

# Corporate Governance and Firm Performance: Analyzing the Social Capital of Corporate Insiders

by

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I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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## Abstract

This dissertation is concerned with how the social capital of corporate insiders is associated with the governance and performance of publicly listed small and medium-sized enterprises (SMEs) in Canada. The premise of social capital theory is that relationships matter and that network structures have implications for outcomes. Encouraging SME growth and performance is an important part of economic policy. In Canada, going public is one way innovative SMEs can access capital for growth.

This research considers the network of relationships between directors, owners and senior officers in a public corporation – i.e. the social capital of corporate insiders – to better understand corporate governance. Family-run firms, large corporate ownership and professional relationships between directors have been the subject of numerous corporate governance studies. They can also be considered networks. In this research, I assume that these various networks act to unite corporate insiders into coalitions with similar interests. I consider the implications of social capital on firm performance in terms of effective control, director independence, CEO ownership, and family control of the firm. The hypotheses, generated from the theory of internal social capital of the firm, are tested using fixed and random effects regression models on a panel of Canadian industrial SMEs that had an initial public offering between 2000 and 2010. SME performance is measured by Tobin's Q.

I find support for the idea that the structure of social capital within the firm is related to corporate governance and associated with performance. My results indicate that having multiple coalitions in the firm, as well as more independent directors, are both positively associated with performance. There are also indirect effects related to the social capital of the firm. After controlling for the structure of social capital in the firm, CEO ownership is found to have no association with firm performance, except in a few cases where the CEO owns in excess of 40 percent of the firm. Once these cases are omitted from the sample there does not appear to be a significant relationship between CEO ownership and performance. These few cases suggest the role of CEO may be important to performance outcomes in

highly controlled firms. Further case-study research into this finding may be merited. Finally, I find no evidence that family-run firms have valuations that differ from other firms.

The theory of internal social capital of a firm contributes to the corporate governance literature by considering how the network of relationships within the firm affects outcomes. There are also useful methodological contributions from this research. Theoretically grounded network measures determine: (i) a scale of effective control of a firm when there are multiple coalitions of owners, and (ii) a way to identify truly independent directors. Entrepreneurs, directors and managers will find this research useful because it outlines how the structure of relationships within an SME is associated with firm valuation.

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## Dedication

This is dedicated to Karen Kawawada, for making everything possible...

...and to Mari and Aya for making it nearly impossible.

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# Table of Contents

<b>List of Tables</b>	<b>xiv</b>
<b>List of Figures</b>	<b>xv</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Background . . . . .	1
1.1.1 Analyzing the Social Capital of Corporate Insiders . . . . .	2
1.1.2 The Meaning of Corporate Interlocks . . . . .	2
1.1.3 Agency Theory and the Importance of Ownership and Family	3
1.2 Research Problem . . . . .	5
1.3 Research Questions . . . . .	7
1.4 Methodology . . . . .	8
1.4.1 Sample . . . . .	8
1.5 Findings . . . . .	11
1.6 Approach and Limitations . . . . .	12
1.6.1 Extensions . . . . .	12
1.7 Contributions . . . . .	13

<b>2</b>	<b>Literature Review</b>	<b>15</b>
2.1	Introduction . . . . .	15
2.2	Understanding Canadian Markets . . . . .	18
2.3	Ownership Networks . . . . .	27
2.3.1	Inside and Outside Directors . . . . .	33
2.3.2	Concentrated Corporate Ownership . . . . .	35
2.4	Family Networks . . . . .	38
2.5	Professional Networks and Social Capital . . . . .	39
2.5.1	Social Capital Theory . . . . .	40
2.5.2	The Underpinnings of Network Theory . . . . .	43
2.5.3	Network Theory: Flows and Bonds . . . . .	44
2.5.4	Social Embeddedness . . . . .	45
2.5.5	Professional Networks . . . . .	47
2.5.6	Boards of Directors as a Network . . . . .	53
2.6	Summary . . . . .	55



<b>3</b>	<b>The Model</b>	<b>56</b>
3.1	Introduction . . . . .	56
3.2	Theoretical Overview . . . . .	57
3.3	Networks and Corporate Governance . . . . .	59
3.4	Agency Theory . . . . .	61
3.5	This Research . . . . .	63
3.5.1	Types of Linkages . . . . .	65
3.5.2	Ownership . . . . .	65
3.5.3	Family . . . . .	66
3.5.4	Professional Relationships . . . . .	66
3.6	Social Capital of Insiders . . . . .	67
3.6.1	Implications: Oversight and Control . . . . .	69
3.6.2	Positions Within the Firm . . . . .	70
3.7	Hypotheses . . . . .	71
3.7.1	Effective Control by Insider Groups . . . . .	72
3.7.2	Oversight by Independent Directors . . . . .	77
3.7.3	Family Control of the Firm . . . . .	78
3.7.4	CEO Ownership . . . . .	79
3.8	Summary . . . . .	80

<b>4</b>	<b>Approach and Methodology</b>	<b>81</b>
4.1	Introduction . . . . .	81
4.1.1	Outline . . . . .	84
4.2	Population Under Study . . . . .	85
4.2.1	Why SMEs? . . . . .	86
4.2.2	SME Definition and Criteria . . . . .	88
4.2.3	Criteria for Selecting SMEs into the Sample . . . . .	89
4.3	Constructing the Sample of SMEs . . . . .	91
4.3.1	Missing firms . . . . .	94
4.4	Creating the Panel for Data Analysis . . . . .	95
4.4.1	Details of Constructing the Panel . . . . .	97
4.4.2	Industry Codes . . . . .	99
4.4.3	Insider Relationship Information . . . . .	102
4.4.4	Bringing the Data Together . . . . .	103
4.5	Analytical Approach . . . . .	105
4.5.1	Ego-Centric Network Models . . . . .	106
4.5.2	The Problem of Endogeneity . . . . .	108
4.5.3	Overview of Longitudinal Regression Models . . . . .	111

4.6	Descriptive Statistics . . . . .	113
4.6.1	Summary Statistics . . . . .	114
4.6.2	Industry Categories . . . . .	116
4.6.3	Measuring Firm Size . . . . .	120
4.6.4	Family Control . . . . .	126
4.6.5	Firm Ownership by Insiders . . . . .	127
4.6.6	Family-Run Firms . . . . .	129
4.6.7	CEO Ownership . . . . .	130
4.6.8	Recap . . . . .	131
4.7	Dependent Variable . . . . .	132
4.7.1	Tobin's Q . . . . .	132
4.8	Control Variables . . . . .	137
4.9	Control by Insiders - Constraint . . . . .	140
4.9.1	Explaining Network Constraint . . . . .	142
4.9.2	Measuring Redundant Relationships . . . . .	143
4.9.3	A Simplification . . . . .	144
4.9.4	Redundancy in Relationships . . . . .	144
4.9.5	Effective Size of a Network . . . . .	145

4.9.6	Calculation of Constraint . . . . .	146
4.9.7	Constraint As Used in the Present Research . . . . .	148
4.9.8	Examples of the Constraint Calculation . . . . .	149
4.9.9	A Relative Measure of Control . . . . .	151
4.10	Proportion of Independent Directors . . . . .	154
4.11	Family-Run Firms . . . . .	155
4.12	CEO Ownership . . . . .	156
4.13	Summary . . . . .	157
<b>5</b>	<b>Findings</b>	<b>158</b>
5.1	Introduction . . . . .	158
5.1.1	Corporate Governance Measures . . . . .	158
5.1.2	Model Specification . . . . .	160
5.2	Fixed Effects Regression . . . . .	161
5.3	Random Effects Regression . . . . .	166
5.4	Diagnostic Testing . . . . .	172
5.5	Summary . . . . .	172

<b>6 Discussion, Implications and Conclusions</b>	<b>173</b>
6.1 Introduction . . . . .	173
6.1.1 Network Theory . . . . .	174
6.1.2 Corporate Governance Research . . . . .	175
6.2 Hypotheses . . . . .	178
6.2.1 Effective Control by Insider Groups . . . . .	178
6.2.2 Oversight by Independent Directors . . . . .	181
6.2.3 Family Control of the Firm . . . . .	183
6.2.4 CEO Ownership . . . . .	184
6.3 Conclusions About the Research Problem . . . . .	186
6.3.1 Contributions . . . . .	189
6.4 Implications for Theory . . . . .	191
6.5 Implications for Policy and Practice . . . . .	193
6.6 Limitations . . . . .	195
6.7 Implications for Future Research . . . . .	196
<b>Bibliography</b>	<b>198</b>

# List of Tables

2.1	Ownership of the 100 largest firms listed on the TSX (Nicholls, 2006)	23
4.1	Sources of corporate information . . . . .	92
4.2	Summary Statistics . . . . .	114
4.3	Correlations . . . . .	115
4.4	Broad 4-digit GICS categories of interest in this study . . . . .	117
4.5	Simplified industry categories used in this research . . . . .	119
4.6	Observations from sample of firms taken from 2003–2010 . . . . .	125
4.7	Family as Corporate Insiders . . . . .	126
4.8	Control variables . . . . .	139
5.1	Tobin’s Q regressions: Fixed-effects model . . . . .	162
5.2	Tobin’s Q regressions: Random effects model . . . . .	167

# List of Figures

2.1	TSX -Percentage of market capitalization and listed companies by industry (from Nicholls, 2006, pg.165) . . . . .	20
2.2	TSX Venture Percentage of market capitalization and listed companies (adapted from Nichols, 2006, pg.166) . . . . .	21
2.3	Percentage of voting shares held by insiders, by size class (adapted from Rao & Lee-Sing, 1995, pg.50) . . . . .	24
2.4	The relationship between board ownership and Tobin's Q implied by the piecewise linear OLS regression of Tobin's Q on board ownership and other firm characteristics for 371 Fortune 500 firms (from Morck et al 1988) . . . . .	29
2.5	Listed companies under majority control (from Allaire, 2010, p18) . .	36
3.1	Summary of agency theories of corporate governance. Lines represent relationships. Oversight is provided by directors or possibly large shareholders. . . . .	62
3.2	Network of corporate insiders for Biosign Technologies (2009-2010). .	74

4.1	Observation Window 2003-2010. Lines represent firm histories. The dotted square is the observation window. . . . .	93
4.2	Process of creating panel of firms from FP Survey of Industrials PDF files . . . . .	98
4.3	Data encapsulation – firms in any given range of dates contain all insiders, which in turn contain groups of related insiders, which in turn contain individual insiders. . . . .	103
4.4	Data sources – The information below shows the main data sources and how they are related. . . . .	104
4.5	Histogram of employees of firms in their first full year of operations (bar width represents 20 employees) . . . . .	121
4.6	Employees of firms in their first full year of operations. Separate histograms by TSX and Venture Exchanges (bar width represents 20 employees) . . . . .	122
4.7	Histogram of market capitalization of firms in their first full year of operations (bar width represents \$10 million) . . . . .	123
4.8	Market capitalization of firms in their first full year of operations, separate histograms for companies listed on the TSX and Venture Exchanges (bar width represents \$10 million) . . . . .	124
4.9	Total percentage ownership by all corporate insiders combined, all years. Each bar is 10%. . . . .	127
4.10	Total percentage ownership by all corporate insiders combined. Separate histograms by exchange, all years. Each bar is 10%. . . . .	128



4.11	Total percentage ownership in of non-family firms versus family-run firms, all years. Each bar is 10%. . . . .	129
4.12	Percentage CEO Ownership all firms. Bar width is five percent. . . .	130
4.13	Histogram of Tobin's Q, first period of analysis . . . . .	133
4.14	Smoothed density plot of natural log of Tobin's Q by industry group, first period . . . . .	134
4.15	Network of corporate insiders for Lehman Trikes (2007-2008) . . . . .	149
4.16	Network of corporate insiders for Grand Power Logistics (2008-2009)	150
5.1	Predicted marginal effects of CEO ownership based on fixed-effects model . . . . .	165
5.2	Predicted marginal effects of CEO ownership based on random intercept model . . . . .	171

# Chapter 1

## Introduction

### 1.1 Background

In this research, I argue that the network of relationships between directors, owners and senior officers in a public corporation – i.e., the social capital of corporate insiders – can be used to better understand corporate governance. The core idea of social capital theory, which is a kind of network theory, is that individuals can gain advantages through the structure of their relationships (Burt 1992). Following this idea, I consider three different kinds of linkages between corporate insiders: (i) those based on ownership, (ii) family relationships and (iii) professional relationships. Using social capital theory, I interpret the network of connections to better understand the corporate governance of each firm. In my analysis, I find strong support for the idea that the corporate governance of the firm has a significant association with firm performance. This finding builds on a long history of corporate governance research.

This research makes use of a sample of Canadian industrial small and medium-sized enterprises (SMEs) that went public between the years 2000 and 2010. In developed countries – most of which are dealing with the aftermath of the financial

crisis – encouraging SME growth and performance is an important part of economic policy (BBC 2012, The Economist 2012, OECD 2012). In Canada, going public is one way innovative SMEs can access the capital they need for growth. Understanding factors that affect firm performance is important for researchers and policymakers concerned with the SMEs on the public market.

### **1.1.1 Analyzing the Social Capital of Corporate Insiders**

In this research, I assume that corporate insiders are part of coalitions within the firm because of shared financial interests. I argue that researchers can trace these interests back to the common networks insiders share. Collectively, each of the coalitions within a firm controls some proportion of the outstanding voting shares in the firm. The degree to which a single coalition controls more voting shares than other coalitions within the firm is an indication of their effective control of the organization. Similarly, if there are multiple coalitions controlling similar amounts of voting shares, there is a degree of oversight over decisions within the firm. In the case of multiple groups with similar voting rights, no single group can unilaterally control the firm. In general, I argue that considering the relationships between insiders through various networks can yield insight into firm governance and performance.

In what follows, I briefly outline some of the theories underlying the three main networks used in this research. Economic sociologists have mainly been concerned with the meaning of insiders' professional interlocks across multiple firms. The importance of ownership and family-run firms has largely, although not exclusively, fallen in the domain of researchers interested in agency theory.

### **1.1.2 The Meaning of Corporate Interlocks**

Network theory has benefited tremendously from the work done by economic sociologists interested in the underlying meanings behind corporate interlocks – directors

that serve on the boards of multiple firms. This stream of research sees directors that work together often as having more than just professional relationships. Corporate interlocks have been investigated as conduits through which resources can be exchanged between firms for mutual advantage (Pfeffer & Salancik 1978), ways in which firms are linked to their creditors (Mintz & Schwartz 1985), and also as indications of a distinct social class (Useem 1979).

### **1.1.3 Agency Theory and the Importance of Ownership and Family**

One of the most important obligations of directors is to oversee managers to ensure that shareholders' interests are protected. Berle & Means (1932) argue that in firms where the stock is widely held, there is a separation between the dispersed owners and the managers who actually control the firm. Agency theory formalizes this relationship between the principals of a company (the shareholders) and their agents (the managers) (Jensen & Meckling 1976). In this scheme, directors oversee managers to protect the interests of dispersed shareholders.

Morck, Shleifer & Vishny (1988*b*) find a non-linear relationship between the shareholdings of top managers and firm performance. Researchers continue to try to unravel this relationship between ownership and performance (for a brief review, see Benson & Davidson III 2009). In addition to this line of research, the importance of concentrated ownership – i.e., a single owner with a large proportion of voting shares – on firm performance is an important area of research (Morck 2000, Maury & Pajuste 2005). Another active area of research considers how family-run firms perform relative to other firms (Villalonga & Amit 2006, Villalonga & Amit 2010, Morck 2005*a*).

All of these governance problems can exist simultaneously in public SMEs that have recently undergone an initial public offering (IPO). Firms are often started by an entrepreneur and the firm can grow, in part, through the efforts of her family.

Over time, family, friends, business partners and early investors may also work for the company. When the firm goes public, these insiders may retain a significant proportion of the outstanding voting shares. By my calculations, slightly more than 40 percent of public SMEs that have recently undergone an IPO have families involved as corporate insiders. Similarly, the vast majority of these firms also have one or more large shareholders.

## 1.2 Research Problem

This research asks: *how is the social capital of corporate insiders related to the valuation of public SMEs in Canada?* In this dissertation, I submit that the internal social capital of a firm – or the structure of relationships that exist between directors, owners and managers – operates both directly and indirectly to affect firm valuation. The structure of the relationships between insiders directly affects how the firm is operated. Essentially, the structure of relations results in a degree of informal oversight within the firm. The structure of relationships can also be useful to governance research when it is used indirectly to inform other measures. The the direct and indirect uses of social capital are discussed below.

Utilizing social capital theory, it is possible to infer which corporate insiders are related by considering common ownership or family links. In this research, a group of related insiders is assumed to be more likely to have similar concerns, and thus to vote as a group on issues of common interest. Analyzing the total percentage of the outstanding voting shares that are controlled by each insider coalition yields information about the relative power of each coalition in the firm. Using social capital theory to relate and compare these different coalitions in a firm, I create a measure of effective control of the firm. At one extreme, the measure indicates that there is a single coalition within the firm that can exercise total control. At the other extreme, there are multiple coalitions of insiders that have similar voting rights. In this case, no single group can unilaterally act to extract benefits from the firm without the other coalitions overruling them. This is the informal oversight that can exist based on the structure of relationships between insiders.

The second way in which the structure of relationships between insiders has implications for firm governance is through an analysis of relationships that do not exist. In this case, the network of relationships within a firm is used to determine which insiders are not connected to anyone else in the firm network. Isolated directors can be considered to be independent – they do not share any common family, ownership or professional links with any other insider in the corporation. In many

governance studies, the determining who is an outside directors is largely an ad hoc process that differs across studies. Most researchers agree that outside directors must be independent but few have any theoretically grounded way of determining independence.

The internal social capital of firms can also act on firms indirectly. It can be used to help isolate an aspect of governance or act as a moderating effect on a relevant concept of governance. This approach is important because firms have mainly been treated as homogeneous in corporate governance studies. I argue that the structure of the relationships between the corporate insiders can mean that there could be different outcomes depending on the structure within the firm. I propose a new agenda for corporate governance research that takes the internal social capital of firms into account in the analysis of firm outcomes. This research follows along these lines with an analysis of family-operated firms and CEO ownership. In both cases, the internal social capital of the firm is utilized in order to explore these governance related concepts.

## 1.3 Research Questions

This research addresses the following questions:

1. How are the relationships that exist between different groups of insiders related to corporate governance and, in turn, to firm performance?
2. How is the presence of independent directors in the firm associated with performance?
3. Are family-run firms different from other firms? How is the corporate governance of these firms related to performance?
4. How is CEO ownership related to firm performance?



## 1.4 Methodology

This research examines a panel of industrial SMEs in Canada that underwent an IPO between 2000 and 2010. Fixed and random effects regressions are used to model the corporate governance characteristics of the firm as they relate to firm performance. Consistent with the existing literature, this research uses Tobin's Q as a measure of performance or firm valuation. Tobin's Q is defined as the ratio of book value of liabilities plus market value of common equity divided by the book value of assets (Khanna & Palepu 2000, Klein, Shapiro & Young 2005, Martinez, Stohr & Quiroga 2007, Elkinawy & Stater 2011). Research has shown that book value of assets is highly correlated with replacement cost of capital (Hillman 2005). Tobin's Q accounts for the market's perception of potential of the corporation to grow. Thus, Tobin's Q captures how much investors are willing to pay for the shares of the company. Increases in market valuation could be due to improvements in actual conditions the firm is experiencing, but may also be due to forward-looking investors predicting future gains.

The usual difficulty in trying to explain firm performance is that firms are very different. The solution for cases where there is variation among individual firms is generally to use a fixed effects model. Unlike fixed effects models, which account for variation within repeated observations of an individual firm, a random effects model also accounts for variation between individual firms. For example, in the context of the present study, a random effects model adds a term that will vary to account for differences between firms. The random effect accounts for the observed deviations of individual firms away from the average of the population. At its simplest, a random effects model allows for individuals to have intercepts that differ (see Rabe-Hesketh & Skrondal 2008).

### 1.4.1 Sample

I focus my research on Canadian SMEs that have recently gone public for a number of reasons. The first is that the population of Canadian SMEs is important in its

own right. Like the AIM exchange in the UK, Canada encourages SMEs to access funds through the public market. Per capita, Canada has the largest public exchange for SMEs in the world (Nicholls 2006, pg.163). The second reason is that recently public SMEs provide an opportunity to study firms in the beginning phases of their existence as public firms. This is a particularly important time for SMEs and it would be useful to better understand the implications that corporate governance has for these firms. This is also advantageous because I can try to mitigate concerns of endogeneity between managerial ownership and firm performance by constructing a longitudinal panel of firms from their beginnings and measure the association of ownership with performance.

Restricting the sample to recently public firms focuses the study on firms starting out, and not the entire population of SMEs on the public market. I argue that this approach is necessary because there are many SMEs that exist on the market but may be in decline – perhaps due to events that are outside the observation window of this study. Davis, Haltiwanger & Schuh (1996) outline the problem of dealing with criteria for collecting a sample of SMEs over time. The authors note that one major problem is that firms change over time, so setting arbitrary inclusion criteria to be considered an SME is problematic. For example, if the criteria to enter the panel is that the firm must employ 250 people or less to be considered an SME, then large firms that are shrinking will enter the panel. Similarly, smaller firms that grow will eventually leave the panel. Since there are a number of firms listed on the public exchanges that are doing relatively poorly, we risk creating a downward biased panel by selecting all SMEs that exist within a window of time. I argue that a better solution is to follow firms from their IPO date onwards. This not only mitigates concerns of public ownership levels being caused by performance, because we capture the firm at the initial stages of ownership. It also focuses this research on SMEs at an important period of their development.

Focusing on SMEs also has a further advantage. Smaller firms are much less complex compared to larger firms. The relationships between corporate insiders are often more straightforward. In larger firms, for example, there tends to be more ownership that is held through complex arrangements through multiple corporations

and shell companies. Family-run firms may also have multiple generations represented in the organization. For the SMEs in this study, the holdings by insiders are relatively straightforward. Although Statistics Canada's Inter-Corporate Ownership database was consulted to examine the companies and ownership by insiders in this study, most firms were not listed.

## 1.5 Findings

The results of this research indicate that the presence of a larger proportion of independent directors is positively associated with firm performance. Concentrated ownership in the hands of a single coalition within the firm is negatively associated with the performance of the firm over time.

More than 40 percent of firms in the population I consider in this research have multiple family members acting as corporate insiders. A firm is considered to be family-run only if family members are part of the largest shareholding group in the study. I find no statistically significant differences between family-run firms and other SMEs in the sample. In an examination of all firms, I find a relationship between CEO ownership and firm performance. However, this finding is only statistically different from zero in cases where the CEO owns in excess of 40 percent of the firm's outstanding voting shares. There are very few cases where the CEO owns such a large percentage of the firm. For the majority of firms in the sample, there does not appear to be any direct relationship between CEO ownership and performance.

## 1.6 Approach and Limitations

The proposition that the social capital of boards of directors is associated with firm performance is tested using a series of fixed and random effects regression models. Every attempt has also been made to introduce appropriate controls into these models to account for firm size, regional differences, and industry differences.

However, this research also faces limitations. First, this analysis is concerned with the internal social capital of firms (Harris & Helfat 2007) – i.e., the relationships between directors, managers and owners *within* a given firm. Thus, the present research does not consider the importance of inter-organizational relationships. Second, this analysis does not take into account director experience or other measurements of human capital. Third, this research is specifically concerned with public SMEs that have recently undergone an IPO on the Toronto Venture Exchange and the TSX. The results may not be applicable to firms that are not part of this population. Finally, the study relies heavily upon information from the System for Electronic Disclosure of Insiders (SEDI). In Canada, insiders are required by law to report their shareholdings and trades in SEDI. However, the system may contain errors when the insiders make mistakes (McNally & Smith 2010).

### 1.6.1 Extensions

While the results of this study are not directly applicable to large firms, they do offer a potential way forward in the study of corporate governance of larger firms. Likely the most important changes necessary to the methodology described in this dissertation would be to extend the criteria for relationships between corporate insiders to take into account for more complex inter-corporate ownership structures that are common in Canada (Morck, Strangland & Yeung 1998, Attiga & Morck 2006). For studies of larger firms, this would entail understanding more complex ownership and interlock networks between firms.

## 1.7 Contributions

To date, the corporate governance literature has neglected to study the importance of internal social capital to firm performance. This research contributes to the corporate governance literature through its consideration of how the social capital of corporate insiders can be used to understand corporate governance and, in turn, firm performance. There are also methodological contributions from this research. Theoretically grounded network measures determine both a scale of effective control of a firm when there are multiple coalitions of owners, and also a way to identify truly independent directors.

The increased interest by policy makers in new ways of allowing SMEs to access capital make studies of these firms relevant and timely. The results of this research offer a better understanding of corporate governance of SMEs and their performance through an analysis of the relationships of corporate insiders. The main finding of this research is that corporate governance is associated with SME performance.

This study builds on research drawn from the corporate governance and sociological literature. The academic literature in these fields tends to focus on large, established firms. Very little work examines the importance of corporate governance to the performance of relatively small- and medium-sized firms. The contributions of this research are in creating complementary models of SME performance which include testable hypotheses about the social capital of corporate insiders. This research will assess the importance of corporate governance to the performance of SMEs. The outcomes of this research will potentially be of interest to three constituencies: academics, policy makers and practitioners – entrepreneurs, managers and directors.

Academics will be interested in this research because it offers a novel way to approach firm corporate governance – through the use of social capital theory applied to networks within the firm. The relationships between corporate insiders are used to create measures of corporate governance based on insights from agency theory. Policy

makers will find this work useful because it offers practical, quantitative methods for measuring the relationships between corporate insiders. Entrepreneurs, directors and managers will find this research useful because it will outline how different forms of governance are generally associated with firm performance and valuation. This knowledge can be used as the boards of SMEs are assembled or new members added to existing boards.

In SMEs, many of the corporate insiders maintain relationships with the founding entrepreneur. Family members, friends or early investors may all be corporate insiders because of their personal relationships with the founder rather than merit. Directors working with these firms need to be aware of the possible dynamics of groups of insiders within the firm. The relationships highlighted in this study – family, ownership and professional relationships – may affect how directors can do their job. Rather than ignore these complex issues, this research attempts to take them into account.

# Chapter 2

## Literature Review

### 2.1 Introduction

The purpose of this study is to better understand how the social capital of corporate insiders affects firm performance and growth. Social capital is the idea that the relationships a person has can be advantageous. In this study, I am concerned with three types of relationships of corporate insiders. In this paper these are referred to as relationships through mutual ownership, professional relationships and family ties.

Some may find the rhetorical choice of phrases such as “ownership network” or “family network” awkward. Indeed, the extant corporate governance literature rarely refers to ownership or family control overtly as a *network*, especially when considering the corporate governance structure within the firm. I argue that the relationships between individuals involved in these different networks should be explicitly accounted for.

Currently, corporate governance considers the roles of executives and directors in running a public firm. In the simplest version, directors are charged with overseeing



executives on behalf of shareholders. However, the more closely we look at firms in different circumstances – such as firms with large shareholders, or firms with the majority of executives also serving as directors, etc. – the more this simple explanation of corporate governance begins to break down. Indeed, much of the corporate governance literature is concerned with discerning the implications that real-world situations have for existing corporate governance theory. One of the main difficulties that exists for researchers is determining what the conditions are that actually exist in any particular firm.

For example, if theory tells us that concentrated ownership is negatively related to performance, how can we verify this? Should we examine each individual's holdings in a corporation? Do we overlook the fact that multiple large shareholders are related when we consider whether a corporation should be considered as being effectively controlled? Moreover, how can we hope to consider the implications of multiple large shareholders in a firm? I argue that examining the social capital of corporate insiders – i.e., the structure of the network of ownership, professional and family relationships that exists among corporate insiders – provides a useful and theoretically robust way in which to better understand the conditions that actually exist in a firm.

The structure of relationships – the social capital of corporate insiders – allows us a relatively simple way to determine if corporate insiders should be thought of as a group. A group of related insiders – linked by shared ownership, professional or family interests – can be thought of as having aligned interests and being more likely to vote in concert. The approach also has another advantage. Those directors that are not obviously part of any such insider group are more likely to act as truly independent directors.

This network approach provides the frame in which the extant literature presented in this section is reviewed. Two areas of corporate governance research have generated particular interest. The first has mainly focused on ownership in various forms. The second, is family involvement in firms. The third section in this literature review is dominated by the approaches taken by economic sociologists. This research often considers professional networks – the relationships between corporate

insiders that exist when they work together through corporate interlocks. Social capital theory is discussed in depth in this section.

As mentioned, the first type of relationship in this research is concerned with ownership. In this research, I say that corporate insiders have a relationship if they share common ownership in the firm – perhaps through an intermediate company. Ownership and its relationship to control of the firm has been the central concern of the corporate governance literature.

An important and growing area of research concerns the role of family involvement in firms. This study is no exception to this trend and finds that family relations are found to be an important type of corporate insider relationship that needs to be accounted for. Family relations comprise the second aspect of relationships between corporate insiders that are considered in this study.

Professional relationships comprise the third aspect of social capital considered in this study. The economic sociology literature concerned with boards of director interlocks has been the focal point for advancements in our understanding of professional relationships and in network theory more generally. This portion of the literature review serves the dual purpose of showing the relevance of network approaches to our understanding of organizations, as well as making explicit the importance of relationships in business.

Before the review of the literature, I present a brief section giving some background to the economic landscape in Canada and the context in which SMEs must operate within Canada.

## 2.2 Understanding Canadian Markets

This section summarizes the unique characteristics of the Canadian stock market for public corporations. In particular, it compares other national stock markets to the Canadian system. The broader Canadian market also stands in stark contrast to the UK and USA because of the prevalence of inter-corporate ownership in Canada (Morck et al. 1998). These business groups, or corporate pyramids, allow for the control, if not majority ownership, of multiple corporations by a single owner (ownership pyramids are tracked by Statistics Canada, see Statistics Canada 2010*b*). Business groups in Canada are often family owned.

The Canadian economy and political system is similar in many respects to the USA and the UK. All of these countries have common law legal systems, and can be described as market-based economies (Porta, Lopez-de Silanes & Shleifer 1999). However, despite these superficial similarities, there are important differences between the Canadian, American and British markets. Canadian IPOs tend to be smaller than their British or American counterparts. By American standards, over 85 percent of Canadian IPOs are penny stocks – earning median proceeds from sales of shares of \$800,000 (Carpentier & Suret 2009, pg.102). Two aspects of the Canadian stock market differentiate it from other exchanges. First, the listing requirements are not as stringent as other countries. Second, firms do not have to be profitable, and post-IPO proceeds need to be in excess of only half a million dollars, which should sustain the firm for at least a year (Carpentier & Suret 2009, pg.102).

It should be noted that similar public exchanges for SMEs exist in other countries – most notably the AIM exchange in the UK (London Stock Exchange 2012). Similarly, there is the NYSE Alternext in Europe which exists to facilitate SME access to institutional investors – although this is not a regulated market but a multilateral trading facility under EU directives (see NYSE Euronext 2012). These types of exchanges, which allow promising SMEs access to capital, may become increasingly important over time. In the current climate of fiscal austerity, ways to increase financing for SMEs is already an issue of international concern (OECD 2012).

In Canada, a large portion of publicly traded corporations are involved in resource-based industries and finance. There is a large number of small and micro-sized public corporations, and a relatively small number of large public companies. The two main exchanges in Canada are called the Toronto Stock Exchange (TSX) and the Toronto Venture Exchange (TSX-Venture, or simply the Venture Exchange). However, there are also smaller exchanges such as the Canadian National Stock Exchange (CNSX) and the NEX. The CNSX currently lists just 143 stocks, and the NEX is an exchange solely for companies that have fallen below the listing requirements of the TSX Venture exchange. The Canadian stock exchanges are sometimes seen as training grounds where successful corporations can graduate to a larger exchange to access deeper capital pools (Carpentier & Suret 2009). Successful companies listed on the venture exchange are encouraged to graduate to the TSX main exchange. Large corporations on the TSX often, in turn, graduate to large international exchanges such as the NYSE in the USA, or the NASDAQ. Smaller successful companies sometimes also choose to cross-list on international exchanges such as Britain's AIM or the London Stock Exchange (Carpentier & Suret 2009, Nicholls 2006, pg.158).

The composition of the TSX and the Toronto Venture Exchange are also worth noting. The 200 largest firms account for approximately 88 percent of the total market capitalization of both exchanges. The largest 100 firms on the TSX alone account for over 70 percent of the capitalization of that exchange. In contrast, the smallest 2,000 listed firms account for less than nine percent of the market capitalization of both exchanges. On the TSX alone, the smallest 1,000 listed firms account for just 5 percent of the total market capitalization (Nicholls 2006). While the venture exchange technically encourages larger firms to graduate to the TSX, the largest firms in the venture exchange have a greater market capitalization than the smallest on the TSX. Nicholls (2006) reports that the largest 63 corporations on the venture exchange have greater market capitalization than over 600 TSX-listed companies.

Researchers have noted that Canadian firms tend to go public sooner than their American or UK counterparts (Carpentier & Suret 2009, Nicholls 2006). The number of public companies in Canada relative to the population is the highest in the world.

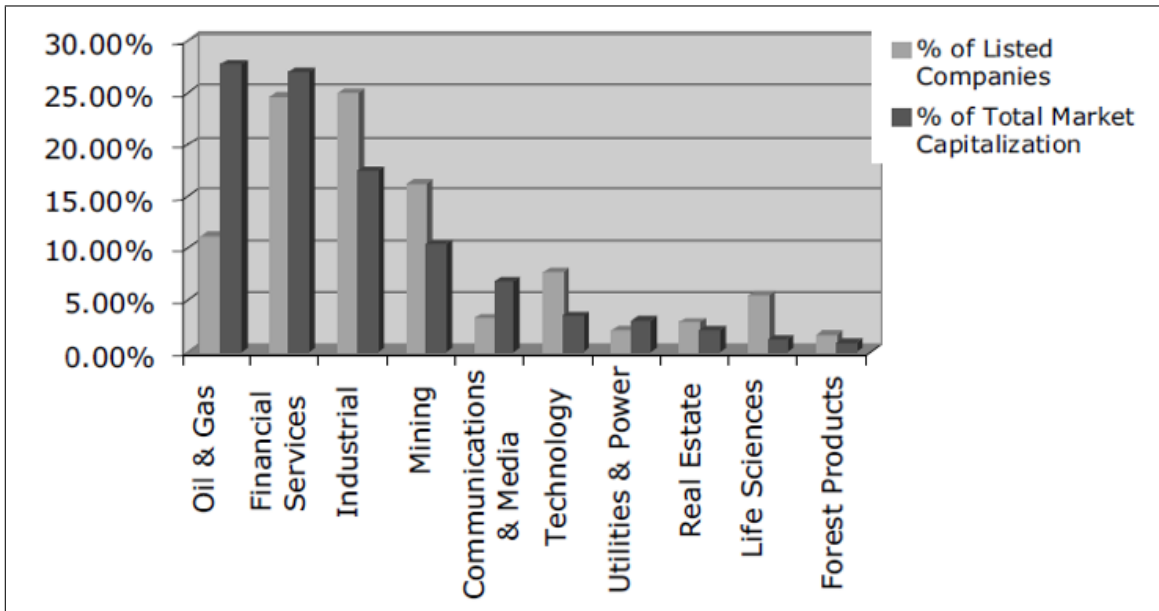


Figure 2.1: TSX -Percentage of market capitalization and listed companies by industry (from Nicholls, 2006, pg.165)

In 1999, Canada had 130 listed companies per million people compared to approximately 65 for Australia, nearly 29 for the USA and 31 for the UK (Nicholls 2006, pg.153). The fact that Canada has a relatively underdeveloped venture capital (VC) system has been offered as an explanation for the large number of small public companies. The fact that Canadian venture capital is less capable than American venture capital explains why corporations need to access public capital markets sooner (Cumming 2006, pg.221). Additionally, while Canada has a large number of public companies, they tend to be thinly traded compared to other common law market-based economies. Morck & Yeung (2006, pg.318) suggest that this is due to systemic corporate governance problems in Canada.

The composition of Canadian firms on both exchanges is shown in Figure 2.1 and 2.2. By market capitalization, the TSX is dominated by oil and gas, financial services, and industrial companies, followed by mining, communications and technology. The TSX Venture exchange by market capitalization is dominated by mining, oil and gas, followed by technology, manufacturing, and biotech.

