i> listed in item 3.10	_____	_____
Total issued capital	_____	_____

3.7 Distribution of shares

Complete the following table for each class of shares to be listed. This information should be based on the shareholders' register.

Size of holding	Number of holders	Total number of shares
1 - 99 shares	_____	_____
100 - 499 shares	_____	_____
500 - 999 shares	_____	_____
1,000 - 1,999 shares	_____	_____
2,000 - 2,999 shares	_____	_____
3,000 - 3,999 shares	_____	_____
4,000 - 4,999 shares	_____	_____
over 5,000 shares	_____	_____
Totals	_____	_____

If the number of registered holders does not exceed the TSE's minimum requirements, the applicant can satisfy the requirement by providing certificates received from registered holders. The certificates must confirm that the registered holders are holding shares as nominees for a sufficient number of clients, each holding a board lot or more, to bring the number of public holders above the minimum required.

Note that a board lot for shares trading at \$0.10 to \$0.99 per share is 500 shares. A board lot for shares trading at \$1.00 or more is 100 shares.

3.8 Largest registered shareholders

For each class of shares to be listed, provide the following information for each of the 10 registered shareholders with the largest holdings:

- Class of shares
- Shareholder name and address
- Beneficial ownership (if you do not know the beneficial ownership, state here)
- Number of shares held in escrow
- Total number of shares held
- Percentage of issued shares of this class

3.9 Major beneficial shareholders

For each person or company owning or controlling, directly or indirectly, shares carrying more than 10% of the votes attached to all outstanding voting shares of the applicant, provide the following information:

- Beneficial owner and address
- Nominee account (if applicable)
- Number of shares
- Class of shares

3.10 Shares not freely tradable

Provide the following information for all shares to be listed which are pooled, held in escrow, non-transferable at time of listing (e.g., subject to a hold period), or held under a voting trust agreement, syndicate agreement or similar agreement:

- Date of agreement
- Nature of agreement
- Number of shares originally covered by the agreement
- Name and address of institution holding the shares
- Terms and conditions of release
- Number of shares subject to the agreement or hold period as of the date of this application

3.11 Shareholders with a 10% interest in pooled or escrowed shares

Provide the following information for those shareholders who beneficially own or exercise control or direction over, directly or indirectly, more than a 10% interest in pooled or escrowed shares. If the shares are registered in the names of nominees or in street names, list those people who have more than 10% beneficial ownership in those shares.

Name and address

Beneficial ownership (if you do not know the beneficial ownership, state here)

Number of shares held in escrow

Percentage of shares held in escrow

4. INFORMATION ABOUT APPLICANT'S HOLDINGS

4.1 Subsidiaries

For each direct or indirect subsidiary of the applicant, provide the following information:

Name

Jurisdiction of incorporation or organization

Percentage owned

Nature of business

If publicly traded, on which market(s) it trades

4.2 Investments in securities of other companies

For any securities of other companies that the applicant holds, excluding subsidiaries listed in item 4.1, provide the following information:

Name of company and securities

Number of securities

Book value

Market value

If publicly traded, on which market(s) it trades

4.3 Properties

List the principal locations where the applicant conducts its business and explain how the properties are used (c.g., warehouse, sales office, field office, mine site office, plant site).

Municipality or region

Use of property

Owned or leased

4.4 Mining and oil and gas companies: Properties

4.4.1 All mineral properties

For all the mineral properties that the applicant owns, provide the following information:

- Geographic location (e.g., 50 km north of Val d'Or, Quebec)
- Claim number
- Lot and range numbers
- Acreage
- Status of ownership (e.g., patented or unpatented claims)
- Description of existing and proposed working agreements

4.4.2 Significant mineral properties

For each significant mineral property in which the applicant holds an interest, provide the following information:

- Geological setting, including age and type of rocks, and association with a mining camp
- Main mineral occurrences or commodities
- All previous work done on the property, including name of previous operator and full production details to date
- All work currently being done on the property
- Known reserves and geological resources, including quality, quantity and status
- Any planned exploration or development programs, including estimated costs and, if applicable, estimated revenues
- drilling method (diamond drilling, reverse circulation, percussion, etc) and core diameter where applicable
- description of sampling procedures (sawing, splitting, bulk sampling, methods of retaining representative samples, crushing, etc.)
- all assay laboratories used, their accreditations and affiliations
- describe geochemical analytical methods applied to samples (fire assaying, ICP, atomic absorption, acid leach, etc.) and procedures in place to verify results/check assaying procedures
- All plants and equipment
- Royalty payments and agreements
- Infrastructure, including access, electricity, water, etc.
- Any environmental concerns, including nature of concerns and party who raised them, the

environmental protection or conservation plan, and costs of the plan

- Date and author of mining engineer's or geologist's report filed with this application; date of any site visit and describe procedures performed

4.4.3 Significant oil and gas properties

For significant oil and gas properties in which the applicant holds an interest, provide the following information:

- Prospects or projects by location, general land description and full details of interests held
- Reserves by country, category (such as proven developed producing, proven developed non-producing, proven undeveloped or probable additional), type of hydro-carbons and recovery procedures
- Gross and net reserves, by category (such as proven developed, proven undeveloped or probable additional) at the end of each of the past five years
- Value of reserves using net present value of future cash flows before income taxes, prepared on a constant dollar basis and discounted at 20%
- Current and historic production rates for the last five years
- Planned exploration or development programs, including estimated costs
- Status of wells
- Date and author of petroleum engineer's or geologist's report filed with this application

4.4.4 All other oil and gas properties

Describe briefly all other properties.

4.5 Payments to promoters

Provide details of any payment in cash or securities made, or to be made, to a promoter or finder in connection with a financing or property acquisition.

5. TRADING INFORMATION

5.1 Transfer and registration

5.1.1 Name and address of transfer agent(s)

One of the transfer agents must have a Toronto address.

5.1.2 Name and address of registrar(s)

One of the registrars must have a Toronto address.

5.1.3 List any other municipalities where transfers may be effected.

5.1.4 Describe in detail any transfer fees other than taxes.

5.2 Trading on other markets

5.2.1 For shares of the applicant that trade or have traded on another market, provide the name of the market and date trading commenced.

5.2.2 If the applicant has ever applied to have its shares traded on another market and been denied, provide name of the market or markets, dates and reasons why the application was denied.

5.3 Trading history

Provide the following information for the principal market where the applicant's shares have traded for the past 12 months, starting with the most recent month. Adjust for any stock splits or consolidations.

Name of market

Month	High	Low	Close	Volume
-------	------	-----	-------	--------

6. LEGAL CONSIDERATIONS

Is the applicant or any of its properties subject to any legal or other actions, current or pending, which may materially affect applicant's operating results, financial position or property ownership?

If so, for each action provide a brief description and attach a legal opinion as to the probable outcome.

7. MATERIAL CONTRACTS

Describe all material contracts, including management contracts, entered into by the applicant that are in effect and not already disclosed in this application. Include dates and parties to the contracts. Do not include information about contracts entered into in the normal course of business.

8. OTHER MATERIAL FACTS

Describe in detail any other material facts about the applicant not already addressed in this application.

9. CERTIFICATE OF APPLICANT

After having received approval from its Board of Directors,
(please enter the applicant's legal name in the space below)

applies to list the shares designated in this application on the Toronto Stock Exchange.

The two officers signing below certify that all of the information in this application and the supporting documentation is accurate as of the date this application is signed.

Date _____

Signature of authorized signing officer _____

Position with applicant _____

Signature of authorized signing officer _____

Position with applicant _____

SUPPORTING DOCUMENTS TO BE FILED

Copies of the following documents must be provided to the TSE in notarial form if the originals are kept outside Canada by the applicant.

1. Two fully executed copies of the listing application.
2. Certified copies of all charter documents, including Articles of Incorporation, Letters Patent, Articles of Amendment, Articles of Continuance, Articles of Amalgamation, or equivalent documents.
3. One copy of each of the annual reports for the past three years (if they were issued). If the applicant was formed as a result of an amalgamation, one copy of the annual reports of each of the amalgamating companies for the past three years.
4. Two copies of the applicant's most recent audited financial statements, signed by two directors of the applicant on behalf of the Board.

If the audited financial statements are not dated within 120 days of the date on which the application is submitted to the TSE in substantially acceptable form, provide unaudited financial statements dated within 90 days of the submission date.

Unaudited financial statements must be accompanied by a comfort letter signed by the auditors of the applicant that complies with Section 7100 of the CICA (Canadian Institute of Chartered Accountants) Handbook. They must include a balance sheet, income statement, statement of retained earnings or deficit, statement of changes in financial position, and notes. Unaudited financial statements must be signed by two directors of the applicant on behalf of the Board.

5. One copy of every stock option or share purchase plan and any other agreement under which shares may be issued.
6. A copy of every material contract referred to in the listing application and not included in the above.
7. Copies of any agreements under which shares are held in escrow, pool, or under a similar arrangement.
8. If any shares are held in escrow, pool, or under a similar arrangement, a certificate from the trustee:
 - < certifying that the trustee is holding the shares, and
 - < providing a list of the registered holders of the shares.
9. A letter from the trust company which acts as transfer agent in the City of Toronto stating that it has been duly appointed as transfer agent for the applicant and is in a position to make transfers and make prompt delivery of share certificates. The letter must state what fee, if any, is charged for transfers.

10. A letter from the registrar indicating that it is acting as registrar in the City of Toronto.
11. A current list of shareholders, certified by the transfer agent or registrar to be true and correct.
12. Evidence of any registration or qualification of the applicant or its shares with the Ontario Securities Commission or a corresponding body in the jurisdiction where it was incorporated or primarily carries on business. One copy of each prospectus, if it was filed within the previous 24 months, will satisfy this requirement.
13. A communication from legal counsel setting out, in effect, that legal counsel has examined, or is familiar with, the records of the applicant and is of the opinion that:
 - it is a valid and subsisting company
 - the shares for which listing is applied have been legally created
 - all of the shares which have been allotted and issued as set out in the application are validly issued as fully-paid and non-assessable.
14. A specimen certificate, printed by a bank note company approved by the TSE, imprinted with a CUSIP number, for each class of shares to be listed.
15. An unqualified letter from The Canadian Depository for Securities Limited confirming the CUSIP number(s) assigned to the shares.
16. Cheque, payable to the Toronto Stock Exchange, for the amount of the application fee (\$1,000 plus \$70 Goods and Services Tax).
17. Personal Information Form, sworn before a Commissioner for Oaths, to be completed by every individual who will at the time of listing:
 - be an officer or director of the applicant company; or
 - beneficially own or control, directly or indirectly, securities carrying greater than 10 per cent of the voting rights attached to all outstanding voting securities of the applicant company.

