

**WORKING PAPER SERIES**

**GOVERNANCE STRUCTURE,  
CORPORATE DECISION-MAKING AND  
FIRM PERFORMANCE IN  
NORTH AMERICA**

*Working Paper Number 7  
March 1996*



Industry  
Canada

Industrie  
Canada



WORKING PAPER SERIES

**GOVERNANCE STRUCTURE,  
CORPORATE DECISION-MAKING AND  
FIRM PERFORMANCE IN  
NORTH AMERICA**

*by P. Someshwar Rao and Clifton R. Lee-Sing, Micro-Economic Policy  
Analysis, Strategic Investment Analysis, Industry Canada*

*Working Paper Number 7  
March 1996*

**ACKNOWLEDGMENTS**

*We are grateful to Ross Preston and Denis Gauthier for their encouragement and support on this project, and to Ron Daniels and Randall Morck for their comments and suggestions at various stages of the study. We would also like to thank David Stangeland, Giovanni Barone-Adesi and Lee Gill for their many useful comments on the draft paper. Thanks are also due to Ashfaq Ahmad and Marc Legault for their assistance throughout.*

---

Comments should be addressed to:

Someshwar Rao  
Director, Strategic Investment Analysis  
Micro-Economic Policy Analysis  
Industry Canada  
5th Floor, West Tower  
235 Queen Street  
Ottawa, Ontario  
K1A 0H5

Telephone: (613) 941-8187  
Facsimile: (613) 991-1261

*Aussi disponible en français*

---

The views expressed in these working papers do not necessarily reflect those of Industry Canada or of the federal government.

Details of the titles available in the Working Paper Series and how to obtain copies can be found at the end of this document.



## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b> .....	<i>i</i>
<b>1. INTRODUCTION</b> .....	1
<b>2. THE GOVERNANCE SYSTEMS IN CANADA AND THE UNITED STATES</b> .....	5
<b>Concentration of Voting Shares and Ownership</b> .....	6
Concentration of Corporate Ownership or Corporate Control .....	6
Percentage of Voting Shares Held by Significant Shareholders .....	7
Number of Significant Shareholders .....	8
<b>Level of Inside Ownership</b> .....	8
<b>Institutional Ownership</b> .....	9
<b>Number of Directors and Senior Officers</b> .....	11
<b>Inside Director Ratio</b> .....	12
<b>Foreign Director Ratio</b> .....	12
<b>CEO on the Board or Chairperson of Board of Directors</b> .....	13
<b>Summary</b> .....	14
<b>3. ANALYTICAL FRAMEWORK</b> .....	15
<b>Regression Equations, Set 1</b> .....	18
<b>Regression Equations, Set 2</b> .....	19
<b>Possible Effects of Corporate Governance Variables</b> .....	19
Concentration of Ownership .....	19
Institutional Investors .....	20
Insider Ownership .....	20
Inside Directors .....	21
CEO as Chairperson .....	21
Board Size .....	21
<b>Summary</b> .....	22
<b>4. EMPIRICAL RESULTS</b> .....	23
<b>Corporate Governance and Decision-Making</b> .....	23
<b>Corporate Performance and Governance Structure</b> .....	26
Profitability .....	26
Growth .....	26
Productivity .....	26
<b>Corporate Performance and Corporate Decision-Making</b> .....	29
<b>Total Effect of Governance Variables on Corporate Performance</b> .....	29
<b>Summary</b> .....	30

<b>5. CONCLUSION .....</b>	<b>31</b>
<b>ENDNOTES .....</b>	<b>33</b>
<b>APPENDIX 1</b>	
<b>SOURCES AND CHARACTERISTICS OF THE DATABASE .....</b>	<b>35</b>
<b>APPENDIX 2</b>	
<b>GOVERNANCE ENVIRONMENT IN NORTH AMERICA .....</b>	<b>41</b>
<b>APPENDIX 3</b>	
<b>CORPORATE GOVERNANCE STRUCTURE:</b>	
<b>DETAILED TABULATIONS .....</b>	<b>45</b>
<b>APPENDIX 4</b>	
<b>CONCENTRATION OF OWNERSHIP TABULATIONS .....</b>	<b>59</b>
<b>APPENDIX 5</b>	
<b>REGRESSION RESULTS OF MODEL 1 .....</b>	<b>61</b>
<b>APPENDIX 6</b>	
<b>REGRESSION RESULTS OF MODEL 2 .....</b>	<b>71</b>
<b>APPENDIX 7</b>	
<b>REGRESSION RESULTS FROM THE REDUCED FORM EQUATIONS ....</b>	<b>91</b>
<b>APPENDIX 8</b>	
<b>RESULTS FROM THE NON-LINEAR REGRESSION EQUATIONS .....</b>	<b>111</b>
<b>BIBLIOGRAPHY .....</b>	<b>121</b>
<b>INDUSTRY CANADA RESEARCH PUBLICATIONS .....</b>	<b>125</b>

## LIST OF FIGURES AND TABLES

### *Figures*

Figure 1	Concentration of Ownership in Canada and the United States . . . . .	7
Figure 2	Percentage of Voting Shares Held by Insiders, by Size Class . . . . .	9
Figure 3	Percentage of Voting Shares Held by Institutions, by Size Class . . . . .	10
Figure 4	Number of Directors by Size Class . . . . .	11
Figure 5	Inside Director Ratio by Size Class . . . . .	12
Figure 6	Foreign Director Ratio in Canadian Firms, by Size Class . . . . .	13
Figure 7	CEO as Chairperson . . . . .	14
Figure 8	Linkages Between Corporate Governance Structure and Decision-Making . . . . .	17
Figure 9	Linkages Between Corporate Governance Structure, Decision-Making and Performance Variables . . . . .	18
Figure A1-1	Sample Distribution of Canadian and American Firms by Size Class . . . . .	37
Figure A1-2	Sample Distribution of Canadian and American Firms by Industry Grouping . . . . .	39
Figure A4-1	Return Performance Grouped by Concentration of Ownership . . . . .	60
Figure A4-2	Growth Performance Grouped by Concentration of Ownership . . . . .	60

### *Tables*

Table 1	Corporate Governance, Decision-Making and Performance Variables . . . . .	16
Table 2	Regression Dummy Variables . . . . .	17
Table 3	Canadian Corporate Governance and Decision-Making Regression Results . . . . .	23
Table 4	American Corporate Governance and Decision-Making Regression Results . . . . .	24
Table 5	Canadian Corporate Performance and Corporate Decision-Making Regression Results . . . . .	27
Table 6	American Corporate Performance and Corporate Decision-Making Regression Results . . . . .	28
Table 7	Summary of Regression Analysis . . . . .	30
Table A1-1	Size Classes Determined by Sales Volume . . . . .	36
Table A1-2	Components of the Major Industry Groupings . . . . .	38
Table A2-1	Canadian Governance Environmen . . . . .	41
Table A2-2	United States Governance Environment . . . . .	43
Table A3-1	Database Summary - Number of Firms, Average Sales and Average Assets by Size Class (US\$ millions) . . . . .	45

Table A3-2	Database Distribution - Firms, Sales and Assets by Size Class (US\$ millions) . . . . .	45
Table A3-3	Database Summary - Number of Firms, Average Sales and Average Assets by Major Industry Grouping (US\$ millions) . . . . .	46
Table A3-4	Database Distribution - Firms, Sales and Assets by Major Industry Grouping . . . . .	47
Table A3-5	Concentration of Ownership by Size Class . . . . .	48
Table A3-6	Concentration of Ownership by Major Industry Grouping . . . . .	48
Table A3-7	Percentage Held by All of the Significant Shareholders by Size Class . . . . .	49
Table A3-8	Percentage Held by All of the Significant Shareholders by Major Industry Grouping . . . . .	49
Table A3-9	Number of Significant Shareholders with at least 10 Percent Ownership by Size Class . . . . .	49
Table A3-10	Number of Significant Shareholders with at least 10 Percent Ownership by Major Industry Grouping . . . . .	50
Table A3-11	Percentage of Voting Shares Held by Insiders, by Size Class . . . . .	50
Table A3-12	Percentage of Voting Shares Held by Insiders, by Major Industry Grouping . . . . .	51
Table A3-13	Institutional Ownership by Size Class . . . . .	51
Table A3-14	Institutional Ownership by Major Industry Grouping . . . . .	52
Table A3-15	Number of Directors by Size Class . . . . .	52
Table A3-16	Number of Directors by Major Industry Grouping . . . . .	53
Table A3-17	Number of Officer, by Size Class . . . . .	53
Table A3-18	Number of Officers by Major Industry Grouping . . . . .	54
Table A3-19	Inside Director Ratio by Size Class . . . . .	54
Table A3-20	Inside Director Ratio by Major Industry Grouping . . . . .	55
Table A3-21	Foreign Director Ratio in Canadian Firms by Size Class . . . . .	55
Table A3-22	Foreign Director Ratio in Canadian Firms by Major Industry Grouping . . . . .	56
Table A3-23	CEO is on the Board of Directors by Size Class . . . . .	56
Table A3-24	CEO is on the Board of Directors by Major Industry Grouping . . . . .	57
Table A3-25	CEO is Chairperson on the Board by Size Class . . . . .	57
Table A3-26	CEO is Chairperson on the Board by Major Industry Grouping . . . . .	58
Table A4-1	Concentration of Ownership Tabulations . . . . .	59
Table A5-1	Leverage Variable, Canadian Sample (Dependent Variable: CD.DDASS) . . . . .	63
Table A5-2	Capital-Labour Ratio Variable, Canadian Sample (Dependent Variable: CD.ASSEM) . . . . .	64
Table A5-3	R&D Intensity Variable, Canadian Sample (Dependent Variable: CD.RNDSS) . . . . .	65