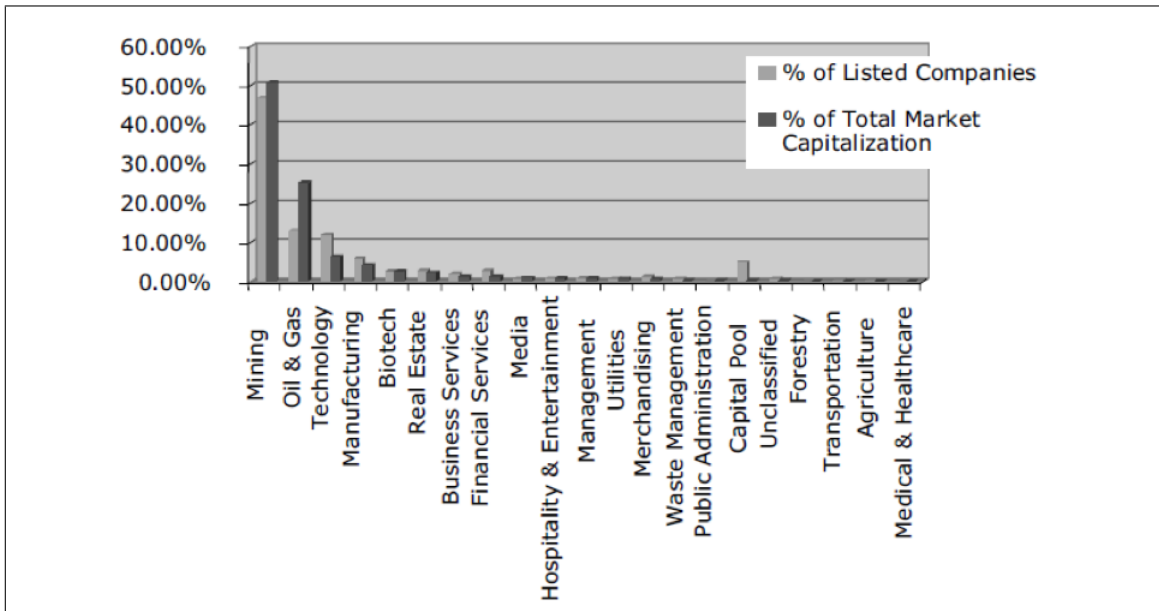


Figure 2.2: TSX Venture Percentage of market capitalization and listed companies (adapted from Nichols, 2006, pg.166)

Large shareholders are a feature of the Canadian economy. Large shareholders are of interest because they are in a position to control a company even if a large proportion of its shares is widely held among many small investors. From a governance perspective, this situation is a concern because of the potential for large shareholders to use their controlling shares to influence corporate decision-makers for their private benefit, to the detriment of smaller shareholders.

The natural questions that follow from this discussion are at what point a shareholder should be considered large and at what point there should be concerns that large shareholders exhibit effective control of the public company. In the most clear-cut case, controlling shareholders own a simple majority (greater than 50 percent) of the shares outstanding. In this case, the shareholders can appoint the board and CEO. However, effective control can be exercised over a public company when a much smaller fraction of the company is owned. The level of voting rights implying effective control of a public corporation differs across jurisdictions. Usually, those with ownership rights in excess of 5 percent are considered to be of interest, although

blocks of 10 percent to 20 percent of shares has also been used as a threshold for effective control (Porta et al. 1999). Large shareholders can effectively control a corporation with less than a majority of the votes because small shareholders rarely vote, and when they do they tend to vote for the recommended course of action in the proxy circular. Large shareholders can recommend directors, managers and set the corporate agenda largely uncontested (for an in-depth discussion, see Morck 2005*b*).

The discussion so far assumes the simplest case that each share of stock corresponds to a single vote. In reality, Canadian public companies often issue multiple classes of shares that allocate different voting rights to different shareholders (Morck et al. 1998, Amoako-Adu & Smith 2001). For example, this was the case for Magna International, a Canadian corporation that was effectively controlled by Frank Stronach through so-called “dual-class” shares. Stronach had relatively little in the way of direct dividend rights from shares, but the class of shares he owned gave him a majority of the voting rights. In 2010 Magna paid what some shareholders argue was an excessive amount to sell his super-voting shares and restructure Magna as a widely held firm with a single class of shares (Keenan 2010, Miller & Keith 2010).

In Canada, legal voting control exists if more than 50 percent of the outstanding shares are held. In cases where an individual holds more than 20 percent of a firm’s outstanding shares, they are considered to have effective control of the company, unless otherwise proven (Nicholls 2006, pg.168). Those with control of 10 percent or more are deemed to be “insiders” by provincial securities regulators (Nicholls 2006, pg.168). Since 2003, insiders of public corporations must report their holdings in the company online (see [www.sedi.ca](http://www.sedi.ca), CDS Inc. 2010). Other methods of control include the use of dual-class shares (Nicholls 2006).

The prevalence of controlling shareholders in the Canadian economy effectively changes the focus of Canadian regulatory concerns compared to the USA and the UK. The USA and the UK have mainly widely held public corporations. In their seminal work, Berle & Means (1932) argued that in widely held corporations, that there exists a separation between the interests of owners (i.e., shareholders) and

managers. The authors argued that managers have little incentive to operate the company in the interests of shareholders because individual shareholders are too small and unorganized to effectively monitor those that manage their investments. In the governance literature, the central concern is often focused on shareholders and management (Berle & Means 1932, Cheffins & Bank 2009). With the presence of controlling shareholders, the problem becomes dealing with conflicts between majority owners and minority owners (Daniels & Morck 1995, Nicholls 2006).

Of the 300 largest firms on the TSX, more than 25 percent have a controlling shareholder (Gray 2005*b*, Gray 2005*a*). Using the inter-corporate ownership database from Statistics Canada (Statistics Canada 2010*a*), Nicholls (2006) breaks down the control structure of the 100 largest TSX listed firms as follows:

Table 2.1: Ownership of the 100 largest firms listed on the TSX (Nicholls, 2006)

Number	Ownership
41 of 100 largest firms on the TSX	Single shareholder with 10 percent or more of outstanding shares
30 of the 41	Have a single owner with at least 20 percent equity ownership stake
20 of the 30	Have a single controlling shareholder

Corporate insiders include those such as management, directors or others who own in excess of 10 percent of voting shares. Between the USA and Canada, there appear to be significant differences in the level of insider ownership (Rao & Lee-Sing 1995). In this comparison of different-sized corporations (see Figure 2.3, below), Canadian smaller firm insiders on average have higher ownership levels compared to their American counterparts. However, as progressively larger firms are examined, there appears to be a decline in Canadian insider ownership and then an increase as sales levels increase. In American firms, ownership levels appear to steadily decline as the level of sales of a firm increases.

Comparing the number of directors in samples of US and Canadian firms, there appears to be very little difference. The number of inside directors, or directors who



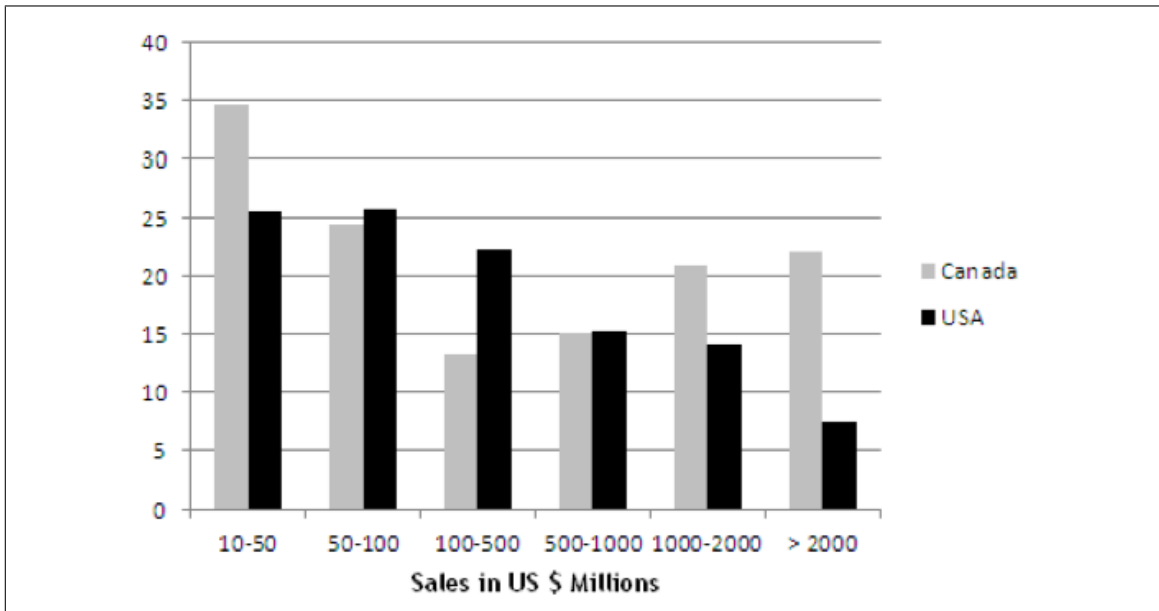


Figure 2.3: Percentage of voting shares held by insiders, by size class (adapted from Rao & Lee-Sing, 1995, pg.50)

also serve as firm management, is lower in Canada than the USA despite the fact that the basic structure – the ratio of inside directors to the total number directors – is similar across size classes (Rao & Lee-Sing 1995).

Corporations with dual-class voting shares are also common on the TSX. It is estimated that 20 percent to 25 percent of stocks listed on the TSX have some type of dual-class voting share (Gray 2005*b*, Nicholls 2006). When groups of firms have hierarchical inter-corporate ownership interests, they are often referred to as corporate pyramids. Such interrelations between corporations are considered problematic because of the risk of the tunnelling of wealth, or transferring goods at below or above market prices, between a public corporation to a privately held corporation (Morck & Yeung 2006, pg.306).

While Canada, USA and the UK all have legal systems based on the British common law, critics charge that the legal environment in Canada regarding corporate ownership remains rooted in the past. Over time, the USA and the UK have

developed different legal regimes to encourage mainly freestanding public corporations. Governance experts have noted that Canada is more accurately comparable to Latin America, East Asia and parts of Europe because of the nation's preponderance of corporate pyramids and dual-class voting shares (Morck & Yeung 2006). While at one point similar, modernizations in American and British corporate governance have made it so that suggesting to import governance solutions from these countries into the Canadian environment are "embarrassingly like debates about the best global positioning system to install in a horse-drawn buggy." (Morck & Yeung 2006, pg.286).

In America, pyramids disappeared because of New Deal reforms to the tax code that penalize inter-corporate dividends. These regulations tax earnings as they are passed up through the levels of a corporate pyramid (Morck, Wolfenzon & Yeung 2005, Morck & Yeung 2006, pg.308). In the UK, regulatory changes enacted after WWII force shareholders to acquire complete ownership if they acquire more than 30 percent of outstanding shares. This legislative change allows large block-holders in public firms to be challenged by other large investors; if one individual takes a large position in a public company, another large shareholder can challenge their control. Vying for control through stock purchasing can only increase until the 30 percent threshold is reached, which will force one of the investors to take the corporation private. Morck & Yeung (2006) argue that these differences mean that governance in the USA and the UK is implicitly concerned with widely held corporations. In Canada, however, the unit of analysis should more accurately be the business group rather than the individual firm, which is assumed to be freestanding (Morck & Yeung 2006, pg.300).

Morck (2005) notes that inter-corporate dividends account for 20 to 40 percent of income in corporate Canada, compared to just eight percent in the USA. The main problem with pyramidal business groups is that they can exert tremendous control over capital without a corresponding equity stake. At an extreme is Sweden's Wallenberg family, which controls a pyramidal business group that accounts for over half of the Swedish stock exchange by market capitalization (Morck 2005, p.144). More subtly, powerful family businesses have a tendency to become entrenched over time.

Powerful family-owned business groups have a tendency to maintain contacts within governments and to become adept at encouraging beneficial legislation. Anecdotal accounts in the Canadian context abound (Morck 2000). For example, in 1991, the Bronfman family was allowed to move \$2 billion from Canada, exempt from capital gains taxes, presumably with the blessing of the Liberal government of the day (Morck 2000, Morck & Yeung 2006, pg.307).

The ultimate impact of pyramidal ownership on small firm IPOs in Canada is unknown. Some firms IPO with ownership stakes from pyramids, while other firms eventually become acquired by pyramidal groups. While venture capital investors have been found to have a beneficial effect on firm performance (Carpentier & Suret 2009), it is unlikely that large block-holders would consistently have the same outcome. In Canada, research shows that for larger firms, stocks that are controlled by others are priced lower than comparable stocks not so controlled (Smith, Amoako-Adu & Kalimipalli 2009).

This brief review is intended to explain the structural characteristics of the Canadian public market. Despite the large number of public firms, there is often very little trading of stock relative to other market-based economies. In general, Canadian firms appear to go to the equity market for financing well before other firms in other common-law countries such as the USA, the UK and Australia. This is potentially due, at least in part, to a systemic failure of venture capital in Canada to successfully bring firms to an initial public offering. As a result, Canadian stock markets have a large number of small firms and these firms are often thinly traded. The American and British corporate governance literature often implicitly assumes that firms are freestanding organizations, and hence that the most pressing governance problems will be between the interests of management and dispersed shareholders. In the Canadian context, studies clearly show the influence of corporate control exercised through pyramidal business group structures or stocks with differing voting rights. Given these facts, what are the implications for firms that have recently undergone an IPO? At the very least, one thing is certain: to be accurate, studies must take into account the unique Canadian market conditions.

## 2.3 Ownership Networks

In their influential book *The Modern Corporation and Private Property*, Berle & Means (1932) argue that there exists a separation of ownership and control in the modern corporation. Firms with widely held shares are not accountable to shareholders because individual shareholders are too small to effectively challenge management. Instead, a professional class of managers effectively controls the assets of shareholders (Cheffins & Bank 2009).

Principal-agent theory in the corporate governance literature formalizes the potential for divergence of interests between management and small shareholders (Jensen & Meckling 1976). Within this framework, shareholders are considered the principals, and the firm's managers their agents. Holding little equity interest themselves, managers (the agents) have an incentive to misallocate the profits that belong to the principals (shareholders) for their own ends. While boards of directors are put in place to monitor management, they too are subject to a principal-agent problem. Directors can become entrenched in their positions, choosing to exercise no effective oversight over management.

The solution proposed by agency theorists is to realign the interests of agents with the principals, by ensuring that agents own equity in the firm. By becoming shareholders, agents are thought to have less incentive to engage in behaviours that do not benefit shareholders.

Early research suggests that there is not a simple linear relationship between the size of executive ownership and firm performance (Morck et al. 1988*b*). However, theory does not predict what the relationship between ownership and performance should be. In their exploratory empirical study, Morck et al. (1988*b*) use Tobin's Q as a measure of the firm's performance. Tobin's Q is defined as the ratio of the market value of the firm, consisting of intangibles as well as existing physical stock of capital, divided by the replacement cost of physical assets (Morck et al. 1988, p.296). This definition implies that when the firm is highly valued because it

possesses intangible goods, Tobin's Q will be high. Intangibles include things such as good management, strong patent portfolios or the market power of the firm. Hence the measure accounts for the market's perception of potential of the corporation to grow. A Tobin's Q greater than one is thought to mean that the firm is performing well, less than one indicates that the firm is under-performing.

In a cross-sectional sample of Fortune 500 companies, Morck et al. (1988*b*) find firm performance is highest in cases where cumulative executive ownership is about 5 percent. Higher rates of ownership are associated with declining performance until executives own more than 25 percent of the firm. After this point, performance is observed to increase again (see Figure 2.4, on page 29). All of the findings are individually and jointly statistically significant. Based on this exploratory empirical evidence, moderate executive ownership should be associated with increased firm performance because executive interests will be aligned with shareholders. The authors speculate that the decrease in performance that is associated with ownership greater than 5 percent is due to the entrenchment of executives. Entrenchment implies that management of corporate assets is less effective when executives have few constraints acting on them (Morck et al. 1988*b*, pg.294). In other words, there is little incentive for executives to work effectively when they are confident that they cannot be removed based on their performance.

The effects of entrenchment and convergence of interests are predicted to affect performance in opposite ways. Performance of firms where executives are entrenched is expected to be lower. The performance of firms where there is significant management ownership is predicted to be higher. However, given that both of these effects are related to firm ownership by executives, it is unclear which effect should be expected to dominate in empirical observations. There is no ownership threshold established by theory indicating at which points effects should, on average, be stronger than the other.

The relationship between firm performance and executive ownership is also investigated by Loderer & Martin (1997). Contrary to Morck et al. (1988*b*) findings, they find no clear indication that firm performance is necessarily related to executive

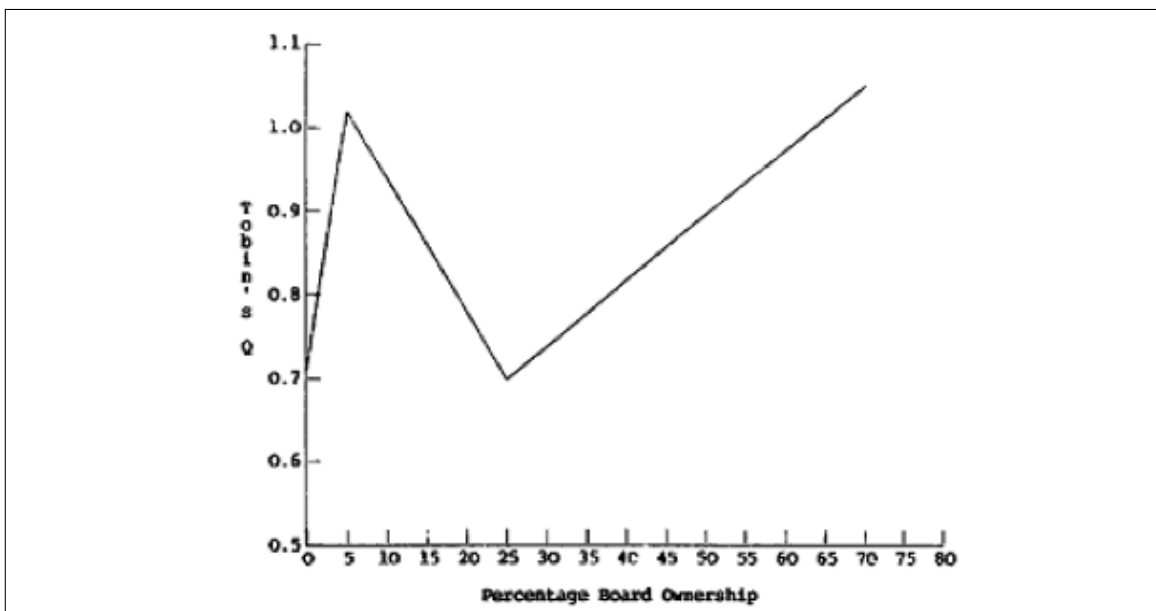


Figure 2.4: The relationship between board ownership and Tobin's Q implied by the piecewise linear OLS regression of Tobin's Q on board ownership and other firm characteristics for 371 Fortune 500 firms (from Morck et al 1988)

ownership. Instead, they argue, the opposite could be the case: executive ownership could increase because of firm performance. In other words, the authors suggest that managers could be rewarded for good firm performance. The authors examine executive ownership in cases where firms acquire another company. They estimate two regression equations simultaneously, which are designed to show whether executive stock ownership affects performance or vice versa. One equation models the returns from the acquisition, and the other equation models executive shareholdings. The sample is composed of 867 companies that acquired other firms between 1978 and 1988 in the USA Loderer & Martin (1997, pg.227). The results of estimating these two equations indicates to the authors that executive stock holding does not appear to influence performance, but firm performance does appear to influence the amount of stock executives hold. While it is possible that the sample of acquiring firms is not broadly representative of firms, their method and results indicate that endogeneity could be a problem in simple regression models. As a result, they argue that researchers need to carefully consider the direction of causal relationships in models.

Demsetz & Villalonga (2001) explore the relationship between firm performance and ownership structure through the analysis of multiple variables measuring executive ownership as well as the ownership of major shareholders. The authors argue that Berle & Means's (1932) research implies that the more dispersed the ownership of a firm is, the better the performance should be. Demsetz & Villalonga (2001) counter that corporate ownership is better considered as being a result of firm performance over time. This means statistical studies that do not take into account the inter-relatedness of ownership and firm performance will be biased.

Some aspects of the study are worth noting. The authors consider ownership in terms of major shareholders and with respect to executive shareholdings. They use a panel of firms with the performance measure of Tobin's Q and independent variables as the average of the years 1976 and 1980. In order to model the simultaneity problem, the problem where performance and ownership could be simultaneously determined through a circular relationship, the authors also examine regressions with ownership as both the dependent and an independent variable. Besides control

variables, both equations make use of ownership variables as explanatory variables. Using ordinary least squares (OLS) regression, the authors find a relationship between executive ownership and firm performance as measured by Tobin's Q. However, treating executive ownership as an endogenous variable, and using two-staged least squares regression, the authors find that this relationship disappears. The authors argue that the study provides unequivocal evidence that ownership is endogenously determined.

There are some potential problems with the study. First, the study does not differentiate between management and board of director ownership. Instead, these two groups are treated as a homogeneous unit. There is not a measure of institutional representation on the board. Additionally, the sample is based on data from an earlier paper (Demsetz & Lehn 1985). However, the authors note that only a portion of the data from the earlier study is still available. These concerns aside, the authors raise a number of important points. Researchers need to be concerned with the endogeneity of ownership structures (i.e., the ultimate direction of the relationship of ownership with performance), as well as the statistical approaches used to measure this relationship.

Inevitably, the conflicting evidence from various researchers has led to a careful examination of empirical approaches used in order to understand the discrepancies between theory and the seemingly diverse results. Benson and Davidson III (2009) note that the different results may be explained as an artifact of measurement problems combined with modelling choices. The studies that find no relationship between managers' ownership of equity and performance measures use fixed effects estimation procedures. Fixed effects estimation methods analyze variation within firm observations over time by subtracting the group average to control for other manager- and firm-specific variables (Benson & Davidson III 2009, Zhou 2001). The problem, first noted by (Zhou 2001), is that because managerial ownership levels change so slowly, there is likely to be very little within-firm change over time. Instead, the changes will be more noticeable examining between-firm variations. The size of the firm, often used as a denominator in models, will also have an important impact. A multi-million-dollar increase in the wealth of an executive may be lost when considered



relative to the market value of a Fortune 500 company (Hall & Liebman 1998, Benson & Davidson III 2009).

Following Hall & Liebman (1998), Benson & Davidson III (2009) suggest that a better measurement of management's ownership stake in the company needs to be used. They suggest a measure of pay-performance semi-elasticity (ppse), which measures the dollar value of executive wealth to be gained for each percentage change in firm value (Benson & Davidson III 2009). They argue that this measure exhibits more variability that also accurately represents the stake management has in the corporation. Using this measure, the authors find a consistent U-shaped relationship between ownership and performance under a variety of specifications and validity checks. This result is similar to that of (Morck et al. 1988*b*).

### 2.3.1 Inside and Outside Directors

While executive ownership of the corporation is an important part of agency theory, the composition of the board is also a focus of interest for many scholars. The sole duty of boards of directors is technically to oversee the work of CEOs and senior management. In practice, however, some boards of directors are often composed of members of the top management team itself. In cases where senior managers effectively control the board, there remains the potential for agency problems. There are other cases where the directors are somehow connected to those that operate the company. Directors that are somehow associated with management are often termed insider directors. Directors that are deemed to be independent are often called outside directors. These outside directors are not employed by the corporation in other capacities and are independent of management for that reason.

Outside directors are generally considered to be more effective overseers of management. As a result, agency researchers are often interested in the number of outside directors on the board. Theoretically, outside directors are thought to be more likely to challenge CEOs and managers on questionable expenditures on behalf of residual claimants – the shareholders. In practice, the composition of boards is often determined by the CEO, which casts doubt on the ultimate independence of directors (Weisbach 1988). However, Fama & Jensen (1983) counter that board members have not only a legal obligation, but also their own professional reputations to consider, which will give them added incentive to ensure shareholder interests are protected (Fama & Jensen 1983).

While there is broad consensus in what generally constitutes an outside director there appears to be no consensus in the details of actually determining an outside director. For Borokhovich, Parrino & Trapani (1996, pg.344) the situation is straight forward – outside directors are those directors that are not officers of the firm. Cyert, Kang & Kumar (2002, pg.461) extend the definition of an outside director to ensure that a director is not related to the CEO, nor are they direct employees of the firm. Srinivasan (2005, pg.305) is more general, stating that outside directors “are

defined as board members who have no relationship with the company other than their role as directors”. Peng’s (2004, pg.454) definition of an outside director is that directors have no family relations with the firm’s management, or professional dealings directly with the firm or the management. All of these different definitions of outside directors overlap to some degree. However, there are clearly significant differences in the ways some authors define outside directors.

Perhaps not surprisingly given the diversity of definitions, the empirical evidence concerning outside directors has been mixed. Hermalin & Weisbach (1991) find little evidence indicating that board composition has an effect on performance once ownership, CEO tenure, and board experience and firm control variables are taken into account. The authors note that this result is inconsistent with the governance literature up to that point. It could also be that firms benefit from having mainly internal board members because of their familiarity with the firm and its challenges (Hermalin & Weisbach 1991, pg.111). Another possible explanation is that the variable did not accurately capture true outsiders to the firm. Hwang & Kim (2009) use the social ties of directors, in addition to traditional measures of financial or familial ties, to determine director independence. Using their social measures, the authors find that social ties matter for various measures related to governance. A major result of their findings is that many boards that are considered independent actually are not.

### 2.3.2 Concentrated Corporate Ownership

The precise implications of the existence of large shareholders is a complex topic. Berle and Means have become widely influential because of their observation that the interests of managers can become uncoupled from those of small shareholders (Berle & Means 1932, Cheffins & Bank 2009). From this perspective, increasing ownership should reduce this separation of interests. In this thesis, this is termed as a Type I agency problem (this is derived from Villalonga & Amit (2006), who use a slightly different terminology). There also exists a second agency problem. Type II agency problems refer to large shareholders that use their position to extract private benefits from the firm at the expense of other shareholders. This Type II agency problem is common in countries where there are many business groups (for a review of international corporate ownership see Morck, Percy, Tian & Yeung 2005). In the Canadian context, Type II agency problems are more likely to arise because of the large number of business groups (Bozec & Laurin 2008, Morck & Yeung 2006). It is worth noting that the USA and UK have the fewest business groups relative to the rest of the world.

There is growing interest in international studies of countries with Type II agency problems, such as Canada, where family-controlled business groups are common (Morck 2005). These studies tend to emphasize four problems with large shareholders (Bozec & Laurin 2008, Morck & Yeung 2006, pg.27). The first problem is that controlling shareholders can force the firm to make decisions that are sub-optimal for smaller shareholders. For example, controlling shareholders may resist takeovers, even if shareholders would benefit. Similarly, controlling shareholders may decide to engage in acquisition activity for reasons unrelated to future profits – as a matter of family pride, for example. Third, controlling shareholders may appoint family members or less-than-capable associates to the board – a point echoed by the fieldwork of Leblanc & Gillies (2005). Fourth, large shareholders can engage in tunnelling of wealth out of the firm and into other investments that benefit the controlling shareholder at the expense of small shareholders (Bozec & Laurin 2008, Morck & Yeung 2006).

In one of the few Canadian governance studies examining multiple sizes of firms, Rao and Lee-Sing observe that the majority of Canadian firms have a controlling shareholder (Rao & Lee-Sing 1995, pg.47). They also find that, in general, legal ownership (more than 50 percent of voting rights) is associated with relatively lower growth compared to widely held firms (less than 20 percent of voting rights), and effectively controlled (20–49 percent of voting rights) firms (Rao & Lee-Sing 1995, pg.61, 101). However, it should also be noted that the levels of ownership differ across industry categories. Technology-intensive manufacturing appears to have the lowest rate of controlling ownership, with over 88 percent of firms being widely held (Rao & Lee-Sing 1995, pg.48).

High levels of inter-corporate ownership are common throughout the world. Canada is no exception (see Figure 2.5). Governance researchers generally point out that the presence of large shareholders in a company may indicate a Type II agency problem.

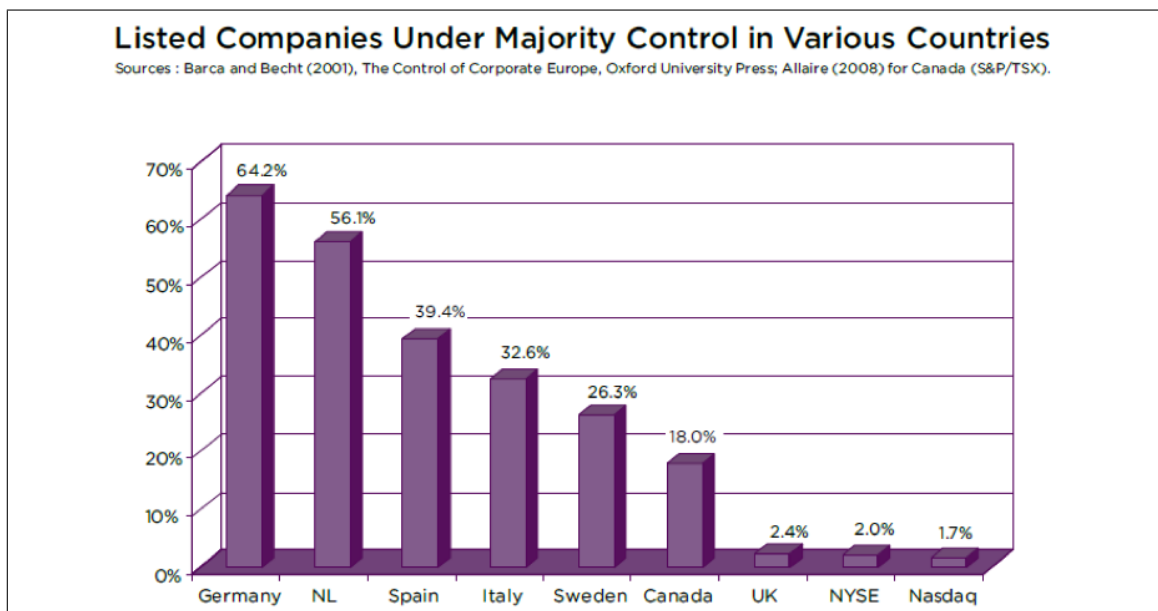


Figure 2.5: Listed companies under majority control (from Allaire, 2010, p18)

Most of the empirical research concerned with the performance of firms with large shareholders assumes that the large shareholder completely controls the firm (Laeven

& Levine 2007). Researchers generally only take into account the characteristics of the largest shareholder and exclude other large shareholders and managers. However, not all researchers make this assumption. Maury & Pajuste (2005) find evidence that more equal distribution of voting shares among large shareholders has a positive effect on firm valuation in Finland. This is consistent with the idea that large shareholders can be monitored by other large investors in order to ensure that smaller shareholders' interests are protected (Tjaden 2010, Maury & Pajuste 2005, Connelly, Hoskisson, Tihanyi & Certo 2010).

## 2.4 Family Networks

Throughout the world, family firms have been found to be large shareholders in corporations. Often these wealthy families are the descendants of successful entrepreneurs (Morck 2005*a*). This fact has encouraged many scholars to investigate the link between family ownership and corporate performance.

Researchers have found that investors appear willing to pay a premium to own shares in a company where the original entrepreneur manages the company (Villalonga & Amit 2006, pg.394). However, firms where descendants are appointed to lead the firm generally suffer a decrease in firm value (Smith & Amoako-Adu 1999). Working with a sample of large American firms from 1994 to 2000, Villalonga & Amit (2006) find that family ownership creates value only in cases where the original owner is the CEO. In cases where a relative is appointed, value of the firm is lessened. Using both fixed effects and random effects models, the authors find that control-enhancing mechanisms such as dual-class shares also destroy market value.

In Canada, major shareholders – often the founding family (Allaire 2010) – may choose to maintain control over their enterprise using dual-class shares. Structures such as dual-class shares or corporate pyramids are often used to maintain control in firms with minimal costs. Governance researchers are concerned about situations such as these because individuals can control corporations despite having minimal amounts of equity invested in them.

King & Santor (2008) use a random effects model to examine how family ownership in Canada affects performance and capital from 1998 to 2005. The authors distinguish family ownership from control-enhancing mechanisms such as dual-class shares. They find that family controlled firms with a single class of shares have similar performance to widely held firms. However, family owned firms with dual-class shares have a market valuation about 17 percent lower. This finding leads the researchers to conclude that it is not family controlled firms per se but the presence of dual-class shares or pyramidal ownership structures that are problematic for valuations.

## 2.5 Professional Networks and Social Capital

For the most part, research concerned with corporate governance overlooks the fact that corporate insiders tend to know one another. Directors in particular often serve on the boards of multiple companies simultaneously. Historically, much has been made of these corporate interlocks especially by those concerned with unfair business practices (Brandeis 1914) . However, it has been left to the field of economic sociology to explore the implications of these connections between insiders.

Economic sociology has explored these connections through the development of many different theories. At the core of all of these theories has been a concern with the underlying network that links individuals into identifiable clusters. This concern with the relations between individuals has led sociologists and social psychologists to develop a more general theory of social networks. The concept of social capital is one way in which social network structures are theoretically understood.

This section on professional networks serves a dual purpose. The first is to introduce the concept of relationships between corporate insiders – especially directors. Most of this research and related theory has been done by economic sociologists. The other purpose is to introduce the idea of social capital and to explain how this concept is used to theorize about the importance of networks in social and economic contexts.

This section will begin with an overview of social capital and network theory, followed by a discussion of three influential theories concerned with the importance of the social network of directors. Finally, attention will be drawn to more recent research that considers how the relationships between directors in a firm can be treated as a network. The authors draw a distinction between what they call social capital that is internal to the firm, compared to social capital that involves linkages that extend outside the firm.



### 2.5.1 Social Capital Theory

The idea that knowing people can bring benefits is well known. Social capital is the idea that relationships can be valuable and advantageous. While this basic idea is appealing, there is dispute among academics regarding what precisely should be considered social capital and what should not (Lin 1999). In order to define and better understand the concept of social capital, the following section will briefly discuss the origins of the idea and some of the meanings that the phrase has taken on over time.

Social capital can be traced from its intellectual roots in context with other forms of capital. In the classical theory of capital, Marx saw capital as the tool by which the bourgeoisie exploits the proletariat by extracting the surplus value from the production process (Lin 1999, pg.28-31). Over time, researchers extended the concept of capital beyond physical goods and money. Human capital explained how individuals capture more of the surplus value as they develop skills or talents that allow them to demand a higher wage (Lin 1999, pg.31). Social capital is “the contextual complement to human capital” (Burt 2002, pg.202). Those individuals who are better connected tend to gain more advantages.

Lin (1999, pg.33) argues that the benefits of social capital are derived from three sources. First, social capital allows for the *flow of information* between individuals, which can reduce transaction costs. For example, members of the same graduating class may share job opportunities. Second, social capital can *exert influence* on others. For example, people are more likely to be positively disposed toward people about whom their friends speak highly than toward complete strangers. Third, *social credentials* are derived through belonging to groups. For example, having a professional designation may entail a degree of standing in one’s community.

The precise methods by which individuals gain advantages through their connections is debated. The main controversy stems from whether social capital is an asset of the individual or a collective. Lin argues that social capital is something that is

embedded in social relationships between individuals (Lin 1999, pg.35). More precisely, Lin defines social capital as “resources embedded in a social structure which are accessed and/or mobilized in purposive actions.” (Lin 1999, pg.35). Lin argues that something of value must be “embedded” in the relationship, that individuals need to be able to access this value, and also be able to use it.

In his social resource theory, Lin argues that resources are embedded in one’s network of relationships with others. These resources are captured as characteristics of one’s contacts. These resources are intuitive and often readily observable as wealth, power or status (Lin 1999, pg.36).

Coleman envisioned social capital as having to do with the closeness of relationships between people (Coleman 1988, pg.105). Coleman sees social capital deriving from communal forces – people working together to achieve some goal, or a general norm that confers benefits to the group. Structurally, Coleman describes this solidarity as “closure”. In essence, more tightly knit groups (groups that exhibit greater closure) likely have more social capital. For example, a close family in a community where people know one another will have fewer children that drop out of school compared to other communities. Here, the emphasis on social capital comes from the fact that people are part of tightly knit communities. The density of links between people make it easier for them to find out about problems with children and deal with them when they arise.