These forms will not be part of the public file.

18. Statutory Declarations completed by two officers.

MINING AND OIL AND GAS COMPANIES ONLY
.....

A full and up-to-date report on the property or lease of the Company and the development made, by a qualified independent mining or petroleum engineer or geologist acceptable to the Exchange and accompanied by a certificate of the person and by his written consent to the use of his report in support of the listing application.

A certificate from the author of the reports confirming that he has reviewed the property disclosures in the listing application and that he considers the disclosure true and correct to the best of his knowledge.

A letter from the assay laboratories used which confirms their accreditations and affiliations.

The TSE reserves the right to require additional information or documents as it may deem appropriate in the circumstances.

TSE Listing Agreement

Date: _____

In consideration of the listing on the Toronto Stock Exchange (hereinafter called the "Exchange") of securities of the undersigned (hereinafter called the "Company"), the Company agrees with the Exchange as follows:

The Company will comply with all Exchange requirements applicable to listed companies, including Exchange by-laws, policies, rulings and procedural requirements, and any additions or amendments which may be made thereto from time to time, which by-laws, policies, rulings and procedural requirements may be in addition to or in lieu of the provisions of this agreement.

Without limiting the generality of Paragraph 1 hereof, the Company shall:

- (a) not issue any securities (other than debt securities which are not convertible into equity securities) without the prior consent of the Exchange;
 - (b) not undergo a material change in its business or affairs without the prior consent of the Exchange, unless the Company is exempted from this requirement by the Exchange;
 - (c) maintain transfer and registration facilities in the City of Toronto where all listed securities shall be directly transferable and registerable, and no fee shall be charged for the transfer and registration of such securities (other than government stock transfer taxes) after the Exchange has exempted the Company from the requirement referred to in clause (b) hereof;
 - (d) notify the Exchange at least seven trading days in advance of each dividend record date;
 - (e) forthwith file with the Exchange four copies of all financial statements required to be published or filed for inspection by law, including the Company's law of incorporation or applicable securities legislation, or by the Exchange;
 - (f) file with the Exchange four copies of all notices, reports or other written correspondence sent by the Company to its holders of listed securities concurrently with the sending of such correspondence to the security holders;
 - (g) notify the Exchange on a monthly basis of any changes to the number of issued securities of any listed class (nil reports not being required);
 - (h) not change the provisions attaching to any warrants, rights or other securities outstanding from time to time (other than debt securities which are not convertible into equity securities) without the prior consent of the Exchange;
 - (i) pay, when due, any applicable fees or charges established by the Exchange from time to time; and
 - (j) furnish to the Exchange, at any time upon demand, such information or documentation concerning the Company as the Exchange may reasonably require.
3. The Exchange shall have the right, at any time, to halt or suspend trading in any listed securities of the Company with or without notice and with or without giving any reason for such action, or to delist such securities, provided that the Exchange shall not delist securities of the Company without providing the Company with an opportunity to be heard.

(Name of Company)

By : _____

By : _____

(Under each signature please print name and position with Company)

TSE

Toronto Stock Exchange

NOTE TO USERS

This reproduction is the best copy available

UMI

Appendix 3: The TSE listing process

86

This is an excerpt from the TSE listing manual on the listing process:

"TSE staff welcome the opportunity to discuss a company's eligibility to list before a formal application is made. Once a company has decided to apply, the TSE assigns a Company Listings Manager as an advisor and key TSE contact.

In addition to submitting detailed TSE listing applications, companies must file certain supporting documents such as Personal Information Forms (and geological reports in the resource sectors). In many respects, the information disclosed on the TSE application form is similar to that found in a prospectus. If the company is currently issuing a prospectus for the securities to be listed, the TSE will accept the prospectus instead of the TSE application - provided the supporting documents are submitted and the company can demonstrate public distribution requirements are met.

Once all the required documentation has been filed with the TSE, a TSE staff committee examines the application to confirm that all requirements are met. A Stock List Committee, comprised of seasoned corporate finance experts from TSE member brokerage firms, then reviews the application. Successful applicants are "conditionally approved"³⁴ for listing and have 90³⁵ days to comply with any outstanding listing prerequisites. The entire process, from initial application to conditional approval, typically takes at least six to eight weeks. (This time may be shorter if the

A company receiving 'conditional approval' has been accepted for listing subject to specific requirements or conditions within 90 days. The TSE publishes the names of companies which have been conditionally approved in the TSE Daily Record. After conditional approval has been granted, a company could list at any time within the 90 day period on the condition that they have provided the necessary information and met the TSE's listing requirements. The average amount of time from conditional approval date and the listing date is generally 3-4 weeks.

application is filed in conjunction with a prospectus.)

Appendix 4: Daily CAR and average AR for newly-listed securities on the TSE

for the period from -50 to +50 around the listing event: 1984-1996.

Table 4-17: Daily risk-adjusted CAR and average AR for newly-listed securities on the TSE from trading day -50 to +50.

This table reports pre-listing and post-listing cumulative and average abnormal stock returns for 99 firms that listed their common stocks on the TSE from Canadian regional stock exchanges (ASE, ME, VSE, or CDN) from January 1984 to December 1996. The table present average AR measured on risk-adjusted basis.

Trading Day	N	Raw returns	CAR raw	Avg. AR	t-test	CAR	% positive
50	99.00	-0.33	-9.77	-0.003340	-0.703250	-0.099476	41.41%
49	99.00	-0.39	-9.44	-0.003984	-0.838713	-0.096136	42.42%
48	99.00	0.81	-9.05	0.008170	1.720052	-0.092152	55.56%
47	99.00	-0.48	-9.85	-0.004818	-1.014388	-0.100322	44.44%
46	99.00	0.12	-9.38	0.001167	0.245669	-0.095504	50.51%
45	99.00	-0.10	-9.49	-0.001034	-0.217650	-0.096670	48.48%
44	99.00	-0.65	-9.39	-0.006516	-1.371863	-0.095637	40.40%
43	99.00	0.50	-8.75	0.005012	1.055204	-0.089120	50.51%
42	99.00	0.03	-9.24	0.000329	0.069335	-0.094133	51.52%
41	99.00	-0.31	-9.27	-0.003132	-0.659344	-0.094462	45.45%
40	99.00	-0.46	-8.96	-0.004668	-0.982755	-0.091330	40.40%
39	99.00	0.61	-8.50	0.006151	1.294901	-0.086662	41.41%
38	99.00	-0.39	-9.11	-0.003892	-0.819323	-0.092813	45.45%
37	99.00	-0.03	-8.73	-0.000314	-0.066049	-0.088921	49.49%
36	99.00	0.04	-8.69	0.000420	0.088430	-0.088607	49.49%
35	99.00	-1.05	-8.74	-0.010605	-2.232616	-0.089027	34.34%
34	99.00	0.47	-7.69	0.004769	1.004007	-0.078423	49.49%
33	99.00	-0.68	-8.16	-0.006836	-1.439135	-0.083191	38.38%
32	99.00	0.04	-7.48	0.000454	0.095608	-0.076356	51.52%
31	99.00	-0.43	-7.53	-0.004394	-0.924970	-0.076810	43.43%
30	99.00	0.18	-7.09	0.001797	0.378412	-0.072416	50.51%
29	99.00	0.36	-7.27	0.003650	0.768404	-0.074214	50.51%
28	99.00	0.23	-7.63	0.002325	0.489580	-0.077864	51.52%
27	99.00	0.05	-7.86	0.000459	0.096541	-0.080189	49.49%
26	99.00	-0.25	-7.91	-0.002504	-0.527179	-0.080648	39.39%
25	99.00	-0.15	-7.66	-0.001537	-0.323613	-0.078144	41.41%
24	99.00	-0.56	-7.51	-0.005642	-1.187715	-0.076606	38.38%
23	99.00	-1.14	-6.95	-0.011507	-2.422628	-0.070965	37.37%
22	99.00	0.63	-5.81	0.006350	1.336782	-0.059458	52.53%
21	99.00	-0.10	-6.44	-0.000982	-0.206689	-0.065807	43.43%
20	99.00	-0.86	-6.34	-0.008688	-1.828997	-0.064825	35.35%
19	99.00	-0.47	-5.48	-0.004769	-1.003919	-0.056138	38.38%
18	99.00	0.57	-5.01	0.005775	1.215792	-0.051369	49.49%
17	99.00	0.20	-5.58	0.001986	0.418095	-0.057144	46.46%
16	99.00	0.79	-5.78	0.007982	1.680358	-0.059130	51.52%
15	99.00	-0.34	-6.57	-0.003416	-0.719113	-0.067112	43.43%
14	99.00	0.05	-6.23	0.000496	0.104464	-0.063696	46.46%
13	99.00	0.07	-6.28	0.000696	0.146453	-0.064192	44.44%