Table A5-4	Outward Orientation Variable, Canadian Sample (Dependent Variable: CD.FTAG) .....	66
Table A5-5	Leverage Variable, U.S. Sample (Dependent Variable: UD.DDASS) .....	67
Table A5-6	Capital-Labour Ratio Variable, U.S. Sample (Dependent Variable: UD.ASSEM) .....	68
Table A5-7	R&D Intensity Variable, U.S. Sample (Dependent Variable: UD.RNDSS) .....	69
Table A5-8	Outward Orientation Variable, U.S. Sample (Dependent Variable: UD.FTAG) .....	70
Table A6-1	Return on Equity Variable, Canadian Sample (Dependent Variable: CP.ROE) .....	73
Table A6-2	Return on Assets Variable, Canadian Sample (Dependent Variable: CP.ROA) .....	74
Table A6-3	Sales Growth Variable, Canadian Sample (Dependent Variable: CP.SG) .....	75
Table A6-4	Asset Growth Variable, Canadian Sample (Dependent Variable: CP. ASSG) .....	76
Table A6-5	Labour Productivity Performance Variable, Canadian Sample (Dependent Variable: CP.SSEMP) .....	77
Table A6-6	Capital Productivity Performance Variable, Canadian Sample (Dependent Variable: CP.SSASS) .....	78
Table A6-7	Labour Productivity Growth Variable, Canadian Sample (Dependent Variable: CP.LPG) .....	79
Table A6-8	Capital Productivity Growth Variable, Canadian Sample (Dependent Variable: CP.CPG) .....	80
Table A6-9	Earnings per Share Growth Variable, Canadian Sample (Dependent Variable: CP.EPSE) .....	81
Table A6-10	Return on Equity Variable, U.S. Sample (Dependent Variable: UP.ROE) .....	82
Table A6-11	Return on Assets Variable, U.S. Sample (Dependent Variable: UP.ROA) .....	83
Table A6-12	Sales Growth Variable, U.S. Sample (Dependent Variable: UP.SG) .....	84
Table A6-13	Asset Growth Variable, U.S. Sample (Dependent Variable: UP. ASSG) .....	85
Table A6-14	Labour Productivity Performance Variable, U.S. Sample (Dependent Variable: UP.SSEMP) .....	86
Table A6-15	Capital Productivity Performance Variable, U.S. Sample (Dependent Variable: UP.SSASS) .....	87

Table A6-16	Labour Productivity Growth Variable, U.S. Sample (Dependent Variable: UP.LPG) . . . . .	88
Table A6-17	Capital Productivity Growth Variable, U.S. Sample (Dependent Variable: UP.EPSG) . . . . .	89
Table A6-18	Earnings per Share Growth Variable, U.S. Sample (Dependent Variable: UP.ASSG) . . . . .	90
Table A7-1	Return on Equity Variable, Canadian Sample (Dependent Variable: CP.ROE) . . . . .	93
Table A7-2	Return on Assets Variable, Canadian Sample (Dependent Variable: CP.ROA) . . . . .	94
Table A7-3	Sales Growth Variable, Canadian Sample (Dependent Variable: CP.SG) . . . . .	95
Table A7-4	Asset Growth Variable, Canadian Sample (Dependent Variable: CP.ASSG) . . . . .	96
Table A7-5	Labour Productivity Performance Variable, Canadian Sample (Dependent Variable: CP.SSEMP) . . . . .	97
Table A7-6	Capital Productivity Performance Variable, Canadian Sample (Dependent Variable: CP.SSASS) . . . . .	98
Table A7-7	Labour Productivity Growth Variable, Canadian Sample (Dependent Variable: CP.LPG) . . . . .	99
Table A7-8	Capital Productivity Growth Variable, Canadian Sample (Dependent Variable: CP.CPG) . . . . .	100
Table A7-9	Earnings per Share Growth Variable, Canadian Sample (Dependent Variable: CP.EPSG) . . . . .	101
Table A7-10	Return on Equity Variable, U.S. Sample (Dependent Variable: UP.ROE) . . . . .	102
Table A7-11	Return on Assets Variable, U.S. Sample (Dependent Variable: UP.ROA) . . . . .	103
Table A7-12	Sales Growth Variable, U.S. Sample (Dependent Variable: UP.SG) . . . . .	104
Table A7-13	Asset Growth Variable, U.S. Sample (Dependent Variable: UP.ASSG) . . . . .	105
Table A7-14	Labour Growth Performance Variable, U.S. Sample (Dependent Variable: UP.SSEMP) . . . . .	106
Table A7-15	Capital Productivity Performance Variable, U.S. Sample (Dependent Variable: UP.SSASS) . . . . .	107
Table A7-16	Labour Productivity Growth Variable, U.S. Sample (Dependent Variable: UP.LPG) . . . . .	108
Table A7-17	Capital Productivity Growth Variable, U.S. Sample (Dependent Variable: UP.CPG) . . . . .	109

Table A7-18	Earnings per Share Growth Variable, U.S. Sample (Dependent Variable: UP.EPSG) .....	110
Table A8-1	Return on Equity Variable, Canadian Sample (Dependent Variable: CP.ROE) .....	113
Table A8-2	Return on Assets Variable, Canadian Sample (Dependent Variable: CP.ROA) .....	114
Table A8-3	Sales Growth Variable, Canadian Sample (Dependent Variable: CP.SG) .....	115
Table A8-4	Asset Growth Variable, Canadian Sample (Dependent Variable: CP.ASSG) .....	116
Table A8-5	Return on Equity Variable, U.S. Sample (Dependent Variable: UP.ROE) .....	117
Table A8-6	Return on Assets Variable, U.S. Sample (Dependent Variable: UP.ROA) .....	118
Table A8-7	Sales Growth Variable, U.S. Sample (Dependent Variable: UP.SG) .....	119
Table A8-8	Asset Growth Variable, U.S. Sample (Dependent Variable: UP.ASSG) .....	120



## EXECUTIVE SUMMARY

The recent upsurge of interest in corporate governance issues in Canada and other industrial countries is a reflection of the recognition of the rising importance of corporate governance for strong economic performance of firms and nations. For example, in Canada, the TSE report on corporate governance examined the role of the board of directors in corporate governance and decision making in some detail and recommended several measures to improve the current governance structure and practices

The corporate governance debate in Canada and other countries to date, however, has mainly concentrated on the role of the board of directors in ensuring shareholders' interests and the minimization of agency costs. As a result, both the research and policy debates have been too narrowly focused. In addition, much of the past corporate governance research in Canada is primarily qualitative and not based on any rigorous empirical analysis.

To broaden these research efforts, Industry Canada has prepared an in depth, firm specific empirical analysis of the interactions between corporate governance, corporate decision-making, and corporate performance in Canada. A financial activity-based database on 3000 United States and 766 Canadian firms was created to examine these linkages within Canada. The Canadian findings were compared and contrasted with similar results for United States companies.

The findings of this paper suggest that the governance structure of Canadian companies differ significantly from those of their American counterparts, especially with respect to the nature and concentration of corporate ownership, institutional ownership, inside ownership, and the composition of the board of directors. The following are some of the major findings of our study:

- Corporate ownership in most Canadian firms is concentrated in the hands of very few, very large shareholders. On the other hand, most American firms are owned by a large number of very small shareholders.
- Institutional ownership is much higher in the United States than in Canada. They control on average over 50 percent of the voting shares of American corporations, compared with less than 40 percent in Canada. However, the importance of institutional ownership is increasing in the two countries, as well as in many of the OECD countries.

- The CEO is also the Chairperson of the Board in 60 percent of American companies, compared with less than 35 percent of cases in Canada.
- The correlation between the governance structure, decision and performance variables, as expected, is significant and strong in American firms. In Canada, on the other hand, the relationship is weak and not robust. These results imply that the differences in corporate ownership play a crucial role in determining the impact of the governance system on corporate decision making and corporate performance.