The idea that social capital is derived mainly from the closure of a group has been questioned. Other theorists note that certain individuals can act as “bridges” between groups. Structurally, individuals who act as bridges can become sources of valuable information. Granovetter’s (1973) work exploring how people find a job has become a classic example of the importance of “weak links” between people bringing benefits. Granovetter found that distant acquaintances, not close friends, were often sources of information about job opportunities. Burt’s (2000) idea of structural holes formalizes this kind of “bridging” relationship. Burt (2005) also refers to individuals in a position to act as a bridge between groups as “brokers” because these individuals gain advantage from brokering information between groups. In contrast, closure does

not explain what happens when individuals benefit from extended networks of friends and acquaintances.

Burt (2000) argues that there are too many general metaphors for social capital. Rather than broad metaphors, Burt argues that social capital research would benefit by considering only specific examples of structures of relationships in a network. Burt argues that for clarity, specific cases need to be considered and the network mechanisms need to be clearly described. Otherwise, the sheer diversity of metaphors that exist to explain social capital by reference to different examples will impede productive discussion (Burt 2000).

Burt defines social capital as “the advantage created by a person’s location in a structure of relationships” (Burt 2005, pg.4). Burt’s insistence on the structure of relationships forces a degree of concreteness on this complex theoretical discussion. Coleman’s emphasis on the importance of closure in groups is taken by Burt to be an important part, but only a part, of explaining social capital in network terms (Burt 2000, Coleman 1988). Rather than just closure, social capital must also include the idea of information passing between close groups. Granovetter’s weak ties argument famously highlights the important effects individuals can have when they act to broker information between otherwise distinct groups (Granovetter 1973, Granovetter 1983).

Burt argues that brokerage and closure are both key elements of social capital (Burt 2000, Burt 2005). In closure, there can be more trust because groups enforce norms. Lin (1999, pg.34) highlights these dense networks as important for maintaining resources within the group. However, bridging different dense groups is a preferable model to understand the processes of searching for and acquiring information (Burt 2000, pg.355). In Burt’s parlance, structural holes exist between dense groups and the individuals that act to bridge groups are in a position to gain advantage. It is important to note, however, that even if individuals occupy a network position that appears to provide advantage, they are not expected necessarily to take advantage of it. In short, a social structure *may* influence an individual, but it will not *necessarily* influence an individual. Individuals make decisions and cause things

to happen – social structure is not the cause of any event – see Burt (1992). For a discussion of structuralism in general, see Flew (1995, pg.109).

## **2.5.2 The Underpinnings of Network Theory**

Much of modern network theory developed from the work of social psychologists. Perhaps the earliest formal paper concerned networks was written by Bavelas (1950). Bavelas's (1950) paper was concerned with how small groups can be affected by the structure of the communication network they are within – even if they are not aware of the network topology. Bavelas found that different network configurations actually appeared to influence the efficiency with which the task was performed and the morale of those involved. To distinguish the networks and the positions that people occupied within them, Bavelas developed a measure of how central a given actor was within the network. This key idea of centrality has been adopted by the networking literature. Perhaps more importantly, Bavelas's (1950) insight that the structure of relationships in a network can influence outcomes has deeply influenced the networking research that has followed.

Initially, much of the networking literature was concerned with the strong links between individuals. More contemporary theories such as structural holes (Burt 1992) or the strength of weak ties (Granovetter 1973) focus on the links between these dense clusters. Yet, even these theories of weak ties are also indebted to social psychology for providing theoretical grounding. Granovetter's (1973) strength of weak ties theory, for example, posits that there exists some sort of transitivity between actors – if actor A and B share a strong link, and B and C also share a strong link, then it is more likely that A and C will have some some sort of relationship, even if just a weak link (Borgatti & Halgin 2011, pg.3). This kind of transitivity in relationships is underpinned by Heider's (1958) balance theory or Festinger's (1957) theory of cognitive dissonance (Borgatti & Lopez-Kidwell 2011).

### 2.5.3 Network Theory: Flows and Bonds

Borgatti & Lopez-Kidwell (2011) argue that there are essentially two main theoretical types of network models. They call the first *network flow theories*. This class of theory is mainly concerned with how information flows through a network. Based on the structural characteristics of the network and an individual's position in said network, one can infer certain outcomes. The authors term the second general class of network models as *network architecture* or *bonding* models (Borgatti & Lopez-Kidwell 2011, Borgatti & Halgin 2011). This class of model cannot be adequately captured by considering the flow of information in the network. Instead of communication between nodes, it is the alignment between nodes that leads to an outcome. In this case, the relationships between nodes are indications of coordination of some sort. Borgatti & Lopez-Kidwell summarize the difference between these two general classes succinctly. In the network flow model, relations can be likened to pipes, whereas in the architectural model the relations are bonds – girders that, “bind the network together” (Borgatti & Lopez-Kidwell 2011, pg.12).

## 2.5.4 Social Embeddedness

Social capital captures the idea that resources can be acquired from an individual's network of social relationships. An important supporting idea of social capital is that of social embeddedness. Social embeddedness theory highlights the fact that economic transactions are not isolated events, but are always embedded within some social context (Granovetter 1985). The insight of social embeddedness theory is that the outcome of economic transactions often differs from what would be expected of purely rational actors. Instead, economic relationships can take other forms for social reasons.

Davis (1996) utilizes the theory of social embeddedness to explain the dynamics of board networks. He argues that directors are constrained in their actions by the social bonds that develop over time with others. For example, directors are technically in an oversight role with respect to the major decisions of a firm's management. However, it is not uncommon for directors to know senior managers socially or to have mutual acquaintances. This situation is a well-known case of social embeddedness – directors may be hesitant to disagree with management because of social relationships that have nothing to do with the achieving the best possible performance of the firm. This particular observation has relevance in the Canadian context where there are a number of business groups controlled by rich families (Morck & Yeung 2006). Leblanc & Gillies (2005) argue that directors need to exercise more discretion when dealing with these families than they would dealing with the board at a widely held firm.

Proponents of the social embeddedness perspective are critical of approaches that treat people as completely independent and isolated rational actors devoid of any social context. Social embeddedness also questions theories that place excessive emphasis on environmental causes at the expense of an individual's own decision-making abilities (Granovetter 1985).

Social relationships often supersede so-called pure economic transactions. For example, in a detailed study of small fashion firms, Uzzi (1997) finds that firms

that often work together tend to compromise and make allowances for one another. This flexibility benefits all organizations in the long term because it encourages future collaborations. The ultimate decision to make allowances for others is based mainly upon social considerations (Uzzi 1997). Developing social relationships often increases trust. This increased trust will be useful when economic transactions do not go as planned. These insights have led some researchers to consider the role that networks have in a firm's development and performance.

### **2.5.5 Professional Networks**

The sections that follow highlight major theories concerned with board interlocks and the implications that these interlocks have for understanding relationships between organizations. In particular, bank-based theory, resource dependence theory, theories of elites, and social capital theory are each discussed. Bank-based theory sees financial firms as particularly important organizations that have the power to influence industrial firms that rely on them for funds. Resource dependence theory (Pfeffer & Salancik 1978) is concerned with how organizations gain access to the resources external to the firm that they need to stay in business in an uncertain business environment. Theories of elites see executives as a separate social class. Useem (1986) argues that these corporate elites see serving on the boards of other companies as a way to increase their knowledge of the business environment. Useem's in-depth interviews with directors also provide reasons to believe that directors are trusted sources of information for managers.

#### **Organizational Resource Dependence**

The resource dependence perspective has proven to be one of the most influential and adaptable theoretical frameworks for understanding organizational relationships in general and the role of boards of directors in particular. Influenced by organizational ecology (Hannan & Freeman 1977), the resource dependence approach of Pfeffer & Salancik (1978) considers firms as embedded within their environment. This is in contrast to other organizational theories, which focus on using resources within the firm without much reference to the external environment and the processes involved with attaining resources. In contrast, Pfeffer & Salancik (1978) stress the importance of considering the external environment, and the relationship to other organizations, as key factors influencing events within the firm. The primary goal of the firm, they argue, is to extract resources from the environment in order to survive. In order to accomplish this goal, the environment needs to be understood and uncertainty reduced.



Because the external environment is always changing, firms are expected to act in ways to reduce risk. Change is a source of risk for the long-term survival of the firm – especially for young firms. Pfeffer and Salancik argue that firms attempt to reduce uncertainty by coordinating with other organizations. Coordination may take many different forms: boards of directorships, trade agreements between firms, industry associations, etc. These relationships need not be permanent. They simply need to provide the organization with a degree of environmental stability, as well as information (Pfeffer & Salancik 1978, pg.144). Not only may these linkages provide information in the present, they also serve as conduits for gaining more information in future. These links to other organizations can also be used to extract commitments from others when needed to reduce uncertainty. Finally, the mere existence of these linkages provides the firm with a degree of legitimacy in the eyes of others (Pfeffer & Salancik 1978, pg.145). For example, a firm that is an active member of the local chamber of commerce may be seen as more stable or reliable by customers and suppliers.

Within resource dependence theory, using the connections that corporate directors have to other organizations is seen as an important way that a firm can link itself to its environment (Pfeffer & Salancik 1978). The authors highlight three ways boards are important. First, boards are seen as advisers to inexperienced managers. Second, boards of directors are overseers of the processes of the firm. Technically, this is the oversight role of boards of directors. Third, directors are seen as people that have been co-opted to help the organization. Co-opted people are expected to adhere to the established norms of the firm.

The idea of co-optation was drawn from a study of the Tennessee Valley Authority (TVA) power project (Selznick 1949). The TVA was able to silence vocal critics to the project by bringing them into the process of decision making. Selznick's (1949) point was that critics themselves gradually accommodate the organization because they are part of the planning process. Pfeffer and Salancik extend the idea of co-optation. They argue that co-optation through director interlocks implies that a subtle relationship is established between the organizations through their directors (Pfeffer & Salancik 1978, pg.163-5).

Co-optive theory posits that when a firm faces problems that are beyond its power, corporate interlocks are used as a way to reduce uncertainty. Burt (1983*a*, pg.76) notes that interlock ties would be valuable to the firm even if they were just sources for information because they would act to reduce uncertainty. Generally, however, researchers interested in co-optation presuppose that the board positions are deliberately chosen not so much to utilize an individual director's talents as to establish contact with the particular organizations they represent.

The North American evidence of a relationship between interlocking and firm performance is mixed. In Canada, Carrington (1981) found a positive relationship between industry concentration, profits and board interlocks. In the USA, Burt (1983*a*) found small statistically significant results on profits, once concentration was controlled for, while Pennings (1980) found no statistically significant relationship (Mizruchi 1996, pg.274-5).

Co-optation theory has been broadly criticized on the grounds that director interlocks are not consistently re-established after the death of a director. In Canada, Ornstein found that 30 percent of broken ties due to death of a director between 1946 and 1977 were reestablished within two years (Ornstein 1982). Ornstein argues that this finding indicates that neither theories of elites (discussed in the following section) nor co-optation are alone sufficient to explain the small proportion of ties replaced. This is evidence, critics note, that not all interlocks can be described as co-optative (Mizruchi 1996).

Overall, the data requirements of co-optation theory present daunting challenges for those wishing to provide direct empirical support to the co-optation hypothesis. Co-optation assumes that interlocks are established with the intention of seeking knowledge from a particular firm, and to reduce uncertainty as a result of acting on that knowledge of the external environment. However, establishing the cause of any director appointments is a difficult task and likely not feasible for most researchers. As made clear by Selznick in his study of the TVA, some directors surely are co-opted (Selznick 1949). It is also likely that some firms use director interlocks as conduits for exchanging information between particular firms in order to reduce

uncertainty. However, there appears to be little evidence to support the notion that *most* interlocks linking organizations are co-optative in nature (Mizruchi 1996, Ornstein 1982).

### **Executives As Elites**

Many academic studies of the 1970s and 1980s frame relationships between directors as a study of elites. Useem (1986) found that executives act in such a way as to promote policies that best serve their interests. Useem (1986) conducted over 100 in-depth interviews with directors of large firms in the USA and the UK. He found that resource exchange did not sufficiently answer why people chose to sit as a director on the board of a firm. Instead, he found that directors serve on the boards of corporations partially because they feel obligated to do so, but also in order to increase their general understanding of business events. He uses the term “business scan” to capture the idea that directors use their positions as a way to collect information, gain insight into current strategies, current events, techniques, and any other relevant topics. He refers to the elite community of executives and directors as “the inner circle” because of the tendency for directors to be chosen through old friendships or acquaintances Useem (1986).

### **Bank Based Theory**

The role of corporate boards of directors in firms and the wider economy has been an area of study for nearly a century. How boards operate, and who sits on these boards, especially of powerful corporations, has long fascinated people. Near the turn of the last century, corporations were considered to be joined to ‘money trusts’ through multiple inter-corporate board appointments, which inevitably included powerful investment bankers (Brandeis 1914, Davis & Mizruchi 1999). Brandeis chose to focus on the board appointments – with a number of leading industrial companies and railroads – held by the powerful investment banker JP Morgan and his associates.

Brandeis traced the collusive agreements between the firms that were linked through inter-corporate board appointments. The industrial companies would take loans from JP Morgan, and some would then sell goods as inputs to other manufacturers. All of these companies would then ship their goods on the same railway service. Partially thanks to Brandeis' work, the 1914 Clayton Act effectively put an end to such overt collusion in the USA. Section eight of the act specifically prohibits interlocks between competing companies because of the risks to competition (Mizruchi 1996, pg.273). Brandeis' work was widely read and was both publicly popular and politically influential. A few years after Brandeis published his popular book *Other People's Money: And How The Bankers Use It*, Lenin wrote about similar collusive behaviour in Europe (Davis, Yoo & Baker 2003). Despite these changes, the relationships between companies developed through board interlocks continue to be viewed with great interest and often suspicion.

Echoing the concerns of Brandeis seventy years before, Mintz & Schwartz (1985) argue that the centrality of financial institutions gives banks effective power over their client firms. According to this theory, banks and other financial institutions benefit from the information gained through multiple directors from outside industrial firms. These board appointments provide the banks with current market information so that the bank can more effectively conduct their business. To investigators of the inter-corporate network of board appointments in the 1970s and 1980s, financial firms appeared as central points in the network, as indicated by many outside directors serving on their boards.

While the idea that financial institutions may be important actors or intermediaries remains influential, theories that posit the hegemony of banks over their clients has come under scrutiny – for modern versions, see Santos & Rumble (2006) and for corresponding criticism, see Cheffins & Bank (2009). Empirical studies of the importance of banks are sometimes at odds with theory. Critics also argue that the thesis of bank hegemony is poorly defined and not consistently supported by the existing inter-corporate board network patterns described by Mintz and Swartz (Marsden 1988). More recently, the decline in the importance of financial firms in US

corporate interlocks has raised serious questions regarding the central assumptions of financial hegemony theory (Davis 1996).

## 2.5.6 Boards of Directors as a Network

Recently, there has been renewed interest in considering boards of directors as a social network. Harris & Helfat (2007) note that most studies consider only the external networks that boards of directors are a part of. The authors argue that in addition to *external social capital* researchers need to consider *internal social capital* of boards. The authors distinguish these concepts as follows:

“Internal social capital refers to linkages among actors within a collective of people (a network) and external social capital refers to linkages between an actor within the network and actors outside of it.” (Harris & Helfat 2007, pg.230).

Internal social capital represents the relationships that exist between directors who serve on the board. External social capital consists of the relationships with people who are outside of the firm. The authors note that very little research has considered the internal relationships between directors.

Harris & Helfat (2007) envision board networks as relationships between individuals. In particular, the authors adopt a network flow-type theoretical model regarding directors (Borgatti & Halgin 2011). Harris & Helfat are concerned with how information flows through the network and the centrality of different directors and the strength of the ties between them. Although the authors make an intuitively appealing case for networks that exist between directors, their paper lacks some important specifics. For example, the authors note that managers or directors may occupy more or less connected positions in the network. However, the authors never specify which network(s) they are considering. With respect to communication, it is unclear what types of communication count or what potential criteria are used to determine the strength of ties between individuals.

This lack of specificity becomes more problematic as the authors draw on examples from actual firms. The authors note that coalitions form on boards and that

CEOs may be more central in the network especially if they are also chairs of the board. However, it is unclear what meaning a flow-type model of information access has in the author's discussion. For example, the authors note that certain members of the board or managers may have access to information sooner than others. Access to information about the firm is considered to be important to allow directors to make "informed decisions" (Harris & Helfat 2007, pg.233) but the authors never explain why this information confers anything useful to those who have it and how this is systematically related to the operation of the firm. In the standard flow-model used in network theory, information is often a general term to infer that some advantage is gained. However, researchers must be clear about what advantage is gained and why. Harris & Helfat do not explain why information flowing through the internal board network is important enough for some nodes to gain advantage from others by controlling the information over a long period. The authors attempt to illustrate their points using cases regarding boards of directors gained from the media. However, the authors end up using network terminology to *describe* actual events rather than *explaining* how the structure of relationships on the board affect outcomes (see Borgatti & Lopez-Kidwell 2011, pg.10).

The core idea the authors offer is important – boards of directors in a firm can be treated as a network. Currently, the flow-type model is the most common network model (Borgatti & Lopez-Kidwell 2011). However, in this instance, the choice of theoretical approach does not appear to be directly applicable to the problem area the authors wish to contribute to. By forgoing specific examples of networks the authors are actually concerned with, it is difficult to understand how the theory would predict outcomes. In the concrete examples the authors give, network terminology is used to describe current situations rather than to illustrate how the network structure of the board influenced an outcome.

## 2.6 Summary

This chapter considers the relationship between ownership and firm performance. Performance is usually quantified as Tobin's Q—total market value of the firm divided by total asset value. The focus of this research is the agency problem between shareholders and managers in the widely held firm. Other research characterizes an agency problem as being between small shareholders and large shareholders. However, when considering large shareholders, empirical studies often tend to focus on only the largest single shareholder and ignore multiple large shareholders and managers' ownership stakes in the firm. This simplifying assumption is thought to be problematic for studies of young firms where top managers potentially have an important role in the firm's performance. The corporate governance research that concerns family-operated firms was also discussed in this chapter. This literature informs the what I call ownership and family networks that act to link some corporate insiders.

Bank based theory, resource dependence theory and Useem's theory of elites were also discussed especially with reference to information transfer through board interlocks. These theories inform questions about the professional networks directors maintain.

The chapter that follows will develop the hypotheses based on this literature review.



# Chapter 3

## The Model

### 3.1 Introduction

This chapter introduces the theoretical model that motivates this study. This chapter is roughly divided into two parts. The first half of the chapter is dedicated to theoretical development. The second half of the chapter is dedicated to developing the hypotheses of this research.

In the next few sections, the theoretical model will be made explicit. This portion of the chapter builds on the literature review to lay the groundwork for the approach taken in this research. It begins with a general overview of the theory and its placement within the broader literature. Following this general overview are slightly more in-depth discussions of both network theory and corporate governance theory. Finally, the model used in this research is discussed. As noted, the second half of the chapter develops the hypotheses to be used in this research.

## 3.2 Theoretical Overview

The corporate governance literature concerned with executive ownership and performance mainly builds upon agency theory. The underlying assumption of this literature has been that corporate insiders are largely unrelated to other insiders in the firm. Instead, this literature places emphasis on the amount of the firm owned by key executives – particularly the CEO. It is hypothesized that an executive's ownership of the firm acts as an incentive for him to influence firm performance (see Literature Review, Section 2.3). In contrast, this research approaches the public corporation from the perspective that economic transactions are largely situated within a social context, and that the pattern of social relations can have an important effects on outcomes (Granovetter 1985). In short, decisions that may be rational for an autonomous actor may call for a significantly different approach when taken in a wider context of group relations.

The key idea behind this research is that the directors, managers and large owners of a corporation may somehow be socially related, and that these social relationships are important for understanding corporate governance. This research starts from the position that social relationships can be important to understanding how the organization governs itself. By understanding how different corporate insiders are related, I argue that it is possible to determine whether different coalitions, representing different interests, exist in the firm. I use the term coalition here to denote groups of corporate insiders that share some common network ties. These groups of variously related corporate insiders are assumed to share common interests. These common interests may or may not coincide with the interests of other coalitions within the corporation.

The existence of multiple groups with different interests operating a public corporation has some immediate implications for corporate governance. Clearly, a single unified group composed of all corporate insiders – the directors, managers and any large owners – entails effective control of the organization, assuming the group controls a reasonable amount of the voting shares. Similarly, if corporations are

composed of multiple different groups, the implication is that the firm's operations are determined with a degree of collaboration and compromise between groups. In other words, having a firm with multiple different coalitions will provide oversight over one another. At the other extreme, if there is a single group that has effective control of the organization, there may not be any oversight.

The idea that a network of relationships can bring benefits has broadly been termed social capital (see Literature Review, Section 2.5.1). In this research, an explicitly structuralist approach is taken – the patterns of connection between individuals are considered to be indicative of likely outcomes (Borgatti & Foster 2003) – although, to be clear, these patterns of relations can only imply likely influences on outcomes based on the network structure. Ultimately, any social outcome is determined by individuals and not network structure (Flew 1995). In contrast to other network theories of social capital, the content of the ties is largely neglected. In particular, this work draws on Burt's (1992, 2005) structuralist version of social capital. In contrast, other important social capital theorists focus on the content that flows through social ties (Borgatti & Foster 2003, p.1002). Lin (1999), for example, envisions social capital as being embedded resources within social relations.

### 3.3 Networks and Corporate Governance

Much of the academic literature concerned with corporate governance and networks has focused on the role that directors play as links between firms. By and large, this research treats the firm as a black box with directors as conduits for resources to flow between organizations. From this vantage point, firms create interlocks strategically to gain information and resources from directors that serve with other organizations (Pfeffer & Salancik 1978). From another network perspective, the corporate interlock network is treated as a medium for information to flow between firms. In this case, the existing corporate interlock network is analyzed in terms of the importance it has for the spread of ideas or corporate governance strategy through the network (Davis 1991).

These theories differ in a number of important ways from the current research. First, in this research I am concerned with the network of relationships between corporate insiders *within* a firm, not across firms. Relatively little research has addressed the implications of examining corporate boards in terms of social capital (Harris & Helfat 2007). On a deeper theoretical level, this research also differs from the examples given because the focus is on the relative position of individuals in the network, and not the flow of information through the network. The difference here can be explained in terms of the difference between flow-type networks and bonding network models (Borgatti & Lopez-Kidwell 2011).

Currently, the most theoretically advanced network models are flow-type models where information or some other resource flows through the network. Individuals in different network positions are hypothesized to be more or less likely to have access to the resources flowing in the network (see Literature Review, Section 2.5). This line of argument is central to many research studies concerned with networks. Depending on the circumstances, there may be advantages to being in dense network clusters or bridging those clusters (Burt 1992, Burt 2004, Burt 2005).

In contrast, bonding models are concerned with how the existing ties between agents act to help coordinate action (Borgatti & Lopez-Kidwell 2011, p.7). In this

type of theoretical model, collections of related nodes act in concert as a single node. The relationships between these nodes can then be considered. These coordination networks are sometimes also called girder models or architectural models in addition to bonding models. The current research is situated within the tradition of bonding models. I am concerned with how the structure of relationships between corporate insiders influences outcomes – in this case, firm performance and valuation. I will expand on this point in future sections. But first, it is necessary to discuss agency theory and how the current theory fits into this perspective on corporate governance.

In the sections that follow, the theories that influence and guide this research are discussed. In the next section, a more in-depth discussion of agency theory is given. Agency theory is the dominant approach used by policy makers and corporate governance researchers. It is, however, not without its detractors. The theory has been criticized on a number of grounds and alternatives have been presented. Adherents of agency theory have broadened the theory in order to deal with large and more complex ownership structures. In what follows, the method used by this research, the results, and attempts to explain how agency models can benefit from social capital theory are discussed.

## 3.4 Agency Theory

Agency theory has largely been adopted by the corporate governance literature and policy makers as the *de facto* standard by which to judge corporate governance. However, as noted in the literature review, there is widespread dissatisfaction with agency theory. In the broader management literature, agency theory is often criticized as being too narrow (for review, see Pugliese et al. 2009), or not accounting for the diversity of social relationships (Granovetter 1985).

In widely held firms, agency theory is concerned with the general situation in public firms where directors oversee managers. Technically, directors are supposed to ensure that the firm is efficiently operated and that investors receive fair compensation for their investment in the firm. Agency theory has since been extended in ways to account for more diverse ownership structures (see Figure 3.1). In particular, researchers have argued that in cases where there are multiple large owners, oversight will be exercised over the largest owner by the remaining large owners (Maury & Pajuste 2005, Villalonga & Amit 2006). Other researchers have also questioned whether increasing ownership by key executives always acts to align incentives of managers with the interests of small shareholders (see Benson & Davidson III 2009, Morck et al. 1988*b*).

The aforementioned governance research brings important insights about particular groups governing the firm. However, many of the agency approaches fail to account for other aspects of governance. Often the possible importance of other corporate insiders is ignored in favour of a single aspect of governance (for relevant discussion see Hermalin & Weisbach 1991). For example, Morck et al.'s (1988*b*) work examining the relationship between managerial ownership and performance does so at the expense of considering the importance of other large shareholders. At the other extreme, Villalonga & Amit (2006) examine the largest shareholders but omit other large shareholders from their analysis. Maury & Pajuste (2005) examine relations between large corporate owners of the firm, but assume that independent directors have no role in governance. I argue that the problem with these approaches

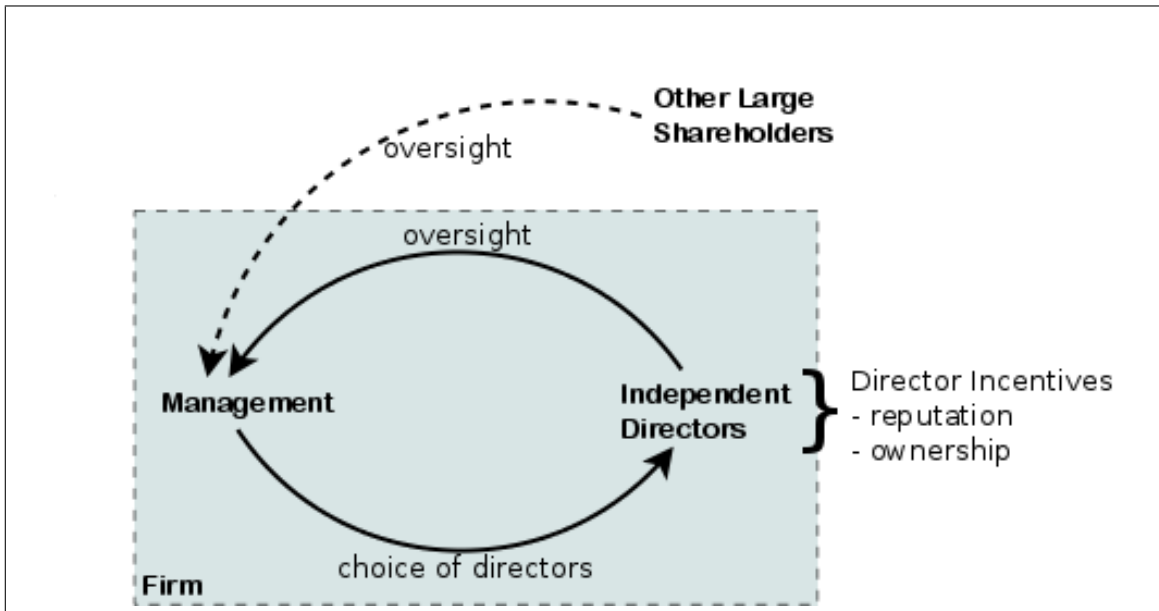


Figure 3.1: Summary of agency theories of corporate governance. Lines represent relationships. Oversight is provided by directors or possibly large shareholders.

is that corporate insiders – directors, managers and owners – have complex relationships that vary across firms. In this dissertation, I argue that the structure of these relationships can be used to inform agency theoretical approaches.

## 3.5 This Research

In this research I use social capital theory to better understand how corporate insiders are related. I argue that the structure of the relationships between corporate insiders can help to inform us about the firm's corporate governance and how the firm is likely to perform.

The structure of insider relationships is important to firm governance in many ways. Previously in this chapter, I touched on the importance of accounting for different insider groups or coalitions within the firm. Having multiple groups within the corporation that have a similar degree of power means that no single group can exercise effective control over the corporation in ways that benefit themselves at the expense of other the shareholders. At the very least, the necessity of collaborating with other stakeholders ensures that potential strategies receive proper vetting. At the other extreme, a single group with unchallenged effective control over the corporation may direct the organization in ways that benefits the group at the expense of small shareholders.

Another important aspect of corporate governance is the role of directors. Directors are supposed to provide oversight over the management of the firm. In practice, however, it is well known that some directors may be closer to top managers than others. Determining which directors are truly independent can often be difficult. A useful aspect of applying social capital theory to determine the structure relationships between insiders within the firm is that there are often individuals who are not connected to any insider group. A director is independent if the individual does not have significant amounts of ownership in the firm or familial ties to others in the firm. To help ensure that there are no significant ties to others in the firm, I also ensure that directors do not share professional relationships with other corporate insiders. This check of network relationships helps ensure that there are no friendships or quid pro quo relationships acting between corporate boards.

The network of relationships within a public corporation can yield a number of insights into structural characteristics of the firm. However, before these issues can



be discussed, it is important to discuss in depth which networks are made use of in this study to determine relationships between corporate insiders.

### 3.5.1 Types of Linkages

In this research, I consider three kinds of relationships between corporate insiders: ownership, family relationships and professional relationships. These different relationships are used to determine if corporate insiders are linked and whether they belong to the same group. The underlying assumption is that insiders who are somehow linked share the same interests in the firm. Once all the groups of corporate insiders have been identified, their total voting power in the firm is considered. The actual voting power that a group has is then used to determine how much power they wield over corporate decision making. I call this amount of power effective control over the corporation<sup>1</sup>. I will return to the precise calculation of effective control later in the dissertation. Each of the three types of ownership are discussed below.

### 3.5.2 Ownership

Relationships that are defined by ownership capture cases in which multiple corporate insiders have shares held in the firm through another common fund or company. In practice, the other company may simply be a numbered company to hold common investments – perhaps used in the case of business partners or a married couple. Alternatively, common ownership may indicate that corporate insiders are employed by another organization that holds shares in the company. In this case, great care is taken to ensure that the voting shares held by this other corporation are included in any calculation to accurately reflect the voting rights of the insider group they belong to.

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<sup>1</sup>In this sample of SMEs there are very few firms with dual class shares. In the very few cases where there were dual class shares with different voting rights I was careful to ensure that these rights were accurately reflected in the calculated amount of voting power an insider group has.

### **3.5.3 Family**

In this research, I assume a family relationship when multiple corporate insiders share the same last name. Ultimately, this is a heuristic that may undercount the actual number of related people in the firm, especially in cases where the same last name is not used by spouses. In practice, however, the ownership networks and family networks tend to have some overlap. For example, it is not unusual for children to have their share ownership held in a family trust or for spouses to hold their shares jointly. In finding groups that are related in the firm, both ownership and family relations are used together to trace out linkages.

### **3.5.4 Professional Relationships**

Professional relationships are indicated when corporate insiders share an appointment at another company – i.e., a corporate interlock – in addition to the company under study. These corporate interlock-based relationships are not used in the calculation of groups of insiders, because this type of relationship is not sufficient to infer aligned interests. In other words, corporate insiders may just coincidentally sit on another corporate board together and that this employment may not constitute any significant relationship. However, professional relationships are considered when determining if a director is truly independent. In this case, a shared appointment on the board of another company, if it is shared with a member of an owning group within the firm of interest, could reasonably be interpreted as a possible outside link that could affect the director's independence.

The following sections will continue to discuss how insider groups are determined and the implications that this social capital approach has on interpretations of ownership and control within the firm.

## 3.6 Social Capital of Insiders

In this research, corporate insiders are assigned to the same group if they are related by common ownership through another company or shared account, or family relations. If corporate insiders belong to the same group, then they are assumed to have similar interests and will hence vote as a block. The degree to which a firm can be controlled by a single group of insiders is determined by examining the total number of voting shares the group controls. For example, if a number of family members are corporate insiders, their shareholdings are summed together; this reflects the assumption that the family members are more likely to vote as a block.

An examination of the networks of corporate insiders also reveals which directors are independent. Those directors who are not obviously related to other insiders are considered to be independent. The proportion of independent directors over the total number of directors is used as a measure of how much oversight they can reasonably exercise over executives or large owners. This fraction is used as a measure of whether independent directors are in the majority or the minority within the firm. In this research, I argue that firms lacking a majority of independent directors will have little effective oversight. Firms with a majority of independent directors will have more oversight.

In this research, if a group of insiders has multiple family members as part of the group, then the firm is assumed to be family-operated. Family-operated firms are often mentioned in the literature (see Literature Review Section 2.4). Small firms often start off as family-run because families can be a source of inexpensive and reliable labour. However, from a governance perspective, it could be the case that firms where families are part of the largest shareholding group are a concern in case the family puts its interests ahead of those of common shareholders.

The network of relationships and their relative ownership stakes in the firm are analyzed using a slightly adjusted version of Burt's (1992) network measure of constraint. This measure is intended to capture the degree to which one insider group,

or coalition, has effective control over the firm. One extreme indicates that the firm is effectively controlled by a single group. At the other extreme, the measure of effective control indicates that no single group controls the firm – i.e., that there are multiple groups within the firm and each has a similar proportion of voting shares in the firm. The latter situation implies that these groups are exercising some degree of oversight over one another.

### **3.6.1 Implications: Oversight and Control**

In tension with the previously mentioned measure of control is oversight over a firm. In this research, the proportion of independent directors is used to capture whether there is any independent oversight. There are cases, for example, where there is effective control by one insider group over the firm, but there is a countervailing power exerted by truly independent directors. These two situations can overlap and may be desirable by both the largest shareholding group as well as smaller shareholders. For example, a single group may own a significant portion of the company but may want to attain the highest market valuation possible. In order to assure would-be investors, a board of truly independent directors is obtained. Thus, the potential risks posed by having a single group effectively controlling the firm are offset by the countervailing power of an independent board of directors.

### 3.6.2 Positions Within the Firm

Certain positions within the organization also merit particular attention. This research highlights how directors can be independent or related to the firm. Similarly, this research examines how family-run firms may be viewed by the marketplace differently than other firms. Finally, this research considers the position of the CEO and asks whether, given the importance of this position within the organization, this position shows any relationship to firm performance.

This research makes use of CEO ownership as a test of the social capital approach and to tie back to the extant literature. A number of important questions arise from the issue of CEO ownership. First, is CEO ownership a significant factor in firm performance, even when the social capital measure of effective control is accounted for? In short, is there evidence that the social capital perspective and executive ownership measures are competing measures or are they complementary measures? If the former, then it would appear that, in the case of SMEs at least, that total firm social capital network structure should be considered rather than executive ownership as a driver of performance. The social capital network structure is then perhaps more fruitfully interpreted as an additional contextual factor within the firm enabling either additional oversight or more control. In this case, the additional questions of CEO ownership concern whether it supports the entrenchment or convergence-of-interests hypotheses noted in the literature (Morck et al. 1988*b*).

Taken together, I argue that the structure of insider relationships – or the network architecture or bonds of these relations (Borgatti & Halgin 2011) – yield important information about likely firm performance. Ultimately, the structural measures used in this study are meant to reveal the potential tensions within public companies, tensions that centre on ownership and control of the firm. In this research, social capital theory is used to make more sense of ownership and oversight issues by examining these issues through the structure of relationships that exist between corporate insiders. The hypotheses of this research flow from the social capital perspective.

## 3.7 Hypotheses

In the second part of the chapter, the key hypotheses derived from the theory of social capital of corporate insiders will be discussed. These hypotheses deal with:

1. Effective control by insider groups.
2. Oversight by independent directors.
3. Family operated firms and their implications for valuation.
4. CEO ownership and the implications for the social capital perspective presented in this research.