12	99.00	-0.66	-6.35	-0.006676	-1.405537	-0.064888	42.42%
11	99.00	-0.94	-5.69	-0.009485	-1.996831	-0.058212	40.40%
10	99.00	-0.57	-4.75	-0.005786	-1.218218	-0.048727	38.38%
9	99.00	-0.28	-4.17	-0.002863	-0.602709	-0.042940	44.44%
8	99.00	0.03	-3.89	0.000282	0.059452	-0.040078	43.43%
7	99.00	-0.33	-3.92	-0.003346	-0.704409	-0.040360	44.44%
6	99.00	-0.01	-3.59	-0.000059	-0.012421	-0.037014	50.51%
5	99.00	-0.25	-3.58	-0.002498	-0.525955	-0.036955	47.47%
4	99.00	-0.60	-3.33	-0.006022	-1.267737	-0.034457	38.38%
3	99.00	-0.82	-2.74	-0.008245	-1.735876	-0.028435	41.41%
2	99.00	-0.24	-1.92	-0.002454	-0.516695	-0.020190	43.43%
1	99.00	0.16	-1.68	0.001609	0.338783	-0.017736	40.40%
0	99.00	-0.01	-1.84	-0.000053	-0.011218	-0.019345	54.55%
-1	95.00	-0.41	-1.83	-0.004311	-0.888928	-0.019292	38.95%
-2	95.00	0.65	-1.42	0.006865	1.415463	-0.014980	46.32%
-3	95.00	0.18	-2.08	0.001897	0.391192	-0.021845	50.53%
-4	95.00	0.12	-2.26	0.001282	0.264317	-0.023742	50.53%
-5	95.00	-0.48	-2.38	-0.005054	-1.042110	-0.025024	47.37%
-6	95.00	0.06	-1.90	0.000670	0.138232	-0.019970	43.16%
-7	95.00	0.23	-1.96	0.002406	0.495990	-0.020641	46.32%
-8	95.00	0.15	-2.19	0.001598	0.329587	-0.023046	48.42%
-9	95.00	-0.15	-2.34	-0.001612	-0.332418	-0.024645	48.42%
-10	95.00	0.70	-2.19	0.007326	1.510455	-0.023032	61.05%
-11	95.00	-0.09	-2.88	-0.000965	-0.199020	-0.030358	42.11%
-12	95.00	0.11	-2.79	0.001112	0.229294	-0.029393	36.84%
-13	95.00	0.41	-2.90	0.004293	0.885251	-0.030505	43.16%
-14	95.00	-0.16	-3.31	-0.001720	-0.354614	-0.034798	44.21%
-15	95.00	-0.37	-3.14	-0.003932	-0.810679	-0.033078	44.21%
-16	95.00	-0.55	-2.77	-0.005780	-1.191850	-0.029147	45.26%
-17	95.00	-0.07	-2.22	-0.000756	-0.155946	-0.023366	37.89%
-18	95.00	0.27	-2.15	0.002890	0.595964	-0.022610	48.42%
-19	95.00	0.24	-2.42	0.002518	0.519121	-0.025500	51.58%
-20	95.00	-0.33	-2.66	-0.003480	-0.717475	-0.028018	44.21%
-21	95.00	0.60	-2.33	0.006298	1.298487	-0.024538	55.79%
-22	95.00	-0.52	-2.93	-0.005437	-1.120962	-0.030836	40.00%
-23	95.00	-0.44	-2.41	-0.004640	-0.956789	-0.025399	41.05%
-24	95.00	0.12	-1.97	0.001233	0.254220	-0.020759	45.26%
-25	95.00	0.00	-2.09	0.000016	0.003228	-0.021992	45.26%
-26	95.00	0.67	-2.09	0.007033	1.450029	-0.022008	52.63%
-27	95.00	-0.96	-2.76	-0.010114	-2.085476	-0.029040	40.00%
-28	95.00	-0.23	-1.80	-0.002435	-0.502044	-0.018926	49.47%
-29	95.00	-0.39	-1.57	-0.004053	-0.835703	-0.016491	42.11%
-30	95.00	0.78	-1.18	0.008177	1.686063	-0.012438	42.11%
-31	95.00	-0.22	-1.96	-0.002300	-0.474223	-0.020615	43.16%
-32	95.00	0.31	-1.74	0.003300	0.680506	-0.018315	42.11%
-33	95.00	-0.41	-2.05	-0.004305	-0.887700	-0.021615	41.05%
-34	95.00	0.70	-1.64	0.007400	1.525712	-0.017310	53.68%
-35	95.00	-0.19	-2.35	-0.002023	-0.417078	-0.024710	42.11%
-36	95.00	-1.09	-2.16	-0.011427	-2.356021	-0.022687	37.89%

-37	95.00	0.68	-1.07	0.007147	1.473605	-0.011260	50.53%
-38	95.00	-0.15	-1.75	-0.001562	-0.322118	-0.018407	48.42%
-39	95.00	0.12	-1.60	0.001292	0.266470	-0.016845	43.16%
-40	95.00	0.22	-1.72	0.002300	0.474252	-0.018137	48.42%
-41	95.00	0.09	-1.94	0.000910	0.187683	-0.020438	49.47%
-42	95.00	-0.61	-2.03	-0.006427	-1.325204	-0.021348	34.74%
-43	95.00	0.05	-1.42	0.000574	0.118450	-0.014921	40.00%
-44	95.00	-0.77	-1.47	-0.008156	-1.681624	-0.015495	36.84%
-45	95.00	0.52	-0.70	0.005488	1.131518	-0.007339	46.32%
-46	95.00	-0.48	-1.22	-0.005010	-1.033060	-0.012827	38.95%
-47	95.00	-0.33	-0.74	-0.003445	-0.710406	-0.007817	42.11%
-48	95.00	-0.42	-0.42	-0.004377	-0.902471	-0.004371	45.26%
-49	95.00	0.17	0.00	0.001824	0.376185	0.000006	47.37%
-50	95.00	-0.17	-0.17	-0.001819	-0.375051	-0.001819	43.16%

Table 4-18: Daily market-adjusted CAR and average AR for newly-listed securities on the TSE for trading days -50 to +50: 1984-1996.

This table reports pre-listing and post-listing cumulative and average abnormal stock returns for 99 firms that listed their common stocks on the TSE from Canadian regional stock exchanges (ASE, ME, VSE, or CDN) from January 1984 to December 1996. The table present average AR measured on risk-adjusted basis.

Trading Day	N	Raw returns	CAR raw	Avg. AR	t-test	CAR	% positive
50	99.00	-0.27	2.33	-0.002713	-0.546320	0.028157	38.38%
49	99.00	-0.26	2.60	-0.002653	-0.534339	0.030870	41.41%
48	99.00	0.81	2.86	0.008191	1.649584	0.033523	55.56%
47	99.00	-0.59	2.05	-0.005978	-1.203986	0.025332	39.39%
46	99.00	0.04	2.64	0.000415	0.083659	0.031310	47.47%
45	99.00	-0.08	2.60	-0.000820	-0.165112	0.030895	44.44%
44	99.00	-0.43	2.68	-0.004392	-0.884589	0.031715	38.38%
43	99.00	0.47	3.11	0.004757	0.957918	0.036107	47.47%
42	99.00	0.09	2.64	0.000934	0.188009	0.031351	44.44%
41	99.00	-0.23	2.55	-0.002287	-0.460582	0.030417	45.45%
40	99.00	-0.30	2.78	-0.003065	-0.617252	0.032704	47.47%
39	99.00	0.50	3.08	0.005008	1.008605	0.035769	43.43%
38	99.00	-0.48	2.59	-0.004827	-0.972160	0.030761	43.43%
37	99.00	-0.10	3.06	-0.001032	-0.207879	0.035588	48.48%
36	99.00	-0.10	3.17	-0.001035	-0.208487	0.036621	40.40%
35	99.00	-0.96	3.27	-0.009675	-1.948372	0.037656	30.30%
34	99.00	0.40	4.23	0.003999	0.805289	0.047331	41.41%
33	99.00	-0.74	3.83	-0.007522	-1.514908	0.043332	36.36%
32	99.00	-0.03	4.57	-0.000254	-0.051085	0.050854	44.44%
31	99.00	-0.49	4.60	-0.004998	-1.006632	0.051108	38.38%
30	99.00	0.23	5.09	0.002296	0.462376	0.056106	47.47%
29	99.00	0.35	4.87	0.003555	0.715911	0.053810	41.41%
28	99.00	-0.07	4.52	-0.000731	-0.147209	0.050255	37.37%
27	99.00	0.00	4.59	0.000042	0.008435	0.050986	45.45%
26	99.00	-0.42	4.58	-0.004211	-0.848073	0.050945	40.40%
25	99.00	-0.24	5.00	-0.002461	-0.495691	0.055156	41.41%
24	99.00	-0.28	5.24	-0.002860	-0.575909	0.057617	38.38%
23	99.00	-1.10	5.53	-0.011145	-2.244412	0.060477	35.35%
22	99.00	0.77	6.63	0.007744	1.559499	0.071622	52.53%
21	99.00	0.02	5.86	0.000193	0.038810	0.063878	41.41%
20	99.00	-0.89	5.84	-0.008963	-1.805102	0.063685	29.29%
19	99.00	-0.38	6.73	-0.003860	-0.777345	0.072648	38.38%
18	99.00	0.42	7.11	0.004247	0.855349	0.076508	45.45%
17	99.00	0.04	6.69	0.000443	0.089170	0.072261	42.42%
16	99.00	0.80	6.65	0.008055	1.622279	0.071818	55.56%
15	99.00	-0.32	5.85	-0.003226	-0.649765	0.063763	40.40%
14	99.00	0.12	6.17	0.001197	0.241056	0.066989	45.45%
13	99.00	0.08	6.05	0.000778	0.156700	0.065792	41.41%
12	99.00	-0.73	5.98	-0.007360	-1.482155	0.065014	48.48%
11	99.00	-0.93	6.70	-0.009361	-1.885269	0.072374	35.35%
10	99.00	-0.62	7.63	-0.006233	-1.255284	0.081735	33.33%