In short, the findings indicate that corporate governance structures matter in the decision making process, which in turn, impact upon corporate economic performance. However, although the regression results are fairly strong, a large part of inter-firm variation in the corporate decision-making and performance variables is left unexplained. Efforts to develop data on variables relating to corporate management practices might be helpful in shedding further light on the importance of corporate governance for firms' adaptability, flexibility, and dynamism of firms.

# 1. INTRODUCTION

For the past decade, a number of inter-related global trends have been changing the world economy in a remarkable and fundamental way. The enormity of these changes has been paralleled only by those experienced during the nineteenth century Industrial Revolution. These developments include rapid product, process and organizational innovations; shorter product cycles; increased pace of business globalization; marked shifts in the comparative advantage and competitive position of firms and nations; fierce competition among firms and nations for markets, technology, capital and skilled employees; the revolution in information technologies; dramatic reduction in transportation and communication costs; and the emergence of the Asia-Pacific Region as a major player in the world economy.

These global developments have made it necessary for all countries to become more flexible and to accelerate the pace of structural adjustment. A nation's economic performance – absolute as well as relative – therefore, depends on the willingness and ability of its firms to adapt to the constantly changing environment. Slow economic growth, poor productivity performance, stagnant real incomes and high unemployment in Canada and other industrialized countries are attributed to the inability of firms to make necessary modifications to their strategies and activities, and governments to adjust quickly and decisively to these global changes.

The poor economic performance of the global economy, especially the OECD countries, and the serious economic difficulties of many large and well-known global companies such as GM, IBM and Eastman Kodak during the 1980s and the early 1990s, strongly suggest that corporate internal control (corporate governance) systems have failed to deal effectively with the challenges of structural changes and adjustment. Since all the above-mentioned structural trends are expected to continue, if not intensify, in the future. The challenge of adaptation and structural adjustment for Western firms and political systems, therefore, is likely to continue for several decades.

Reactions and feedback from capital, product and factor markets, and legal, political and regulatory systems, either individually or collectively, could effectively address the problems of inadequate, ineffective and inefficient management. However, as Jensen (1993) has eloquently argued, these control mechanisms are either too blunt as instruments or too slow to act, resulting in very slow structural adjustment, waste of productive resources, serious economic difficulties for firms and employees, and poor overall economic performance. On the other hand, a system of effective corporate governance – including the active participation of shareholders in the direct and indirect management of the corporation through the board of directors, and an arrangement of productive checks and balances between the shareholders, board of directors and management of the corporation – should increase corporate dynamism and flexibility, minimize the overall costs of economic adjustment, and change and improve the global economic performance.

The recent upsurge of interest and research activity related to corporate governance in Canada and other industrial countries is a reflection of the growing recognition of the importance of corporate governance to the strong economic performance of firms and nations. For example, in Canada, the TSE report “‘Where Were the Directors?’ Guidelines For Improving Corporate Governance in Canada”<sup>1</sup> examines the role of the board of directors in corporate governance and decision-making in Canada and recommends 18 measures to improve current governance structures and practices.

To date, the corporate governance debate in Canada and elsewhere has concentrated mainly on the role of the board of directors in ensuring that shareholders’ interests are met and agency costs are minimized. As a result, both the research and policy debates have been too narrowly focused. In addition, much of the past research on corporate governance in Canada is primarily qualitative and is not based on rigorous empirical analysis. Current policy and research efforts that focus simply on inter-country comparisons of corporate governance environments cannot resolve these problems. For example, most Canadian firms are closely held while the majority of American firms are widely held. Although the problem of managers ignoring shareholders is prominent in widely held U.S. firms, it is less of an issue in closely held Canadian firms. Therefore, research and, ultimately, public policy should focus on problems that are specific to the Canadian corporate governance environment.

The primary objective of this study is to conduct an in-depth, firm-specific empirical analysis of the interaction between corporate governance, corporate decision-making, and corporate performance in Canada. In particular, by using extensive company data on Canadian and American firms, we will examine empirically the role of corporate governance structure in corporate decision-making and performance in Canada and compare the Canadian results with our findings for the American companies. Our secondary objective is to provide a general empirical background to the other studies in this volume, especially the qualitative studies dealing with specific issues of corporate governance.

The governance variables include, among others, concentration of ownership (e.g., widely held versus closely held); size and composition (e.g., inside versus outside directors) of the board of directors; institutional ownership; inside ownership; and the role of the CEO on the board of directors. Decision variables include debt-to-asset ratio; capital-to-labour ratio; R&D intensity; and degree of outward orientation (measured by the importance of foreign assets and foreign sales in total assets and sales). Firm performance variables include accounting measures (such as capital and labour productivity); sales and asset growth; growth in earnings-per-share; and rates of return on assets and equity.<sup>2</sup>

Following this Introduction, we discuss corporate governance structure, disaggregated by firm size class (measured by sales), and by major industry groupings in the section on the Governance System in Canada and the United States. The section on the Analytical Framework describes in some detail the framework we use to examine empirically the role of corporate governance structure, corporate decision-making and corporate performance in Canada and the United States. The Empirical Results are analyzed in the next section, which discusses the importance of good corporate governance and decision-making for healthy and robust corporate economic per-

formance in the two countries. Finally, we summarize the main findings of the study and discuss their implications for possible action by corporations, institutions and governments in the Conclusions.

Our findings suggest that corporate governance structures in Canada differ significantly from those in the United States, especially with respect to the nature and concentration of corporate ownership, institutional ownership, inside ownership, and the composition of the board of directors. For example, the concentration of corporate ownership is substantially higher in Canadian than in American companies, but the concentration of institutional ownership is considerably higher in American than in Canadian companies. More important, however, is that corporate governance variables, especially in the United States, appear to have a significant influence on the corporate performance variables – directly as well as indirectly – through their influence on corporate decision variables.



## 2. THE GOVERNANCE SYSTEMS IN CANADA AND THE UNITED STATES

This section provides definitions of corporate governance variables and an examination of the governance structure in Canada, disaggregated by six major size classes and by 11 major industry groups. The Canadian results are then compared with the findings for the United States. The description of both the database and the characteristics of Canadian and American samples, especially industry and size distributions, appear in Appendix 1.

The corporate governance literature focuses on two major groups of corporate governance variables: characteristics and interactions between a firm's board of directors and management; and the composition of a firm's ownership. These two groups of variables are further characterized as either structures or practices.

Appendix 2 provides comparative summaries of the Canadian and American governance environment.<sup>3</sup> These summaries describe the role of both structure and practice variables in shaping the governance environment. However, the objective of this study is to set out an empirical analysis of the governance environments in Canada and the United States. Therefore, the summaries in Appendix 2 may best serve as a foundation for comparing the Canadian and American environments.

The structural characteristics of the board and the management of a firm include board size (Jensen, 1993 and Friedlaender, 1992), senior officer size (Friedlaender, 1992), the inside director ratio (Jensen, 1993 and Friedlaender, 1992), the foreign director ratio, whether or not the CEO is the Chairperson of the board of directors (Jensen, 1993), whether the CEO is on the board of directors (Jensen, 1993), and the level of inside ownership (Jensen, 1993).

Firm-specific practices related to the board and management include proxies of board culture (Jensen, 1993), financial expertise of the board (Jensen, 1993), the level of legal liability taken by board members (Jensen, 1993), personnel characteristics (such as age, education and experience) of the senior management (Friedlaender, 1992), corporate life cycle and age (Morck & Stangeland, 1994), and CEO interaction – such as information flow and decision-making – with inside directors (Baysinger, 1990).

The structure of the ownership composition includes variables such as institutional ownership/activism (Jensen, 1993), percentage held by the largest shareholders (Morck & Stangeland, 1994), and concentration of corporate ownership (Morck & Stangeland, 1994). Firm-specific practices related to the composition of ownership include the effects of differential voting rights (Morck & Stangeland, 1994), and the founder/heir ownership relation (Morck & Stangeland, 1994).

Since it was very difficult to obtain reliable quantitative data on corporate governance practices variables, this study focuses exclusively on the following corporate governance structure variables.

- Concentration of Voting Shares and Ownership Control
- Level of Inside Ownership
- Institutional Ownership
- Number of Directors and Senior Officers
- Inside Director Ratio
- Foreign Director Ratio
- CEO on the Board or Chairperson of the Board of Directors

### **Concentration of Voting Shares and Ownership Control**

Concentration of corporate ownership, the percentage of voting shares held by significant shareholders, and the number of significant shareholders all measure the concentration of voting shares.