### 3.7.1 Effective Control by Insider Groups

One of the key concerns of corporate governance research is the degree to which a public firm may have its resources improperly used by its managers or large shareholders. Agency theory highlights the necessity of maintaining independent directors who can oversee the work of managers to ensure that resources are not misused. Similarly, large owners are considered to be potentially problematic for the firm unless some oversight is provided. Research indicates that if other large organizations invest in a firm, they may be able to provide a degree of oversight to ensure that resources are not misallocated (Maury & Pajuste 2005, Villalonga & Amit 2006). In other words, any choices by the largest shareholder are contestable by other large investors who have an incentive to ensure that the resources are not improperly allocated.

The implicit assumption of studies of corporate governance is often that the ownership of the firm is held by a single individual or entity. In the case of SMEs, it could be the case that ownership stakes are held jointly – for example, by multiple members of a single family – and control is exerted by the group as a whole. This reflects the early history of the firm where skills and resources necessary for the firm are gathered from the entrepreneur’s family and social circle. If this is correct, in order to better understand the structure of relationships among corporate insiders, it is reasonable to try to infer relationships from available network information. In this study, I make use of information concerning ownership, family and professional relations. I argue that social capital theory is useful in this context in order to gain a better understanding how the structure of these relationships may be associated with firm valuation. By understanding the structure of the relationships between corporate insiders, it is possible to determine which insiders can be considered as a group with similar interests.

This portion of the research begins from the perspective of trying to summarize the structure of the potentially complex relationships between corporate insiders. The first step in this process is to determine how the corporate insiders in a firm are related to one another. This is done by considering their ownership records in the

firm<sup>2</sup>. An analysis of these records will determine if, for example, multiple insiders own shares in a public company through a common holding company, trust or the like. The second step in this process is to relate corporate insiders through their family ties. In this study, individuals are considered to be related if they share the same last name. The goal of this process is to create a scaled measure that yields some indication if the firm is effectively controlled by one of its owners.

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<sup>2</sup>A detailed discussion of data sources and the methods used to determine linkages is provided in the next chapter.

## A Simple Example

The ownership and family relations of directors are used to create a network of relationships between the different corporate insiders. The following example shows the major groups of corporate insiders that collectively owned in excess of one percent of the Biosign Technologies between the years 2008 and 2009. Figure 3.2 shows Biosign as the leftmost node. On the right are the major insider groups. In the diagram, the first number is the number of individuals in the group. The words that follow the hyphen are the last names of the individuals in the group, and any names of accounts they may have that hold shares indirectly in Biosign Technologies. The percentage that follows in parentheses is the calculated share of the corporation the insider group owns.

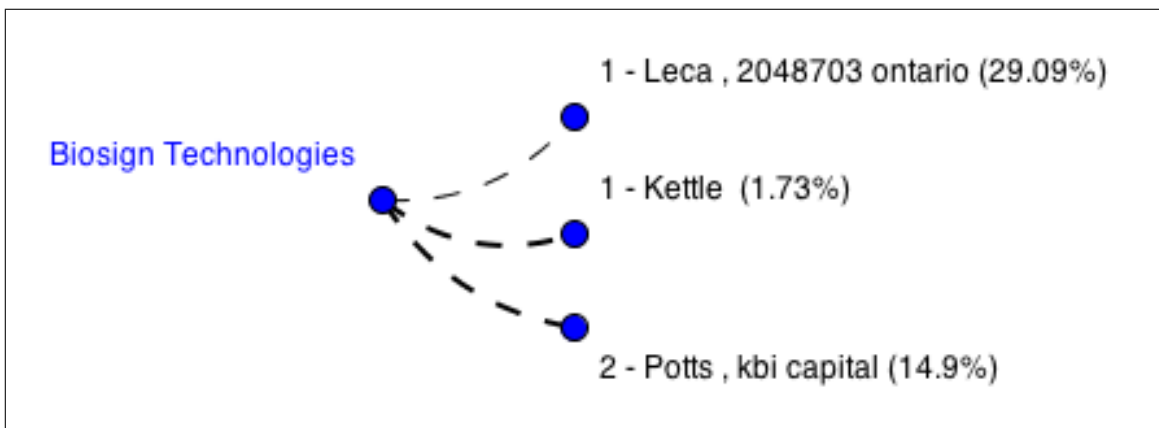


Figure 3.2: Network of corporate insiders for Biosign Technologies (2009-2010).

In the illustration above, the topmost insider group has only one person in it – Radu Leca, the CEO, who owned approximately 29 percent of the shares in the corporation. Many of those shares were held through a holding company 2048703 Ontario Ltd. The vice-president of research, Eva Kettle, owned almost two percent of the outstanding shares. The final listing is for Angela and Richard Potts. Collectively they owned approximately 15 percent of the firm. Richard Potts also held shares through a company called KBI Capital. The information is drawn from the SEDI online database (CDS Inc. 2010, at [www.sedi.ca](http://www.sedi.ca)), discussed in the next chapter.

## Constraint Measured with Ownership

The illustration above is a graph relating groups of corporate insiders to the firm. Insiders are determined to be related through ownership linkages and family relations. These *insider groups* are considered to vote as a block because they have similar interests. If one insider group owns over 50 percent of outstanding voting shares then, consistent with the economic literature, it is clear this insider group de facto controls the company. Recall that the an owner with a clear majority of outstanding voting shares can appoint the directors who in turn appoint top executives. However, it is rare that a single owner has a clear voting majority.

As the illustration above makes clear, ownership structures in firms can be quite complex. Many studies dealing with complex ownership simply take the largest owner and make the assumption that this corporation controls the company (see for example Porta et al. 1999, Morck, Wolfenzon & Yeung 2005). This assumption makes complex ownership structures more tractable. However, this assumption does not seem well suited to the present study. If there is are multiple owners with similar amounts of shares, then it would seem reasonable that one group couldn't unilaterally impose its will upon others.

The social capital networking literature offers a partial measure to quantitatively capture the degree to which one group may have control of the firm. In this case, it is perhaps easiest to consider the firm under study as the “ego” node under study. All of the insider groups can also be considered as the “alters”. The alters we are concerned about in this section are each of the insider groups that are composed of a related subset of corporate insiders.

A useful measure of effective control over the firm is the so-called measure of *constraint* developed by Burt (1992). In the present example, the central node is the firm under study. Each edge connected to the firm leads to a node representing a group of corporate insiders. Each edge is weighted by the shares outstanding that are controlled by each insider group. Thus, the more voting shares any group controls

relative to other groups of insiders, the more the firm under study will be constrained. Intuitively, one might argue that the operations of a firm with a clearly dominant shareholding group is constrained by the will of that dominant owner.

The constraint measure captures an aspect of the network topology — it summarizes how much choice the firm under study has with respect to others. In this case, “choice” is considered to be how many alternative paths the central node has. If there is a single insider group then there are effectively no alternative viewpoints within a firm. Using Burt’s (1992) terminology, the firm is constrained because there are no options besides the single insider group. The extension of this to multiple owners is intuitively straightforward – although somewhat involved in terms of the actual calculation of the network statistic (see Chapter 4, Section 4.9 for details). In the case of multiple insider groups, the firm has multiple links with different insider groups.

In the case of a single insider group, the insider group may have incentive to treat the company as a privately held firm and use it to maintain themselves comfortably rather than trying to increase returns for investors. However, if there are multiple insider groups, there are multiple paths or options leading from the firm. Thus, these different insider groups linked to the firm have incentive to provide a degree of oversight over one another. Thus, the constraint measure intuitively captures the amount of control a single insider group can exert in a scale comparable across firms.

In conclusion, in firms where there are multiple insider groups, it is more difficult for one group to make decisions unilaterally. Decisions cannot be forced through without other insider groups in the firm resisting. Thus, the more voting shares controlled by some insider groups relative to others, the greater the effective control (constraint) the group can exert on the firm. This leads to the following hypothesis:

*Hypothesis 1: The measure of effective control (constraint) in the firm is negatively associated with firm performance.*

### 3.7.2 Oversight by Independent Directors

Independent directors are generally considered to be an important aspect of corporate governance. In the agency model, independent directors oversee managers and ensure that the interests of ordinary shareholders are protected.

In this study, independent directors are those directors who are retained by the firm but do not have significant ownership in the firm (Fama & Jensen 1983, Yermack 2004). This research uses a number of criteria in order to classify a director as independent. The first criteria is that independent directors cannot own more than one percent of the outstanding shares in the corporation. Additionally, independent directors cannot share a family or ownership relationship with any other directors. Finally, independent directors must be professionally independent as well; they cannot sit on a different corporate board with another director involved with the firm.

In other words, there are no obvious social relations between the independent director and any other currently serving directors. Directors that are classified as independent in this study are essentially those directors that are not part of any insider group described earlier. Thus, these directors have no links to other insiders and little incentive not to challenge management if their plans seem unreasonable. As pointed out in the literature, not challenging management if the situation warranted it could damage an independent director's future job prospects (Fama & Jensen 1983, Srinivasan 2005).

In this study, I create a variable capturing the number of independent directors divided by the total number of directors. The proportion of independent directors serving with the firm is a measure of how committed the firm is to corporate governance. Independent directors are thought to be more likely to challenge management, whereas inside directors have too much to potentially lose if they challenge other managers in the firm (Weisbach 1988).

*Hypothesis 2: The proportion of independent directors in the firm is positively associated with firm performance.*

### 3.7.3 Family Control of the Firm

Family ownership is often an important aspect of the development of small and medium-sized firms. In public firms, the situation is somewhat different. While some families may be successful entrepreneurs, it is less certain that all family members will be equally good managers or directors as people chosen on merit alone. Additionally, the interests of the family within the public firm may not align with those of smaller shareholders. I argue that family-run firms will be associated negatively with firm valuation. To test this assertion, a dummy variable is set to one if a family belongs to the largest shareholding insider group in the organization and has a majority independent board. This leads to the following hypothesis:

*Hypothesis 3: An indicator of a family-run firm is negatively associated with firm performance.*

### 3.7.4 CEO Ownership

To date, most studies concerned with the importance of corporate governance to firm performance have followed Morck et al. (1988b) in examining the ownership of top executives. The CEO is most often singled out because of her decision-making power within the organization. This research is no different – the position of CEO within public companies is unique and needs to be accounted for.

There are two main theories relating CEO ownership to firm performance (Morck et al. 1988b). The first theory is called the convergence of interests hypothesis. The intuition here is that the more of a company a CEO owns, the more her interests become aligned with those of small shareholders because everyone has similar interests in having the company succeed.

The other theoretical perspective is termed the entrenchment hypothesis. The argument behind entrenchment theory is that CEOs are likely to become entrenched if they own too much of the firm; the greater an executive's ownership, the more able he is to collect a large salary and shirk his duties because there are few people who can challenge him. In this case, it is expected that firm performance will suffer because the CEO has little incentive to improve firm performance beyond the minimal amount to keep his income consistent.

Assuming that CEO ownership remains significantly related to firm performance, an important question arises: Does CEO ownership follow a similar pattern to that found by other studies? In other words, is increasing CEO ownership associated with positive firm performance, and is there a point at which “excessive” executive ownership is associated with decreased firm performance that is consistent with the entrenchment hypothesis? In other words, if there is a non-linear relationship between ownership and performance, does it appear reasonably close to that found by Morck et al. (1988b)? This leads to the following hypotheses concerning CEO ownership:

*Hypothesis 4: CEO ownership is non-linearly associated with firm performance.*



## 3.8 Summary

The first half of this chapter has developed the theory used in this research based on the literature review. This section discussed the structural interpretation of social capital used in this research. The types of networks that are used to determine relationships between corporate insiders are also discussed. On a theoretical level, the social capital perspective of corporate insiders is considered as a potential mechanism of oversight and control. Additionally, positions within the organization, such as directors and the CEO, are given special attention because of the emphasis in the extant literature but also because of their important relationship to the social capital of the organization. In the final half of this chapter explicit hypotheses were outlined.

In the next chapter, the approach and methodology will be discussed, along with the measurements used in this research.

# Chapter 4

## Approach and Methodology

### 4.1 Introduction

This research is concerned with how the social capital of corporate insiders affects firm performance and valuation. Little is known about the importance of corporate insiders to the performance of relatively small and medium-sized enterprises (SMEs). Both the economic sociology literature concerned with boards of directors, and the corporate governance literature concerned with firm performance, tend to focus exclusively on large firms. Much of this work also focuses on American firms – partially perhaps because of data availability. To date, there has been little work relating directors to small and medium-sized firm performance in the Canadian context.

The Canadian corporate governance literature makes it clear that, despite the many similarities between Canada and the USA, there are significant differences. Foremost among them is that Canada lacks a national securities regulator. Instead, different securities regulators exist at the provincial level. In terms of the wider economy, Canada has a relatively larger number of family-controlled business groups as compared to the USA or the UK. There also appears to be a greater tolerance

by investors for large shareholders in public companies who exercise control of the firm. Mechanisms of control include corporate pyramids and dual-class shares. In the Canadian context, firms that have recently undergone an IPO often have a wide variety of large shareholders, which may influence how they perform and grow over time. Another important difference between Canada and the United States is the relative lack of venture capital in Canada. While there are many public firms, they tend to be much smaller than in other countries (for discussion, see Section 2.2).

In order to answer the research questions of this study, I created a database of firms that have undergone an IPO in Canada between the years 2000 and 2010. Part of the necessity of creating my own database of firm histories is due to the fact that there is not a single integrated source available for this information.

While many countries have some source of information about public companies, there appears to be no ideal single source of information about SME public firms in Canada. For example, American researchers can access Compustat, which tracks all public firms over time. While some Canadian firms that are cross-listed on an American exchange are captured in Compustat, there is not complete coverage of all Canadian firms. Another problem is that firms that go out of business in Canada are often removed from databases that private companies maintain. Similarly, when Canadian firms change their names, they may or may not be tracked consistently in private data sources, such as FPInfoMart.ca. Thus, firms that go through mergers or acquisitions, or that are taken private, can also be difficult to follow. A consistent history of a firm can be constructed over time, but this entails cross-checking through multiple sources and verifying major changes through the original corporate filings.

In order to make inferences regarding the role of social capital in firm performance, this research makes extensive use of secondary data sources, such as the *Financial Post Survey of Industrials* (Financial Post 2010b) and the *System for Electronic Disclosure by Insiders* (SEDI) (CDS Inc. 2010). These sources respectively provide firm financial statistics over time and director appointments with firms.

Tobin's Q, the dependent variable in this research, is constructed using financial information from the *FP Survey of Industrials* based on the annual reports of the

firms in the sample. The price of the security is extracted from the *FP Survey*, which captures the recent closing price. For firms on the Venture Exchange, I take the average value of the daily price of the shares over the two weeks after the firm's annual report period ended. This information is extracted from the publicly accessible daily stock prices from the Venture exchange, available at <ftp://ftp.cdnx.com>.

The analysis of firm performance is to be conducted using various longitudinal regression models ranging from fixed effects to random effects models. These models will be discussed in subsequent sections. The hypotheses described broadly as the social capital of corporate insiders will be implemented as explanatory variables, in addition to relevant control variables.

### 4.1.1 Outline

This chapter will cover the general approach and methodology to be used in this research. First, the population under study will be discussed in-depth. The reasons why public SMEs merit individual study are reviewed. The definition of an SME in this paper is discussed as well as some of the shortcomings of the data sources used in this research.

The section that follows discusses the data sources, data collection process and methods of analysis used in this research. In this section, I outline the process I developed to construct the sample of firms. The analytical approach of this research is also considered. Network theory is discussed and related to how it is used in this study as an interpretation of the social capital of corporate insiders. Other important subjects that are discussed include potential concerns with endogeneity and their possible solutions. Finally, the section ends with a general discussion outlining the panel data methods used in this research.

The remaining sections in the chapter are concerned with the variables to be used in the analysis. The dependent variables and the control variables are discussed. Finally, an in-depth discussion covers the main variables of interest in this study and how they are operationalized based on the theory outlined in the previous chapter.

## 4.2 Population Under Study

This study focuses on a collection of Canadian industrial firms that have undergone an IPO between the years 2000 and 2010, inclusive. Every attempt has been made to collect as many of the firms that meet the criteria of this study as possible. In one sense, the firms collected in this study represent the entire population of firms of interest. However, within the broader scope of time, the firms collected in this study represent only a sample of public SME industrial firms drawn from a larger population of firms over time. Thus, in the text that follows, I will often refer to the sample of firms that have been collected in this study. Furthermore, inferences about this sample will be considered with respect to the broader population of SME public industrial firms that exist in Canada over time.

The firms in this study are listed either on the Toronto Stock Exchange (TSX) or the Toronto Venture Exchange. To be consistent with previous studies, financial firms, real estate companies, and holding companies are excluded from the sample. Resource extraction firms are also omitted from the sample under study because they are considered to be systematically different from industrial firms because they are largely dependent on global commodity prices. Resource firms are also contained in a separate data source from the *FP Survey of Industrials*.

### 4.2.1 Why SMEs?

The importance of access to financing for growing SMEs has emerged as an important concern for governments within the G20 (OECD 2012). The recent financial crisis and subsequent recessions throughout the international economy have also added to the difficulties of SMEs. Many SMEs find their customers are less willing to buy their products and that accessing capital for growth has become more difficult. Within this context, governments have been searching for sustainable ways to improve access to finance for SMEs.

Canada and the United Kingdom have both developed specialized public exchanges for SMEs. These SME exchanges – the Venture Exchange and the TSX in Canada and the AIM in the UK (London Stock Exchange 2012) – offer an alternative way for SMEs to gain financing for innovative projects<sup>1</sup>. However, corporate governance remains a major concern for investors in publicly listed companies. Despite this, very little research has focused on the relationship between corporate governance and public SME performance.

The managers and directors of SMEs differ from those of large, established firms because SMEs are often started by a few people who know one another. The founders of small business often receive help from family members, close friends or close business associates. Building on this intuition, in this research I hypothesize that the relationships between these corporate insiders can be important predictors of firm valuation. Studying the importance of relationships between individuals is in contrast with much of the extant literature; most of that research concentrates on the importance of individuals such as the CEO, and his ownership in the corporation (a prominent example is Morck et al. 1988*b*).

It should be noted that while SMEs are important, the results of this research from the social capital perspective has the potential to extend beyond SMEs. In

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<sup>1</sup>SMEs are also listed on so-called Alternative Trading Systems (ATS) in the USA and Multilateral Trading Facilities (MTFs) in the EU. Used by mainly institutional investors, ATS/MTF are often called “light” exchanges. NYSE Alternext is a prominent example of an MTF for SMEs (NYSE Euronext 2012).

particular, the findings of this study may be useful in the context of corporate governance studies of larger firms. Some of the types of linkages considered in this study between corporate insiders – family, ownership and professional relationships – could be extended to other kinds of networks. For example, in studies of larger firms in Canada, the inter-corporate ownership network could also be included as an additional network to determine relationships between insiders. The social capital approach used in this research may provide additional tools and theory to help governance researchers working in these different contexts. However, these are approaches that are beyond the scope of the present study; they are best considered as potential directions for future research.



## 4.2.2 SME Definition and Criteria

This study is concerned with small and medium-sized enterprises. However, there is no universal definition of what constitutes an SME. Many of the countries in the European Union define an SME as a firm that employs fewer than 250 people. In contrast, in the USA and Canada, a firm is considered an SME if the organization employs fewer than 500 people (OECD 2012, p.174).

One shortcoming of the chosen data source for this study is that it does not list the number of employees in every firm in each year. Rather than using the employment information that does exist for firms, this study removes larger firms from the sample based on their assets and market capitalization in the first year after their IPO. In their first year of operations, firms with an excess of \$50 million dollars in assets or \$100 million in market capitalization are removed from the sample. Most of the firms in the sample are well below these cut-off points. However, to ensure that the results were not driven by larger firms in the sample, a sensitivity analysis was conducted adjusting these cut-off points upwards and downwards. No significant changes to the model results were found.

To verify that these cut-off points are reasonable and also reflect the desired employment levels for SMEs, I examined the firms that have employment information in their first period of operations. I found that the vast majority of firms employed fewer than 200 people in their first year of operations (See Figure 4.5 and accompanying discussion in Section 4.6). These employment levels are consistent with smaller firms as defined by Canada, the OECD and the USA.

### 4.2.3 Criteria for Selecting SMEs into the Sample

There are some practical and theoretical reasons to prefer constructing a panel of firms by selecting SMEs based on their initial assets and market capitalization in their first year of operations. I argue that the sampling method described above is the best way to capture a sample of SMEs that have recently undergone an IPO. It could be argued that a larger sample could be created by selecting all firms that currently exist in the public market that meet the SME criteria outlined previously. (Ignoring for the moment that such a sample would have little to say about firms that are starting out on the public market – the entrepreneurial firms that are seeking capital for growth.) I argue that while this alternative process would yield a larger sample, such a sample would not truly be representative of small and medium sized enterprises for the reasons described below.

I argue that the chosen methodology results in an unbiased firm sample, whereas choosing firms that meet the SME selection criteria in any given period would result in bias. The main reason for bias is that many of the public firms do not perform well over time. Just like in the private market, the most firms do not rapidly grow and many shrink or outright close (Baldwin & Gorecki 1991, Baldwin, Dunne & Haltiwanger 1998). These firm dynamics – growth, shrinkage and failure – can create inferential problems if one were to simply sample all existing SMEs over time. If one were to just take a sample and include pre-existing firms, then the prior performance of pre-existing firms would be unknown. Having the prior performance of some firms censored from the analysis means that all of the firms that listed as SMEs and then grew past the size of the SME criteria would be omitted from the sample. Similarly, all of the large firms that decreased in size to the point that they met the criteria for an SME would enter into the sample. The end result would be that the sample would be biased to contain more poorly-performing firms, and fewer growth firms. A version of this sampling argument is made by Davis, Haltiwanger & Schuh (1998) and subsequently by Haltiwanger (2006). I argue that following a sample of SMEs from their IPO on is a more representative sample of firms over time. Moreover, it captures those firms that are in the initial stages of launching as public companies.

These firms are likely of greatest interest to policy makers considering alternative methods of financing SMEs (see BBC 2012, The Economist 2012, OECD 2012).

Following a panel of SMEs from their IPO onward also has some theoretical advantages. Demsetz & Villalonga (2001) are critical of studies of firm performance because they argue that they make unfounded assumptions about causality. The authors argue that these studies assume that ownership affects performance and not vice-versa. By following a panel of SMEs, I can mitigate concerns that the initial ownership stakes of the corporate insiders may precede performance.

### 4.3 Constructing the Sample of SMEs

On average, there were 200 IPOs each year from 2000 to 2009 (my calculation based on IPO data from Investcom Group 2010). However, many of these IPOs are financial investment vehicles and are not counted by sources usually consulted by the investing public (PriceWaterhouseCoopers 2010, pg.2).

Accurately constructing a firm's history across time is a straightforward procedure. In order to track changes to firms over time, information listed in the *Financial Post Survey of Industrials* (Financial Post 2010b) each year is linked to the following year using information on corporate name changes that is given in every edition of the *Survey of Industrials*. Any discrepancies in the information are resolved by consulting the original filings using the *System for Electronic Document Analysis and Retrieval* (SEDAR), available online at *sedar.com* (CDS Inc. 2012). Major changes can indicate that a firm has changed so much that it is effectively no longer the same organization. If this occurs, it is dropped from the analysis. For example, a reverse takeover – when a public company is taken over by another company that wants to be publicly listed – can result in an entirely different business being listed. All data sources are summarized in Table 4.1.

Three main sources supply most of the data for this research. Corporate information is drawn from the *FP Survey of Industrials* (Financial Post 2010b). Detailed director information is taken from the *System for Electronic Disclosure by Insiders* (SEDI) (CDS Inc. 2010). This publicly available website ([www.sedi.ca](http://www.sedi.ca)) contains all of the publicly listed companies in Canada and detailed accounts of all executive holdings in the corporation. By law, SEDI has to be updated within five days of any purchase or sale of equity by corporate insiders. The definition of an insider, in this case, is anyone who knows about internal planning decisions in the corporation or owns a significant portion of the stock (10 percent of shares or more). However, SEDI has only been active since 2003, so the observation window of this study is between 2003 and 2010 (see Figure 4.1).

Table 4.1: Sources of corporate information

Name	Publisher	Information
Inter-Corporate Ownership database	Statistics Canada	Corporate ownership structure
FP Survey of Industrials	Financial Post Media	Annual profile and financial data
System for Electronic Disclosure by Insiders (SEDI)	CDS Inc.	Detailed insider ownership ( <a href="http://www.sedi.ca">http://www.sedi.ca</a> )
System for Electronic Document Analysis and Retrieval (SEDAR)	CDS Inc.	Public corporate filings ( <a href="http://www.sedar.com">http://www.sedar.com</a> )
List of IPOs in Canada	Investcom Company	Canadian IPOs between 2000–2010 ( <a href="http://ipo.investcom.com">http://ipo.investcom.com</a> )
<a href="ftp://ftp.cdnx.com">ftp.cdnx.com</a>	Toronto Stock Exchange	Security prices of firms on the Venture Exchange ( <a href="ftp://ftp.cdnx.com">ftp://ftp.cdnx.com</a> ).
<a href="http://infoventure.tsx.com">infoventure.tsx.com</a>	Toronto Stock Exchange	Information on Venture Exchange firms (name changes, insiders, shares outstanding, etc.)

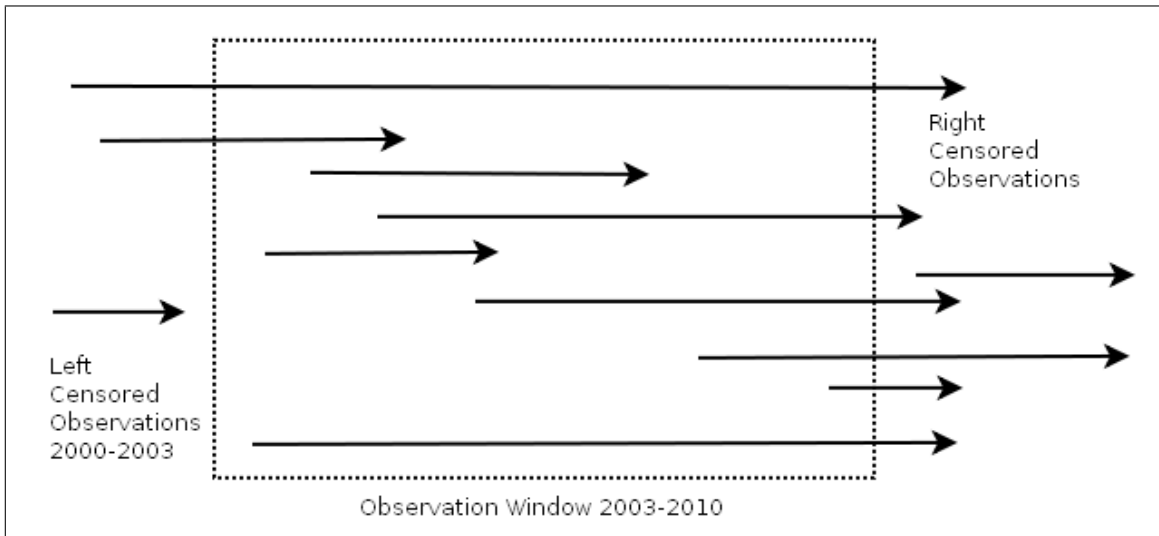


Figure 4.1: Observation Window 2003-2010. Lines represent firm histories. The dotted square is the observation window.

The annual listings of IPOs in Canada are drawn from an investment website, ipo.investcom.com. This is derived from the original IPO prospectus filed at the SEDAR website (Administration at investcom.com 2011). This is a complete list of Canadian IPOs. However, for the purposes of this research, a number of these listings need to be removed because they do not meet the criteria of this study. Some research reports remove structured products, a type of investment vehicle, from their total counts of IPOs (PriceWaterhouseCoopers 2010). Similarly, in this study, I exclude these structured products, and all financial corporations, in addition to resource-based IPOs.

### 4.3.1 Missing firms

There are a number of cases in which the data had to be cleaned or, in some cases, firms removed from the panel. Firms are removed from the sample in cases where information for them could not be found in any data source – either the *FP Survey* or SEDI. Overall, there are very few firms that could not be found.

Once collected, the data was cleaned to remove duplicate entries for firms. Duplicate entries were recorded because the *FP Survey* would often republish a particular firm’s financial statements the following year. This may have happened because the firm delayed publishing information, or the *FP Survey*’s publication schedule perhaps conflicted with the firm’s reporting period. Other rare, problematic cases that were removed consisted of cases where a firm split into two firms.

## 4.4 Creating the Panel for Data Analysis

There are a number of supplementary data sources that need to be consulted in order to create the final panel of firms and directors for data analysis. This section outlines the key sources and procedures used to merge the information gathered from these sources into panel data organized by firm-year observations.

The general approach is to follow a firm over time. This is done by constructing a panel of firm-year observations. The process is as follows:

1. Firm names are drawn from the list of annual IPOs. Each firm is assigned a unique identifier so that if the firm changes its name it can still be identified in subsequent years.
2. In each year, the name of each firm is verified using the Financial Post's *Survey of Industrials*. Direct matches are recorded. Each firm is also checked to see if the name changed that year or if the industry code changed.
3. In cases where an exact match is not found, a confirmatory search is performed in the *Survey of Industrials* corporate name changes and mergers information. If the name has changed, step 1 is repeated with the new name.

From these searches, it is possible to determine whether the firm is still in operation, if it has changed its name, or ceased to exist. A basic firm-year history can be formed in order to collect information with greater ease from other sources.

It is important to note that firms often do not immediately appear in the panel in the year of their IPO. In order to be included in the analysis, firms must have a complete year's worth of financial information. In practice, this criteria means that it can be up to three years from the time a firms undergoes an IPO until it is published with a full year of data in the *FP Survey of Industrials*. There are a number of reasons for this time lag. The primary reason is that the *FP Survey of Industrials* is



published once a year, so that if a firm IPOs after the date of publication it will not be included in that edition. Next, the criteria that a firm must have a complete year's worth of financial data means that there may be a time lag before it is captured by the *FP Survey of Industrials*. This publishing lag is one of the reasons that firms that underwent an IPO from 2000 on are included in the panel.

#### 4.4.1 Details of Constructing the Panel

In order to construct the panel of firms over time, a number of steps were taken. Each step was codified so that it could be reproduced, if necessary. The first step involved extracting information from the *FP Survey of Industrials*. In order to do this, the PDF files were converted to HTML and then the HTML files were parsed. This conversion was done for convenience because HTML is a structured document type and was easier for me to work with.

Each firm in the *FP Survey of Industrials* is written up in the same way. There is a series of section headings that are further subdivided with bolded subsection headings. These section and subsection headings were used as the basis for a simple parser. The parser extracted the data from each of the sections and generated a file that was then read into an SQL database table. The parser extracted information for all Canadian public firms into this firm table. Over the period of interest, approximately 21,000 records were extracted. In subsequent steps, only the SME industrial firms that are of interest to this study are used.

In each *FP Survey of Industrials* there are also separate tables at the end of the document detailing firm name changes and their industry classification. From each annual edition of the *Survey*, this information was transcribed into a separate SQL table. This name change table was used to accurately track a firm across time, even if it underwent a name change. In the final step of this process, a “life-history” of each firm was constructed by joining firm observations across years. In the event of a name change, the new name was used to ensure that each firm was accurately followed. Firms that are acquired by other organizations are censored from the analysis. All of these steps were performed using the SQL database language so they are easily reproducible. See Figure 4.2 for an outline of the process.

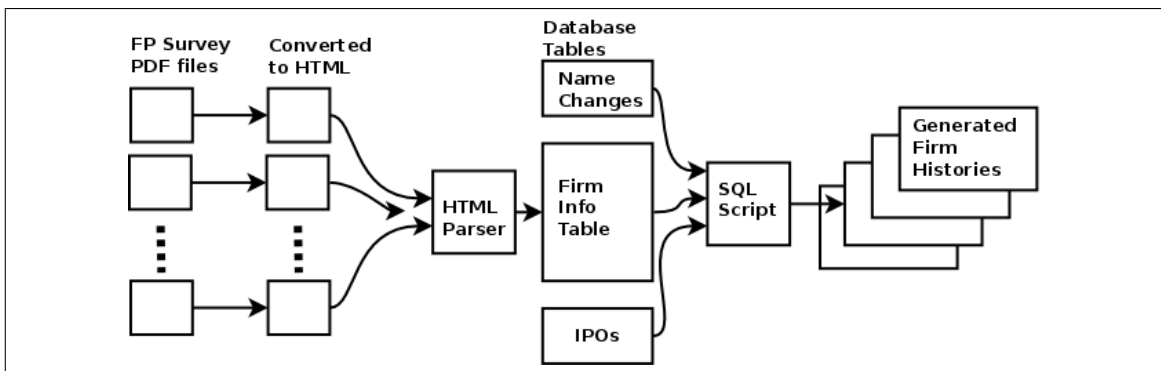


Figure 4.2: Process of creating panel of firms from FP Survey of Industrials PDF files

## 4.4.2 Industry Codes

Some background needs to be given regarding the diverse number of industry code systems that appear in data sources used in this study. In particular, three classification schemes are prevalent in the data sources used. The oldest system still in use is the Standard Industrial Classification (SIC). This system was found wanting because it lacked classifications for more modern industries and there were difficulties comparing across nations. As a result, the North American Industry Classification System (NAICS) was developed by national governments to reconcile differences between Canadian and US industrial schemes (for listings of SIC and NAICS standards, see Statistics Canada 2011) However, business groups and industry have found that these systems often do not meet their criteria.

Usually firms are assigned to categories depending on what they produce. However, it is often unclear how companies are assigned to particular categories. In answer to this problem, Standard & Poor's and MSCI/Barra developed the *Global Industrial Classification Standard (GICS)* (Standard & Poor 2006). Developed by leading financial industry analysts, this scheme categorizes companies mainly according to where their revenues are derived from – as opposed to what goods they make. Each of these schemes appear in different contexts and there is often no clear concordance between the classification schemes.

This paragraph describes how I handle missing GIC codes in this study. In the panel of firms in this study, a corporation's GIC code may not be listed for a given year, or the GIC code may change over time. In cases where the GIC is not listed but the industry category is the same in the previous and following years, I insert the same GIC code. In cases where the GIC code changes but one or a number of observations in between have no assigned GIC code, I automate an approach which I also manually verify. The automated approach uses term-frequency, inverse document frequency (TF-IDF) using the profile information for the firm that is supplied in each year of the *FP Survey of Industrials*.

## Details of Industry Code Process

TF-IDF makes use of firms with known industry codes in order to classify firms with no listed industry code. The process, although complex in the details, boils down to a series of intuitive steps. The first step is to separate firm listings that include industry codes from firm listings with no industry code. The collection of firms with industry codes that we know make up the corpus of documents. The next step is to subdivide the corpus of known documents into groups based on which industry category each firm is classified into. The final step is to consider the description that is associated with each firm in the *FP Survey of Industrials*. Each firm listing contains a brief description, also referred to as a profile, outlining the firm's business. The TF-IDF approach uses information from each firm's profile to properly categorize firms without an industry category by comparing how similar the firm's profile text is to the description of firms with a known industry code. The paragraphs that follow elaborate on this procedure.

In order to properly compare the text from firm descriptions, the unique words that are specific to particular industries need to be determined. These industry-specific words need to be used to help classify firms with no listed industry. Similarly, common words such as “the”, “if”, “and”, etc. need to be ignored. The industry-specific words are separated from the more common words by considering their frequency within each known industry group and then to the corpus as a whole. TF-IDF essentially applies a weight to each word based on how often it appears in the collection of firm descriptions from a particular industry relative to the corpus of all known firms. Industry specific words such as “auto”, “car”, “manufacturing” may appear more in auto manufacturing firms but not at all in software related firms. Common words like, “and”, “or” and “the” will likely appear in all of the profile descriptions. Therefore, if we count the number of times each word appears and then divide that by the total number of words in the firm's description, we know the term-frequency. The inverse document frequency considers how rare a given word is compared to all of the descriptions in the entire corpus – this measure is the proportion of documents with the word over all of the documents in the entire corpus. By

dividing the term-frequency (TF) by the inverse-document frequency (IDF), we end up with a number representing how unique the word is.

The mechanics of document classification involve comparing the TF-IDF score of each unknown document and seeing how similar it is to known documents. This is done by creating a vector of all word scores for each firm profile. For any given profile, it is unlikely that all of the words in the corpus will appear, so the vector will contain zeros instead. More common words in the description will have low scores and less common words will have higher scores assigned to the vector. Since we are given certain industry groups, it is possible to average their word-score vectors to create a single industry-average vector.