9	99.00	-0.16	8.25	-0.001662	-0.334666	0.087968	43.43%
8	99.00	-0.04	8.41	-0.000424	-0.085424	0.089630	48.48%
7	99.00	-0.45	8.46	-0.004539	-0.914103	0.090054	42.42%
6	99.00	0.04	8.90	0.000428	0.086177	0.094593	48.48%
5	99.00	-0.30	8.86	-0.003032	-0.610534	0.094165	46.46%
4	99.00	-0.68	9.16	-0.006877	-1.384977	0.097197	38.38%
3	99.00	-0.89	9.84	-0.008992	-1.810891	0.104074	37.37%
2	99.00	-0.36	10.73	-0.003642	-0.733401	0.113066	42.42%
1	99.00	0.15	11.09	0.001519	0.305898	0.116708	38.38%
0	99.00	0.02	10.94	0.000161	0.032427	0.115189	1.01%
-1	95.00	0.16	10.93	0.001668	0.328974	0.115028	52.63%
-2	95.00	1.01	10.77	0.010659	2.102312	0.113360	56.84%
-3	95.00	0.49	9.76	0.005143	1.014467	0.102701	49.47%
-4	95.00	0.41	9.27	0.004364	0.860646	0.097558	54.74%
-5	95.00	-0.05	8.85	-0.000514	-0.101351	0.093194	47.37%
-6	95.00	0.12	8.90	0.001286	0.253684	0.093708	50.53%
-7	95.00	0.31	8.78	0.003251	0.641184	0.092422	52.63%
-8	95.00	0.78	8.47	0.008199	1.617172	0.089171	47.37%
-9	95.00	0.16	7.69	0.001725	0.340296	0.080972	51.58%
-10	95.00	0.97	7.53	0.010239	2.019432	0.079246	56.84%
-11	95.00	0.21	6.56	0.002253	0.444433	0.069008	50.53%
-12	95.00	0.68	6.34	0.007156	1.411346	0.066754	48.42%
-13	95.00	0.48	5.66	0.005053	0.996593	0.059599	49.47%
-14	95.00	0.10	5.18	0.001051	0.207296	0.054546	48.42%
-15	95.00	-0.26	5.08	-0.002705	-0.533598	0.053495	37.89%
-16	95.00	0.18	5.34	0.001938	0.382235	0.056200	52.63%
-17	95.00	-0.15	5.15	-0.001528	-0.301334	0.054262	42.11%
-18	95.00	0.25	5.30	0.002626	0.517993	0.055790	50.53%
-19	95.00	0.47	5.05	0.004933	0.973035	0.053164	53.68%
-20	95.00	-0.09	4.58	-0.000936	-0.184642	0.048231	45.26%
-21	95.00	0.74	4.67	0.007815	1.541343	0.049167	49.47%
-22	95.00	-0.24	3.93	-0.002494	-0.491888	0.041352	49.47%
-23	95.00	0.05	4.17	0.000492	0.097082	0.043846	46.32%
-24	95.00	0.41	4.12	0.004307	0.849394	0.043354	51.58%
-25	95.00	0.05	3.71	0.000522	0.102965	0.039047	42.11%
-26	95.00	0.88	3.66	0.009267	1.827715	0.038525	54.74%
-27	95.00	-0.68	2.78	-0.007121	-1.404549	0.029258	38.95%
-28	95.00	-0.08	3.46	-0.000809	-0.159478	0.036380	51.58%
-29	95.00	-0.39	3.53	-0.004151	-0.818766	0.037188	43.16%
-30	95.00	0.78	3.93	0.008185	1.614412	0.041339	45.26%
-31	95.00	0.27	3.15	0.002840	0.560221	0.033154	50.53%
-32	95.00	0.53	2.88	0.005544	1.093387	0.030314	49.47%
-33	95.00	-0.19	2.35	-0.001998	-0.394020	0.024770	42.11%
-34	95.00	0.80	2.54	0.008402	1.657188	0.026768	51.58%
-35	95.00	0.09	1.74	0.000897	0.176826	0.018366	44.21%
-36	95.00	-0.80	1.66	-0.008375	-1.651818	0.017469	36.84%
-37	95.00	0.77	2.46	0.008108	1.599252	0.025844	53.68%
-38	95.00	0.13	1.68	0.001418	0.279767	0.017736	46.32%
-39	95.00	0.21	1.55	0.002231	0.440024	0.016317	44.21%

-40	95.00	0.50	1.34	0.005213	1.028135	0.014086	48.42%
-41	95.00	0.39	0.84	0.004102	0.809134	0.008874	51.58%
-42	95.00	-0.26	0.45	-0.002757	-0.543871	0.004771	46.32%
-43	95.00	0.35	0.72	0.003652	0.720284	0.007529	48.42%
-44	95.00	-0.47	0.37	-0.004903	-0.966961	0.003877	41.05%
-45	95.00	0.76	0.83	0.008021	1.582002	0.008779	49.47%
-46	95.00	-0.28	0.07	-0.002922	-0.576246	0.000759	38.95%
-47	95.00	-0.04	0.35	-0.000456	-0.089863	0.003680	44.21%
-48	95.00	-0.10	0.39	-0.001006	-0.198479	0.004136	48.42%
-49	95.00	0.40	0.49	0.004181	0.824606	0.005142	49.47%
-50	95.00	0.09	0.09	0.000961	0.189591	0.000961	48.42%

Appendix 5: Post-listing monthly CAR and average abnormal returns: 1984 to 1996.

Table 5-19: Monthly CAR and average AR for entire sample: 1984- 1996.

This table reports post-listing cumulative and abnormal stock returns for 179 firms that listed their common stocks on the TSE from Canadian regional stock exchanges (ASE, ME, VSE, or CDN) from January 1984 to December 1996. The table present average AR (1) when measured on market-adjusted basis and AR (2) when measured on industry adjusted basis.

Time	N	AR>0	AR(1)	t-test	CAR	AR(2)	t-test	CAR
1	179	38.55%	-0.02	-0.74	-.02	-0.01	-0.6	-0.01
2	178	37.64%	-0.021	-0.928	-0.038	-0.022	-1.050	-0.035
3	179	37.99%	-0.026	-1.147	-0.064	-0.029	-1.381	-0.064
4	179	34.64%	-0.015	-0.645	-0.078	-0.018	-0.866	-0.082
5	178	32.58%	0.025	1.112	-0.053	0.025	1.165	-0.058
6	178	34.27%	0.027	1.175	-0.026	0.014	0.660	-0.044
7	178	34.27%	-0.006	-0.262	-0.032	-0.012	-0.558	-0.056
8	176	36.36%	-0.030	-1.299	-0.062	-0.043	-2.019	-0.099
9	176	35.80%	-0.024	-1.056	-0.086	-0.039	-1.851	-0.138
10	175	34.86%	-0.029	-1.263	-0.115	-0.044	-2.064	-0.182
11	175	31.43%	-0.024	-1.067	-0.140	-0.038	-1.796	-0.221
12	173	33.53%	-0.048	-2.102	-0.188	-0.059	-2.762	-0.280
13	167	33.53%	-0.046	-1.984	-0.234	-0.065	-2.989	-0.345
14	163	36.20%	-0.035	-1.486	-0.270	-0.058	-2.634	-0.404
15	163	36.81%	-0.031	-1.301	-0.301	-0.057	-2.584	-0.461
16	162	39.51%	-0.014	-0.593	-0.315	-0.048	-2.159	-0.509
17	157	38.85%	-0.027	-1.110	-0.342	-0.055	-2.438	-0.564
18	154	35.71%	-0.054	-2.224	-0.396	-0.082	-3.600	-0.646
19	151	29.80%	-0.069	-2.813	-0.465	-0.103	-4.465	-0.749
20	146	32.19%	-0.009	-0.340	-0.474	-0.043	-1.818	-0.791
21	145	31.72%	-0.010	-0.413	-0.484	-0.037	-1.558	-0.828
22	141	31.91%	0.002	0.063	-0.482	-0.026	-1.111	-0.854
23	137	34.31%	0.028	1.065	-0.455	-0.010	-0.400	-0.864
24	135	33.33%	0.045	1.713	-0.410	0.010	0.427	-0.854

25	134	32.09%	0.054	2.067	-0.356	0.027	1.092	-0.827
26	130	32.31%	0.078	2.929	-0.278	0.058	2.320	-0.769
27	129	34.88%	0.113	4.218	-0.166	0.083	3.343	-0.686
28	126	32.54%	0.120	4.431	-0.046	0.102	4.041	-0.584
29	122	33.61%	0.093	3.401	0.047	0.064	2.502	-0.520
30	121	33.06%	0.082	2.967	0.129	0.055	2.148	-0.465
31	116	33.62%	0.039	1.391	0.168	0.019	0.739	-0.445
32	113	35.40%	0.057	1.992	0.225	0.052	1.946	-0.393
33	107	33.64%	-0.022	-0.739	0.204	-0.020	-0.720	-0.413
34	107	28.97%	-0.077	-2.633	0.126	-0.052	-1.901	-0.465
35	104	28.85%	-0.057	-1.899	0.070	-0.033	-1.189	-0.498
36	102	34.31%	-0.035	-1.165	0.035	-0.010	-0.343	-0.508

Table 5-20: ME and CDN monthly CAR and AR: 1984-1996.

This table reports post-listing cumulative and abnormal stock returns for firms that listed their common stocks on the TSE from ME (18 firms), and from CDN (29 firms) from January 1984 to December 1996.

Month	ME Companies				CDN Companies			
	Mkt. Adj. AR**	CAR	Industry Adj. AR	CAR	Mkt. Adj. AR	CAR	Industry Adj. AR	CAR
1	0.0879592	0.0879592	0.1531807	0.153181	-0.0547	-0.0547	-0.0646757	-0.06467
2	0.1043986	0.1923577	0.1267832	0.279964	-0.0528	-0.1076	-0.0688425	-0.13351
3	0.0537981	0.2461558	0.045941	0.325905	-0.0905	-0.1981	-0.0923137	-0.22583
4	0.0395497	0.2857055	0.0322611	0.358166	-0.0705	-0.2686	-0.0820484	-0.30786
5	0.0237141	0.3094197	0.007563	0.365729	-0.0572	-0.3259	-0.0551032	-0.36298
6	0.036678	0.3460977	0.0111169	0.376846	-0.1110	-0.4370	-0.1262771	-0.48926
7	0.0129253	0.3590229	0.0087134	0.385559	-0.1674	-0.6045	-0.1865752	-0.67583
8	-0.0095344	0.3494885	-0.0480263	0.337533	-0.1763	-0.7808	-0.1888378	-0.86467
9	0.0072156	0.3567041	-0.0245704	0.312963	-0.2317	-1.0126	-0.2253586	-1.09003
10	0.0227012	0.3794053	-0.0125999	0.300363	-0.2695	-1.2821	-0.2660731	-1.35610
11	0.0101314	0.3895367	-0.0300451	0.270318	-0.2910	-1.5732	-0.2843147	-1.64042
12	-0.0024802	0.3870565	-0.0468162	0.223502	-0.3266	-1.8998	-0.3140782	-1.95449
13	0.0091547	0.3962112	-0.0297657	0.193736	-0.3913	-2.2912	-0.3909003	-2.34539
14	0.116107	0.5123182	0.0751222	0.268858	-0.3876	-2.6789	-0.397674	-2.74307
15	0.1558285	0.6681467	0.124681	0.393539	-0.4176	-3.0965	-0.4289662	-3.1720
16	0.1202703	0.788417	0.0633487	0.456888	-0.3916	-3.4882	-0.4089085	-3.58094
17	0.0967929	0.8852099	0.0488051	0.505693	-0.417	-3.9059	-0.4292575	-4.01020
18	0.0518113	0.9370212	-0.0038059	0.501887	-0.4853	-4.3912	-0.5009398	-4.51114
19	0.0722208	1.009242	-0.0022134	0.499674	-0.512	-4.90414	-0.5248904	-5.03603
20	0.1895056	1.1987476	0.1048626	0.604536	-0.470	-5.3744	-0.4924294	-5.52846
21	0.1452304	1.3439779	0.0660888	0.670625	-0.431	-5.80596	-0.4270839	-5.95554
22	0.3089451	1.6529231	0.2179943	0.888619	-0.455	-6.2615	-0.4778154	-6.43336