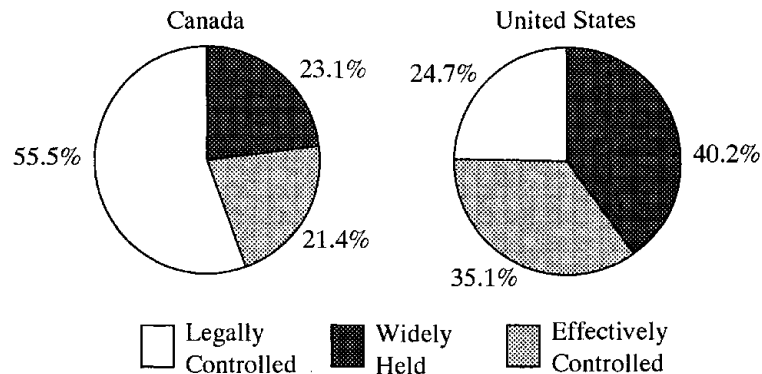
#### ***Concentration of Corporate Ownership or Corporate Control***

The level of concentration of corporate ownership or corporate control is measured by the number of voting shares held by one or a small group of shareholders. This variable focuses on the defacto control of the voting shares. There are three categories of ownership concentration: widely held control – in which companies have no shareholder or group of related shareholders that own, directly or indirectly, more than 20 percent of the voting shares; effective control – in which companies have one shareholder or a small group of shareholders owning, directly or indirectly, 20 percent to 49.9 percent of the voting shares; and legal control – in which one or a small group of shareholders owns, directly or indirectly, more than 50 percent of the voting shares of a company. These definitions follow those used by Daniels & MacIntosh (1991).

In the Canadian sample, 55.5 percent of the firms are legally controlled while 21.4 percent and 23.1 percent are effectively controlled and widely controlled, respectively (Figure 1). In contrast, less than 25 percent of the U.S. firms are legally controlled, while 35.1 percent are effectively controlled and 40.2 percent are widely held.

The majority of Canadian firms are legally controlled in all six size classes. The differences in ownership structure between the two countries is more pronounced for firms with over US\$ 1 billion annual sales (see Appendix 3, Table A3-5). These results are similar to the findings of Morck & Stangeland (1994).

Unlike the size classes, the concentration of ownership differs significantly across the major Canadian industry groups. For instance, the share of legally controlled firms varies between

**Figure 1****Concentration of Ownership in Canada and the United States**

Source: Based on Table A3-5.

a low of 32 percent in Mining to a high of 72 percent in Transportation and Public Utilities (Appendix 3, Table A3-6). The Mining and Technology-Intensive Manufacturing industries have the majority of firms in the widely held and effectively controlled categories, while the high level of legally controlled firms in the Transportation and Public Utilities industry might be simply a reflection of the provincial governments' ownership of public utilities.

The levels of ownership concentration in the U.S. industries also differ noticeably from those in Canada. The percent of legally controlled firms is substantially lower in all the major U.S. industries. In the Finance, Insurance and Real Estate industry, and in the Transportation and Public Utilities industry, the majority of U.S. firms are widely held. In sharp contrast, about 70 percent of Canadian firms in these two industries are legally controlled.

### ***Percentage of Voting Shares Held by Significant Shareholders***

A shareholder that owns at least 10 percent of the voting shares in a company is considered to be a "significant" shareholder. The percentage of voting shares held by all significant or "10 percent" shareholders focuses on the defacto control that may exist among these large block shareholders. This variable is directly related to the corporate concentration variable, discussed above, because the categorization of control – widely held, effective or legal – is based on the percentage of voting shares held by all significant shareholders.

On average, the majority (53.6 percent) of voting stock in the Canadian sample is held by one or more significant shareholders. The high concentration of ownership is consistent with the majority of legally controlled firms in Canada. The percentage of voting shares held by significant

shareholders increases with the size of the firm except for firms with sales over US\$ 2 billion (Appendix 3, Table A3-7). This result is consistent with the positive relationship between the proportion of legally controlled firms and firm size.

Unlike the similarities between the two concentration variables by size class, the concentration of ownership within industry groups differs from the percentage held by the significant shareholders. The percentage held by significant shareholders varies from a high of 80 percent in the Technology-Intensive Manufacturing industry to a low of 12 percent in the Agriculture, Forestry and Fishing industry (Appendix 3, Table A3-8). Although the Technology-Intensive Manufacturing industry has the highest level of significant shareholder ownership, it has a low number of legally controlled firms.

### ***Number of Significant Shareholders***

The number of significant shareholders is another measure of the concentration of voting shares within a firm. Although the number of 10 percent owners is not directly related to the total percentage of the voting shares held by the firms' significant shareholders, discussed above, it also indicates the concentration of ownership within a firm.

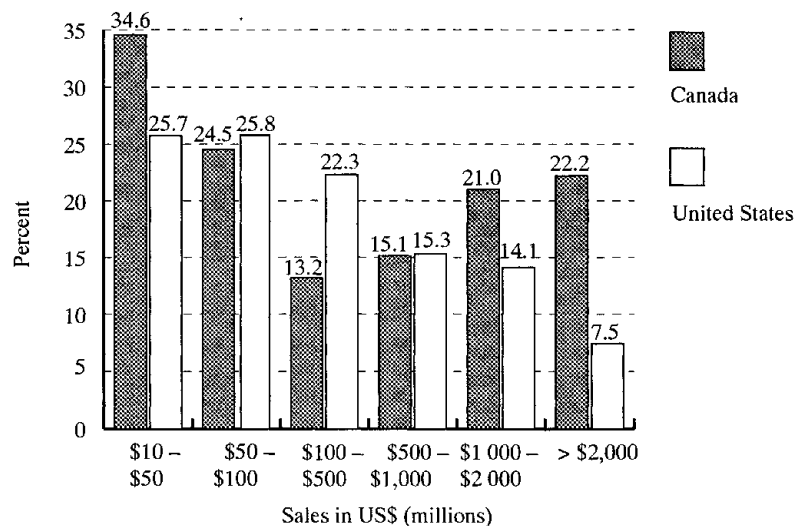
In the Canadian sample, unlike the percentage of voting shares held by significant shareholders, the number of significant shareholders tends to decline with the size of the firm, except for the smallest size class (Appendix 3, Table A3-9). This implies that the average dollar value of shares held by significant shareholders is considerably higher in larger firms. Canadian firms also have a higher number of significant shareholders across all size classes than American firms.

The average number of significant shareholders varies between different major industry groupings. Construction, Wholesale Trade, Services and Labour-Intensive Manufacturing tend to have more significant shareholders than the norm, while Agriculture, Finance and Mining have fewer significant shareholders. There is no systematic variation of the concentration of large shareholders across the industry groupings in the Canadian and the American samples (Appendix 3, Table A3-10).

### **Level of Inside Ownership**

The percentage of voting shares held by "Insiders" follows the SEC's definition of inside shareholders (traders). Inside shareholders include directors, officers and affiliates of the firm.

In the Canadian sample, on average, over 21 percent of company shares are held by insiders, compared to less than 10 percent in the American sample. The percentage of voting shares held by insiders in Canadian firms declines from an average of 35 percent in the smallest

**Figure 2****Percentage of Voting Shares Held by Insiders, by Size Class**

Source: Based on Table A3-11.

size class to 13 percent for firms that are moderately sized and then increases to over 22 percent for the largest size class. Insider ownership in the United States, on the other hand, tends to decline systematically with the size of the firm (Figure 2).

Firms in the U.S. Retail Trade, Agriculture, Forestry and Fishing, Wholesale Trade, and Services industries tend to have higher than average levels of inside ownership (Appendix 3, Table A3-12). On the other hand, Mining, Transportation and Public Utilities, and Technology-Intensive Manufacturing tend to have lower than average levels of inside ownership. The lack of inside ownership information for several Canadian industries prevents Canada-U.S. comparisons by industry.

### **Institutional Ownership**

Institutional ownership is the percentage of a firm's voting shares held by institutional investors. The term "institutional owners", as used in this study, is the same as that used by Disclosure Inc. Institutional owners include banks and other financial institutions, pension funds, mutual funds, and other corporations that own shares.

In the Canadian sample, institutional owners control about 38 percent of the dollar value of shares, compared to 53 percent in the U.S. sample. The apparent contradiction between the smaller proportion of legally controlled firms and the higher levels of institutional ownership

in the American sample implies that there are a larger number of institutional holders in the United States, each controlling only a small block of corporate shares.

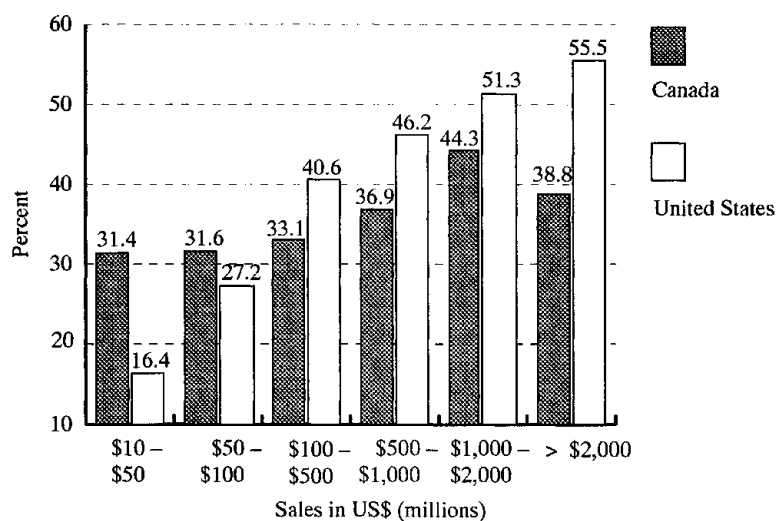
Institutional ownership in the Canadian sample increases systematically with firm size except for the largest size class. However, this increase is not nearly as prominent as in the American sample where the range of institutional ownership varies from a low of 16 percent in the smallest size class to over 55 percent in the largest size class. Canadian firms have higher levels of institutional ownership than their American counterparts in the two smallest size classes. On the other hand, in other size classes, Canadian firms tend to have significantly lower institutional ownership than similar size American firms (Figure 3).