The result of this process is that there are now a series of word-score vectors representing each high-level industry. The final step involves simply comparing the vectors generated from those firms where we are not given the industry category to the average industry vectors. This comparison can be done using cosine similarity – this measures the cosine of the angle between two vectors. The smaller the angle between the two vectors, the more similar the vectors are. Thus, firms can be assigned an industry category by seeing how similar their description is to the descriptions used by other firms in known industries.

For introductions to some of the important tools and methods involved, see Stray (2010), Ingram (2007), Grimmer (2011), and Pal (2011).

### 4.4.3 Insider Relationship Information

The information about linkages between individuals and their ownership in the firm is determined through *SEDI*, the *System for Electronic Disclosure of Insiders*. SEDI contains a listing of all of the shares owned by all corporate insiders for every Canadian public company. Using the information from SEDI, the entire interlock network of all firms was determined. However, this study uses information from SEDI to focus on the relationships between corporate insiders within each firm.

In order to extract the necessary information about each corporate insider from SEDI, a series of small scripts were written to “scrape” the SEDI web site. In each case, the following process was used to collect data on insiders:

1. The name of the company is searched for, and the names of all of the associated corporate insiders are recorded.
2. Each of the names of the corporate insiders are searched for, and their personal details are extracted from the site.
3. Finally, all of the trades every insider has made with all public firms they serve with are recorded.

The resulting insider and trading information was also inserted into SQL database tables. The trading table consists of an entry for each trade for each company on any given date. Not surprisingly, this table is large – with over 400,000 entries – but it allows me to calculate the ownership stake of any given insider in a firm over any span of time. In Canada, insiders are required by law to report their shareholdings and trades in SEDI. However, the system may contain errors when insiders make mistakes when reporting (McNally & Smith 2010).

#### 4.4.4 Bringing the Data Together

The final step was to bring all of the data together into a reasonably flexible format. In particular, I needed to integrate firm information with insider ownership information. In order to accomplish this goal I used an object-oriented framework to encapsulate the data. In essence, by using object-oriented programming, I was able to simply “ask” a firm object to return its object representation of its collection of insiders, which I could then query about their ownership stake in the firm over any particular period. This simplified what could have otherwise become an unwieldy processes. The relationship is shown graphically in Figure 4.3. The overview of how the *FP Survey* and *SEDI* information is related is shown in Figure 4.4.

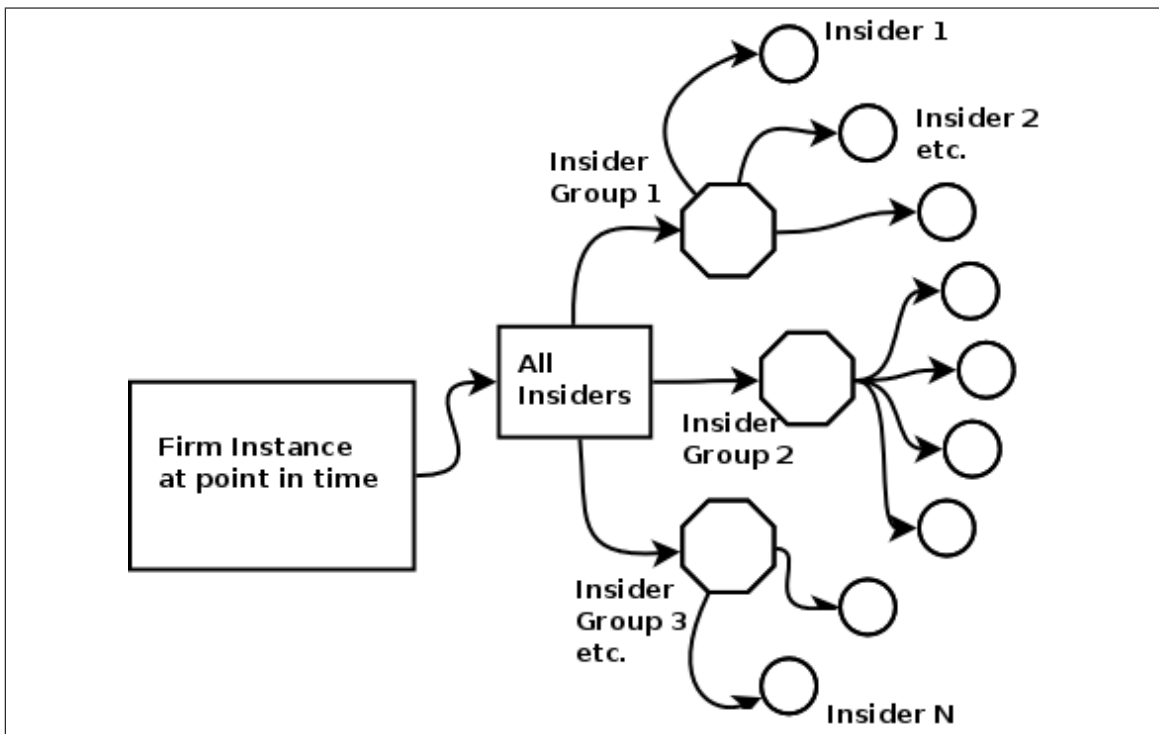


Figure 4.3: Data encapsulation – firms in any given range of dates contain all insiders, which in turn contain groups of related insiders, which in turn contain individual insiders.



Some note should also be made at this point about the presence of multiple classes of voting shares. There were very few companies that had multiple classes of shares. In the vast majority of cases, each share is worth one vote. However, in cases where there are multiple votes assigned to each share, great care is taken to appropriately allocate voting shares to individuals. For example, if an individual owned super-voting shares that gave them 10 votes per share, then I took great care to ensure that the individual was analyzed according to the number of votes he had, not the number of shares he owned. This was done to help ensure that controlling shareholders were correctly identified as such. Additionally, care was taken in tracking the current number of shares outstanding for each firm to ensure that additional share issues or consolidations of shares outstanding were accurately tracked.

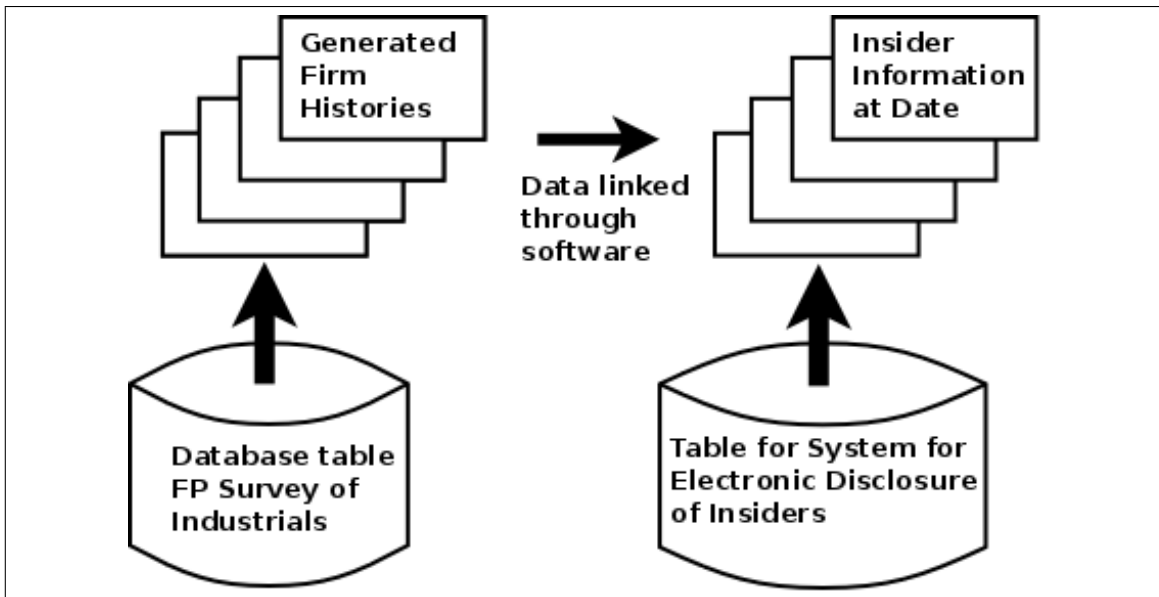


Figure 4.4: Data sources – The information below shows the main data sources and how they are related.

## 4.5 Analytical Approach

This is a quantitative study designed to examine the association between corporate governance in Canadian industrial SMEs and their performance on the public market. This research uses a series of fixed-effects and random effects regressions to attempt to model this relationship. In the subsections that follow, three topics important to successfully modelling the relationship between performance and governance are discussed.

The first section gives a general overview of network models and explains how whole-network models differ from so-called ego-centric type network models that are utilized in this study. The next section considers a problem common to all social science models – potential bias caused by endogeneity. This section contains a brief review of some potential approaches and trade-offs to dealing with endogenous variables. The regression modelling technique chosen in this study is situated within these various approaches. The last section discusses fixed-effects regression models and random effects models and how they are related. These methods are important when dealing with a panel of individual subjects that change over time.

### 4.5.1 Ego-Centric Network Models

There are two main approaches to studying networks. One is the whole-network approach and the other is an ego-centric network model (sometimes known as person-centric). Whole-network studies focus on social collectives – groups of actors that are related due to some predefined characteristic. Ego-centric networks focus on a sample of individuals (in this case, firms) drawn from a population. Each individual in the sample is referred to as an “ego” and the immediate network surrounding each ego is composed of individuals known as “alters.” Ego-centric studies are limited to the immediate network surrounding each individual (Marsden 2005, pg. 8-9). Although whole-network data is generally considered ideal, it is often not feasible because of the high costs of collecting data. Ego-centric approaches are often preferred because of their focus on the immediate population of interest. In this study, the industrial firms that underwent an IPO between the years 2000 and 2010 are the “egos” of interest. Rather than other firms, the linkages that are considered in this research are to the corporate insiders that are charged with both running and overseeing the firm. One of the main advantages of the ego-centric approach is that it is compatible with random sampling approaches and regression analysis because the ego-centric approach does not violate the independence assumption required for regression analysis.

Network studies that utilize ego-centric network approaches often suffer from recall problems; the “egos” in the study may not recall who they are connected with and the strength of those connections to alters (Marsden 2005). This study avoids this problem through the use of the *System for Electronic Disclosure by Insiders (SEDI)* database (CDS Inc. 2010). This database captures ownership information for corporations and individuals. The database also retains historical ownership information for defunct or acquired companies. One of the disadvantages of the SEDI database is that it does not reveal detailed information about prior work experience, demographic information or relationships of directors with non-public entities.

To some extent these shortcomings can be mitigated through positional measures (Burt 2000, Lin 1999). Positional measures are indicators of position within

a network. Examples of positional measures include the highest-status person of an individual's contacts. Another may be the diversity of occupations that an individual interacts with (Burt 2000, pg.11-12 Appendix). In both cases, there is not detailed information about the network relationship, but there is an indication of the types and diversity of social networks an individual may be exposed to. In this study, positional measures are the official titles of the corporate insiders that indicate whether they are directors or executives. The advantage of this information is that, while it lacks detail, it is relatively easy to collect and gives an indication of the different types of relationships an individual is engaged in (see Burt 2000, for discussion). Quantitative studies of boards of directors and firm performance tend to use aggregated measures of group characteristics rather than rely on detailed individual characteristics.

## 4.5.2 The Problem of Endogeneity

One important concern in the corporate governance literature is that most governance variables within models are arguably endogenous to some degree. In other words, explanatory variables themselves may possibly be explained by the other variables in the model. Major concerns can arise when explanatory variables are correlated with the error term of a regression. In the worst case, extreme endogeneity may cause a model to be biased unless some preventative action is taken.

Three main problems may cause inconsistency in OLS estimates. Measurement error is one possible cause of endogeneity. In this case, the measurements used in the study may not be an accurate reflection of reality. A simple example could involve a survey question that is phrased in such a way to elicit a certain response. If this is the case, then the resulting measurements will be biased.

Another problem is simultaneity bias – also known as instantaneous causation. When events take place at the same time, it becomes difficult to unravel causal relationships. Finally, omitted variables bias – variables excluded from the regression that are nonetheless related to other explanatory variables – make it difficult to accurately unravel causal relationships between variables. Omitted variables can lead to bias in the regression if they are correlated with other dependent variables (for a full discussion of these issues, see Wooldridge 2001).

In applied social science work, some degree of endogeneity is common – this is also true for governance research (Adams, Hermalin & Weisbach 2008). There are different techniques to attempt to mitigate the effects of endogeneity. One basic approach – the approach used in this dissertation – is to ensure that there is a time lag between the dependent variable of interest and the explanatory variables. In panel models, a lag of the dependent variables is taken to ensure that the variables of interest do not change due to the same circumstances as the independent variable. Theoretically, if we want to show causation, we need to ensure that the explanatory variables appear prior to the event of interest. This approach assumes that there

exists relationship between past explanatory variables and those that explanatory variables that evolved simultaneously with the dependent variable. While not a perfect solution, this approach helps to mitigate simultaneity bias (for a discussion of trade-offs involved with different methods, see Nichols 2007).

Other approaches to the problem of quantitatively determining causality include the use of simultaneous equations. In work utilizing this approach, multiple equations are created containing the dependent variable of interest and separate equations estimating the potentially endogenous regressors. Simultaneously estimating these equations is said to reveal the distinct relationships between variables. The disadvantage of this approach is that a single misspecified equation in any step can bias all of the regressions (Hayashi 2000, Ch.4).

Instrumental variables (IVs) is the preferred method of choice for determining causation by many economists. In instrumental variable regressions, endogenous variables are modelled by adding so-called instrumental variables. These instruments are (ideally) highly correlated with the endogenous variable of interest, but not related to the errors in the main regression of the dependent variable. Instrumental variables are theoretically capable of helping to unravel causal relationships by removing endogeneity. IVs refine the part of the endogenous variable of interest into a portion that is highly correlated with the dependent variable of interest, but no longer correlated with the error term. In practice, however, finding and utilizing proper instruments is difficult (Adams et al. 2008). Using poor instruments can often lead to incorrect conclusions. Additionally, what constitutes a good instrument is often not clear. Using improper instruments can result in bias (Baum, Schaffer & Stillman 2003, Hayashi 2000).

Given these options, this research uses the basic approach of lagging the explanatory variables one period from the dependent variables. While this approach may be open to criticism, it maintains the advantage of being relatively simple and easily verifiable. Beyond a randomized experiment, there is no ideal way to determine causation in the social sciences (Nichols 2007). As previously noted, simultaneous

equations are susceptible to bias if one equation is misspecified. Similarly, an instrumental variables approach is also open to bias if improper or weak instruments are used with suspected endogenous covariates. In summary, short of a randomized clinical trial, there are no perfect approaches for those interested in determining causality in quantitative social studies.

The following section discusses more in-depth the panel data methods used in this study.

### 4.5.3 Overview of Longitudinal Regression Models

Longitudinal data presents a number of problems that need to be accounted for by any regression technique. The main approaches for dealing with longitudinal data make use of fixed effects or random effects. The sections that follow will review and relate these techniques in order to make clear the approaches used in the analysis.

When examining longitudinal panel data – data collected on a series of individuals over time – ordinary regression techniques are insufficient. One of the fundamental assumptions of ordinary regression – or Ordinary Least Squares (OLS) – is that all of the observations are independent. Clearly, however, this assumption is violated when we consider data collected about individual subjects over time. It is reasonable to expect that observations of a subject – in this study, a firm – remain similar over time. Because it is more natural to assume that changes are gradual and not discontinuous there is a very strong likelihood that there is serial correlation between the observations of an individual. This correlation can be controlled for in a number of different ways using the panel data methods described below.

#### Fixed Effects Regression

Perhaps the most straightforward approach to dealing with serial correlation between the observations of a subject over time is to apply fixed effects regression analysis. The fixed effects approach removes all of the time-invariant aspects of the observations from the analysis. Thus, the focus of the analysis is on how the variables we are concerned with change *within* the subject over time. To accomplish this, the fixed effects regression subtracts the subject mean of each variable from each observation. After this operation, only the variables within the subject that have changed over time remain. Static variables that do not change over time are completely removed from the analysis.

One of the disadvantages of the fixed effects approach is that static variables that do not change over the time are simply removed from the analysis. Fixed effects



regressions can't tell us anything about the potential importance of variables that do not change over time, or change very little over time.

The key advantage of fixed effects estimates is that they are unbiased. However, the standard errors on fixed effects models may not be the most efficient. In appropriate circumstances, the random effects estimator is potentially more efficient and therefore a better choice. However, if improperly applied, estimates from a random effects regression can be biased. Before discussing the random effects approach, it is first necessary to consider population average models.

## **Random Effects Models**

Fixed effects estimation is guaranteed to be consistent but not efficient. In contrast, random effects models can be more efficient but they may not be consistent. Random effects models are a weighted average of the within and between regressions previously discussed (Rabe-Hesketh & Skrondal 2008, pg.113). This methodology exploits differences between individuals to gain greater efficiency than the fixed-effects method can.

In order to do this, the random effects model assumes that the error term is uncorrelated with the regressors (Nichols 2007, p.514-5). A Hausman test of over-identifying restrictions is used to test to ensure that a random effects model is applicable by comparing the asymptotic variance of the fixed and random effects estimators (Hayashi 2000, pg.335). If the Hausman specification test fails, then the fixed effects estimation should be used because the random effects estimation could give biased results.

The next section outlines some important descriptive statistics of this study.

## 4.6 Descriptive Statistics

This research involves the collection of information about the population of public SMEs that underwent an IPO between 2000 and 2010 in Canada. In the following sections, some relevant information about these public firms is outlined. Relatively little information exists pertaining to public SMEs in Canada. This is unsurprising since larger firms are more often subjects of scrutiny; they have more assets under their control, employ more people, and potentially offer more stable returns to investors. Smaller firms are a riskier investment. They have fewer resources to sustain themselves when their strategies go awry or product development fails. Despite these risks, the growth potential for some innovative firms can be large. The risk associated with smaller firms implies that corporate governance should be a major concern of investors.

In this section, a number of basic descriptive statistics are discussed. The subsections that follow contain some general summary statistics of the variables of interest in this study and information about firm industry categories. Included is an overview of firm size by market capitalization and number of employees. The final portion of this section discusses matters related to insider ownership and family ownership.

## 4.6.1 Summary Statistics

Table 4.2 shows basic summary statistics of the variables used in this study. The table of correlations follows; see Table 4.3. In this table, variable names have also been shortened to fit in a single page. It should be noted that some firms change industry classification over time (as discussed in Section 4.6.2). Thus, the industry classification variables will persist within the fixed effects models.

Table 4.2: Summary Statistics

<b>Variable</b>	<b>Mean</b>	<b>(Std. Dev.)</b>	<b>Min.</b>	<b>Max.</b>	<b>N</b>
West	0.439	(0.497)	0	1	760
East	0.224	(0.417)	0	1	760
Ind. Auto	0.157	(0.364)	0	1	760
Ind. Computer	0.391	(0.488)	0	1	760
Ind. Health	0.33	(0.471)	0	1	760
Ind. Consumer	0.054	(0.226)	0	1	760
Ind. Transition	0.067	(0.25)	0	1	760
Crisis	0.503	(0.5)	0	1	760
Ln (Assets)	8.256	(1.749)	1.053	12.266	760
Leverage	0.171	(0.626)	0	11.077	760
Patents	1.375	(7.932)	0	94	760
Ind. Dirs.	0.451	(0.31)	0	1	760
<i>CEO</i>	0.066	(0.122)	0	0.833	760
<i>CEO</i> <sup>2</sup>	0.019	(0.06)	0	0.694	760
<i>CEO</i> <sup>3</sup>	0.008	(0.038)	0	0.579	760
Eff. Control	0.561	(0.296)	0	1	760
Family	0.143	(0.351)	0	1	760

Table 4.3: Correlations

Variables	West	East	Auto	Comp	Health	Cons.	Trans.	Year	L. Assets	Lev.s	Patent	Ind. Dirs	CEO	CEO <sup>2</sup>	CEO <sup>3</sup>	Control	Family	Dirs	
West	1.000																		
East	-0.472	1.000																	
Auto	-0.062	-0.032	1.000																
Comp	0.012	-0.023	-0.342	1.000															
Health	0.006	0.114	-0.302	-0.554	1.000														
Consumer	0.093	-0.059	-0.111	-0.203	-0.179	1.000													
Trans.	-0.035	-0.068	-0.116	-0.212	-0.187	-0.069	1.000												
Year	-0.114	0.014	0.009	-0.014	-0.022	0.050	0.007	1.000											
L. Assets	-0.228	0.091	0.215	-0.192	0.025	0.009	0.007	0.132	1.000										
Lev.	-0.052	0.075	0.120	-0.040	-0.035	-0.017	-0.014	0.073	0.026	1.000									
Patent	-0.027	0.079	0.238	-0.130	-0.013	-0.039	-0.033	-0.043	0.160	0.002	1.000								
Ind. Dirs	-0.225	0.137	-0.012	-0.112	0.150	-0.125	0.074	0.094	0.234	-0.045	0.125	1.000							
CEO	-0.053	0.114	0.077	0.037	-0.096	0.043	-0.046	-0.006	0.007	0.016	0.018	-0.086	1.000						
CEO <sup>2</sup>	-0.078	0.132	0.057	0.025	-0.092	0.078	-0.035	0.023	0.045	0.003	0.025	-0.038	0.872	1.000					
CEO <sup>3</sup>	-0.085	0.128	0.048	0.016	-0.088	0.101	-0.032	0.039	0.056	-0.000	0.042	-0.005	0.733	0.956	1.000				
Control	-0.089	0.081	0.093	0.004	-0.068	-0.024	0.007	-0.047	0.085	-0.017	0.088	0.187	0.199	0.179	0.143	1.000			
Family	-0.096	0.078	0.184	-0.077	-0.071	0.036	-0.019	0.004	0.079	0.082	0.011	-0.026	0.168	0.151	0.153	0.151	1.000		
Dirs	-0.038	0.112	0.008	-0.106	0.004	0.128	0.064	0.205	0.110	-0.016	-0.010	0.281	-0.042	0.011	0.057	-0.152	0.106	1.000	

## 4.6.2 Industry Categories

This research makes use of the *Global Industrial Classification Standard (GICS)* (Standard & Poor 2006) in order to classify firms by industry. As previously noted, in Chapter 4 (Section 4.4.2; Industry Codes), the GICS scheme was developed by financial analysts to classify firms according to their main sources of revenue. The GICS scheme seems well-suited for firms in this study because it relates their industry category to the activities from which they raise their revenues. However, some difficulties arise because some firms get the revenues through different industries over time as their business model changes.

The table that follows lists the GICS categories of the three main industrial activities of interest in this study. The four broad industry categories are (i) auto and machinery, (ii) computer equipment and software, (iii) biotechnology and health-related products, and (iv) consumer products.

Large companies generally tend to stay within their industry categories over time. However, in this study, it is not unusual for firms to change industry categories as their business changes. For the most part, these industry transitions can be credited to the firm finding new sources of revenue for existing products or services, or developing related products. For example, one company called *HealthPricer Interactive* initially was classified as a “health” company because it sold dietary supplements. Over time, it was reclassified as a “software and services” company because its main product became a health products-related search engine. In all, 28 firms in this sample – approximately 14 percent – have undergone a change significant enough to their business model to merit a change in industry classification.

All of the firms in this study are SMEs with fewer than 200 employees – see Population Under Study (section 4.2) for discussion. For these SMEs it is possible to rapidly transition between industries. As a result of the transitions between industries, firms are included in the study depending on if they had ever served in an industry of interest at some period over the course of their existence.

Table 4.4: Broad 4-digit GICS categories of interest in this study

GICS Code #	Description
2010	Machinery
2510	Auto
2520	Consumer Products
2530	Leisure Services
2550	Retail
3010	Drug and Food
3020	Brewers, Foodstuffs
3030	Personal Products
3510	Health
3520	Life Sciences
4510	Software and Services
4520	Computer Equipment
4530	Semiconductors

As noted earlier, financial firms and resource firms are omitted from this study. Resource firms are captured in another data source separate from the *FP Survey of Industrials*, and financial firms are not of interest in this study. Because the firm's main revenue sources can transition across industry categories, there are cases where industries are represented that were not part of the original selection criteria to enter the study. Table 4.5 on page 119 includes a concordance with the corresponding GICS categories related to the broad categories used in the regression models. In the table, frequency represents the number of firm-year observations that are included in the sample for a given industry. For example, there were 14 observations from different firms that changed industry and became classified as deriving a significant portion of revenues from the resource sector.

Table 4.5: Simplified industry categories used in this research

Industry Category	GICS Categories	Frequency	Percent
Computer	Software and Services	300	39.4
	Computer Equipment		
	Wireless Telecommunication		
	Integrated Telecommunication		
	Semiconductors		
Health	Health	251	33.0
	Life Sciences		
Auto & Machinery	Machinery	120	15.8
	Auto		
Consumer	Leisure Services	43	5.6
	Drug and Food		
	Consumer Products		
	Retail, Brewers Foodstuffs		
	Personal Products		
Professional	Professional Services	23	3.0
	Specialized Finance		
	Other Diversified Financial Services		
	Real Estate Management		
	Insurance Brokers		
Resource	Oil & Gas Equipment & Services	14	1.8
	Electric Utilities		
	Div. Metals & Mining		
	Specialty Chemicals		
	Forest Products		
	Paper Products		
	Oil & Gas Refining & Marketing		
	Independent Power Producers		
Construction	Construction related businesses	6	0.8
Media	Media	2	0.4
Total firm-year observations:		760	100%



### 4.6.3 Measuring Firm Size

The number of people a firm employs cannot be used directly as a criterion to include firms into the sample for study. The data source used in this research does not contain consistent employee information for all firms, for all time periods. The *FP Survey of Industrials* only has information about the number of employees for approximately 30 percent of firms in their first year of operations. Therefore, rather than use these employment numbers directly, I exclude firms from the sample based on their initial market capitalization and their total assets in the first full year of being listed on the stock exchange. I use the employment numbers that do exist for firms in the sample to verify that my chosen cut-offs appear to conform to the definition of SME used in the literature.

The chosen cut-offs are as follows. Firms with a market capitalization in their first year of operations in excess of 100 million dollars are excluded from the sample. Similarly, firms with over 50 million dollars in assets in their first year as a listed public company are also excluded from the sample. In practice, these cut-offs are not very restrictive. The vast majority of firms listed on the venture exchange are much smaller<sup>2</sup>. The distribution of employees is shown in Figure 4.5. This figure shows the number of employees in the first year of operations for firm listings with employment information. The results are a skewed distribution – the vast majority of firms employ fewer than 50 people. Figure (4.6) shows the employment by firms listed on different exchanges. These findings are consistent with Nicholls (2006).

Nearly 80 percent of the firms on the venture exchange that meet the sampling criteria of this study employ fewer than 50 people. Firms listed on the TSX appear to be larger, on average. Close to half of the firms on the TSX that meet the sampling criteria have fewer than 200 employees – with fully 25 percent of all firms employing 100 to 150 people (see Figure 4.6).

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<sup>2</sup>To ensure that the results are not driven by larger firms in the sample, a sensitivity analysis was conducted adjusting maximum assets and market capitalization in the first year both upwards and downwards. The model results showed no significant differences.

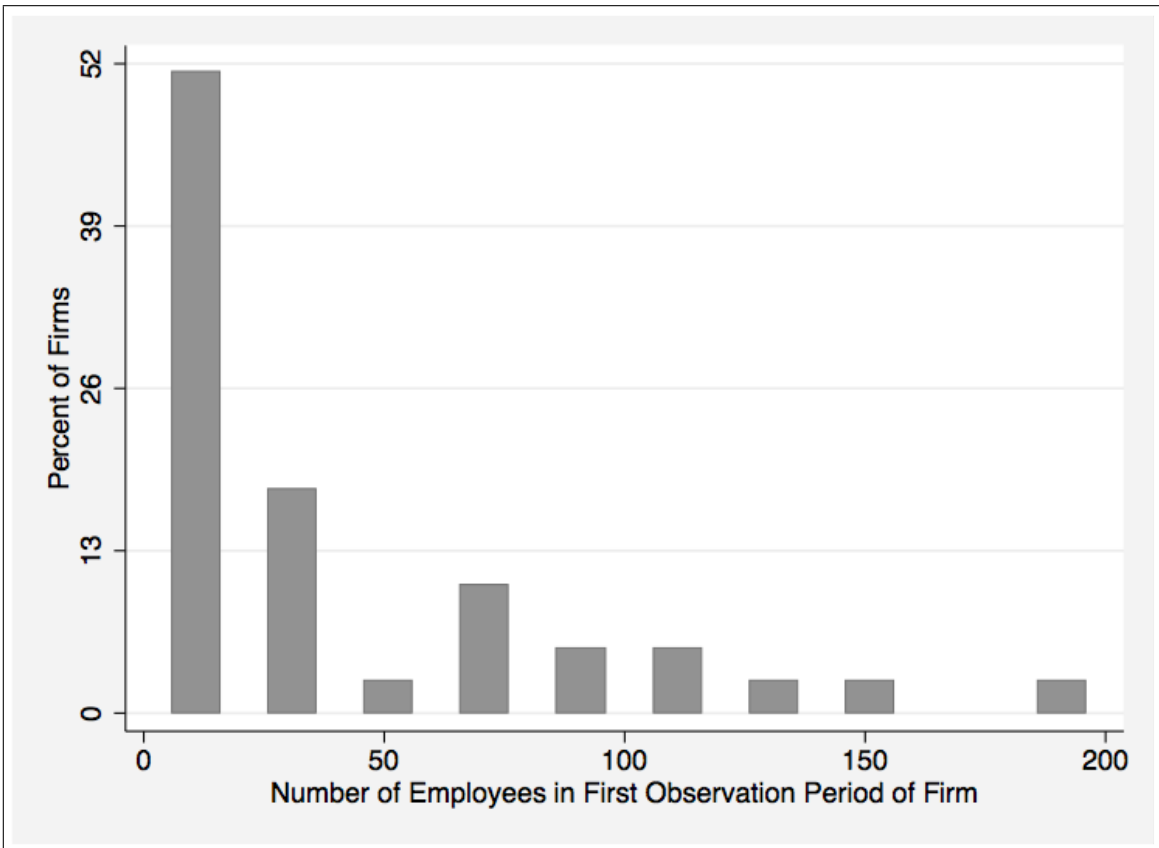


Figure 4.5: Histogram of employees of firms in their first full year of operations (bar width represents 20 employees)

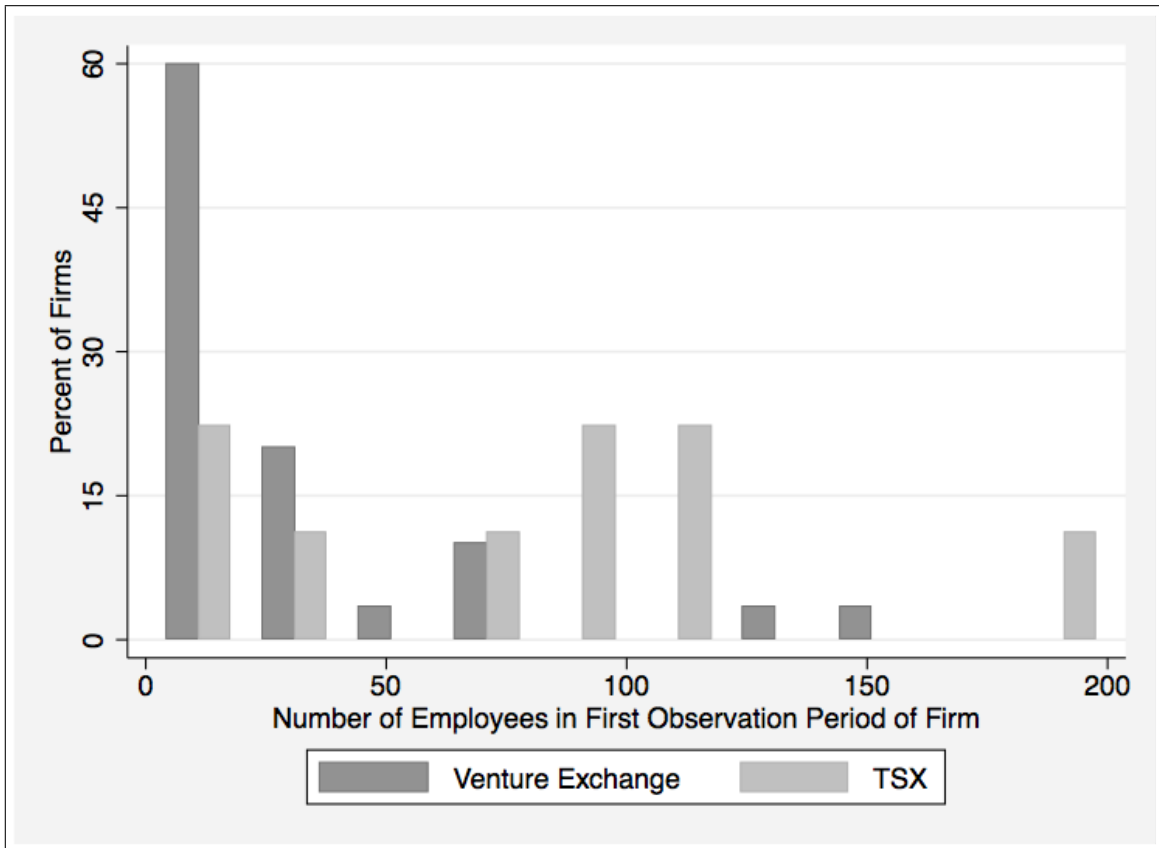


Figure 4.6: Employees of firms in their first full year of operations. Separate histograms by TSX and Venture Exchanges (bar width represents 20 employees)

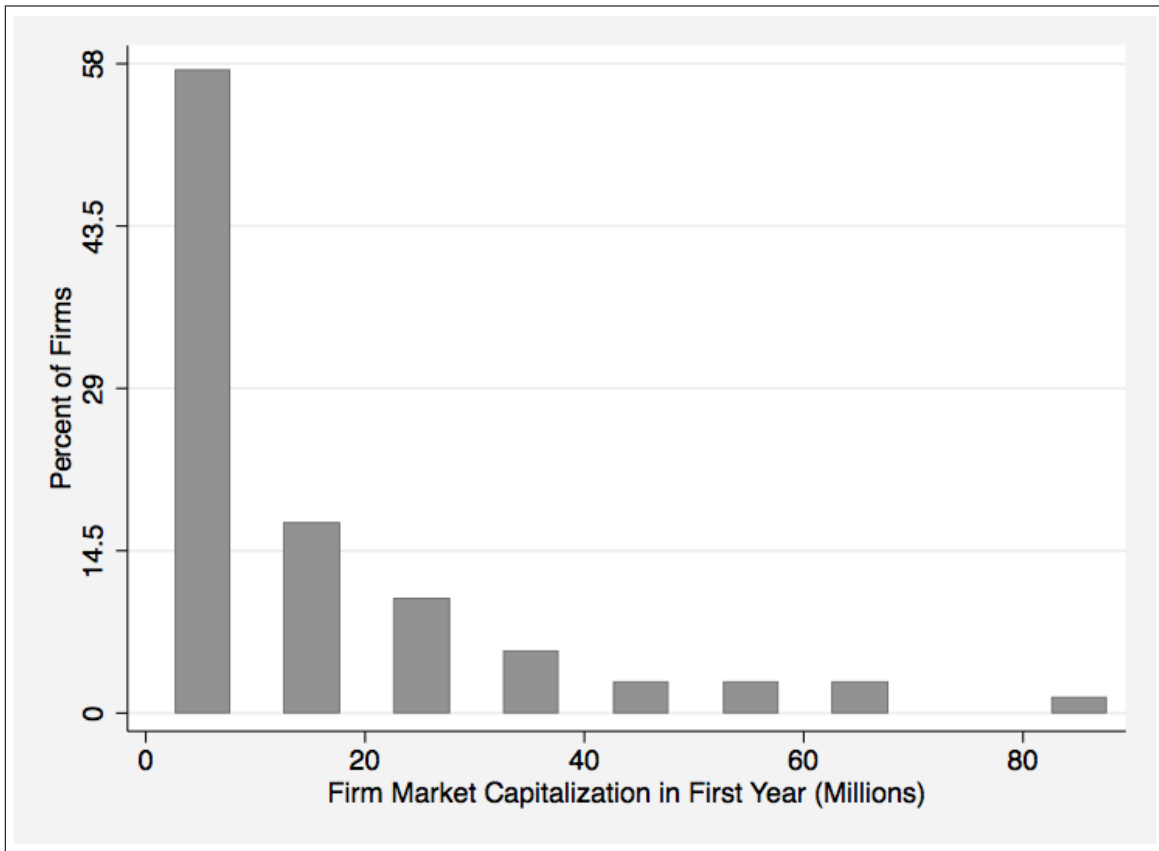


Figure 4.7: Histogram of market capitalization of firms in their first full year of operations (bar width represents \$10 million)

Perhaps not surprisingly, the vast majority of firms have a very small market capitalization – over 50 percent of the firms in this sample have a market capitalization of less than 10 million dollars in their first year of operations (see Figure 4.7). Figure 4.8 shows that this is the case for over 60 percent of firms listed on the Venture Exchange, but only a small minority of firms in the sample listed on the TSX.