Month	ME Companies				CDN Companies			
	Mkt. Adj. AR**	CAR	Industry Adj. AR	CAR	Mkt. Adj. AR	CAR	Industry Adj. AR	CAR
23	0.3146171	1.9675402	0.2361532	1.124773	-0.382	-6.6444	-0.4195109	-6.85287
24	0.4412945	2.4088347	0.3551047	1.479877	-0.423	-7.0682	-0.4583326	-7.31120
25	0.4635313	2.872366	0.3699308	1.849808	-0.429	-7.4980	-0.4448178	-7.7560
26	0.5370781	3.4094441	0.4601548	2.309963	-0.491	-7.9898	-0.5003797	-8.25640
27	0.7797645	4.1892086	0.6716115	2.981574	-0.557	-8.5471	-0.5688296	-8.82523
28	0.8103127	4.9995213	0.6939769	3.675551	-0.560	-9.1075	-0.543907	-9.36914
29	0.8235474	5.8230687	0.6793924	4.354944	-0.556	-9.6635	-0.5817349	-9.95087
30	1.1517164	6.9747851	0.970255	5.325199	-0.540	-10.2044	-0.5641816	-10.5150
31	1.2283052	8.2030903	0.9914549	6.316654	-0.553	-10.758	-0.5819333	-11.0969
32	1.301529	9.5046193	1.1014768	7.41813	-0.539	-11.297	-0.5660051	-11.6629
33	0.9466848	10.451304	0.7974213	8.215552	-0.569	-11.866	-0.592506	-12.2555
34	0.7549073	11.206211	0.6881704	8.903722	-0.578	-12.445	-0.5918729	-12.8473
35	0.686241	11.892452	0.5885958	9.492318	-0.590	-13.035	-0.6027539	-13.4501
36	0.6286009	12.521053	0.5385275	10.03085	-0.605	-13.64	-0.599	-14.049

**Note that t-statistics are absent from this table because both CDN and ME companies which are eligible for this study were small, thus the t-statistics will likely be meaningless. However, a significant difference exists between the effect of exchange listing decision on companies originating from either exchange. ME companies have a higher positive CAR, while CDN companies have cumulative loss of 59.9% over the 36 months after listing.

Table 5-21 : VSE monthly CAR and average AR: 1984 to 1996.

This table reports post-listing cumulative and abnormal stock returns with their respective t-tests for firms that listed their common stocks on the TSE from the VSE (62 firms) from January 1984 to December 1996.

Month	N	AR>0	Mkt. adj. AR	t-test	CAR Mkt.	Index adj. AR	t-test	CAR index
1	62	37.1%	-0.046	-0.702	-0.046	-0.047	-0.693	-0.047
2	61	36.1%	-0.067	-1.019	-0.113	-0.076	-1.107	-0.123
3	62	37.1%	-0.066	-1.018	-0.179	-0.074	-1.090	-0.197
4	62	30.6%	-0.075	-1.155	-0.254	-0.081	-1.193	-0.279
5	61	26.2%	-0.076	-1.151	-0.330	-0.077	-1.118	-0.355
6	61	24.6%	-0.086	-1.306	-0.416	-0.089	-1.300	-0.444
7	61	24.6%	-0.165	-2.509	-0.581	-0.153	-2.222	-0.597
8	60	23.3%	-0.210	-3.163	-0.790	-0.217	-3.139	-0.814
9	60	23.3%	-0.213	-3.208	-1.003	-0.218	-3.155	-1.033
10	59	18.6%	-0.248	-3.710	-1.251	-0.259	-3.707	-1.291
11	59	15.3%	-0.246	-3.677	-1.497	-0.254	-3.638	-1.545
12	58	17.2%	-0.264	-3.915	-1.761	-0.267	-3.798	-1.813
13	59	16.9%	-0.276	-4.133	-2.037	-0.294	-4.211	-2.107
14	59	22.0%	-0.287	-4.294	-2.324	-0.300	-4.303	-2.407
15	59	27.1%	-0.293	-4.388	-2.618	-0.313	-4.489	-2.720
16	59	28.8%	-0.291	-4.351	-2.909	-0.313	-4.491	-3.034
17	57	28.1%	-0.273	-4.017	-3.182	-0.290	-4.078	-3.323
18	57	28.1%	-0.295	-4.343	-3.477	-0.311	-4.382	-3.635
19	57	22.8%	-0.313	-4.604	-3.791	-0.327	-4.609	-3.962
20	56	21.4%	-0.318	-4.630	-4.109	-0.326	-4.550	-4.288
21	56	19.6%	-0.338	-4.916	-4.446	-0.349	-4.864	-4.637
22	55	23.6%	-0.341	-4.917	-4.787	-0.340	-4.696	-4.977
23	54	25.9%	-0.348	-4.976	-5.135	-0.363	-4.971	-5.340
24	53	20.8%	-0.321	-4.542	-5.456	-0.333	-4.514	-5.672
25	53	20.8%	-0.286	-4.051	-5.742	-0.303	-4.103	-5.975
26	51	23.5%	-0.269	-3.733	-6.010	-0.268	-3.565	-6.243
27	51	25.5%	-0.239	-3.323	-6.250	-0.266	-3.534	-6.509
28	50	26.0%	-0.230	-3.168	-6.480	-0.249	-3.277	-6.758
29	50	26.0%	-0.273	-3.756	-6.753	-0.304	-4.003	-7.062
30	50	24.0%	-0.286	-3.936	-7.040	-0.308	-4.059	-7.370
31	49	24.5%	-0.301	-4.094	-7.340	-0.319	-4.158	-7.689
32	48	31.3%	-0.251	-3.374	-7.591	-0.266	-3.436	-7.955
33	47	27.7%	-0.251	-3.347	-7.842	-0.263	-3.357	-8.218

Month	N	AR>0	Mkt. adj. AR	t-test	CAR Mkt.	Index adj. AR	t-test	CAR index
34	49	24.5%	-0.285	-3.883	-8.128	-0.284	-3.700	-8.502
35	48	20.8%	-0.254	-3.420	-8.382	-0.261	-3.370	-8.764
36	47	29.8%	-0.214	-2.845	-8.595	-0.222	-2.837	-8.986

Table 5-22 : ASE monthly CAR and average AR: 1984 to 1996.

This table reports post-listing cumulative and abnormal stock returns with their respective t-tests for firms that listed their common stocks on the TSE from the ASE (62 firms) from January 1984 to December 1996.

Month	N	AR > 0	AR(Market-adjusted)	t-test	CAR	AR(Index-adjusted)	CAR
1	70	40.0%	-0.002	-0.019	-0.002	-0.003	-0.003
2	70	41.4%	0.000	-0.001	-0.002	0.006	0.002
3	70	42.9%	0.016	0.141	0.014	0.018	0.020
4	70	40.0%	0.048	0.425	0.062	0.051	0.071
5	70	38.6%	0.148	1.296	0.210	0.151	0.221
6	70	44.3%	0.179	1.572	0.389	0.163	0.384
7	70	45.7%	0.195	1.708	0.584	0.178	0.562
8	69	50.7%	0.183	1.596	0.767	0.171	0.733
9	69	49.3%	0.219	1.907	0.986	0.190	0.923
10	69	52.2%	0.246	2.143	1.232	0.224	1.148
11	69	49.3%	0.268	2.333	1.500	0.247	1.395
12	68	52.9%	0.242	2.092	1.742	0.223	1.618
13	63	54.0%	0.301	2.501	2.043	0.278	1.896
14	60	55.0%	0.328	2.661	2.371	0.295	2.191
15	60	55.0%	0.348	2.826	2.719	0.310	2.501
16	60	56.7%	0.384	3.112	3.103	0.338	2.839
17	58	56.9%	0.356	2.843	3.459	0.315	3.154
18	56	50.0%	0.353	2.767	3.812	0.316	3.469
19	54	42.6%	0.343	2.639	4.156	0.292	3.762
20	53	49.1%	0.442	3.363	4.597	0.391	4.152
21	53	49.1%	0.447	3.406	5.044	0.409	4.562
22	52	42.3%	0.457	3.445	5.501	0.413	4.974
23	51	43.1%	0.491	3.670	5.992	0.442	5.416

24	50	44.0%	0.490	3.620	6.482	0.446	5.862
25	49	44.9%	0.483	3.533	6.965	0.458	6.320
26	48	41.7%	0.514	3.722	7.479	0.484	6.804
27	48	45.8%	0.543	3.932	8.022	0.526	7.330
28	47	42.6%	0.562	4.024	8.584	0.558	7.887
29	46	43.5%	0.499	3.535	9.083	0.500	8.388
30	45	42.2%	0.399	2.797	9.482	0.408	8.796
31	42	42.9%	0.280	1.891	9.762	0.323	9.118
32	40	42.5%	0.246	1.623	10.008	0.320	9.438
33	36	44.4%	0.180	1.124	10.188	0.255	9.693
34	35	37.1%	0.125	0.767	10.312	0.225	9.918
35	34	38.2%	0.155	0.939	10.467	0.273	10.191
36	33	42.4%	0.188	1.125	10.655	0.307	10.498

Appendix 6: Daily CAR and average abnormal returns for high-liquidity and low-liquidity groups, on risk-adjusted and market-adjusted basis for -50 to +50 trading days around listing: 1984 to 1996.