The Agriculture, Forestry and Fishing industry has the lowest level of institutional ownership compared to the other Canadian industries (9.57 percent versus the Canadian weighted average of 38.24 percent). Finance, Resource-Intensive Manufacturing, Retail Trade and Wholesale Trade have lower than average levels of institutional ownership. On the other hand, Construction, Technology-Intensive Manufacturing, and Transportation and Public Utilities have high levels of institutional ownership.

Unlike Canada, the level of institutional ownership does not vary substantially across the major industry groups in the American sample. In the United States the level varies from a low of 49.4 percent in the Retail Trade industry to a high of 59.3 percent in the Finance, Insurance and Real Estate industry (Appendix 3, Table A3-14).

**Figure 3**

**Percentage of Voting Shares Held by Institutions, by Size Class**



Source: Based on Table A3-13.

### Number of Directors and Senior Officers

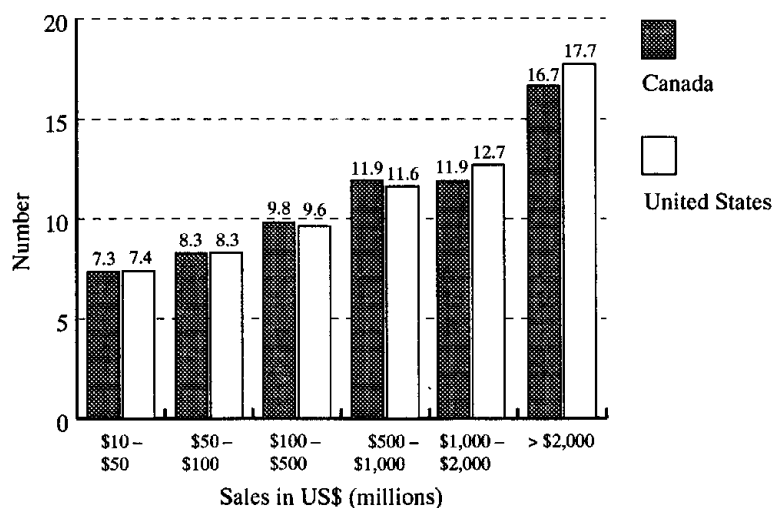
The number of directors who sit on a firm’s board of directors is specified and available from the company’s annual reports. Similarly, data on the number of senior officers (president, executive vice-presidents, senior vice-presidents, vice-presidents, chiefs, treasurer, secretary, controller, comptroller, and other comparable positions) is also available from the company’s annual reports.

The average number of directors in Canadian firms is 9.25 while the average number for American firms is 9.87. The number of directors increases with firm size in both the Canadian and American samples. The number of directors in the four smallest size classes are similar in Canada and the United States. In the two largest size classes, however, the number of directors tends to be significantly higher in the American sample than in the Canadian sample. This discrepancy could be mainly a reflection of the larger size American firms in the largest two size classes (Figure 4).

The number of directors across the major industry groups in the Canadian sample tends to mirror that of the American sample. Construction and Services, on average, has the fewest number of directors, while Transportation and Public Utilities, and Resource-Intensive Manufacturing tend to have the largest number of directors (Appendix 3, Table A3-16). Like the number of directors, the number of senior officers increases with the size of the firm on the two country samples (Appendix 3, Tables A3-17 and A3-18).

**Figure 4**

**Number of Directors by Size Class**



Source: Table A3-15.

### Inside Director Ratio

The inside director ratio represents the ratio of inside directors (officers of the firm who also sit on the Board) to the total number of directors.<sup>4</sup>

The inside director ratio averages 20 percent in the Canadian sample compared to 22 percent in the American sample. In addition, the American insider ratio is higher than the Canadian ratio in all six size classes. The insider ratio declines with firm size in the two samples – i.e., the larger firms tend to have the smaller insider director ratio (Figure 5).

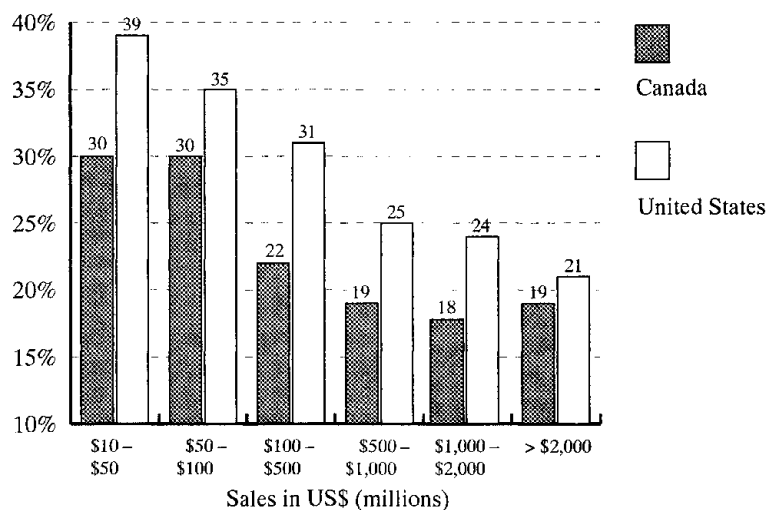
In Canada, the inside director ratio tends to be higher in the Technology-Intensive Manufacturing, Wholesale Trade, Services, Mining, and Construction industries. On the other hand, the ratio is lower in the Finance, Insurance and Real Estate, and Transportation and Public Utilities industries. With few exceptions, the industrial structure of the Canadian insider ratio tends to be similar to the American (Appendix 3, Table A3-20).

### Foreign Director Ratio

The foreign director ratio represents the ratio of the number of directors that reside outside the nation where the firm is incorporated to the total number of directors.<sup>5</sup> This information is only available for the Canadian sample.

**Figure 5**

**Inside Director Ratio by Size Class**



Source: Table A3-19.

On average, only 15 percent of the directors of Canadian firms are residents of foreign countries. The foreign director ratio tends to remain constant for the first four size classes, between 18 percent and 19 percent. However, it increases to 24 percent for firms with sales between US\$ 1 and US\$ 2 billion. But, for the largest size class (sales over US\$ 2 billion), the ratio averages only 11 percent (Figure 6).

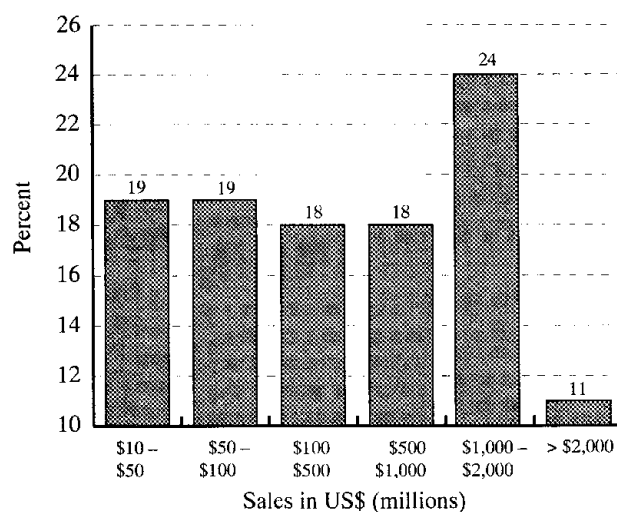
Mining, Resource-Intensive Manufacturing, Services, and Wholesale Trade industries have an above-average foreign director ratio. On the other hand, the Labour-Intensive Manufacturing, Mining and Construction industries have a below-average ratio (Appendix 3, Table A3-22).