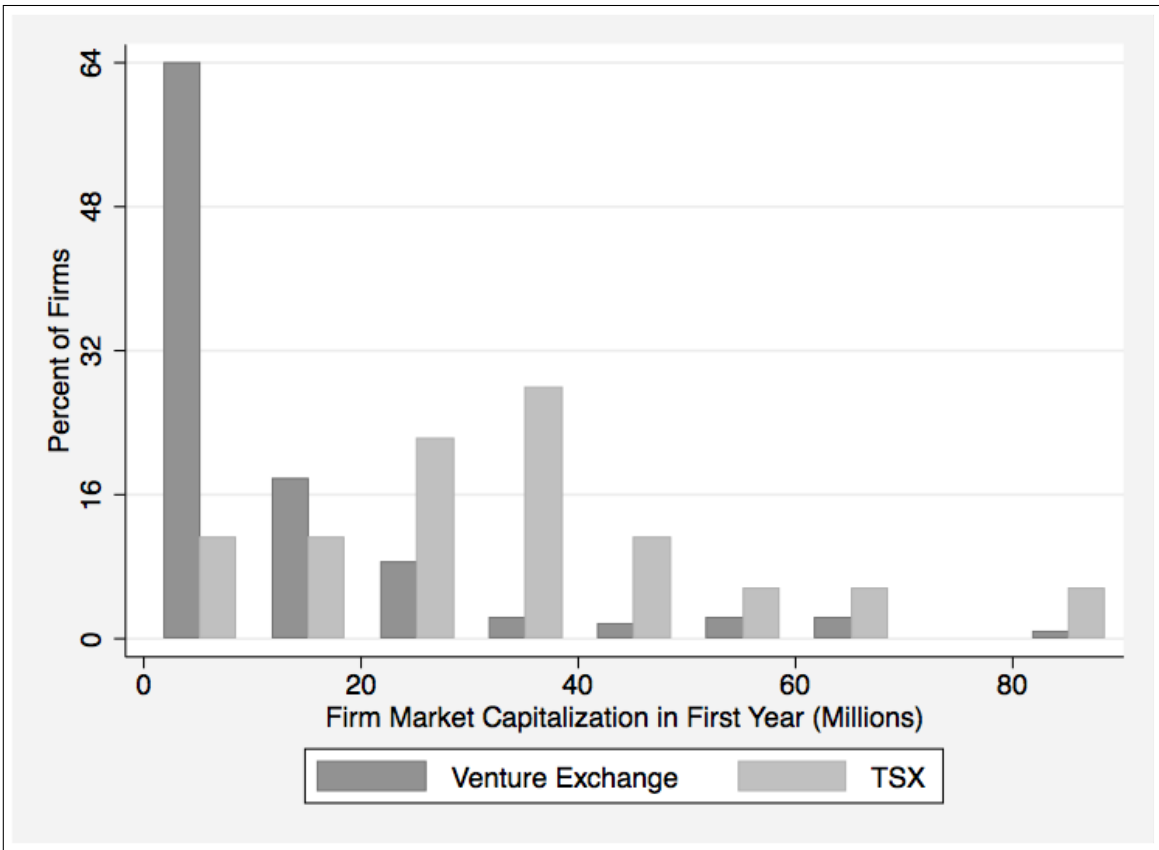


Figure 4.8: Market capitalization of firms in their first full year of operations, separate histograms for companies listed on the TSX and Venture Exchanges (bar width represents \$10 million)

## Creating the Sample

As previously noted, this study takes a one period-lag of the independent variables for the regression analysis. For this study this step was necessary in order to separate the effects of variables changing simultaneously. Governance variables tend to change slowly so there should be no major changes one year to the next. If there are major changes, they may be associated with changes in other variables. This decision also has the effect of removing all firms from the sample where there is only a single observation. Similarly, each firm loses an observation because of this lagging. The table below highlights the effect of lagging the independent variables.

Table 4.6: Observations from sample of firms taken from 2003–2010

Firms	Observations	Notes
194	760	Before lag taken
159	535	Used in regression analysis – one period lag

#### 4.6.4 Family Control

Entrepreneurs often rely on family in the initial stages of building their business. Families often provide funds when lending institutions refuse to invest, or skills when the firm cannot afford outsiders. Thus, it should come as little surprise that more than 40 percent of the SMEs in the sample have families serving as corporate insiders. Recall that in this research, a family relation is considered to be detected when two or more corporate insiders share the same last name.

Table 4.7: Family as Corporate Insiders

Family Insider Type	Number of Firms	Percent of Sample
Firms with families as insiders	83 of 194	43%
Firms with families within insider group with largest shareholdings, owning at least 10% of shares outstanding	33 of 194	17%

As Table 4.7 makes clear, members of the same family are represented on more than 40 percent of public corporations under study. However, if we consider just the insider group with the largest shareholdings within a firm, owning at least 10 percent of outstanding shares, 17 percent of firms have families as part of their largest shareholding groups. It should be noted, however, that in some cases families may enter or exit from the largest shareholding insider group (or the firm entirely). Some firms also have multiple different families serving as corporate insiders.

### 4.6.5 Firm Ownership by Insiders

In all corporate governance research, a key question is how much of the firm is owned by insiders. The following figures show the total percentage of the firm owned by *all insiders* of the corporation – not just a single individual or insider group.

In the sample of firms under study, it is clear that firms that are widely held are a minority. Table 4.9 shows that approximately 20 percent of firms observed are widely held, in that they have less than 10 percent ownership by insiders.

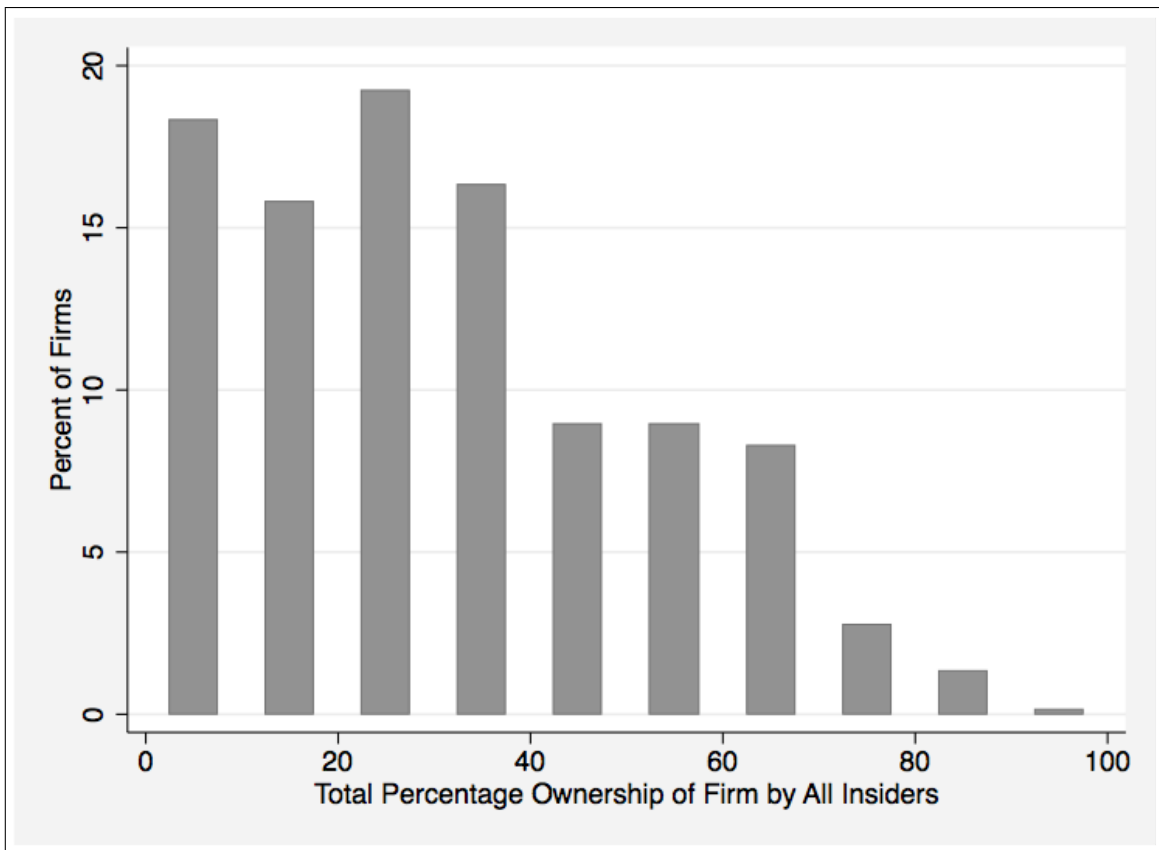


Figure 4.9: Total percentage ownership by all corporate insiders combined, all years. Each bar is 10%.



Figure 4.10 shows a breakdown of insider ownership by listed exchange. This figure makes it clear that over 30% of firms listed on the TSX are widely held. This compares to approximately 15% of firms listed on the Venture Exchange. However, considering firms where insiders own in excess of 20% of outstanding shares, there are similar levels of total ownership by insiders on both exchanges.

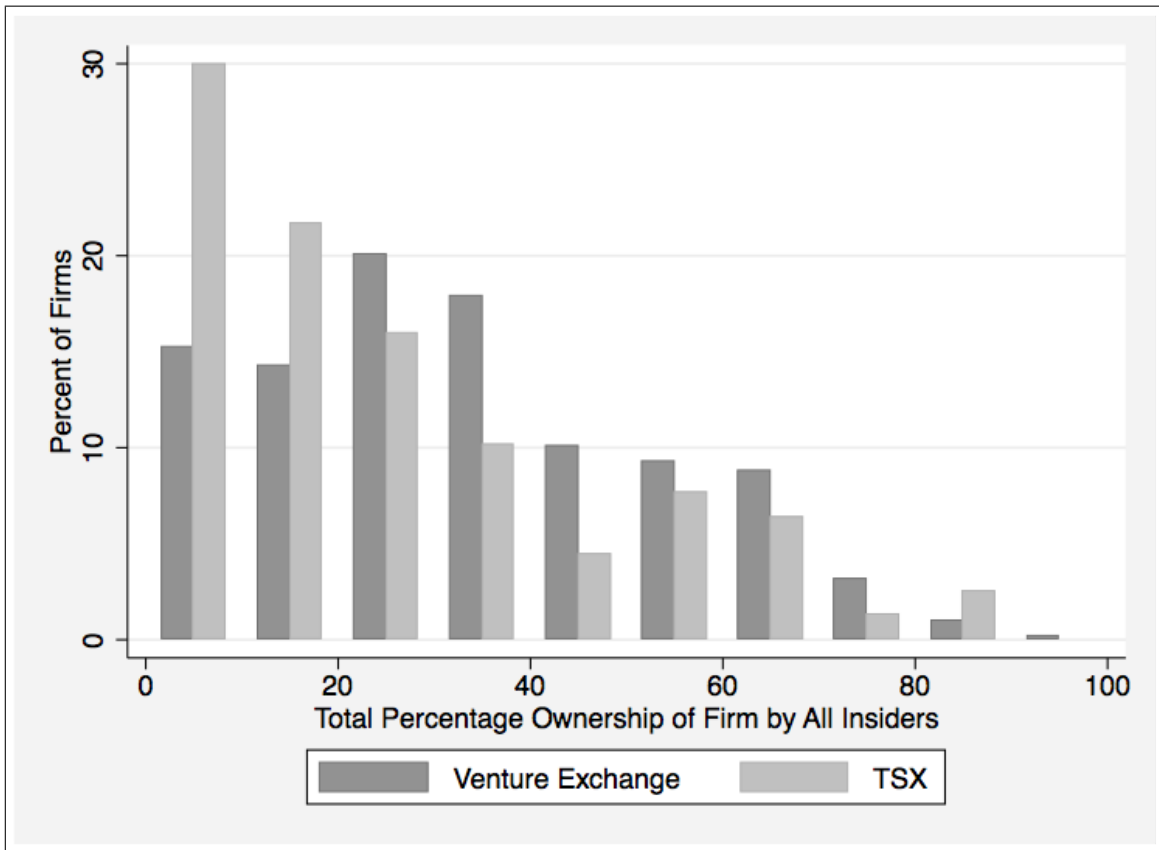


Figure 4.10: Total percentage ownership by all corporate insiders combined. Separate histograms by exchange, all years. Each bar is 10%.

### 4.6.6 Family-Run Firms

Figure 4.11 examines only firms where a family is part of the largest shareholding group versus firms that are not family-run. A family is determined in those cases where two or more corporate insiders share the same last name. This figure shows only the total ownership of firms where families are part of the largest shareholding group. In this case, I call the firm family-run. The largest difference appears beyond the 60 percent ownership level, where family-run firms appear to have much higher rates of total firm ownership.

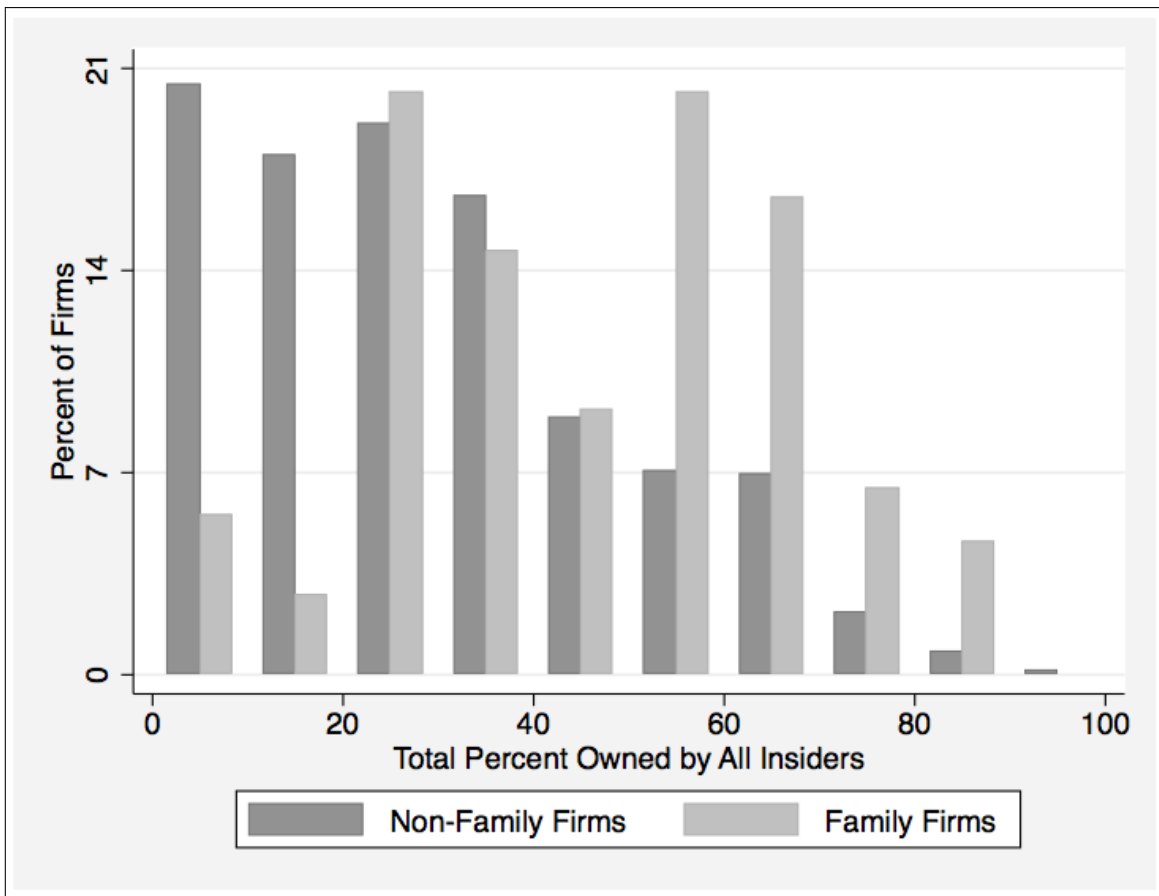


Figure 4.11: Total percentage ownership in of non-family firms versus family-run firms, all years. Each bar is 10%.

### 4.6.7 CEO Ownership

The total distribution of CEO ownership in the firm is shown in Figure 4.12. In the vast majority of cases – close to 70 percent of all observations – the CEO owns between zero and five percent of the firm. On average, the CEO only owns more than 20 percent of the firm in about 13 percent of the cases.

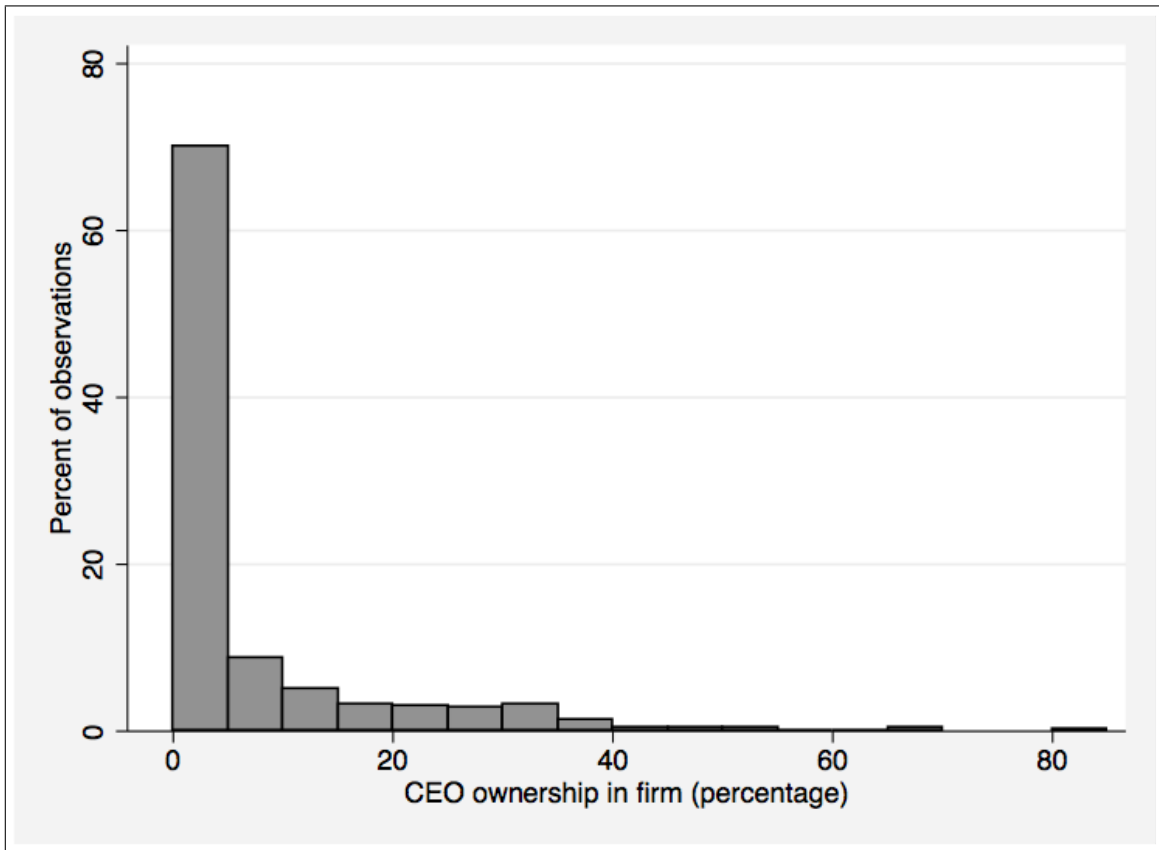


Figure 4.12: Percentage CEO Ownership all firms. Bar width is five percent.

### 4.6.8 Recap

This section has described the sample examined in this study (Section 4.6). This section began with summary statistics detailing the variables used in this study. The industry categories that are used in this study are of interest not only because they describe the area in which industrial firms generate revenues, but also because firms in this sample change industry classifications over the course of the analysis. Another point of interest in this research is the high rate of family presence in the public firms that comprise this study. Given that more than 40 percent of firms appear to have a family involved as insiders in some capacity lends credibility to the intuition that examining the social capital of corporate insiders is an important way in which to attempt to capture some nuances of corporate governance of SMEs. The descriptive statistics on total ownership by all firm insiders – not just a single individual or group – reveal that few firms in the sample are widely held by this measure.

## 4.7 Dependent Variable

This study uses Tobin's Q as a market-based measure of performance, or firm valuation.

### 4.7.1 Tobin's Q

Tobin's Q is generally accepted in the corporate governance literature as a measure of market valuation of a firm's assets. In this study of small- and medium-sized public firms, Tobin's Q is particularly useful. Tobin's Q captures the valuation of a firm's intangible assets that the market may value (Morck et al. 1988*b*). Intangibles include goodwill, valuable patents, or perhaps promising research. The key idea is that the market will price the firm not just according to its present financial performance, but its potential future performance.

In the sample of firms under study, many smaller firms have a large Tobin's Q. These are companies that have intangibles that are highly valued by the market – presumably for the perceived potential for the firm to be highly profitable relative to its assets. Thus, many smaller firms on the TSX and the Venture Exchange have values of Tobin's Q that far exceed those of more established firms. This is expected because more established firms likely have Tobin's Q values closer to one – where the market's valuation of the firm more roughly approximates the replacement cost of physical assets. For smaller firms – especially those that are research intensive, the market valuation can far exceed the replacement cost of the firm's physical assets. This reflects the fact that the firm is developing a product or service offering that has the potential to exceed the initial start-up and research costs. Of course, the process of research and development is full of risk, so a high Tobin's Q need not indicate a successful company. Rather, Tobin's Q indicates the potential for the firm to succeed taking into account the risks.

In this study, Tobin's Q is implemented as book value of liabilities plus market value of common equity, divided by the book value of assets. Using the book value

of assets rather than the replacement costs of assets is consistent with other studies (Khanna & Palepu 2000, Klein et al. 2005, Martinez et al. 2007, Elkinawy & Stater 2011). Research has also shown that book value of assets is highly correlated with replacement cost of capital (Hillman 2005). This formulation of Tobin's Q is thought to be particularly appropriate for the current study because the firms in this sample raise funds through both equity and debt.

The distribution of Tobin's Q is right-hand skewed (Figure 4.13). The most common fix for a skewed variable is to transform it (Fox 1997, pg.59). The natural logarithm is taken of the variable to normalize it. Figure 4.14 shows density plots of the natural logarithm of Tobin's Q for the sample broken down by industry category.

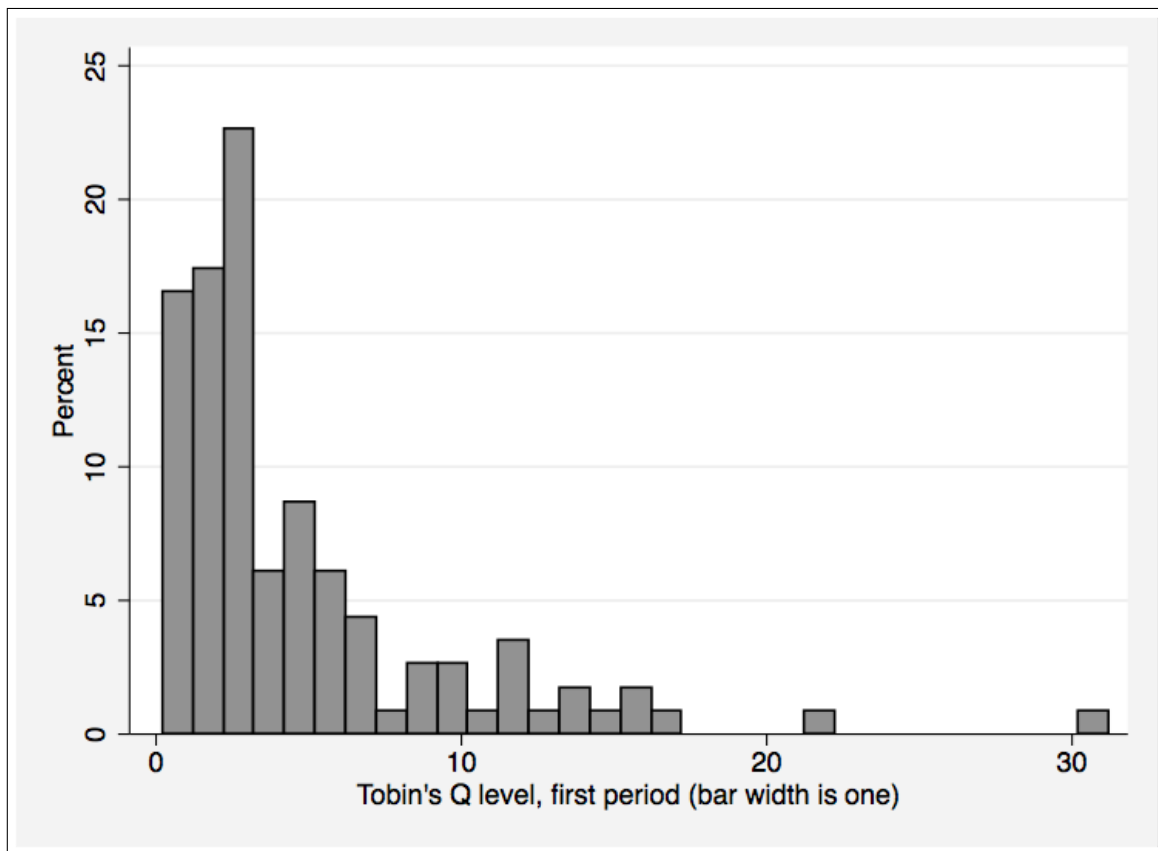


Figure 4.13: Histogram of Tobin's Q, first period of analysis

Compared to other studies using Tobin's Q as a measure of firm performance, the sample considered in this research tends to have relatively higher values of Tobin's Q. Considering all periods in the sample under study, Tobin's Q ranges from a minimum of 0.03 to a maximum of 1360. However, such high values appear to be outliers. In this case the high Tobin's Q appears to be the result of the firm having decreasing assets. Removing this outlier, for firms under study the maximum value of Tobin's Q is 79.

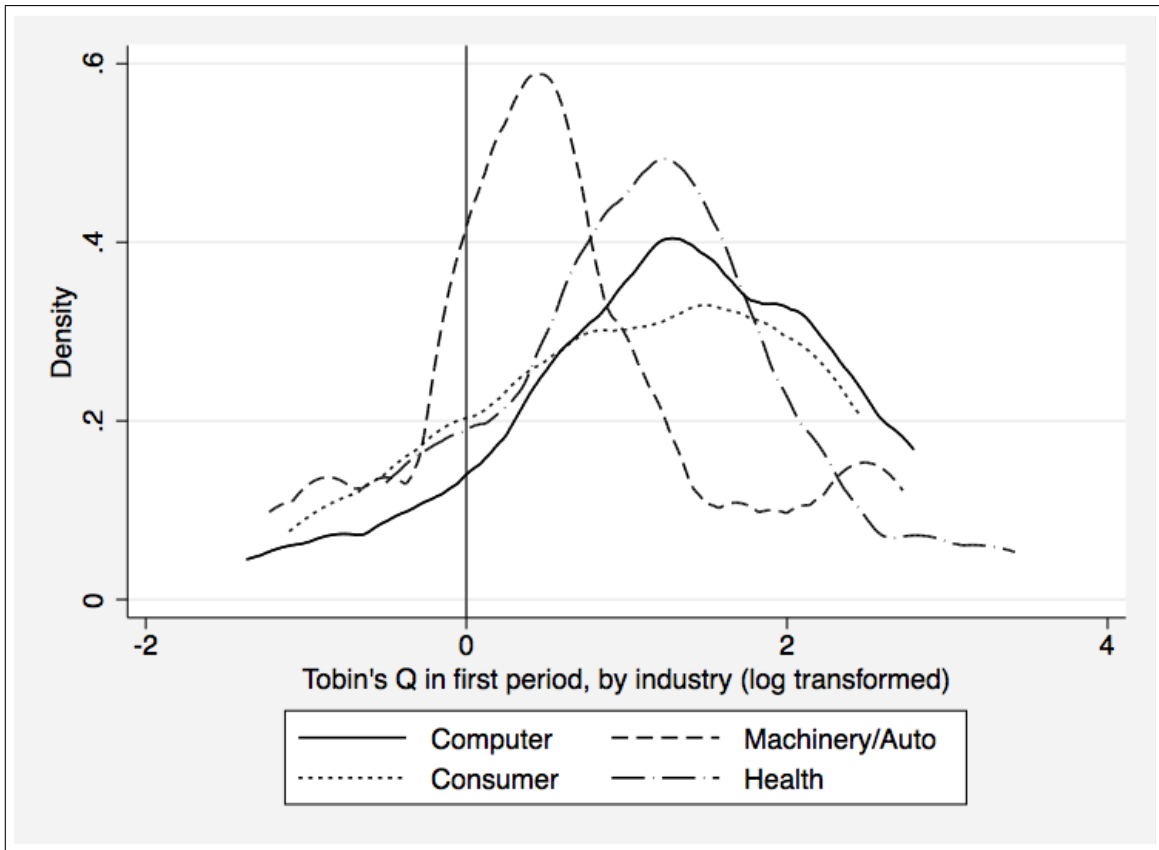


Figure 4.14: Smoothed density plot of natural log of Tobin's Q by industry group, first period

A series of sanity checks were performed to ensure that the results of this study were not driven by outliers. Another concern was that firms that are going out of business may have decreasing assets and that these decreasing assets may artificially

inflate Tobin's Q. In the current regressions, as noted elsewhere, the outliers were removed from the analysis. A series of other sanity checks, in regressions not shown here, were also performed to ensure that the results were consistent. These tests also showed results consistent with the regressions published here. In the first test, the data was winsorized and the regressions were repeated. In the second test, firms that showed large year-on-year decreases in assets were removed from the analysis. Finally, in order to remove firms that may be at risk of failure, the last observed period of the firms were dropped from the analysis. The idea behind this test is to remove the last observation where a firm may be winding down the business – and thus have their assets approaching zero, but still has a positive share price. In all of these test scenarios, the results were consistent with the results published here.

### **Other Dependent Variables**

The SMEs in this study differ from the larger, established firms that usually make up the firms in samples of corporate governance and performance. The SMEs in this sample rarely have positive profits or even revenues. In addition to equity financing, debt financing also appears to be common. Debt financing may be due to the fact that borrowing costs have been relatively low over the time this study was conducted.

As a result of the differences between SMEs and large firms, standard accounting measures of performance that are used to evaluate large firms often yield unintuitive results. Common measures of accounting performance such as return on assets, or return on sales contain large numbers of zeros.

In this research, a number of regression models using accounting performance measures were attempted, but they failed to explain more than one or two percent of the underlying variation overall. Models that were attempted included the natural log of the firm's profit rate, as well as measures based on profits such as return on assets and return on equity. In no case did the models explain any substantial amount of the underlying variance in the dependent variables. Similarly, models



of the percentage change of the firm's revenues and profits also failed to explain a substantial portion of the variation in the dependent variable. This finding is not unusual – most corporate governance research finds no relationship between accounting measures of performance and corporate governance (King & Santor 2008).

These results are not surprising given that the firms in the sample are SMEs. SMEs often have difficulty in becoming profitable and experience a high failure rate as a result (Baldwin et al. 1998, Davis et al. 1998). There may also be other reasons for the lack of relation to accounting measures of performance. The key issue may be that the firms in the sample are trying to undertake new businesses that may not be profitable for some time. Part of the reason for the lack of profitability may be that the firm is engaged in product development or other research and development. In these cases, Tobin's Q may be high for a firm that appears to be on the path to becoming profitable, but does not yet have profits. For example, a biotech firm may need to send a drug for testing and obtain regulatory approval before it can actually begin to become profitable. Over time, investors may choose to invest in the firm based on its non-financial successes such as obtaining patents, receiving approval, etc. Similarly, other technology firms may need time to develop their products before potentially becoming generating significant revenues or profits. Therefore, in this study of SMEs, measures of Tobin's Q – which captures intangible assets of the firm, unlike accounting performance measures – is thought to be more appropriate.

Accounting measures also do not capture the potential for firms to be profitably acquired by larger organizations. Again, the advantage of Tobin's Q is that this measure captures these potential gains because the Tobin's Q takes into account the firm's intangible assets. I argue that these intangibles are especially important in the case of the SMEs that are part of this study.

## 4.8 Control Variables

The control variables that are used in this study are listed in Table 4.8. The paragraphs below provide a brief description of these variables. All measures in nominal dollar values are converted to real 2006 dollars using a consumer price index deflator.

A series of dummy variables are used in the regression models. Industry dummies are used to control for spurious relationships specific to the type of industry the firm is in (Morck et al. 1988*b*, Demsetz & Lehn 1985). These are in the Global Industrial Classification Standard (GICS) industry code format (Standard & Poor 2006). The auto and machinery industry category is used as the reference in the model because the Q values of the health and computer industries may be relatively inflated.

Regional dummy variables denote whether the firm's head office is located in western, eastern or central Canada (the default case in the model). The different regions may have different implications for firms performance. Western Canada has enjoyed significant economic growth driven through the province's oil and gas resources. The eastern provinces have Ontario is the largest province in Canada with the largest industrial base. A time dummy variable is one in cases where the firm observation occurs after the financial crisis.

The value of firm assets is an important variable for controlling for the size of the firm (Hermalin & Weisbach 1991, pg.106). In this study the log of total assets is used to control for differences that are due to the scale of the operation. This measure is common to all corporate governance and firm performance studies (for review, see Benson & Davidson III 2009). A control for which exchange the firm was listed on was considered as a candidate to add to the models. However, testing revealed that this dummy variable is highly correlated with firm assets. As a result, it was omitted.

Book value of debt divided by market value of common equity captures firms that are more leveraged (Klein et al. 2005). Firms that are highly leveraged may perform

differently than those that are not. For example, growth may be more difficult for highly leveraged firms.

There are two variables that sometimes appear in the literature but are not directly used in this study. The first variable is the amount of research and development dollars that are spent as a fraction of total assets. Morck et al. (1988*b*) use this to capture potentially new innovations from the firm. Morck et al. (1988*b*) also use advertising expenses as a fraction of dollars spent to capture marketing by the firm. In both cases, the necessary information was not present in the chosen information source to re-create these variables. However, the number of patents a firm has received up to a given date is used as a proxy for R&D spending. Information for the number of patents a firm has on an annual basis is drawn from the Canadian Intellectual Property Office (CIPO) web site at <http://cipo.ic.gc.ca> (Government of Canada 2012). No comparable proxy was found for marketing expenditures by the firm.

The sections that follow describe the variables to test the central hypotheses of this research.

Table 4.8: Control variables

Variable	Meaning
GICS Industry dummies	Represents 2-digit GICS code of the firm's industry (Demsetz & Lehn 1985; Morck et al. 1988)
Region	Location of head office: Western Canada, Eastern Canada or Central Canada (the default).
Crisis	Dummy variable to indicate if the observation occurred after the 2007 financial crisis.
Firm assets	Natural log of firm's assets to capture the size of the organization (Morck et al 1988, Hermalin and Weisbach 1991)
Leverage	Book value of debt divided by market value of common equity (Klein et al. 2005)
Number of patents received by firm	Proxy for R&D spending used in many studies (Morck et al 1988)

## 4.9 Control by Insiders - Constraint

The relatively small firms that are the subjects of this study often have complex governance structures. If we use agency theory, and consider widely held firms as the baseline, then the vast majority of firms in this study have potentially problematic governance structures because they have at least one large owner. This study argues that the close relationships among many of the corporate insiders in the firm – both directors and managers – make measuring individual ownership alone within the board a potentially misleading approach. On the surface of it, it is unclear whether positional measures of corporate insiders are a good approach to understanding ownership and control. In this case, for example, the position of a corporate insider may hold – a position such as a manager or directors – may not accurately capture what happens in the firm, which affects corporate governance.