Table 6-23 : High-liquidity CAR and average AR on risk and market-adjusted basis from -50 to +50 around the listing day.

t	N	Risk-adjusted AR				Market-adjusted AR			
		%positive	Avg. AR	t-test	CAR	%positive	Avg. AR	t-test	CAR
50	44	43%	-0.006766	-0.638400	-0.166179	32%	-0.008100	-0.768005	-0.104326
49	44	39%	-0.007488	-0.706511	-0.159414	39%	-0.007826	-0.741990	-0.096226
48	44	50%	0.004893	0.461688	-0.151926	52%	0.003570	0.338469	-0.088400
47	44	39%	-0.009015	-0.850603	-0.156819	34%	-0.010215	-0.968515	-0.091970
46	44	55%	0.000432	0.040745	-0.147804	50%	-0.001858	-0.176156	-0.081754
45	44	52%	-0.002043	-0.192803	-0.148236	43%	-0.003979	-0.377213	-0.079896
44	44	41%	-0.002678	-0.252653	-0.146193	34%	-0.003560	-0.337569	-0.075918
43	44	52%	0.011434	1.078851	-0.143515	57%	0.011819	1.120584	-0.072358
42	44	41%	-0.008366	-0.789344	-0.154949	50%	-0.007531	-0.714021	-0.084177
41	44	52%	0.001677	0.158206	-0.146583	55%	0.001613	0.152914	-0.076646
40	44	41%	-0.006870	-0.648191	-0.148260	45%	-0.005608	-0.531663	-0.078258
39	44	41%	0.000092	0.008699	-0.141390	41%	-0.000863	-0.081838	-0.072651
38	44	41%	0.002028	0.191343	-0.141482	43%	0.001263	0.119706	-0.071788
37	44	50%	0.001253	0.118183	-0.143510	55%	0.000345	0.032667	-0.073050
36	44	45%	0.003110	0.293414	-0.144763	43%	0.001978	0.187525	-0.073395
35	44	25%	-0.018369	-1.733241	-0.147872	23%	-0.017718	-1.679870	-0.075373
34	44	45%	0.000789	0.074481	-0.129503	34%	-0.002600	-0.246478	-0.057655
33	44	30%	-0.007244	-0.683529	-0.130293	27%	-0.008331	-0.789915	-0.055055
32	44	59%	0.006113	0.576842	-0.123048	57%	0.005506	0.522033	-0.046724
31	44	41%	-0.004862	-0.458714	-0.129162	39%	-0.006022	-0.570999	-0.052230
30	44	59%	0.003040	0.286820	-0.124300	57%	0.001660	0.157353	-0.046207
29	44	50%	0.006891	0.650231	-0.127340	36%	0.005042	0.478008	-0.047867
28	44	45%	-0.004948	-0.466850	-0.134231	34%	-0.007753	-0.735113	-0.052969
27	44	52%	0.008478	0.799984	-0.129284	57%	0.005771	0.547136	-0.045155
26	44	27%	-0.012133	-1.144844	-0.137762	34%	-0.015237	-1.444671	-0.050926
25	44	32%	-0.008979	-0.847233	-0.125629	41%	-0.006777	-0.642503	-0.035689
24	44	39%	-0.007317	-0.690390	-0.116650	41%	-0.002383	-0.225926	-0.028912
23	44	27%	-0.013614	-1.284578	-0.109333	27%	-0.012358	-1.171671	-0.026529
22	44	57%	0.007511	0.708738	-0.095719	55%	0.011306	1.071919	-0.014171
21	44	50%	-0.001144	-0.107934	-0.103230	50%	0.000829	0.078598	-0.025477
20	44	34%	-0.008577	-0.809266	-0.102086	27%	-0.009595	-0.909723	-0.026306
19	44	34%	-0.012889	-1.216173	-0.093509	34%	-0.014558	-1.380289	-0.016711
18	44	48%	0.005626	0.530870	-0.080620	48%	0.003621	0.343346	-0.002153
17	44	43%	-0.000212	-0.019985	-0.086246	41%	-0.001436	-0.136107	-0.005774
16	44	59%	0.014335	1.352581	-0.086035	61%	0.014176	1.344091	-0.004339
15	44	39%	-0.007721	-0.728547	-0.100370	32%	-0.007887	-0.747796	-0.018515
14	44	34%	-0.013037	-1.230146	-0.092648	34%	-0.012323	-1.168319	-0.010628
13	44	50%	0.004358	0.411171	-0.079611	45%	0.004775	0.452683	0.001695
12	44	48%	-0.000737	-0.069526	-0.083969	50%	-0.002975	-0.282054	-0.003080
11	44	32%	-0.012602	-1.189055	-0.083232	36%	-0.013775	-1.306006	-0.000105

10	44	39%	0.002919	0.275469	-0.070630	34%	0.000943	0.089406	0.013670
9	44	48%	0.001087	0.102569	-0.073549	45%	0.001673	0.158573	0.012727
8	44	48%	0.002343	0.221037	-0.074637	52%	0.001201	0.113854	0.011054
7	44	41%	-0.000696	-0.065667	-0.076979	43%	-0.002166	-0.205328	0.009853
6	44	64%	0.001643	0.155074	-0.076283	55%	0.001863	0.176611	0.012019
5	44	32%	-0.008588	-0.810287	-0.077927	32%	-0.010338	-0.980199	0.010156
4	44	32%	-0.011230	-1.059637	-0.069339	34%	-0.011654	-1.104902	0.020495
3	44	41%	-0.009440	-0.890716	-0.058109	32%	-0.011212	-1.063004	0.032148
2	44	36%	-0.005926	-0.559123	-0.048669	36%	-0.007107	-0.673793	0.043360
1	44	34%	-0.006585	-0.621326	-0.042743	30%	-0.006931	-0.657098	0.050467
0	44	55%	-0.000215	-0.020258	-0.036158	2%	0.000362	0.034349	0.057397
-1	44	43%	-0.003512	-0.331415	-0.035944	55%	0.001598	0.151468	0.057035
-2	44	52%	0.012474	1.177045	-0.032431	59%	0.014229	1.349036	0.055437
-3	44	43%	0.002920	0.275560	-0.044906	45%	0.005115	0.485003	0.041209
-4	44	45%	-0.003191	-0.301073	-0.047826	45%	-0.001456	-0.138042	0.036093
-5	44	52%	0.002270	0.214176	-0.044635	55%	0.004044	0.383451	0.037549
-6	44	34%	-0.005418	-0.511260	-0.046905	48%	-0.005990	-0.567879	0.033505
-7	44	50%	0.007088	0.668843	-0.041487	59%	0.008637	0.818920	0.039495
-8	44	43%	-0.007670	-0.723686	-0.048575	43%	-0.001972	-0.186933	0.030857
-9	44	43%	-0.003154	-0.297643	-0.040906	50%	0.002507	0.237660	0.032829
-10	44	68%	0.010027	0.946111	-0.037751	64%	0.012163	1.153205	0.030322
-11	44	43%	0.004811	0.453991	-0.047778	52%	0.007355	0.697328	0.018159
-12	44	27%	-0.006651	-0.627533	-0.052590	34%	-0.001225	-0.116121	0.010804
-13	44	41%	0.008496	0.801622	-0.045939	50%	0.005617	0.532569	0.012029
-14	44	48%	0.005604	0.528760	-0.054435	52%	0.007803	0.739796	0.006412
-15	44	32%	-0.012548	-1.184027	-0.060039	27%	-0.012404	-1.176014	-0.001391
-16	44	45%	-0.015454	-1.458196	-0.047490	50%	-0.005804	-0.550329	0.011013
-17	44	32%	0.000038	0.003579	-0.032036	39%	-0.003444	-0.326531	0.016817
-18	44	50%	0.011840	1.117133	-0.032074	57%	0.008021	0.760481	0.020261
-19	44	45%	-0.001114	-0.105111	-0.043913	59%	0.003136	0.297352	0.012240
-20	44	41%	-0.001339	-0.126364	-0.042799	43%	-0.000088	-0.008324	0.009104
-21	44	52%	0.008743	0.824941	-0.041460	50%	0.008916	0.845309	0.009192
-22	44	36%	-0.009620	-0.907677	-0.050203	45%	-0.006922	-0.656280	0.000276
-23	44	34%	-0.006305	-0.594907	-0.040583	43%	-0.001715	-0.162601	0.007198
-24	44	43%	0.000854	0.080615	-0.034278	50%	0.001125	0.106673	0.008913
-25	44	48%	0.000660	0.062246	-0.035133	45%	0.001257	0.119136	0.007788
-26	44	52%	-0.000096	-0.009105	-0.035792	52%	0.000038	0.003604	0.006531
-27	44	34%	-0.009299	-0.877432	-0.035696	34%	-0.007247	-0.687130	0.006493
-28	44	55%	0.000819	0.077279	-0.026397	59%	0.002851	0.270307	0.013741
-29	44	41%	0.001370	0.129247	-0.027216	48%	0.001881	0.178307	0.010890
-30	44	48%	0.005049	0.476368	-0.028586	41%	0.003484	0.330352	0.009009
-31	44	55%	0.000675	0.063705	-0.033634	57%	0.002253	0.213625	0.005525
-32	44	41%	0.004709	0.444367	-0.034309	52%	0.005685	0.539029	0.003272
-33	44	27%	-0.011307	-1.066844	-0.039019	36%	-0.009513	-0.901921	-0.002414
-34	44	57%	0.010245	0.966639	-0.027712	57%	0.010456	0.991336	0.007099
-35	44	43%	0.001115	0.105249	-0.037957	50%	0.004398	0.417018	-0.003357
-36	44	39%	-0.005964	-0.562753	-0.039072	39%	-0.003508	-0.332590	-0.007755
-37	44	50%	0.008908	0.840498	-0.033108	59%	0.010733	1.017621	-0.004247
-38	44	50%	0.005650	0.533092	-0.042016	45%	0.008671	0.822159	-0.014980