### CEO on the Board or Chairperson of Board of Directors

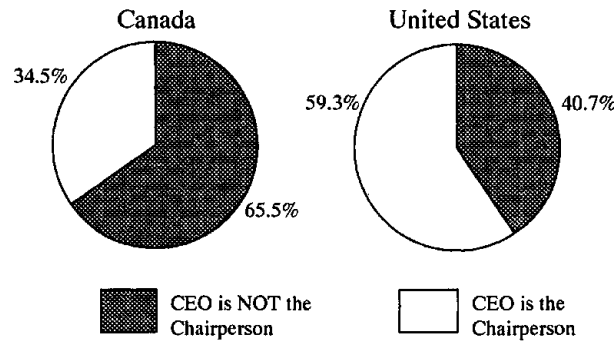
This variable indicates whether the chief executive officer of the firm is also the chairman of the board of directors, as specified and available from the company's annual report. On average, only 34.5 percent of Canadian firms have the CEO as the chairperson, compared to almost 60 percent in the American sample (Figure 7). In over 83 percent of Canadian firms, however, the CEO is also a member of the firm's board of directors (Appendix 3, Table A3-23). There appears to be no systematic relationship between whether or not the CEO is the chairperson and firm size in the Canadian sample. But there is a strong positive relationship between the CEO as chairperson and the size class. In contrast, the proportion of firms with the CEO as chairperson does not vary systematically across major industry groups (Appendix 3, Tables A3-24 and A3-26).

**Figure 6**

**Foreign Director Ratio in Canadian Firms, by Size Class**



Source: Table A3-21.

**Figure 7****CEO as Chairperson**

Source: Table A3-25.

**Summary**

The concentration of corporate ownership is substantially higher in Canada than in the United States. For instance, more than 55 percent of firms are legally controlled, compared to less than 25 percent in the United States. However, the institutional ownership is considerably higher in the United States. These two results imply that there are a large number of institutional investors in America each controlling only a small block of corporate shares.

The number of directors and officers increases with firm size in the two countries. The ratio of inside directors to total directors is higher in the United States in all six size classes. Similarly, the proportion of firms with the CEO as Chairperson of the Board of Directors is substantially higher in the American corporations.

There appears to be, on average, a significant systematic relationship between the corporate governance variables, firm size classes and major industry groups. Therefore, in empirically examining the effect of governance variables on corporate decision-making and corporate performance, the influence of size and industry characteristics of firms must be taken into account.

### 3. ANALYTICAL FRAMEWORK

In the previous section we examined seven main characteristics of the corporate governance structure in Canada and the United States. We now provide an empirical analysis of the influence of corporate governance on corporate decision-making and corporate performance in the two countries. This section will outline the analytical framework of the empirical (regression) analysis reported in the next two sections.

The corporate governance structure is expected to affect directly the corporate performance by having an effect on the managerial, technical and adjustment efficiencies of the firm. In addition, the corporate governance variables can indirectly influence the corporate performance through their influence on the firm's strategies and decisions with regard to inputs, outputs, innovations, markets, etc.

Therefore, the ability of corporate internal controls to deal effectively with the challenges of structural adjustment can be analyzed by studying the linkages between the three groups of variables: corporate governance structure variables, corporate decision-making variables, and corporate economic performance variables. The corporate governance structure variables used in the regression analysis are those defined in the previous section.

Corporate decision-making variables represent activities of firms resulting from both day-to-day and longer-term corporate strategies and decisions. They include leverage in the firm – measured by the debt-to-assets ratio; the capital-to-labour ratio – the ratio of assets to employees; the R&D intensity – measured by the ratio of R&D to total sales; and the firm's degree of outward orientation – measured in three ways: the ratio of foreign sales to total sales, the ratio of foreign assets to total assets, and a dummy variable based on the presence of foreign sales or assets.

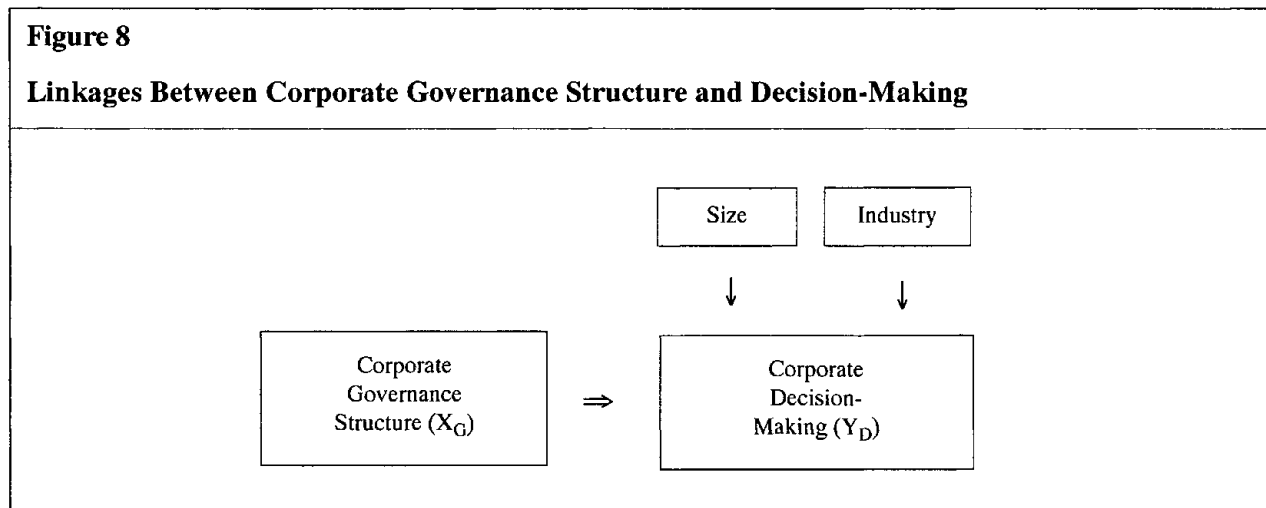
Corporate economic performance variables measure the corporate performance in terms of productivity, profitability, and growth. These include the capital productivity ratio (sales to assets); labour productivity ratio (sales to employees); sales growth; asset growth; the growth in capital and labour productivity; return on equity; return on assets; and the growth in earnings-per-share. Table 1 includes and categorizes the variables used in the regression analysis.

Two sets of dummy variables are included in the regression equations to control for the effects of firm size (sales) and type of industry on the corporate decision-making and corporate performance variables. Six size classes are represented by five dummy variables. Eleven major industry groupings are represented by ten dummy variables. Table 2 gives the mnemonics of the dummy variables used in the regression analysis.

<b>Variable Group</b>	<b>Measure</b>	<b>Variable</b>
<b>Governance</b>	Concentration of Ownership	Widely Held
	Concentration of Ownership	Effectively Controlled
	Concentration of Ownership	Percentage of Voting Shares Held by all of the Significant Shareholders <sup>1</sup>
	Concentration of Ownership	Number of Significant Shareholders <sup>1</sup>
	Ownership Composition	Institutional Ownership
	Ownership Composition	Insider Ownership
	Composition of Board	Inside Director Ratio
	Composition of Board	Foreign Director Ratio
	Composition of Board	Board Size
	Composition of Board	Officer Size <sup>1</sup>
	Composition of Board	CEO is on the Board
	Composition of Board	CEO is the Chairperson
	Composition of Board	CEO is the Chairperson data not available <sup>2</sup>
<b>Decision</b>	Leverage	Debt-to-Asset Ratio
	R&D Intensity	R&D-to-Sales Ratio
	Capital Labour Ratio	Assets-to-Employee Ratio
	Outward Orientation	Foreign Sales to Total Sales
	Outward Orientation	Foreign Assets to Total Assets <sup>1</sup>
	Outward Orientation	Presence of either Foreign Assets or Sales <sup>1</sup>
<b>Performance</b>	Return	Return on Equity
	Return	Return on Assets
	Growth	Asset Growth
	Growth	Sales Growth
	Growth	Capital Productivity Growth
	Growth	Labour Productivity Growth
	Growth	Growth in Earnings-per-Share
	Productivity	Capital Productivity Ratio (Sales over Assets)
	Productivity	Labour Productivity Ratio (Sales over Employees)
	Productivity	
<p>Notes: This table contains a list of the variables described in the analytical framework section of the study. The variables, shown on the far right are categorized into three main groups: corporate governance variables, decision-making variables, and performance variables. These variables are further categorized into the various measures shown in the second column.</p> <p><sup>1</sup> Variables that were included in the empirical framework of our study but were not included in the regression outputs shown in Tables 5, 6, 7, and 8. These variables are highly correlated with other variables that represent similar measures and their inclusion would lead to problems of multicollinearity.</p> <p><sup>2</sup> This variable is used in the Canadian regressions because several firms did not report this information.</p>		

The linkages between the three sets of variables can be analyzed with the two models. The first formulation (Figure 8) analyzes the relationship between the corporate governance structure and corporate decision-making sets of variables, controlling for both the size and industry effects.