There is an alternative to examining individuals who hold top level positions in the firm without referencing other insiders in the firm. The alternative is to momentarily set aside their nominal positions within the organization and to consider their relationships to one another. This focus on the relationships between individuals is based intuitively on how firms form. Entrepreneurs often need to get funding and assistance from their friends and family to start their businesses. In the public firms I am studying, there remains a significant representation of families. By considering the family relationships of individuals as well as the ownership relationships, it is possible to get a more balanced view of the different coalitions that actually govern the firm. From this perspective, in terms of ownership and control, the unit to consider is not the ownership of an individual, or a position (such as CEO, director or manager) but of the entire group that is linked together through common ownership structures and/or family relationships. Approached in this way, governance can be considered in terms of the structure of different coalitions or groups of insiders who collectively operate the firm.

In order to declare that a single group has control over the firm, it is also necessary to determine to what degree other groups own enough of the outstanding voting

shares to contest decisions by the largest shareholders. The degree to which different groups are able to control the firm can become complex. The suggested measure of constraint is useful because it captures the differences between groups in a single summary statistic. However, while the statistic is intuitive, the construction of the statistic is somewhat complex and requires a section of its own to explain.

Most firms in this sample issue only common stock with a single vote per share. This measure is ultimately concerned with control over the firm, so the term ownership is used to mean “ownership of common voting shares”. In the few cases – 14 firms – where firms have dual-class shares with differing voting rights, the multiple voting rights are taken into account in the calculations.

### 4.9.1 Explaining Network Constraint

Network theory is concerned with how the structure of the networks that relate individuals or groups together affects outcomes concerning those involved in the network. Information flow is often considered an important element in the network under study (see Borgatti & Lopez-Kidwell 2011). Depending on the concerns of the analyst, how information is conveyed through a network could result in advantages for certain individuals based on their position within the network. The classic example is Granovetter's (1973) finding that people find a job not through their close relations, but through their acquaintances. Thus, these individuals acted as bridges across to different groups and provided information to the individual.

Burt's (1992) measurement of constraint is an attempt to capture the degree to which an individual has more opportunities because they are acting as a bridge across structural holes. So, in effect, Burt is concerned with the degree to which the links that an individual has are redundant. The more interconnected – or redundant – one's links are, the more one is in the centre of a close group. If one considers that value is to be obtained through novel information, then the person who maintains the same contacts as everyone else is not structurally in a very good position to be the first to receive new information.

The following sections discuss various concepts that constitute Burt's (1992) measure of constraint. Throughout the discussion that follows, it is important to be mindful that the measures are dependent upon how they are used within theory. For example, while the term “constraint” may have negative connotations, it should not be assumed that the outcomes will always be negatively related to this measure. The measures presented below should be considered agnostic – it is the particular theory that they are used within that gives them a predicted effect. We will return to the theory and assumptions used in this research following this brief exposition of terms.

For Burt (1992), one is *constrained* to the extent that one's contacts also have the same contacts as oneself. Implicit in the idea of constraint is the idea that one's

contacts are *redundant* in the sense that these contacts may, if considered purely as a network, lead back to other people that one already knows. To continue with this example, if we were to account for the redundancy in our relationships, then we could gain an appreciation for the *effective size* of our social network. The effective size of one's network is defined by Burt as being a measure of the network size once redundant contacts are taken into account. In the sections that follow the terms redundancy, effective size and constraint will be defined. Finally, the constraint measure will be illustrated in this study through two examples.

## 4.9.2 Measuring Redundant Relationships

Intuitively, redundancy is the degree to which one of your contacts knows the rest of your contacts. So, if we consider person  $i$  is the person of interest – or “ego.” Person  $j$  represents the another person – or “alter”. Finally, let  $q$  represent person  $i$ 's other contacts. Burt (1992, pg.51) formalizes redundancy as the time and energy spent on a relationship ( $p_{iq}$ ) and the marginal strength of that relationship ( $m_{jq}$ ). Marginal strength ( $m_{jq}$ ) is defined by Burt as the strength  $j$ 's relationship divided by the strongest of  $j$ 's relationships with anyone. In the equations that follow,  $z_{jq}$  measures the strength of the relationship from person  $j$  to person  $q$ .

Where  $p_{iq}$  is the time and energy spent on the relationship:

$$p_{iq} = \frac{(z_{iq} + z_{qi})}{\sum_j (z_{ij} + z_{ji})} \quad \text{where } i \neq j \quad (4.1)$$

Similarly,  $m_{jq}$  is the marginal strength of the relationship:

$$m_{jq} = \frac{(z_{jq} + z_{qj})}{\max(z_{jk} + z_{kj})} \quad \text{where } j \neq k \quad (4.2)$$

Burt defines redundancy as

$$R = p_{iq} \cdot m_{jq} \quad (4.3)$$



### 4.9.3 A Simplification

It is worth noting that the apparently complex relation that is a measure of redundancy in a relation  $p_{iq} \cdot m_{jq}$  can be greatly simplified. If we assume that  $z_{jq}$  can only be one or zero to simply denote that a relationship exists or not, then equation (4.1) simplifies to:

$$p_{iq} = \frac{(1+1)}{\sum_j (1+1)} = \frac{(2)}{j \cdot 2} = \frac{1}{j} \quad (4.4)$$

In other words, the time spent on each relationship is equal to the inverse of the number of relationships. This assumes that we spend equal time on each relationship.

Similarly,  $m_{jq}$ , the marginal strength of the relationship in equation (4.2) simplifies to one. This is the case because all edges are of the same weight by assumption – hence their marginal strength is the same.

$$m_{jq} = \frac{(1+1)}{\max(1+1)} = \frac{2}{\max(2)} = 1 \quad (4.5)$$

So, in this simplified case,  $p_{iq} \cdot m_{jq} = \frac{1}{j}$ .

### 4.9.4 Redundancy in Relationships

Taking equation (4.3) and summing across all relationships that our ego  $i$  has, we can calculate the total redundancy of  $i$ 's relationship with the alter  $j$ . In other words,  $i$ 's relationship with  $j$  is redundant to the extent that  $j$  maintains relations with  $i$ 's other contacts  $q$ . The more contacts that  $i$  and  $j$  have in common, the higher the measure of redundancy will be. If we examine each individual that our ego knows,  $q$ , then we can calculate aggregate redundancy. Aggregate Redundancy (AR) is defined as:

$$AR = \sum_q p_{iq} \cdot m_{jq} \text{ where } q \neq i, j \quad (4.6)$$

### 4.9.5 Effective Size of a Network

The non-redundant size of one's network is simply one minus the redundant portion of the network. Burt (1992) takes the sum of all the non-redundant relationships a person has and calls it the *effective size* of one's network. This measure is intended to capture how large one's network actually is once we take into account redundant relationships. Effective Size (ES) is defined as:

$$ES = \sum_j 1 - AR = \sum_j \left[ 1 - \sum_q p_{iq} \cdot m_{jq} \right] \text{ where } q \neq i, j \quad (4.7)$$

Burt (1992, pg.53) points out that the square brackets in equation (4.7) are equal to one when contact  $j$  is independent of other primary contacts – i.e., there is no redundancy in the relationship. At the other extreme, when contacts are very closely related, the term in the square brackets approaches  $p_{ij}$ .

### 4.9.6 Calculation of Constraint

With the previously noted concepts, we can finally turn to the meaning of the measurement of constraint. In his 1992 book *Structural Holes*, Burt approaches constraint from the perspective of an individual negotiating with others. Because of limits to an individual's time and resources, each individual needs to optimize their time. Dealing with each of one's different contacts takes a certain amount of time and energy. Time spent on any given relationship is termed as  $p_{ij}$  in equation (4.1).

Burt (1992, pg.54) gives the example of ego  $i$  considering the cost of maintaining a relationship with  $j$ . Burt argues that  $i$  must consider the extent to which his current group of contacts,  $q$ , is already in contact with  $j$ . In this case,  $p_{iq}$  is the time and energy  $i$  puts into existing contacts  $q$ . The time and energy that  $i$ 's contacts,  $q$ , put into maintaining a relationship with  $j$  are  $p_{qj}$ . The product of these terms,  $p_{iq}p_{qj}$ , is the proportion of time that  $i$  has invested in  $q$ , and the proportion of time that  $q$  has invested in  $j$ . The higher the product of these terms, the more redundant  $i$ 's relationship with  $j$  is because  $j$  and  $q$  remain close. By considering all contacts,  $q$ , Burt (1992) defines constraint across one's contacts as follows:

$$\text{Constraint across contacts} = p_{ij} + \sum_q p_{iq}p_{qj} \text{ where } q \neq i, j \quad (4.8)$$

Again, the idea behind equation (4.8) is that one is constrained to the extent that one has invested solely in contacts that are closely related. From a negotiations standpoint, it would be hard to negotiate anything from one's contacts if they are all closely related. If we look at the network from the point of view of receiving novel information, the situation is similar. The person who has a high constraint measure is unlikely to receive new information before any of his contacts, simply because he has few relationships that reach beyond his immediate group.

Burt (1992, pg.55) argues that the final measure of aggregate constraint should be squared. Burt notes that the expression measures the lack of structural holes an

individual has, as well as the product of time an individual has invested in a given contact. Aggregate constraint is defined as:

$$\text{Aggregate Constraint} = \sum_q \left( p_{ij} + \sum_q p_{iq} p_{qj} \right)^2 \text{ where } q \neq i, j \quad (4.9)$$

Thus, one is constrained to the extent that one has invested one's limited resources in people with relationships that also lead back to the group of people that you already are close to. In other words, one has cultivated relationships within a single close group of individuals. Again, if we consider new information entering the network, it seems unlikely that individual  $i$  will receive any information that is novel relative to what is known by her current contacts already.

It is again worth emphasizing that Burt's exposition is set within very specific situations that tend to emphasize that constraint is negative. This need not always be the case. There can be situations where a high measure of constraint can be considered to have a positive effect and can lead to desirable outcomes. For example, Coleman's (1988) concern with social capital as closure is an important contribution that argues for the importance of community in certain outcomes. At-risk students may do better in tightly-knit social circles where difficulties can be noticed and remedied early on (see discussion on Social Capital in Section 2.5.1 on page 40).

### 4.9.7 Constraint As Used in the Present Research

Network measures seem to be a natural fit for cases where there are multiple individuals who could be related in complex ways. In the present research, the top level of each corporation is composed of individuals. These individuals may pool their ownership stakes in the firm into voting blocks to affect decision making.

In the present research, Burt's measure of constraint is used to consider groups of corporate insiders rather than individuals. Rather than considering individuals as nodes in the network, I consider groups of individuals. Prior to calculating the constraint measure, I assign each corporate insider to a particular group based on their ownership and familial relationships to other insiders. By definition, no insider can be part of more than a single group. If in the process of the calculation, an individual is part of more than one group, then the groups are merged into a larger group.

This process simplifies the the constraint measurement in a number of ways. First, by definition each insider group is independent from all other insider groups. This means that there is no redundancy in relations – so the  $\sum_q p_{iq}p_{qj}$  portion of equation (4.9) drops out of the calculation. Second, by considering groups of insiders rather than individuals, the networks are much simpler and easier to explain and understand. Finally, these simplified networks can be weighted by the total number of shares each insider group owns. From equation (4.9), aggregate constraint in this study simplifies to:

$$\text{Aggregate Constraint} = \sum_q \left( p_{ij} + \sum_q p_{iq}p_{qj} \right)^2 = \sum_q (p_{ij})^2 \quad (4.10)$$

Recall from (4.1) that  $p_{ij}$  is the time and energy spent on the relationship between  $i$  and  $j$ . In the simplified case,  $z$  was set equal to one or zero depending on if there is a relationship or not. For this study, each  $z$  term is weighted according to the number of voting shares outstanding held by each insider group.

## 4.9.8 Examples of the Constraint Calculation

The following section provides some examples of how constraint is calculated for each of the insider groups in the firm. The first example covers calculating constraint for a company called Lehman Trikes. Lehman Trikes builds components to convert motorcycles into three-wheeled trikes. The simplified graph of major shareholders shows two major shareholding insider groups. The first group is composed of one person – Daniel Patterson – who is listed as a director of the firm. The second group is composed of Larry Strilchuck and Marilyn Strilchuck. Larry Strilchuck is also listed as a director.

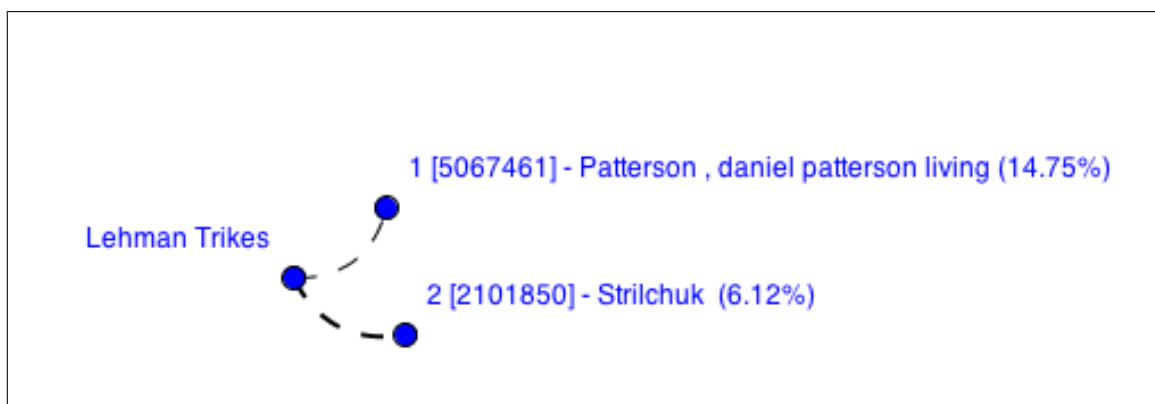


Figure 4.15: Network of corporate insiders for Lehman Trikes (2007-2008)

Given equation (4.10), it is straightforward to calculate the constraint measure. Considering the Lehman Trikes firm and insider groups listed above as nodes, it is possible to set the weight of the edges between the nodes as equal to the total shares outstanding held by each group.

$$P_{i,Patterson} = \frac{5,067,461}{5,067,461 + 2,101,850} = 0.7068$$

$$P_{i,Strilchuk} = \frac{2,101,850}{5,067,461 + 2,101,850} = 0.2932$$

$$\begin{aligned}
\text{Constraint of Lehman Trikes} &= \sum_q (p_{ij})^2 \\
&= (P_{i,Patterson})^2 + (P_{i,Strilchuk})^2 \\
&= (0.7068)^2 + (0.2932)^2 \\
&= 0.59
\end{aligned}$$

For the next example, consider a company called Grand Power Logistics, which handles freight and brokerage services in China. Tong (Ricky) Chui and Wan Kee Chui collectively own almost 31 percent of the firm. Both are directors, and Tong Chui also serves as CEO. Sheng Ning Wong held approximately 2.5 percent of the shares outstanding, followed by Kim Oishi with just 1.49 percent of the shares. Both served as directors.

Note that for the calculation of constraint, it makes no difference if we use shares outstanding or the percentages of the firm owned by each insider group. If we use percentages, the denominator cancels in the calculation.

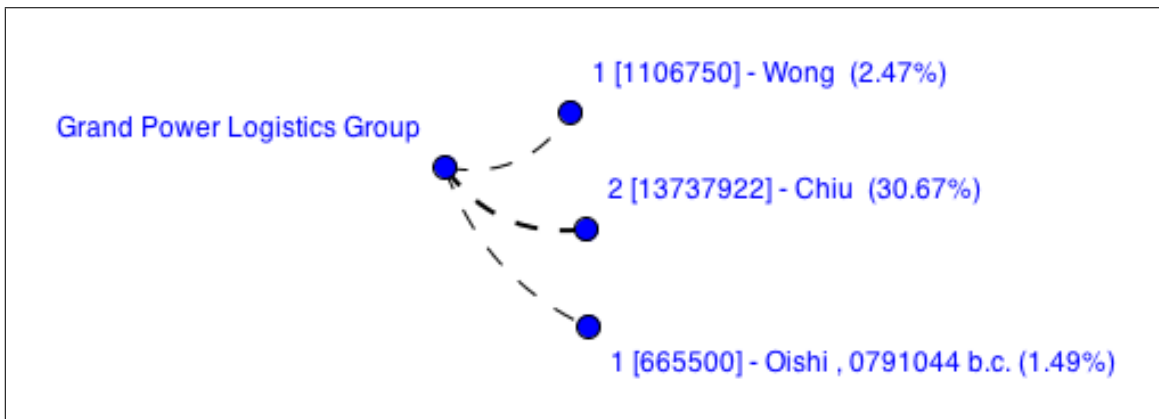


Figure 4.16: Network of corporate insiders for Grand Power Logistics (2008-2009)

$$P_{i,Chiu} = \frac{30.67\%}{30.67\% + 2.47\% + 1.49\%} = 0.8857$$

$$P_{i,Wong} = \frac{2.47\%}{30.67\% + 2.47\% + 1.49\%} = 0.0713$$

$$P_{i,Oishi} = \frac{1.49\%}{30.67\% + 2.47\% + 1.49\%} = 0.0430$$

$$\begin{aligned} \text{Constraint of Grand Power Logistics} &= \sum_q (p_{ij})^2 \\ &= (P_{i,Chiu})^2 + (P_{i,Wong})^2 + (P_{i,Oishi})^2 \\ &= (0.8857)^2 + (0.0713)^2 + (0.0430)^2 \\ &= 0.79 \end{aligned}$$

Both examples show how constraint can be calculated. In the Lehman Trikes example, the calculated constraint is about 0.59. The constraint measure for Grand Power Logistics is approximately 0.79. Grand Power Logistics is more constrained than Lehman Trikes because the Chiu family controls a much larger portion of the voting shares than the other insiders – approximately 25 percent more than all other insiders combined. In the case of Lehman Trikes, the Strilchuk family retains ownership of just over six percent of the outstanding voting shares as compared to Daniel Patterson, who controls nearly 15 percent of the voting shares. The difference here is not nearly as great as in the Grand Power Logistics example. The constraint measure shows that in the case of a conflict, there is some room for the Strilchuks to contest any attempt at unilateral control exerted by Patterson. By comparison, there appears to be little stopping the Chiu family from exerting total control over Grand Power Logistics.

#### 4.9.9 A Relative Measure of Control

As the examples from the previous section makes clear, the measure of constraint used in this research is a relative measure of control. The measure of effective control



is relative in the sense that it compares the outstanding of shares of insiders only. It does not consider all outstanding shares. This choice in the construction of the index has a number of implications.

The first implication is that the measure more accurately determines the balance between coalitions within the firm. The result of this approach is that the measure of effective constraint considers graphs with the same relative voting weights as equivalent. For example, there are two firms, A and B, each with three coalitions owning a number of voting shares. In firm A, each of the three coalitions control 20%, 15% and 5% of the firm's outstanding shares. In firm B, each of the three coalitions controls 10%, 7.5% and 2.5% of the outstanding voting shares. In this case, firms A and B will have the same measure of effective control. This is the case because the coalitions within the firm have the same proportion of control of the firm compared to other insiders. From a governance perspective, the two smallest coalitions control roughly the same amount of outstanding voting shares as the largest group. In both cases, it is hypothesized that there will be a high degree of internal oversight over decisions.

Thus, there remain boundary cases that the measure of effective control alone may be less suitable because it is a relative measure of a coalition's control over the organization. In empirical studies needing to examine absolute control from a network perspective, the effective control measure could be adjusted directly to make use of the total number of shares controlled by all insiders. In cases where there is a dominant owner – a single coalition that absolutely controls the firm with more than 50% of the voting shares – a dummy variable could be set. Although in practice, this would appear to be a relatively rare case. Similarly, in cases where insiders own a relatively small proportion of the firm, the total percentage owned by all insiders could be used as a cut-off to examine effective control only in cases where insiders controlled some percentage of the firm. However, some caution should be exercised with this approach because analysts risk omitting measures internal oversight in cases where the firms are large and insiders own a small percentage. In some cases, this may be an interesting case because although insiders own a small proportion of the firm, their shares could be highly valued. However, for the purposes of the

present study, the measure of effective control is an adequate measure of the internal governance of the firm.

## 4.10 Proportion of Independent Directors

Independent directors are thought to provide oversight over the firm's operations. Independent directors are defined in this study as directors who do not have significant attachments to the firm. In this study, to be considered an independent director, the individual must meet the following criteria:

1. Own less than one percent of the shares outstanding in the firm,
2. not have direct relations with any other insider through mutual ownership links,
3. not have direct relations with any other insider through family relations,
4. not be a director of, or be connected to, a large shareholding organization,
5. not serve on a board at another company with any other director of the firm.

In essence, in order to be considered independent, directors must not be related to any insider within the firm or through work at a different public firm. The proportion of independent directors is calculated as the ratio of the number of independent directors over the total number of directors. It is hypothesized that the proportion of independent directors will be positively associated with firm performance and growth.

An anecdotal example of the power of independent directors can be seen in the one recent, high-profile case. The firm, Environmental Management Solutions, obtained a number of well known independent directors. For a number of reasons, in 2005 the independent directors eventually felt they had to remove the CEO – who also owned 20 percent of the firm – for malfeasance (McNish & Howlett 2005, CBC News 2005*a*, CBC News 2005*b*). While extreme, this case illustrates that directors do have real power to use when they choose.

## 4.11 Family-Run Firms

In this study, a firm is considered to be family-run if multiple family members are part of the insider group that collectively holds the most shares in the corporation. When there are multiple corporate insiders with the same last name, they are considered to be related. From the standpoint of market valuation, firms that are family-run may be discounted somewhat for fear that family interests will be put ahead of the interests of other shareholders. In terms of real performance indicators, it could be feared that firms will not perform as well because their management is not hired through merit, but through family relations.

This research begins from the position that there is reason to suppose that a family-run firm will be considered suspect by investors. Thus, a family run-firm will be systematically undervalued relative to firms that do not have families as part of the largest shareholding group, all other things being equal. In order to test this hypothesis, I construct a dummy variables that indicates whether a family is part of the largest insider group in a firm. These dummy variables will represent an intercept shift which is applied to the company if the above conditions are met. If the firm is family-operated, I expect a negative association with the performance measure, all other things held constant.

## 4.12 CEO Ownership

Studies concerned with corporate governance and firm performance often consider executive or CEO ownership as a key factor affecting performance. Morck et al. (1988*b*) found a non-linear association between the percentage of executive ownership and performance as measured by Tobin's  $Q$ .

In this research, the CEO ownership is also measured as the percentage of voting shares in the firm that the CEO owns. The percentage of the firm that is owned by the CEO is hypothesized to be non-linearly associated with firm performance similar to the results found by Morck et al. (1988*b*). The intuition here is that the CEO is likely to play a particularly important role in the success of an SME. This research will attempt to fit a polynomial of the percentage of ownership in order to capture the potential non-linear relationship between CEO ownership and performance. CEO Ownership will also be compared to the variable capturing control by insiders to ensure that they are not highly correlated.

## 4.13 Summary

This chapter has reviewed how the full model outlined in previous chapters will be implemented. In particular, this chapter has covered in depth the sample the study is concerned with. The important data sources have been outlined along with the general methodology involved with extracting data from these files. An extended discussion followed detailing how the individual firm observations over each year of the study will be linked in order to create a longitudinal panel. Finally, a detailed outline of how each of the major hypotheses are implemented was included. This was followed by an overview of the control variables important for this study.

The next chapter discusses the findings of this research.

# Chapter 5

## Findings

### 5.1 Introduction

The purpose of this chapter is to introduce the regression models used to test the hypotheses developed in chapters three and four. The sections that follow contain the results of the fixed-effects and random effects regression models that have Tobin's Q as the dependent variable. In this chapter, I describe the technical results of the models. An in-depth discussion of how the results are related to the internal social capital theory developed in this research is reserved for the discussion in the final chapter of this dissertation.

#### 5.1.1 Corporate Governance Measures

In this research, I examine the firm from a social capital perspective. By utilizing the information about how corporate insiders are linked to each other, I re-interpret corporate governance measures. The variables that are used to test the hypotheses generated in the previous chapters are concerned with different aspects of corporate governance.

In this research, I have focused on four main areas of corporate governance. The first area concerns what I have termed the effective control of the firm and how the structure of relationships between insiders can be interpreted as an indicator of internal oversight within the organization. The second area concerns the external oversight provided by independent directors. The third examines the differences between family-controlled firms and other firms. The fourth area focuses on the relationship between CEO ownership and firm performance. Each of these areas of research and their implementation in the model specifications will be reviewed below.

I argue that the structure of relationships – the internal social capital of the firm – can be considered as contributing to the corporate governance of the firm. The measure of effective control used in this research is based on Burt's (1992) network measure of constraint and varies between zero and one. A lower measure of effective control indicates that the coalitions within the firm have similar voting rights. In this case, no single coalition of insiders can control the firm without at least the tacit consent of other coalitions. A value at the other end of the effective control scale, when the measurement is close to or equal to one, indicates that there is a single coalition that has enough voting rights in the firm to exercise complete control of the organization. This measure is similar in intent to that used by Maury & Pajuste (2005) (for discussion, see Literature Review, Section 2.3).

Although I argue that internal social capital is important for corporate governance, it is not the only factor that is important. The extant literature has also stressed the importance of independent directors as sources of oversight over the principles within a firm. Independent directors are thought to be particularly important because they have incentives to oversee the insiders in the firm. One important incentive is that independent directors are likely to be concerned about their professional reputation (Jensen 2000). It is well known that directors often gain work through personal references (Useem 1986). Directors who do not provide effective oversight are therefore less likely to receive new positions.

In this research, I use the proportion of independent directors on a board to capture the importance of independent external oversight in a firm. I define independent



directors as those directors that have no family or professional associations with the firm and do not own a major stake in it. In essence, independent directors are those directors that are unconnected to other corporate insiders through any of the types of networks discussed in this research.

In the corporate governance literature, family-run firms are also an important and growing area of research. In this research, I indicate family-run firms by setting a dummy variable for those firms that have two or more family members in the largest shareholding group of the firm.

The importance of the level of ownership by key executives was first highlighted by Morck et al. (1988*b*). Since then, a number of researchers have considered the relationship between executive compensation and firm performance (for brief review, see Benson & Davidson III 2009). However, there has been little corporate governance research examining the importance of executive roles in SMEs despite the fact that this area was identified as an important area for research early on (Morck et al. 1988*b*, pg.314)..

### **5.1.2 Model Specification**

The model specification assumes that all governance variables are independent from one another and other measurable factors operating within the firm. The model is estimated with heteroskedasticity robust standard errors. Serial correlation due to observations of the same firms over time are also controlled for. Wooldridge's test for autocorrelation also shows no support for the hypothesis that there is serial correlation in the idiosyncratic errors at the 13 percent level (Wooldridge 2001, Drukker 2003). The models also use lagged independent variables in order to alleviate concerns about simultaneity bias from contemporaneously determined independent and explanatory variables.

## 5.2 Fixed Effects Regression

Table 5.1 contains the basic fixed-effects (FE) model with the governance covariates treated independently. The table contains two different regressions. The first model (column one) excludes all of the governance variables. This regression is used as a baseline to compare the explanatory power of the governance variables used in this study. The second regression (column two) contains the full fixed-effects regression model including the governance variables that were discussed earlier. The addition of the governance variables collectively accounts for almost four percent of the variation explained by the model. While the additional explanatory power of the governance variables is relatively modest, this result is consistent with other corporate governance studies (for example, see Benson & Davidson III 2009). Both regression models include standard error adjustments to control for within-firm serial correlation and heteroskedasticity.

These regressions show that the control for firm size, the log of assets, is negative and statistically significant within the firm. The implication is that the larger the organization, the closer Tobin's Q will be to one. This is consistent with my expectation that larger firms will be more established businesses with fewer unknowns and intangible goods. Thus, the market valuation will be closer to the assets the firm holds resulting in a Tobin's Q closer to one. In larger firms, Tobin's Q is more likely to be closer to one than in smaller firms. Smaller firms are a greater risk but potentially offer a greater reward per dollar invested if their strategy bears fruit. It is not unusual for high-tech firms to be valued much higher than their assets because of the firm's potential to make profits in the future.

The financial crisis dummy variable also indicates that firm observations after this point in time experience a significant decrease in Tobin's Q, all other things being equal.

Of the governance variables considered in this study, none are statistically significant except the covariate measuring effective control within the firm. In this case, the coefficient of effective control is negative, as expected.

Table 5.1: Tobin's Q regressions: Fixed-effects model

VARIABLES	(1)	p-values	(2)	p-values
	FE		FE	
Prov. Western	0.520	(0.312)	0.429	(0.459)
Prov. Quebec	0.0556	(0.916)	0.0534	(0.931)
Ind. Computer	0.0402	(0.941)	-0.0967	(0.872)
Ind. Health	0.0589	(0.908)	-0.118	(0.840)
Ind. Consumer Goods	0.190	(0.710)	0.0443	(0.936)
Ind. Transition	-0.217	(0.319)	-0.358	(0.262)
Log Assets	-0.313***	(4.72e-05)	-0.318***	(2.82e-05)
Leverage	-0.0250*	(0.0844)	-0.0232	(0.113)
Fin. Crisis	-0.387***	(0.000550)	-0.409***	(0.000118)
Patents	0.0129	(0.881)	-0.0312	(0.562)
Prop. Indep. Directors			0.321	(0.153)
Effective Control			-0.395**	(0.0285)
Family Firm			0.287	(0.534)
<i>CEO</i>			1.565	(0.524)
<i>CEO</i> <sup>2</sup>			-11.53	(0.306)
<i>CEO</i> <sup>3</sup>			20.47	(0.112)
Constant	3.283***	(1.13e-05)	3.570***	(1.37e-05)
Observations	535		535	
<i>R</i> <sup>2</sup> Within	0.212		0.249	
Number of Firms	159		159	
Joint test CEO			0.0164	

Robust p-values in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

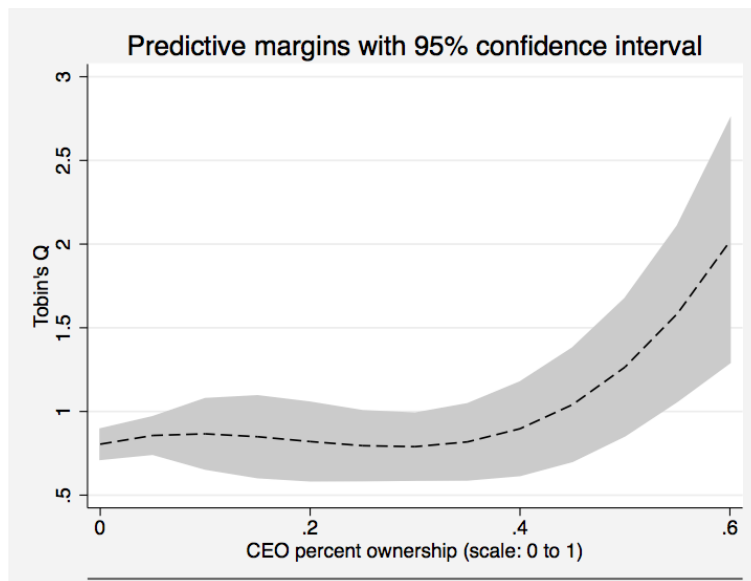
In a sample of large firms, Morck et al. (1988*b*) find evidence suggesting that the relationship between CEO ownership and firm performance is non-linear. In order to test this hypothesis, my research makes use of a third degree polynomial of CEO ownership. This approach allows the curve representing CEO ownership to vary non-linearly across a range of ownership values. Table 5.1 makes it clear that individually the CEO ownership covariates are not significant. However, they are jointly significant at the two percent level.

Figure 5.1a on page 165 shows the curve from the estimated polynomial based on CEO ownership along with 95 percent confidence intervals. This figure shows that the curve of CEO ownership does not appear to rise until after CEO ownership exceeds 40 percent of the firm. Figure 5.1b is the derivative of the curve also with 95 percent confidence intervals. This curve clearly shows that the slope of the CEO ownership curve does not appear to be significantly different from zero until ownership exceeds 40 percent of the firm. In Figure 5.1b, the y-axis value of zero is in bold. This indicates that the slope of the CEO ownership curve in Figure 5.1a does not increase or decrease until the 40 percent ownership point. In excess of 40 percent, it appears that the slope of the CEO ownership curve becomes positive.

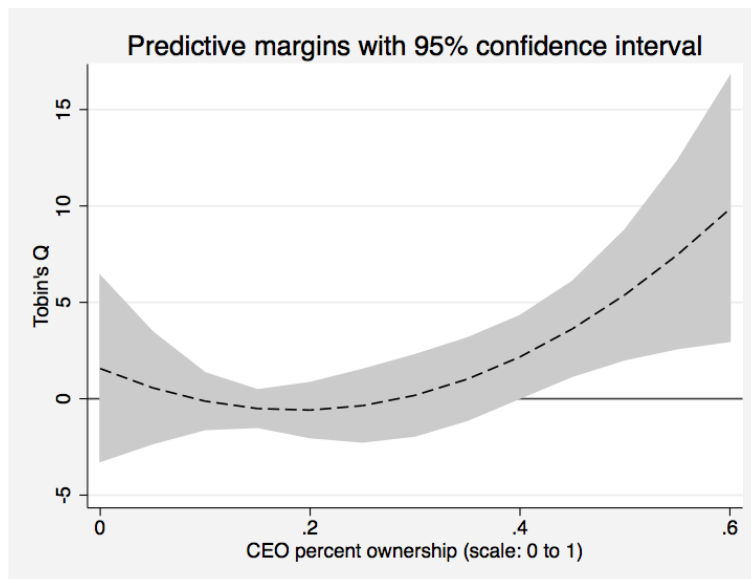
There is not a statistically significant relationship between the remaining governance covariates and Tobin's Q. The proportion of independent directors and the dummy variable representing family control of the firm are not significantly different from zero. Note that family control of the firm can change over time within firms – hence it is not a fixed effect which would be dropped from the regression model.

The failure of the fixed effects estimation method to indicate a relationship between the dependent variable and governance explanatory variables is not surprising. The governance variables in question are more likely to change slowly over time (Zhou 2001, Benson & Davidson III 2009). The fixed-effects method examines the changes within individuals over time by subtracting the mean from each observation. Thus, covariates that change slowly over time will display little variation. In contrast, the random effects models discussed in the next section are designed

to take into account the variation between insiders as well as the variation within observations.



(a) CEO ownership curve based on the fixed effects model with 95% confidence intervals.



(b) Derivative (rate of change) of the CEO ownership curve based on the fixed effects model with 95% confidence intervals.

Figure 5.1: Predicted marginal effects of CEO ownership based on fixed-effects model

## 5.3 Random Effects Regression

Random effects models have an important advantage over fixed-effects models because they take into account the variation between observations in addition to the variation within observations of individuals. Random effects regressions are a weighted average of between and within effects. Fixed-effects models have the advantage of being consistent, but random effects models are more efficient. However, random effects models have the disadvantage that they may be inconsistent if the between and fixed estimates of the parameter values in a model are not the same – i.e., if the model is misspecified. The Hausman test compares the between and fixed estimates to ensure that the random effects model is valid.

Column one in the regression results Table 5.2 on page 167 shows the results of the random effects model with the same basic specification used in the previous section. Column two shows the results of the regression when the governance variables are included. Again, comparing the overall r-squared values of the two regressions, the governance variables appear account for approximately four percent of the model's power to explain the variation in the dependent variable. In both cases the Hausman test indicates that the random effects model is not invalid.

Table 5.2 shows that firms in the health and biotechnology industry appear to be positively associated with Tobin's Q. The random effects regression also shows positive coefficients for both the computer industry dummy variable at the seven percent level. However, after the governance characteristics are accounted for, the dummy variable for computer industry firms ceases to be significantly different from zero even at the ten percent level, but the health industry dummy variable remains significant at the five percent level. The sign of the coefficients are as expected – both the computer industry and the health industry are technology-intensive industries where a potential success could result in large gains relative to their assets.