-39	44	45%	-0.003985	-0.376007	-0.047666	45%	-0.003417	-0.323958	-0.023652
-40	44	45%	0.000444	0.041940	-0.043681	48%	0.003291	0.312040	-0.020235
-41	44	48%	0.001357	0.128067	-0.044125	43%	0.001740	0.164975	-0.023526
-42	44	34%	-0.012881	-1.215375	-0.045482	36%	-0.010661	-1.010797	-0.025266
-43	44	36%	-0.005043	-0.475812	-0.032602	48%	-0.004088	-0.387569	-0.014605
-44	44	34%	-0.004730	-0.446322	-0.027559	41%	-0.001864	-0.176706	-0.010517
-45	44	41%	-0.004285	-0.404323	-0.022829	43%	-0.001176	-0.111515	-0.008653
-46	44	41%	-0.004612	-0.435197	-0.018544	43%	-0.003089	-0.292670	-0.007477
-47	44	41%	-0.001876	-0.176991	-0.013932	48%	-0.000554	-0.052491	-0.004388
-48	44	43%	-0.000770	-0.072660	-0.012056	48%	0.001729	0.163928	-0.003835
-49	44	39%	-0.006194	-0.584477	-0.011286	48%	-0.001889	-0.179062	-0.005564
-50	44	36%	-0.005091	-0.480396	-0.005091	45%	-0.003675	-0.348435	-0.003675

Table 6-24: Low-liquidity daily CAR and AR on risk and market-adjusted basis from -50 to +50 around the listing day.

t	N	Risk-adjusted AR				Market-adjusted AR			
		%positive	Avg. AR	t-test	CAR	%positive	Avg. AR	t-test	CAR
50	55	40%	-0.000600	-0.073144	-0.044710	44%	0.001597	0.188493	0.125778
49	55	45%	-0.001181	-0.143936	-0.044110	44%	0.001485	0.175226	0.124180
48	55	60%	0.010792	1.315591	-0.042929	58%	0.011888	1.402911	0.122696
47	55	49%	-0.001461	-0.178109	-0.053721	44%	-0.002589	-0.305540	0.110808
46	55	47%	0.001755	0.213945	-0.052260	45%	0.002234	0.263648	0.113397
45	55	45%	-0.000226	-0.027575	-0.054015	45%	0.001707	0.201452	0.111163
44	55	40%	-0.009587	-1.168734	-0.053789	42%	-0.005058	-0.596910	0.109456
43	55	49%	-0.000125	-0.015263	-0.044202	40%	-0.000893	-0.105428	0.114514
42	55	60%	0.007285	0.888123	-0.044077	40%	0.007705	0.909290	0.115407
41	55	40%	-0.006979	-0.850745	-0.051362	38%	-0.005407	-0.638074	0.107702
40	55	40%	-0.002907	-0.354348	-0.044383	49%	-0.001031	-0.121660	0.113169
39	55	42%	0.010997	1.340666	-0.041476	45%	0.009705	1.145341	0.114140
38	55	49%	-0.008627	-1.051739	-0.052474	44%	-0.009699	-1.144607	0.104434
37	55	49%	-0.001567	-0.190995	-0.043847	44%	-0.002134	-0.251794	0.114134
36	55	53%	-0.001732	-0.211100	-0.042280	38%	-0.003446	-0.406634	0.116267
35	55	42%	-0.004393	-0.535566	-0.040548	36%	-0.003240	-0.382371	0.119713
34	55	53%	0.007953	0.969479	-0.036155	47%	0.009277	1.094828	0.122953
33	55	45%	-0.006509	-0.793502	-0.044108	44%	-0.006875	-0.811333	0.113676
32	55	45%	-0.004073	-0.496566	-0.037598	35%	-0.004861	-0.573696	0.120551
31	55	45%	-0.004019	-0.489962	-0.033525	38%	-0.004179	-0.493200	0.125412
30	55	44%	0.000804	0.097959	-0.029506	40%	0.002805	0.331019	0.129591
29	55	51%	0.001057	0.128825	-0.030310	45%	0.002365	0.279151	0.126786
28	55	56%	0.008144	0.992813	-0.031366	40%	0.004887	0.576713	0.124421
27	55	47%	-0.005957	-0.726231	-0.039510	36%	-0.004541	-0.535911	0.119534
26	55	49%	0.005199	0.633826	-0.033553	45%	0.004610	0.543998	0.124075
25	55	49%	0.004416	0.538393	-0.038752	42%	0.000991	0.116927	0.119465
24	55	38%	-0.004301	-0.524359	-0.043169	36%	-0.003241	-0.382489	0.118475
23	55	45%	-0.009822	-1.197345	-0.038867	42%	-0.010174	-1.200664	0.121716
22	55	49%	0.005420	0.660765	-0.029046	51%	0.004894	0.577563	0.131890
21	55	38%	-0.000852	-0.103869	-0.034466	35%	-0.000316	-0.037328	0.126996
20	55	36%	-0.008776	-1.069889	-0.033614	31%	-0.008458	-0.998124	0.127312
19	55	42%	0.001728	0.210652	-0.024838	42%	0.004699	0.554493	0.135770
18	55	51%	0.005894	0.718502	-0.026566	44%	0.004748	0.560316	0.131071
17	55	49%	0.003744	0.456430	-0.032459	44%	0.001945	0.229582	0.126323
16	55	45%	0.002899	0.353401	-0.036203	51%	0.003159	0.372767	0.124378
15	55	47%	0.000029	0.003497	-0.039102	47%	0.000502	0.059258	0.121219
14	55	56%	0.011323	1.380346	-0.039131	55%	0.012013	1.417609	0.120717
13	55	40%	-0.002234	-0.272335	-0.050454	38%	-0.002419	-0.285474	0.108705
12	55	38%	-0.011428	-1.393109	-0.048220	47%	-0.010868	-1.282487	0.111124
11	55	47%	-0.006991	-0.852275	-0.036792	35%	-0.005831	-0.688085	0.121991
10	55	38%	-0.012751	-1.554453	-0.029801	33%	-0.011974	-1.413069	0.127822
9	55	42%	-0.006023	-0.734209	-0.017050	42%	-0.004329	-0.510895	0.139796
8	55	40%	-0.001366	-0.166495	-0.011027	45%	-0.001724	-0.203473	0.144125

7	55	47%	-0.005466	-0.666323	-0.009662	42%	-0.006438	-0.759719	0.145849
6	55	40%	-0.001421	-0.173228	-0.004196	44%	-0.000720	-0.084962	0.152287
5	55	60%	0.002373	0.289308	-0.002775	58%	0.002814	0.332054	0.153007
4	55	44%	-0.001855	-0.226115	-0.005148	42%	-0.003056	-0.360639	0.150193
3	55	42%	-0.007290	-0.888645	-0.003293	42%	-0.007216	-0.851601	0.153249
2	55	49%	0.000323	0.039359	0.003996	47%	-0.000870	-0.102647	0.160466
1	55	45%	0.008164	0.995304	0.003674	45%	0.008279	0.976956	0.161335
0	55	55%	0.000076	0.009245	-0.004491	0%	0.000000	0.000000	0.153057
-1	55	33%	-0.004637	-0.565255	-0.004567	47%	0.001603	0.189161	0.153057
-2	55	38%	0.001878	0.228936	0.000070	51%	0.007028	0.829377	0.151454
-3	55	53%	0.000941	0.114682	-0.001808	49%	0.004792	0.565481	0.144426
-4	55	51%	0.004767	0.581115	-0.002749	58%	0.008702	1.026905	0.139634
-5	55	40%	-0.010546	-1.285605	-0.007516	38%	-0.004123	-0.486563	0.130932
-6	55	47%	0.005493	0.669599	0.003030	49%	0.007013	0.827638	0.135055
-7	55	40%	-0.001516	-0.184787	-0.002463	44%	-0.001295	-0.152792	0.128042
-8	55	49%	0.008897	1.084578	-0.000947	47%	0.015740	1.857435	0.129337
-9	55	49%	-0.000261	-0.031835	-0.009843	49%	0.000975	0.115037	0.113597
-10	55	51%	0.004632	0.564635	-0.009582	47%	0.007955	0.938722	0.112622
-11	55	38%	-0.005516	-0.672486	-0.014214	45%	-0.001992	-0.235053	0.104668
-12	55	42%	0.007241	0.882772	-0.008698	56%	0.013340	1.574210	0.106660
-13	55	42%	0.000619	0.075499	-0.015939	45%	0.004234	0.499645	0.093320
-14	55	38%	-0.007454	-0.908663	-0.016558	42%	-0.004427	-0.522415	0.089086
-15	55	51%	0.003248	0.395905	-0.009105	44%	0.005250	0.619554	0.093513
-16	55	42%	0.002379	0.290019	-0.012352	51%	0.007991	0.943015	0.088263
-17	55	40%	-0.001337	-0.162957	-0.014731	42%	0.000116	0.013722	0.080272
-18	55	44%	-0.004479	-0.546037	-0.013394	42%	-0.001880	-0.221916	0.080156
-19	55	53%	0.005240	0.638783	-0.008915	45%	0.006012	0.709515	0.082036
-20	55	44%	-0.004939	-0.602100	-0.014155	44%	-0.001547	-0.182533	0.076024
-21	55	55%	0.003883	0.473407	-0.009216	45%	0.006366	0.751218	0.077571
-22	55	40%	-0.001695	-0.206598	-0.013100	49%	0.001230	0.145137	0.071205
-23	55	44%	-0.002971	-0.362215	-0.011405	45%	0.002222	0.262241	0.069975
-24	55	44%	0.001446	0.176295	-0.008434	49%	0.006538	0.771603	0.067753
-25	55	40%	-0.000501	-0.061040	-0.009880	36%	-0.000104	-0.012218	0.061215
-26	55	49%	0.012224	1.490226	-0.009379	53%	0.015976	1.885299	0.061318
-27	55	42%	-0.010031	-1.222850	-0.021603	40%	-0.006502	-0.767352	0.045342
-28	55	42%	-0.004861	-0.592578	-0.011572	42%	-0.003677	-0.433973	0.051845
-29	55	40%	-0.008097	-0.987034	-0.006711	36%	-0.008675	-1.023718	0.055522
-30	55	35%	0.010086	1.229492	0.001385	45%	0.011351	1.339498	0.064197
-31	55	31%	-0.004513	-0.550136	-0.008700	42%	0.003104	0.366255	0.052846
-32	55	40%	0.001933	0.235662	-0.004188	44%	0.005027	0.593245	0.049743
-33	55	49%	0.001609	0.196130	-0.006121	44%	0.004160	0.490877	0.044716
-34	55	47%	0.004585	0.558999	-0.007730	44%	0.006148	0.725535	0.040556
-35	55	38%	-0.004386	-0.534718	-0.012315	36%	-0.001970	-0.232500	0.034408
-36	55	35%	-0.014965	-1.824388	-0.007929	33%	-0.011659	-1.375927	0.036378
-37	55	47%	0.005218	0.636163	0.007037	45%	0.005419	0.639486	0.048038
-38	55	44%	-0.007218	-0.879955	0.001818	44%	-0.004487	-0.529531	0.042619
-39	55	38%	0.005420	0.660765	0.009037	40%	0.006587	0.777331	0.047106
-40	55	47%	0.003617	0.440973	0.003616	45%	0.006371	0.751833	0.040519
-41	55	47%	0.000486	0.059299	-0.000001	55%	0.005694	0.671942	0.034148