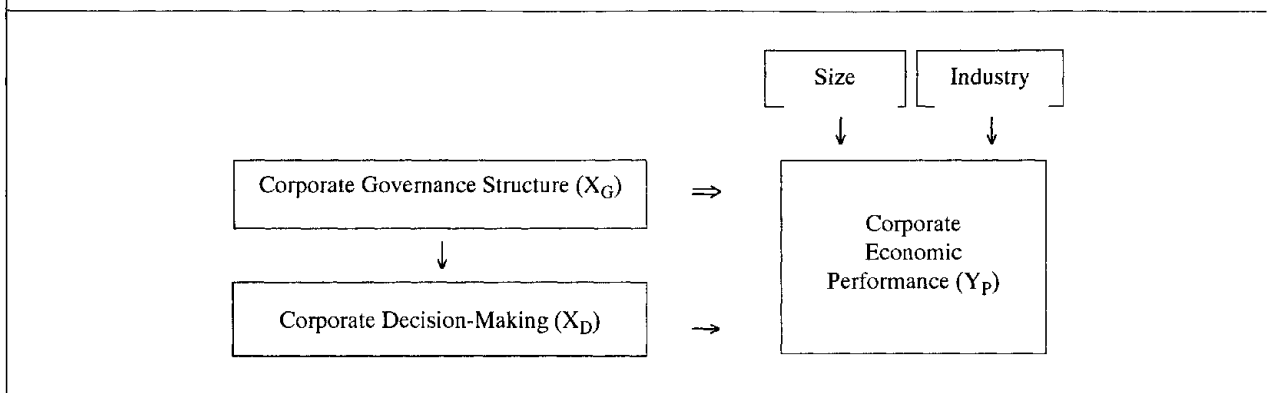
Table 2 Regression Dummy Variables	
Variable Group	Class or Group Size
Size (US\$)	10 million to 50 million 50 million to 100 million 100 million to 500 million 500 million to 1,000 million 1,000 million to 2,000 million 2,000 million and greater
Major Industry	Agriculture, Forestry & Fishing Construction Finance, Insurance & Real Estate Labour-Intensive Manufacturing Mining Resource-Intensive Manufacturing Retail Trade Services Technology-Intensive Manufacturing Transportation & Public Utilities Wholesale Trade
<p>Note: This table contains a list of the size and industry dummy variables used in the regression analysis. Five sizes of dummy variables and ten industry dummy variables were created using the indicator coding method. The two control groups were "US\$ 2,000 million and greater" and "Wholesale Trade".</p>	



The second model (Figure 9) depicts the influences of the corporate governance and decision-making variables on the performance variables, controlling for industry and size effects.

Figure 9

## Linkages Between Corporate Governance Structure, Decision-Making and Performance Variables



## Regression Equations, Set 1

$$Y_{D1} = f(X_{G1}, \dots, X_{GN}, \text{SIZ}, \text{MI})$$

...

$$Y_{DN} = f(X_{G1}, \dots, X_{GN}, \text{SIZ}, \text{MI})$$

where

$X_{G1}, \dots, X_{GN}$  are the corporate governance structure variables,

$Y_{D1}, \dots, Y_{DN}$  are the corporate decision variables,

SIZ are the size class dummy variables, and

MI are the major industry group dummy variables.

Two sets of regression equations are used to generate the above models. The first set of equations (Regression Equations, Set 1) are used to test for the significance of the influence of corporate governance variables on decision-making variables. The two sets of regressions are estimated for both the Canadian and American samples.

The second set of equations (Regression Equations, Set 2) is used to analyze the relationship between the corporate governance structure variables, corporate decision-making and corporate performance variables, again, controlling for size and industry effects.

In this model, the total effect of a corporate governance variable on a corporate performance variable is the sum of the two effects: the direct effect and the indirect effect. The indirect effect measures the influence of the governance variable on the performance variable operating through its impact on the decision-making variable.

## Regression Equations, Set 2

$$Y_{P1} = f(X_{G1}, \dots, X_{GN}, X_{D1}, \dots, X_{DN}, SIZ, MI)$$

...

$$Y_{PN} = f(X_{G1}, \dots, X_{GN}, X_{D1}, \dots, X_{DN}, SIZ, MI)$$

where

$X_{G1}, \dots, X_{GN}$  are the corporate governance structure variables,

$X_{D1}, \dots, X_{DN}$  are the corporate decision variables,

$Y_{P1}, \dots, Y_{PN}$  are the corporate performance variables,

SIZ are the size class dummy variables, and

MI are the major industry group dummy variables.

## Possible Effects of Corporate Governance Variables

The regression results are discussed in the next section. First, however, we will review from the corporate governance literature a priori relationships among the governance structure, decision-making and performance variables. However, as described below, these relationships are confounded by many interactions.

### *Concentration of Ownership*

Morck & Stangeland (1994) examined the relationship between concentration of ownership and firm performance in Canada and the United States. The managers of widely held firms can be neither effectively monitored nor controlled by the widely dispersed and often unsophisticated shareholders who hold only a small number of shares ("small" shareholders). Therefore, the decisions and performance of widely held firms could be adversely influenced by the divergence of interests of the managers and shareholders. On the other hand, sophisticated shareholders who own large numbers of shares ("large" shareholders) will have the ability and incentive to monitor effectively the decisions and performance of managers. But the concentration of corporate ownership could result in an unhealthy and undemocratic concentration of economic power.<sup>6</sup>

In addition, the effect of corporate ownership on firm performance could be significantly influenced by the nature or composition of the ownership concentration – the proportion of voting shares held by institutional investors and insiders, the number of significant shareholders, etc. Therefore, it is difficult to predict a priori the relationship between the level of concentration of ownership and its effect on decision-making and performance.

In an attempt to reach a better understanding of the relationship between the level of concentration of ownership and firm decision-making and performance, we disaggregated the two

country samples into the three groups: widely held, effectively controlled and legally controlled. The averages of governance, decision and performance variables for the three groups are displayed in Appendix 4, Table A4-1.

There appears to be a systematic negative relationship between the rate of return on assets and equity and the level of ownership concentration in the United States. The relationship between rate of return and concentration of ownership is not as clear for the Canadian firms because the average rates of return on equity and the average return on assets are the same for widely held firms as for legally controlled firms.

On the other hand, growth of sales and assets in American firms appears to be positively related to ownership concentration. In the Canadian sample, legally controlled firms, on average, have much lower sales and asset growth than the other two groups (Appendix 4, Figure A4-2).

It is important to note that these are partial results because they do not take into account the size and industry effects or the interactions between the governance and decision-making variables. Therefore, these provide only a cursory glimpse of the relationship between performance and ownership concentration.<sup>7</sup>

### *Institutional Investors*

According to several commentators, American institutional investor activism (for example, the California Public Employees Retirement System [CalPERS], Corporate Partners, Allied Investment Partners, etc) has a significant positive effect on firm performance because these well-informed investors can assess firm management strategies and activities in an unbiased way and can therefore exert pressure on the board for change and dynamism through either voting or selling mechanisms. In addition, institutional investors could take a more active role in the management of the firm by obtaining a seat on the board.

However, the effectiveness of institutional investors could be severely limited by the legal, tax and regulatory constraints (Jensen, 1993). Furthermore, institutional investors, such as public pension funds, may be risk-averse and shy away from activism for enhancing the firm performance. Nevertheless, the cost of a proxy fight has fallen from US\$ 1 million to less than US\$ 5,000<sup>8</sup> (The Economist, 1994) thereby minimizing the constraints on institutional activism.

### *Insider Ownership*

A high degree of ownership by managers and directors could well align their interests in the firm with those of the shareholders. Managers and directors, whose remuneration and personal wealth are closely tied to the firm's performance, would prefer to emphasize firm performance over other objectives. But, as the level of inside ownership increases, management could become more entrenched and fail to act in the interests of other shareholders. Thus, the relationship

between inside ownership and firm performance is confounded by the interaction of these two effects. The interaction between the entrenchment and the incentive alignment effects has been analyzed by Morck (1994).

### ***Inside Directors***

Baysinger & Hoskisson (1990) reviewed the body of literature that focuses on inside directors. They argue that insiders have access to information that is relevant to assessing both the managerial competence and the strategic desirability of initiatives. They also state that outside directors, although they are more open and objective, lack the amount and quality information needed to perform their roles. Hence, the inside directors ratio can improve the effectiveness of a firm's decision-making. Moreover, agency theory states that inside directors should perform just as well or better than outside directors because their reputations and economic well-being are tied directly to the performance of the firm.

On the other hand, inside directors may not be as objective as outside directors if the CEO is a member and/or the chairperson of the board. Also, outside directors may bring insight and objectivity to the decision-making process from their involvement and association with other organizations and outside sources. It is uncertain whether the positive effects of inside directors outweighs the negative effects; thus, the relationship between inside directors and decision-making and firm performance cannot be predicted unambiguously a priori.

### ***CEO as Chairperson***

Proponents of separating the offices of CEO and chairperson argue that the ability of the board to function independently and effectively will be compromised when the CEO is also the chairperson of the board. Separation of CEO and chairperson positions could improve the decision-making process and performance of the firm in three ways (Bacon, 1993). First, the relationship between the board (the overseer of management) and management will become clear. Second, with an independent leader the board will become more effective and better organized. Third, the board's responsibility to look after shareholders' interests will come to the forefront.

Conversely, a combined CEO/chairperson role would enhance the information flow between the Board and management and improve the co-operation and co-ordination between the two bodies. It is not clear whether the advantages of separation of the two positions dominate the disadvantages.