Table 5.2: Tobin's Q regressions: Random effects model

VARIABLES	(1)	p-values	(2)	p-values
	RE		RE	
Prov. Western	0.00344	(0.983)	0.0466	(0.770)
Prov. Quebec	-0.0648	(0.670)	-0.0514	(0.729)
Ind. Computer	0.373*	(0.0628)	0.319	(0.115)
Ind. Health	0.493**	(0.0113)	0.406**	(0.0410)
Ind. Consumer Goods	0.404	(0.263)	0.393	(0.263)
Ind. Transition	0.126	(0.608)	0.0374	(0.888)
Log Assets	-0.379***	(0)	-0.390***	(0)
Leverage	-0.0267**	(0.0265)	-0.0256**	(0.0319)
Fin. Crisis	-0.308***	(0.000830)	-0.340***	(7.69e-05)
Patents	0.0130***	(0.00245)	0.00962***	(0.00519)
Prop. Indep. Directors			0.505***	(0.00253)
Effective Control			-0.327**	(0.0285)
<i>CEO</i>			3.460*	(0.0896)
<i>CEO</i> <sup>2</sup>			-20.94**	(0.0284)
<i>CEO</i> <sup>3</sup>			29.74***	(0.00672)
Family Firm			-0.0371	(0.857)
Constant	3.743***	(0)	3.802***	(0)
Observations	535		535	
Number of Firms	159		159	
<i>R</i> <sup>2</sup> Within	0.203		0.234	
<i>R</i> <sup>2</sup> Between	0.390		0.426	
<i>R</i> <sup>2</sup> Overall	0.339		0.377	
Hausman test	0.520		0.163	
Joint test CEO			0.00304	

Robust p-values in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1



The natural log of assets – the proxy for firm size – is negative as expected and is significant at the 0.01 percent level. This captures the idea that larger firms will be more established businesses with fewer unknowns and intangible goods. Just as with the dependent variable, this covariate is also transformed as a natural log. The interpretation of the coefficient is that a one percent increase in firm assets will be associated with approximately a 0.4 percent decrease in Tobin’s Q, all other things being equal. The leverage of a firm is also negatively associated with firm valuation of the firm at the four percent level.

The dummy variable indicating if the firm observation occurred after the financial crisis is negative and statistically significant at the 0.01 percent level. A number of different specifications were tried, including individual dummy variables, each year after the crisis. In each case, the results were consistently negative and statistically significant. The single dummy variable was kept for simplicity as different configurations of variables had no discernible effect on the overall fit of the model.

The number of patents a firm has – a proxy for R&D spending – is positive and statistically significant at the 0.01 percent level. The magnitude of the coefficient is rather small, indicating that each additional patent will increase the firm’s valuation by less than one percent. However, the sign and significance of the coefficient is in the expected direction, which supports the idea that the choice of proxy for research and development expenditures is adequate.

The proportion of independent directors, which ranges in value from zero to one, is positive and statistically significant at the one percent level. Here the coefficient indicates that a complete change in a firm’s board from having no independent directors to having all independent directors will be associated with an increase in Tobin’s Q of over 50 percent, all else being equal. In practice, it is very unlikely that a single firm will experience such an extreme change. The average proportion of independent directors on boards of firms in the sample is 0.45 (see Summary Statistics in Table 4.2 on page 114). Moreover, as noted in the previous section dealing with the fixed effects regression, governance variables such as the proportion of independent directors in a firm tend to change relatively slowly over time.

The measurement of effective control yields a negative coefficient that is statistically significant at the three percent level. The interpretation is that, holding all else equal, a complete change in the effective control from a firm where no insider group has any effective control (i.e., the covariate is zero) to one in which one insider group has complete effective control (the covariate is one) will be associated with over a 30 percent drop in Tobin's Q. The average level of effective control in the sample is 0.56.

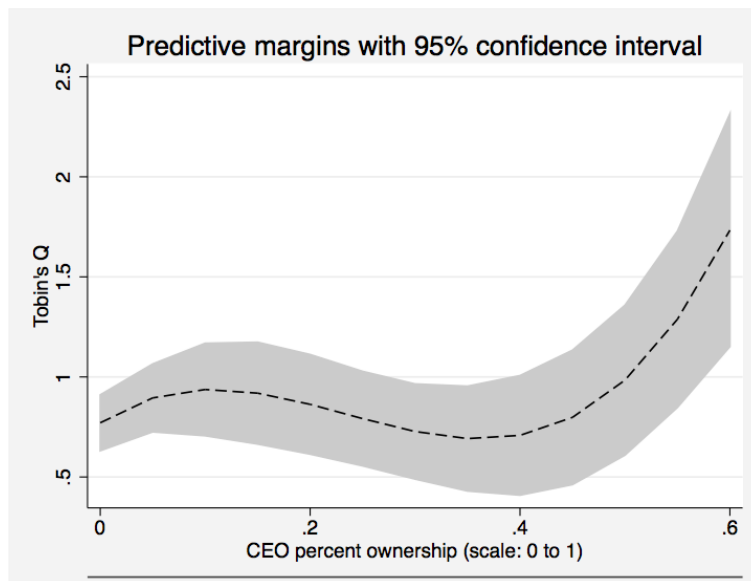
The measure capturing family control of the firm is not significantly different from zero. An alternate specification used a dummy variable indicating if there was a family in the firm at all. This variable too was found to not be statistically different from zero. Note that this alternate choice of variable does not change within firms so it can not be estimated in the fixed-effects model.

Finally, a joint test of the variables representing CEO ownership indicates that the covariates are jointly significant well below the one percent level. The covariates representing CEO ownership are also individually significant but just at the 10 percent level. Figure 5.2a on page 171 shows the predicted relationship between CEO ownership and performance based on the regression results. Here the local maximum appears to be at the 11 percent ownership mark and the local minimum appears around the 36 percent ownership point.

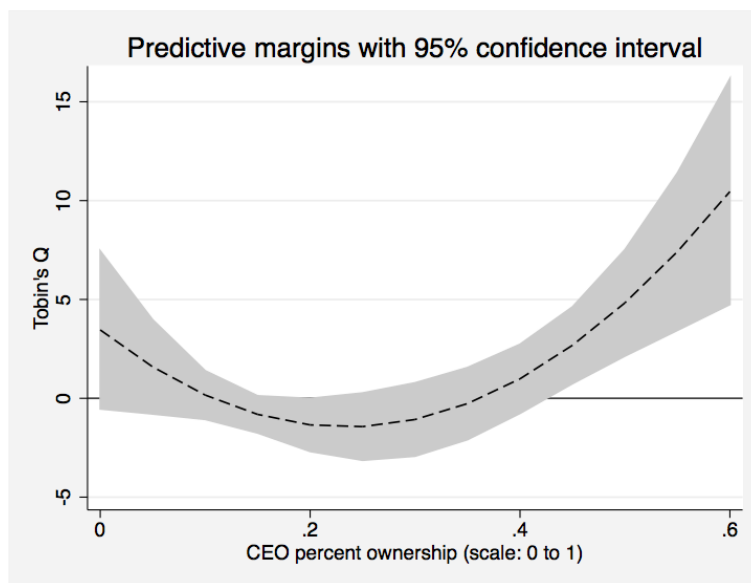
Figure 5.2a shows the marginal effects for changes in CEO ownership on Tobin's Q, everything else held equal. The confidence intervals on the CEO ownership curve (Figure 5.2a) and its derivative (Figure 5.2b) indicate that the slope of the curve is not significantly different from zero below the 40 percent ownership mark. However, past the point where the CEO owns 40 percent of the firm, there clearly appears to be a marginal increase in Tobin's Q, all else being held constant.

The results are similar to those found in the fixed-effects model. The derivative of the CEO ownership curve shows the rate of change of the CEO ownership along with 95 percent confidence intervals. Figure 5.2b makes it clear that the slope of

the CEO ownership curve does not significantly vary from zero until about the 40 percent ownership mark.



(a) CEO ownership as a polynomial curve based on the random intercept model with 95% confidence intervals.



(b) Derivative (rate of change) of CEO ownership polynomial curve based on the random intercept model with 95% confidence intervals.

Figure 5.2: Predicted marginal effects of CEO ownership based on random intercept model

## 5.4 Diagnostic Testing

Some basic diagnostic testing was done for all the models used in this chapter. In both the fixed-effects models and the random effects models, histograms of the residuals took on a normal distribution. There were observations with residuals beyond three standard deviations. For testing purposes, these observations were dropped and the regressions were re-estimated. The resulting coefficients were very similar to those of the original regression model in both signs and significance.

## 5.5 Summary

This chapter presented the results of fixed and random effects regression models that used Tobin's Q as the dependent variable. In this research, Tobin's Q is used as a measure of firm valuation. The model specification treated each of the governance variables independently.

In the next chapter, these results will be discussed with respect to the theory of internal social capital of corporations. Particular attention will be paid to the results of the regression models and their implications for the hypotheses developed in Chapter 3.

# Chapter 6

## Discussion, Implications and Conclusions

### 6.1 Introduction

This thesis offers a view of the firm that focuses on the internal social capital of the organization (Harris & Helfat 2007). From this perspective, I have argued that the theory of internal social capital – described here as the structure of relationships between different coalitions of corporate insiders – can be a useful way in which to understand corporate governance. In this research, I have tested the hypotheses listed in Chapter Three using a sample of SMEs that have recently undergone a public offering.

The literature review touched on some of the influential themes within the corporate governance literature. These themes include ownership and control of the firm (Morck 2005*a*), and the importance of family-run firms (Villalonga & Amit 2006), and the presence or absence of outside directors to oversee management (Weisbach 1988). The majority of the corporate governance research examines hypotheses about these themes by considering samples of larger, established firms. This is the case even

though one of the seminal papers in the field, which focuses on top executive ownership and firm performance, explicitly calls for an analysis of smaller firms and their ownership structure (Morck et al. 1988*b*). Morck et al. (1988*b*, pg.314) call for further research, “to learn how members of boards of directors with different individual ownership positions interact, and how the distribution of ownership among board members affects performance.” This research on internal social capital of SMEs offers a contribution to the corporate governance literature on precisely this point both theoretically and empirically.

The literature review also examines theories that are concerned with how the linkages between firms are important. Economic sociologists have mainly developed this area of the literature. These researchers have paid particular attention to how firms can use corporate interlocks to exchange resources (Pfeffer & Salancik 1978), relate firms to their sources of finance (Mintz & Schwartz 1985), and also examine top corporate managers as a distinct social class (Useem 1986). Researchers in this area have also contributed to network theory more generally.

### **6.1.1 Network Theory**

Network theory has a long history in the social sciences dating back to at least the late 1940s and 1950s. Bavelas (1950) was the first thinker to connect the structure of linkages between individuals with their collective outcomes. Since that time, an examination of the structure of network linkages and how they influence individuals and organizations has become a growing area for academic research.

Other researchers have built on Bavelas’s (1950) insight of network centrality to examine the importance of other network characteristics. One of the most important research areas concerns how weak ties can be important (Granovetter 1973). Burt (1992) also focuses on ties between groups, which he calls bridging ties. These are similar to Granovetter’s weak ties but Burt places more emphasis on structure and less on tie strength (Borgatti & Lopez-Kidwell 2011).

The structuralist approach – the approach that is adopted in this research – explains success as a function of network position. Structuralism differs from other network theories that are more concerned with who one is connected to and the resources to be gained from those others (Lin 1999). In general, network theory has proven to be very flexible – research has extended from whole-network analysis to ego-centric networks.

The dominant approach within network theory has been to consider a so-called flow model. In this type of model, resources of some type – often information – are hypothesized to flow through a network. The position one has in a network may be advantageous if one is able to access unique information or broker that information to others. The alternatives to flow models are called bonding models or architectural models. These models emphasize how individuals in the network can coordinate action (Borgatti & Lopez-Kidwell 2011, p.7). This research makes use of an architectural model perspective to understand relationships between coalitions of corporate insiders.

Economic sociologists generally try to take the social context of economic issues into account in their analyses. The same cannot be said of most of the corporate governance research; this research tends to focus on individuals within a firm without a broader examination of their relationships to others in the same firm or different firms. Granovetter (1985) has been particularly critical of economic studies that ignore the social context in which economic transactions are embedded.

### **6.1.2 Corporate Governance Research**

Corporate governance studies have tended to treat the importance of linkages between insiders as a secondary concern, if at all. For example, when dealing with complex ownership pyramids, most studies of corporate ownership make simplifying assumptions about which group controls the firm, based on who is the largest shareholder (Porta et al. 1999, Connelly et al. 2010). Similarly, studies that include



measures of outside directors often begin from the same intuition – that directors who are not associated with the firm are important for governance. However, governance researchers often vary widely in how they determine who is an outside director and who is an inside director (for discussion, see section 2.3.1 on page 33). It should be noted that there are studies that do attempt to take into account diverse ownership structures (such as Maury & Pajuste 2005) and account for relationships among directors within the firm (Hwang & Kim 2009). These studies, however, are in the minority.

My research brings network theory to the corporate governance literature. Using social capital theory, I examine how the structure of linkages between corporate insiders is associated with firm performance. I use the main networks noted in the literature review – family networks, ownership networks and professional networks – in order to determine which insiders are linked to each other. These relations are theoretically expressed as the internal social capital of the firm.

The theory of the internal social capital of an organization is concerned with the implications of the network structure that links corporate insiders within a firm. In this dissertation, the literature has been broken down into broad headings that emphasize the networks that are used in this study to identify how corporate insiders are related. The key idea behind this research is that the directors, managers and large owners of a corporation are often socially related, and these relationships are important for understanding corporate governance in SMEs that have recently gone public. I argue the social network that results from considering these overlapping networks should be considered architecturally, in terms of how the people within the network coordinate their actions. Understanding how different corporate insiders are related makes it possible to determine whether different coalitions – representing corporate insiders that share some common network ties – exist in the firm. These groups of variously related corporate insiders are assumed to share common interests. These common interests may or may not coincide with the interests of other coalitions within the corporation. I argue that the structure of the relationships between these coalitions can tell us something about how the corporation governs itself. The

particular hypotheses related to the internal social capital of SMEs is discussed in the following section.

## 6.2 Hypotheses

The sections that follow discuss the findings that are the result of the major hypotheses of this research. For each hypothesis, the theory, implementation, findings and implications will be discussed.

### 6.2.1 Effective Control by Insider Groups

*Hypothesis 1: The measure of effective control (constraint) in the firm is negatively associated with firm performance.*

The theory of internal social capital of the firm captures the idea that firms are often composed of multiple different coalitions. This hypothesis considers the direct implications that the structure of the different coalitions within a firm have on a firm's corporate governance. I argue that the relative voting rights controlled by different coalitions within a firm have implications for how a firm is governed and how the firm ultimately performs on the market.

The implications that having multiple coalitions within the firm can have on corporate governance is perhaps best illustrated by considering two different scenarios. In the first scenario, consider the implications if there are multiple coalitions in the firm controlling roughly similar numbers of voting rights. In this case, I argue that the different coalitions will act to provide oversight over one another in order to ensure that their different interests are protected. In the second scenario, consider a firm with only a single coalition of related insiders. In this case, the coalition has effective control over the firm because there are no other coalitions of insiders with significant interests in the firm. Thus, there is no group of insiders with enough votes to contest the main coalition and so there is no oversight internally. In this study, effective control is essentially the amount of control that any single coalition can exert over the firm.

Effective control is important to corporate governance because, at one extreme, multiple different stakeholders have incentive to provide some oversight over one another in order to protect their investment in the firm. This internal oversight should benefit all shareholders by ensuring that resources are not misallocated in order to benefit a single group in the firm. At the other extreme, if there is only a single insider group within the corporation that has effective control of the firm, this indicates that there is no oversight internally – i.e., no other group in the firm has any incentive to challenge those that effectively control the firm. The key idea here is that the structure of the relationships that exist between different coalitions within a firm contribute to how the firm is governed.

I argue that considering the degree to which a firm is effectively controlled by a single group is an important part of understanding a firm's corporate governance. It should be stressed, however, that the idea of effective control of a firm is intended as a complement to other theories that attempt to capture corporate governance. The idea in and of itself is not meant as a replacement to existing corporate governance ideas.

In this research, I have implemented a measure of inside social capital using a variant of Burt's (1992) network measure of constraint. Family relationships and linkages through common ownership in other companies or funds are used to determine which corporate insiders have links to others. Once these linkages have been established, the ownership of voting shares controlled by each group of corporate insiders is considered. Using the groups of corporate insiders, I construct a simple network relating each insider group to the firm. The proportion of voting shares that each coalition controls is used as a weight in the calculation of each network edge. Burt's (1992) measure of constraint is used to summarize the degree to which one coalition has effective control over the organization while also accounting for the relative importance of other insider groups with interests in the corporation.

The results in both the fixed effects and random intercept model are consistent. In both models, the measure of effective control of the organization is negatively associated with firm performance. In both the fixed and the random effects models,

the coefficient on the effective control covariate is negative and statistically significant at the five percent level. This lends support to the interpretation put forward here that firms that are controlled by a single insider group have less internal oversight which has a negative effect on firm performance. These findings support the idea that there are insider groups within the firm and that these coalitions can act to oversee one another. This is not to say that all coalitions in every case will always work to oversee one another in a way that benefits small shareholders. As Flew (1995) succinctly points out, relationships do not cause anything – individuals cause things to happen, though the social structure in which they exist may influence individuals' decisions. The point here is that the structure of the network of linkages between different coalitions makes it more likely that there will be some oversight exercised and that firm valuation will be affected.

This finding lends support to the idea that the internal social capital of a firm has an influence on firm market performance. I argue that this observed relationship can be understood with reference to firm corporate governance. If there is only one insider group in the firm with effective control of the organization, then there are no alternative coalitions of insiders with enough voting shares to provide a credible threat to block the dominant group's plans. However, if there are multiple coalitions within the firm with similar levels of voting control, these groups are likely to provide oversight over one another. If members of one group attempt to organize the firm in a way to narrowly benefit themselves, the other coalitions of corporate insiders in the firm will coordinate to stop this action. This finding also implies that many commonly used measures of corporate governance may be better understood with reference to the internal social capital of organizations.

## 6.2.2 Oversight by Independent Directors

*Hypothesis 2: The proportion of independent directors in the firm is positively associated with firm performance.*

The prime duty of directors of public companies is to oversee the work of managers to ensure that the shareholders' investments in the firm are protected. In practice, however, the firm's top managers often also serve as directors. This has led researchers to try to distinguish between so-called inside directors (i.e., the firm's managers) and outside directors. Outside directors are assumed to be more independent because they share no relationships with the firm. Thus, outside directors are more able to effectively challenge the executive managers than inside directors whose future employment may be at risk if they openly criticize other top managers (Weisbach 1988). Independent directors also have incentive to properly oversee the firm. Fama & Jensen (1983) argue that independent directors are cognizant that their reputations will be at risk if they do a poor job. Other studies have found that there are consequences to the future employment prospects of directors who perform poorly (Srinivasan 2005).

In practice, however, the seemingly simple delineation between inside and outside directors has spawned a great many difficulties. These difficulties stem from the fact that different authors often begin from the same intuitive starting point – that outside directors are not related to the firm. Inconsistencies arise because the criteria used by different authors to determine what constitutes an independent director can vary widely across studies (see Literature Review, Section 2.3.1, page 33). There appear to be only a few studies in which a consistent methodology to determine inside and outside directors is based on the relationships between corporate insiders – a good example of this approach is provided by Hwang & Kim (2009).

The advantage of a network-based theory used in this research is that the theory often implies a clear methodological approach (Borgatti & Lopez-Kidwell 2011, Borgatti & Halgin 2011). From a network perspective, independent directors can be

thought of as insiders who do not share a relationship with any of the other insiders, and who also do not own a significant portion of the firm. In this research, I use the proportion of independent directors on the board – the number of independent directors is divided by the total number of directors – to capture whether independent directors have a significant say in the organization. Thus, as the proportion of independent directors to all directors gets closer to one, the more independent the board is considered to be.

In the fixed-effects regression model, the coefficient on the covariate representing the proportion of independent directors was not significantly different from zero. However, in the case of the random effects model, the coefficient is positive and significant at the 0.01 percent level. This results support the notion that independent directors are important for firm valuation.

The implications of this finding are twofold. First, these findings support the idea that independent directors are important for corporate oversight. Second, the theory of internal social capital of firms upon which this thesis is based and the methodological implementation speak to how useful a theoretical basis for determination of inside and outside directors can be. In the majority of the corporate governance literature, directors are determined to be insiders or outsiders based on intuitive but ultimately somewhat arbitrary criteria. The social capital perspective offers a consistent theoretical and methodological determination of independent directors in a firm.

### 6.2.3 Family Control of the Firm

*Hypothesis 3: An indicator of a family-run firm is negatively associated with firm performance.*

Empirical measures of the importance of family ownership and control of firms have yielded mixed results. Established family control has repeatedly been found to be detrimental to firm performance if the founding entrepreneur passes the firm on to other family members (Villalonga & Amit 2006). Research has shown that in the Canadian context, large firms that are family-controlled have similar performance as measured by Tobin's Q, as widely-held firms in cases where there are no additional mechanisms of control. Family-controlled firms with dual-class shares, on the other hand, are found to have comparatively lower valuations (King & Santor 2008). However, all of this research has focused on larger, established firms. Little is known about family-controlled SMEs on the public market.

In this research, I hypothesized that family-run firms are penalized by potential investors due to concerns that the family will put their own interests ahead of other shareholders. I speculated that if a firm is family-run, investors will see it as carrying additional risk and that the firm will be valued accordingly. In order to test this hypothesis, I created a dummy variable if family members are part of the insider group with the greatest amount of voting shares in the firm.

The findings across all regressions were consistent in that they did not support the hypothesis that family-run firms would be negatively associated with firm valuation. Instead, consistent with King & Santor's (2008) findings for larger Canadian firms, there does not appear to be any relationship between family operation of the firm and its valuation as measured by Tobin's Q. Investors appear to be ambivalent about the family ownership characteristics of the firm. This supports the idea that relatives serving as top managers or directors has no effect on firm valuation once the structure of relationships within the firm has been accounted for.



## 6.2.4 CEO Ownership

*Hypothesis 4a: CEO ownership is non-linearly associated with firm performance.*

Ownership by the CEO is often considered to be an important element of firm valuation. There are two theories that offer guidance regarding the relationship between CEO ownership and firm valuation (Morck et al. 1988b). The first theory is called the convergence of interests hypothesis. It posits that increasing ownership is incentive for the CEO's interests to converge with those of other shareholders. This theory predicts a roughly linear relationship between executive ownership and firm performance. The second theory has been called the entrenchment hypothesis and it predicts that there is a non-linear relationship between CEO ownership and firm performance. Morck et al. (1988b) found in a sample of larger firms that there was a local maximum at around the five percent ownership mark in the marginal relationship between ownership and performance. After this point, there was a decline to a local minimum at around the 25 percent ownership point, after which there was an increase in marginal relationship between ownership and performance (see Figure 2.4 and accompanying discussion on page 29).

In this research, I have implemented CEO ownership as a third degree polynomial in the regression models. This approach has the advantage of allowing the resulting curve to form according to the underlying data and not through a series of chosen dummy variables as used in Morck et al. (1988b). In utilizing this approach, I pay particular attention to the marginal changes in CEO ownership and the confidence intervals around the estimated point values. The confidence intervals are particularly important because they show whether the slope of the CEO ownership curve is significantly different from zero at any given point.

In the primary fixed and random intercept models, the findings have been consistent. There appears to be no significant relationship between CEO ownership and firm valuation at low levels of ownership. It is only when CEO ownership exceeds 40 percent that there appears to be a significant positive association between ownership

and performance (see Figure 5.2b on page 171). This implies that only at very high levels of ownership does there appear to be any positive relationship between the CEO's ownership in the firm and the firm's performance.

## 6.3 Conclusions About the Research Problem

The findings from the empirical portion of this research support the idea that the theory of internal social capital of firms is a useful perspective to examine corporate governance within a sample of SMEs that have recently gone public in Canada. In this research, I present hypotheses to examine questions that are pertinent to corporate governance research. Each of these hypotheses are derived from the theory of the inner social capital of the firm. The core idea of this theory is that the structure of the relationships between corporate insiders matters. The network of relationships that exists between corporate insiders can be used to infer coalitions with similar interests that have incentive to coordinate their actions in order to protect their own interests.

The first two hypotheses about effective control and independent directors deal directly with the structure of relationships between corporate insiders. The last two hypotheses – dealing with family control of the firm and CEO ownership – are concerned with how particular characteristics of the group or individual potentially affect firm performance. Other corporate governance studies dealing with questions of family control and CEO ownership do exist. The difference is that my research considers these factors through the theoretical lens of internal social capital of the firm. I submit that understanding the larger social context adds more insight than considering either the presence of families or CEO ownership in isolation. The internal social capital of the firm is a useful perspective to take in examining the firm because the network of relationships between insiders can have both direct and indirect effects on firm outcomes.

### **Effective Control**

The first hypothesis is concerned with the implications that effective control of the firm by an insider group has for firm performance. The concern is to determine

if there is a coalition in the firm that has enough voting rights to effectively control the organization or if other coalitions can contest any decisions made by the controlling group. In the sample of SMEs used in this research, I find support for the hypothesis that having a single controlling group is negatively associated with firm performance. This finding indicates that the internal social capital view of the firm can provide insight into how the structure of relationships between insiders can influence outcomes.

The effective control hypothesis extends and builds on Maury & Pajuste's (2005) work. However, rather than just being restricted to multiple corporate owners, this research considers the voting shareholdings of every individual insider associated with a firm and their links with other insiders. Thus, the internal social capital of the firm includes all owners as well as their representatives on the board. Internal social capital encompasses all the voting ownership among all the coalitions of insiders in a firm. The extension of the networks in this research to encompass family networks and ownership networks is relevant, especially considering the high rate of family involvement in public SMEs (for discussion, see 2.2 on page 18).

### **Independent Directors**

The second hypothesis is concerned with the proportion of independent directors who provide external oversight on behalf of shareholders. The previous hypothesis dealt with those insiders who are somehow connected to one another. In contrast, this hypothesis focuses on individual insiders who are not connected to anyone else in the firm. In particular, the network measure examines which directors are not related to other insiders. The findings of the empirical model support the notion that independent directors are important for corporate oversight. The internal social capital perspective of the firm also allows for independent directors to be identified using a methodology that is consistent with theory.

## **Family Control of the Firm**

In this research, a firm is considered to be family-controlled if multiple family members are part of the largest shareholding group. I found no support for the idea that the performance of family-controlled firms is significantly different than that of other firms.

This result appears, at first, to differ from the results found in the extant literature. However, the extant corporate governance literature has mainly focused on large, established firms where there may be multiple generations involved in the firm. Researchers have found that there appears to be a negative association with performance when there is nepotism involved in executive appointments (King & Santor 2008). The key idea is that subsequent generations may not have the same business acumen that the originator of the firm possessed. In the current sample of SMEs that have recently undergone an IPO, it is very likely that the family members are founders of the firm. The results from the model indicate that family-controlled firms perform no differently, all other things being equal, than other firms. These results support the idea that executives from the same family are no better or worse than other managers.

## **CEO Ownership**

The percentage of a firm that executives of that firm own has emerged as an important, if controversial, theme in the corporate governance literature. In this study, I consider CEO ownership in the firm because of the important role the position is thought to play in SMEs (Morck et al. 1988*b*, pg.314).

The basic regression models in this study indicate CEO ownership has no association with firm performance for relatively low levels of ownership. At high levels of ownership – past 40 percent – there appears to be a positive association between CEO ownership and firm performance. This implies that at high levels of corporate

ownership, the interests of the CEO appear to converge with those of regular shareholders. However, this result is based on relatively few observations from just seven firms. It is clear that for lower levels of ownership no association between ownership and performance was found. For higher levels of CEO ownership, there may be some relationship although the potential relationship based on these influential observations is likely best explored outside of a quantitative framework using a case-study approach.

### **6.3.1 Contributions**

This research has explored the importance of internal social capital theory to corporate governance and firm performance. Using a sample of SMEs that have recently gone public in Canada, I find evidence supporting the idea that internal social capital is a useful way to understand corporate governance. The hypotheses of this research have made use of the theory of internal social capital to better understand SME corporate governance and its association with firm performance.

There are a number of benefits to examining the internal social capital of corporations. The first is that internal social capital theory offers guidance and consistency in cases that are often handled in an ad hoc fashion by governance researchers. Examples include cases of effective control and independence of directors, discussed above. The second advantage of the internal social capital perspective is that the network measures used offer accurate summaries of the complex relationships that are commonplace in even the smallest firms. The social capital approach can also be easily extended to other cases where additional networks need to be taken into account. In short, the internal social capital view of firms has the advantage of being a consistent theoretical approach to corporate governance within the firm, as well as offering consistent methodological tools to measure complex relationships.

This research has made a number of contributions to the corporate governance literature. The primary contribution of this research has been to develop the theory

of internal social capital of the firm. In contrast to earlier work in this area (Harris & Helfat 2007), I develop a network-based theory of firm governance that is concerned with the coordination between corporate insiders. This is an architectural network model as opposed to a flow-type model that is often adopted in network studies.

Using the theoretical lens of internal social capital, I have developed four general hypotheses of the firm. The hypotheses concerned with effective control of the firm and the proportion of independent directors in the organization are both concerned with factors affecting corporate governance in the firm. Both of these measures are derived directly from the network of relationships between corporate insiders in the firm. This is a methodological contribution of this study – the variables used in the models are tightly coupled with the network theory from which they are derived.

This study's remaining two hypotheses – dealing with family-run firms and CEO ownership – are concerned with themes that have become increasingly the focus of interest for many researchers. Both of these hypotheses make use of the structure of relationships between corporate insiders in order to better understand corporate governance of SMEs. The hypothesis regarding family-controlled firms is concerned with possible differences between firms that are family-run and those that are not. In this research, I find no significant difference between family-controlled firms and other firms in the sample of SMEs that have recently gone public. CEO ownership, a measure of individual incentive, does not appear to be an important explanatory variable in firms that are not effectively controlled by a single large insider. Thus, the findings of these hypotheses illustrate the usefulness of the theory of internal social capital in exploring corporate governance issues in greater detail.

## 6.4 Implications for Theory

The findings of this research have implications for existing corporate governance theory. Considering the internal social capital of a firm draws together disparate sources of the corporate governance literature in a theoretically consistent manner (Connelly et al. 2010). For example, in the present study, family, ownership and professional linkages are all considered. The social capital perspective allows for the implications of these different network types to be considered holistically. By combining all of these very different networks, the theory of internal social capital allows us to see how related insiders in the firm can collectively influence outcomes.

Although this research has focused on Canadian SMEs that have recently gone public and the networks associated with family, ownership and professional connections, there is nothing restricting the approach used here from making use of other theoretically valid networks. This flexibility means that the theory and measures developed here can be easily taken to other contexts, using other theoretically justifiable networks.

This emphasis on relationships and interconnections is important given that the dominant paradigm in the corporate governance literature continues to be agency theory (Connelly et al. 2010). Agency theory provides a powerful explanatory framework, but even authors working with agency theory feel the need to extend it to explain the outcomes they see empirically (see section 3.4 on page 61 for discussion).

Viewing the firm from the perspective of its internal social capital can provide valuable insights even if used from within an agency perspective. For example, in the current research, all SME owners are taken into account in determining whether a firm is effectively controlled. I argue that this approach is superior to existing attempts that focus exclusively on external corporate owners (Maury & Pajuste 2005), or ignoring all but the largest owners altogether (Morck 2005*b*). The social capital approach captures details about the linkages between insiders with significant ownership stakes in the firm that may have otherwise been lost.



Coupled with internal social capital theory and its emphasis on the linkages between corporate insiders are related methodological tools. The measures in this study can be used in other corporate governance studies regardless of the networks chosen. Similarly, the process to determine who is an independent director leads directly from the internal social capital theory developed in this research.

## 6.5 Implications for Policy and Practice

This study builds on research drawn from the corporate governance and sociological literature. The extant literature in these fields tends to focus on large, established firms. Very little work examines the importance of corporate governance to the performance of relatively small and medium-sized firms. This research assesses the importance of corporate governance to the performance of SMEs. The outcomes of this research will be of interest to policy makers and practitioners – entrepreneurs, managers and directors.

Policy makers will find this work useful because it offers practical, quantitative methods for measuring the relationships between corporate insiders. Policy makers are hesitant to burden SMEs with excessive reporting requirements. The methods used in this research can shed light on corporate governance of SMEs without burdening companies with surveys or new reporting requirements. Using these measures, which are grounded in the network analysis literature, firms with different governance structures can easily be compared. Moreover, the methodology used in this research can be used for any public Canadian firm that is required to report using the *System for Electronic Disclosure of Insiders (SEDI)* (CDS Inc. 2010).

Entrepreneurs, investors, directors and managers will find this research useful because it examines how different forms of governance are generally associated with firm valuation. This knowledge – gained from an analysis of actual SMEs that have recently undergone an IPO on a Canadian exchange – can be used as the boards of SMEs are assembled or new members are added to existing boards. This information is useful because SMEs are likely different from the majority of larger, established companies that make up the majority of corporate governance studies.

In SMEs, many of the corporate insiders maintain relationships with the founding entrepreneur. Family members, friends or early investors may all be corporate insiders because of their personal relationships with the founder rather than merit. Directors working with these firms need to be aware of the possible dynamics of

groups of insiders within the firm. The relationships highlighted in this study – family, ownership and professional relationships – may affect how directors can do their job. Rather than ignore these complex issues, this research attempts to take them into account. For example, family firms make up a significant percentage of the publicly listed SMEs in Canada. In many firms, families retain enough shares to effectively control the firm. This research considers how corporate governance in family-run firms is related to performance.

## 6.6 Limitations

There are also limitations that should be considered in this study. This research only considers industrial SMEs that have recently undergone an IPO and that are publicly listed on the Toronto Stock Exchange and the Toronto Venture Exchange. The results here may not be directly applicable to private firms or to larger public firms.

## 6.7 Implications for Future Research

The empirical findings of this research cannot be generalized beyond the SMEs that have recently gone public in Canada. However, the theory and methodology developed in this research point to new directions for future research. The theory and methodology developed in this research should be applicable using any theoretically justifiable networks.

One direction for future research would be to extend it to the study of large corporations and business groups. In many countries, including Canada, business groups are common (Morck 2005*a*). These business groups are characterized by companies owning voting shares in other corporations. Collectively, these firms are often organized into a corporate pyramid. Within a corporate pyramid there is an ultimate controlling owner. When multiple large corporations own shares in another firm the consequences for firm performance are difficult to determine. Many studies of corporate pyramids have made simplifying assumptions to make their analysis more tractable (for discussion, see Section 2.3 on page 27).

Some researchers have chosen to examine the largest owners in a firm while excluding other large shareholders in the firm from their analyses. I argue that these simplifying assumptions are not necessary. Using network-theoretic approaches, complex relationships based on inter-corporate ownership only need to be considered as another network in order to be evaluated. Using the social capital theory in general, and the measure of effective control developed in this research in particular, I argue that it would be possible to conduct more nuanced research into the implications of ownership by business groups. For example, do firms that are effectively controlled by a number of firms perform differently than those that are effectively controlled by a single parent company? What are the implications for public firms that are central in a corporate pyramid? Moreover, what is the role the directors from within the corporate pyramid play on the board of a firm (Attiga & Morck 2006)?

The findings of this research regarding CEO ownership offer another avenue for future research. In this research, CEO ownership was found to have a non-linear

relationship with firm performance in firms that are highly controlled. The results of this study differed from those of Morck et al. (1988*b*). Rather than displaying an increasing and then decreasing association of ownership with firm performance, the results of this study show only a result in those cases where the CEO owns in excess of 40 percent of the firm. These results indicate that in some cases, strong leadership may positively influence performance. However, in the majority of cases this does not appear to be the case. A case-study approach may be necessary here to better understand these results.

This research examines how SME corporate governance is related to firm performance as measured by Tobin's Q. Another important related question concerns those firms that have exited the panel in this analysis. SMEs may have left the panel used in this study for a variety of reasons. Some firms leave because they go out of business, but others become acquired and generate profits for their owners. More study needs to be done to understand if and how the corporate governance of the firm is related to the event of the firm becoming acquired. A further question concerns how the corporate interlocks that the firm maintains are related to this outcome.

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