-42	55	33%	-0.000797	-0.097144	-0.000487	51%	0.003766	0.444424	0.028454
-43	55	40%	0.005026	0.612759	0.000309	45%	0.009578	1.130311	0.024688
-44	55	36%	-0.010303	-1.256014	-0.004717	38%	-0.006977	-0.823369	0.015110
-45	55	47%	0.012907	1.573445	0.005586	51%	0.014795	1.745991	0.022087
-46	55	35%	-0.004964	-0.605179	-0.007321	33%	-0.002575	-0.303908	0.007292
-47	55	40%	-0.004451	-0.542554	-0.002357	38%	-0.000344	-0.040602	0.009867
-48	55	44%	-0.006944	-0.846531	0.002094	45%	-0.003121	-0.368352	0.010211
-49	55	51%	0.008107	0.988281	0.009038	47%	0.008732	1.030505	0.013333
-50	55	45%	0.000931	0.113518	0.000931	47%	0.004600	0.542889	0.004600

References

- Amihud, Y. And Mendelson, Asset pricing and bid-ask spread, *Journal of Financial Economics*, December 1986, pp.223-250
- Bahandari, A., T.Grammatikos, and G.Papaioannou, Risk and return on newly listed stocks: the post-listing experience, *The Journal of Financial Research*, summer 1989, pp.93-101
- Baker, H. And James Spitzfaden, The impact of exchange listing on the cost of equity capital, *The Financial Review*, 17 (1982) , pp.128-141
- Baker, H, K, and Sue E. Meeks, Research on exchange listings and delistings:A review and synthesis, *Financial Practise and Education*, (Spring, 1991), pp.57-71
- Baker, H. and R. Edelman, AMEX-to-NYSE transfers, market microstructure, and shareholder wealth, *Financial Management*, winter 1992, pp.60-72
- Batholdy, J. and Riding, A., Thin trading and the estimation of betas: the efficacy of alterative techniques, *Journal of financial research*, 17 (1994), pp. 241.
- Bernstien, P., Liquidity, stock markets, and market makers, *Financial Management*, summer1987, pp.54-63
- Brennan, Michael and Subrahmanyam, Avaniidhar, Market microstructure and asset pricing: On the compensation for illiquidity in stock returns, *Journal of Financial Economics*, 41 (1996), pp.441-464
- Brown, S. and Warner, J., Using daily stock returns: the case of event studies, *Journal of financial economics*, 14 (1985), pp. 3-31.
- Calvet, A. And Lefoll, J., A varying parameter model for the estimation of systematic risk and its application to Canadian equity data, Proceedings 1981, ASAC Conference, Halifax, Canada.
- Cowan, A., R. Carter, F. Dark, and A. Singh, Explaining the NYSE listing choices of NASDAQ firms, *Financial Management*, winter 1992, pp. 73-85
- Dharan, B. and Ikenberry, D., The long-run negative drift of post-listing stock returns, *Journal of finance*, 50 (1995), pp. 1547-1574.
- Dubofsky, D. and J. Groth, Exchange listing and stock liquidity, *The journal of Financial Research*, winter 1984, pp. 291-302

Edelman, R. And H. Baker, The impact of company pre-listing attributes on the market reaction to NYSE listings, *The Financial Review*, August 1993, pp.431-448

Edelman, R. and H. Baker, Liquidity and stock exchange listing, *The Financial Review*, May 1990, pp.231-249

Fabozzi, F., Does listing on the AMEX increase the value of equity, *Financial Management*, Spring 1981, pp.43-50

Fama, E., Efficient capital markets: A review of theory and empirical work, *Journal of Finance*, 25 (1970), pp. 383-417.

Fama, E., Efficient Capital Markets: II, *Journal of Finance*, Dec. 1991, pp. 1575-1616.

Fowler, D., C. Rorke, and V.M. Jog, Thin trading and beta estimation problems on the Toronto Stock Exchange, *Journal of Business Administration*, fall 1980, pp.77-90.

Fowler, D., C. Rorke, and V.M. Jog, Heteroscedasticity, R-square, and thin trading on the Toronto Stock Exchange, *Journal of Finance*, 34 (1979), pp.1202-1210

Grammatikos, T. and G. Papaionnou (A), Market reaction to NYSE listings: Tests of the marketability gains hypothesis, *The Journal of Financial Research*, Fall 1986, pp.215-227

Grammatikos, T. and G. Papaionnou (B), The informational value of listing on the New York stock exchange, *The Financial Review*, 21 (1986), pp.485-499

Greenstein, Marilyn Magee, and Sami, Heibatollah, The impact of the SEC's segment disclosure requirement on bid-ask spreads, *Accounting Review*, 69 (1994), pp. 179-199

Harris, L. and Gurel, E., Price and volume effects associated with changes in the S&P500: new evidence for the existence of price pressures, *Journal of Finance*, 41(1986), pp.815-829.

Howe, J. And Schlarbaum, G., SEC trading suspensions: empirical evidence, *Journal of Financial and Quantitative Analysis*, Sept. 1986, pp.323-333

Khan, W., Baker, H., Kennedy, R., and Perry, G., Dual domestic listing, market structure and shareholder wealth, *Financial Review*, 28(1993), pp.371-383.

Levi, M., The long run-performance of initial public offering: the UK experience 80-88, *Financial Management*, 22 (1993), pp. 28-41.

- Loughran, T. and Ritter, J., The new issues puzzle, *Journal of finance*, 5 (1995), pp.23-51.
- Mann, S.V. and R.W. Seijas, Bid-ask spreads, NYSE specialists, and NASD dealers, *Journal of Portfolio Management*, fall 1991, pp.54-58
- Marsh, T. And K. Rock, Exchange listing and liquidity: a comparison of the AMEX with the NASDAQ, American Stock Exchange transaction data research project report #2, January 1986.
- Martin, P., Analysis of the impact of competitive rates on the liquidity of NYSE stocks. Economic staff paper 75-3, Securities and Exchange Commission, (JULY 1975).
- McConnell, J. and G. Kadlec, The effect of market segmentation and illiquidity on asset prices: evidence from exchange listings, *Journal of Finance*, June 1994, pp. 611-635.
- McConnell, J. and Gary Sanger, A trading strategy for new listings on the NYSE, *Financial Analyst Journal*, Jan-Feb 1984, pp. 34-38.
- McConnell, J. And Gary Sanger, The puzzle in post-listing common stock returns@, *Journal of Finance*, March 1987, pp. 119-140.
- Merton, R., A Presidential address: A simple model of capital market equilibrium with incomplete information, *Journal of Finance*, 42 (1987), pp. 483-510.
- Merton, M. and Grossman, Liquidity and market structure, *Journal of Finance*, July 1988, pp 617-633.
- Mikkelson, W. and Shah, K. Performance of companies around initial public offerings, Working paper, University of Oregon (1994).
- Nelson, W., Do firms buy low and sell high?: evidence of excess returns on firms that issue or repurchase equity Working paper, Federal reserve board (1994).
- O'Donnell, J.L., Case evidence of the value of a New York Stock Exchange listing, *Michigan State University Business Topics*, 17(1969), pp. 15-21.
- Reinganum, M., Market microstructure and asset pricing, *Journal of Financial Economics*, 28 (1990), pp. 127-147.
- Ritter, J., The long run performance of IPOs, *Journal of Finance*, 46(1991), pp.3-27.

Robinson, M. and Smith, B. Canadian Capital Markets, The Exchange and Western Business School, Canada, 1993.

Sanger, G. and J. McConnell, Stock exchange listing, firm value, and security market efficiency: The impact of NASDAQ, *Journal of Financial and Quantitative Analysis*, March 1986, pp. 1-23.

Sanger, G. and Peterson, J., An empirical analysis of common stock delistings, *Journal of Financial and Quantitative Analysis*, 25(1990), pp. 261-272.

Scholes, W. and Williams, J., Estimating betas from nonsynchronous data, *Journal of financial economics*, 5(1979), pp.309-328.

Sharpe, W., A simplified model for Portfolio analysis, *Management Science*, January 1963, pp. 277-293.

Spiess, D. and Affleck-Graves, J., Under performance in long-run stock returns following seasoned equity offerings, *Journal of financial economics*, 38 (19), pp. 243-267.

Stoll, H.R., The stock exchange specialist system: An economic analysis, Monograph series in finance and economics (ed. Saunders, A.) (1985)

Ule, G. M., APrice movements of newly listed common stocks, *Journal of Business*, October 1937, pp. 346-369.

Van Horne, J., New listings and their price behaviour, *Journal of Finance*, 25(1970), pp.783-794.

Waldemar, Goulet. "Price changes, managerial actions and insider trading at the time of listing" *Financial Management*, no.3, 1974, pp. 30-36.

Ying, L., W. Lewellen, G. Schlarbaum, and R. Lease, Stock exchange listing and securities returns, *Journal of Financial and Quantitative Analysis*, September 1977, pp.415-431.

IMAGE EVALUATION TEST TARGET (QA-3)

APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989

© 1993, Applied Image, Inc., All Rights Reserved