### ***Board Size***

The TSE report on Corporate Governance (1994) and Jensen (1993) looked into the debate of board size and its influence on the effectiveness of the board. Large boards bring a

diversity of views and experience, increase the opportunity for a broad geographic representation, and provide extensive director resources for constituting board committees to deal effectively with complex issues. However, beyond a certain threshold of board size, the information flow and decision-making could become more difficult and cumbersome, and the directors might lose their sense of responsibility and accountability. Again, it is unclear whether board size has a positive or negative effect on the decision and performance variables.

## **Summary**

In short, it is difficult to predict, *a priori*, the relationship among the governance, decision and performance variables. Against this background, the regression results are discussed in the next section.

## 4. EMPIRICAL RESULTS

This section begins with a discussion of the degree of empirical association between the corporate governance structure and decision-making variables, after controlling for the effects of size and industry characteristics. We then examine the degree of association between the governance structure and firm performance variables, discussing the roles of governance structure and decision-making on performance, along with the size and industry effects. Finally, we discuss the direct and indirect effects of the governance structure on the firm performance through its impact on the decision-making variables.<sup>9</sup>

### Corporate Governance and Decision-Making

Tables 3 and 4 summarize the Canadian and American regression results of Model 1 as shown in Figure 8, described in the previous section. A more detailed output of the Model 1 regressions is contained in Appendix 5. The size of the F-statistics indicates significant associations among the decision, governance, size and industry variables in Canada and the United States. However, in general, the American results are much stronger than the Canadian regressions.

The debt-to-asset ratio, a measure of leverage or riskiness of the firm, is significantly negatively related to institutional ownership and insider ownership, and positively related with the

<b>Table 3</b>				
<b>Canadian Corporate Governance and Decision-Making Regression Results</b>				
	<u>Debt</u>	<u>Assets</u>	<u>R&amp;D</u>	<u>Foreign Sales</u>
	Assets	Employee	Sales	Total Sales <sup>1</sup>
(Constant)	0.3293 <sup>a</sup>	-3360297 <sup>a</sup>	0.3156 <sup>c</sup>	0.0843
Board Size	-0.0100 <sup>a</sup>	101307 <sup>a</sup>	-0.0195 <sup>b</sup>	-0.0021
CEO is Chair	0.0494	-75628	-0.0349	0.2095 <sup>a</sup>
CEO is Chair n/a	-0.0052	-149821	-0.0456	0.1568 <sup>a</sup>
Foreign Director Ratio	-0.0488	404900	-0.1678	0.4290 <sup>a</sup>
Inside Director Ratio	-0.0685	-1428028 <sup>c</sup>	-0.0451	0.0082
Inside Ownership	0.0000	15161 <sup>c</sup>	0.0008	-0.0007
Institutional Ownership	-0.0002	32952 <sup>a</sup>	-0.0002	-0.0009 <sup>c</sup>
Widely Held	-0.0272	967610 <sup>c</sup>	-0.0026	-0.0419
Effectively Controlled	0.0298	405216	-0.0188	-0.0234
F	4.2963	10.1254	1.0894	3.6924
r <sup>2</sup>	0.1603	0.2862	0.2664	0.1485
n	566	631	89	533
	a = 1%   b = 5%   c = 10%   t - statistic significance			
<p>Notes: This table summarizes the Canadian regression results illustrated in Figure 8, Model 1. Each column represents one of the equations depicted in Regression Equations Set 1. The contents of each cell indicate the coefficient value and its significance in the regression equation. Industry and Size dummy variables, described in Table 2, have been included in the regressions as control variables but are omitted from this summary table.</p> <p><sup>1</sup> The ratio of Foreign Sales to Total Sales, a measure of the firm's outward orientation, was chosen for this Table. The other two measures of outward orientation, the ratio of Foreign Assets to Total Assets and the Presence of Foreign Sales or Assets, have very similar regression results.</p>				

	<u>Debt</u> Assets	<u>Assets</u> Employee	<u>R&amp;D</u> Sales	<u>Foreign Sales</u> Total Sales <sup>1</sup>
(Constant)	0.2985 <sup>a</sup>	427934 <sup>a</sup>	0.4813 <sup>a</sup>	0.1418 <sup>a</sup>
Board Size	-0.0003	-4628	-0.0011	0.0004
CEO is Chair	0.0147 <sup>c</sup>	-8903	0.0085	-0.0152 <sup>c</sup>
Inside Director Ratio	-0.0129	-80081	-0.0703	-0.0168
Inside Ownership	-0.0005 <sup>b</sup>	-1402	-0.0001	-0.0002
Institutional Ownership	-0.0006 <sup>a</sup>	1475	-0.0006	0.0003
Widely Held	-0.0507 <sup>a</sup>	-57818	0.0056	0.0019
Effectively Controlled	-0.0279 <sup>b</sup>	-35763	0.0162	0.0063
F	17.5080	72.6868	3.3642	23.3684
r <sup>2</sup>	0.2221	0.3541	0.0921	0.2544
n	1372	2940	753	1530
	a = 1% b = 5% c = 10% t - statistic significance			
Notes: This table summarizes the American regression results illustrated in Figure 8, Model 1. Each column represents one of the equations depicted in Regression Equations Set 1. The contents of each cell indicate the coefficient value and its significance in the regression equation. Industry and Size dummy variables, described in Table 2, have been included in the regressions as control variables but are omitted from this summary table.				
1 The ratio of Foreign Sales over Total Sales, a measure of the firm's outward orientation, was chosen for this Table. The other two measures of outward orientation, the ratio of Foreign Assets to Total Assets and the presence of Foreign Sales or Assets, have very similar regression results.				

concentration of ownership. In addition, firms in the smallest size class have lower debt-to-asset ratios than firms in the largest size class.

The Canadian debt-to-asset ratio regression results are considerably weaker than the U.S. findings. The leverage of firms in Canada is significantly related to only one governance variable. The debt-to-asset ratio and board size are negatively related. Firms in the three smallest size classes have significantly lower leverage than firms in the largest size class.

Unlike the results on the debt-to-asset ratio, the governance variables have a stronger influence on capital intensity in Canada than in the United States. In Canada, board size, institutional ownership and insider ownership are positively related to capital intensity. In contrast, corporate ownership concentration and the inside director ratio are weakly negatively related to the capital-labour ratio. Firms in the three smallest size classes have higher capital intensity than firms in the largest size class.

None of the governance variables is significantly related to capital intensity in the American sample. In addition, unlike Canada, firms in the two smallest size classes have slightly lower capital intensity than firms in the largest size class. On the other hand, the capital-to-labour ratio and the industry characteristics are strongly related in the American sample.

The research and development intensity, measured by the ratio of R&D to sales, is not significantly related to any of the governance structure variables in the American sample. The

R&D intensity of firms with sales between US\$ 1 billion and US\$ 2 billion is significantly higher than firms in the largest size class with sales over US\$ 2 billion.

In the Canadian sample, only board size is significantly negatively related to the R&D-to-sales ratio. There is a weak positive relationship between the R&D intensity and firm size.

In the United States, firms that have a combined CEO-chairperson have significantly lower outward orientation, measured by the ratio of foreign sales to total sales, than firms that do not combine the two positions. Not surprisingly, firms in the smallest five size classes have lower outward orientation than firms in the largest size class.

In Canada, the outward orientation is strongly positively related to firms with the CEO as the chairperson of the board. Also, as expected, there is a strong positive relationship between the foreign director ratio and the outward orientation of the firm. The outward orientation of medium-size Canadian firms is not significantly different from that of the largest firms. However, the outward orientation of firms in the smallest size class (with sales less than US\$ 50 million) have significantly lower outward orientation than firms in the largest size class.

Institutional ownership seems to have a much more positive influence on corporate decision-making in the United States than in Canada. On the other hand, the relationship between the inside director ratio and the decision variables is similar in the two countries. Firms with a higher inside director ratio, other things remaining constant, seem to have lower leverage, lower capital intensity, lower R&D intensity and lower outward orientation.

American firms with high levels of inside ownership tend to have low leverage. Inside ownership in Canadian firms is significantly positively related to capital intensity. In American firms, leverage increases with the concentration of ownership. That is, legally controlled firms tend to have higher debt-to-asset ratios compared to the effectively controlled and widely held firms. In Canada, the capital intensity of the widely held firms is somewhat higher than in the legally controlled group firms.

In both countries, a CEO-chairperson is associated with high levels of leverage. In Canada, outward orientation of firms with CEO as the chairperson tends to be higher than in the firms with the two positions separated.

The relationships between the size of the board of directors and the decision variables are stronger in Canada than they are in the United States. In Canada, the size of the board is negatively related to both the degree of leverage and the R&D intensity. Board size in Canada is positively related to the capital intensity of the firm.

In the two countries, firms in the two smallest size classes have lower leverage and lower outward orientation than firms in the largest size class. In Canada, however, smaller firms tend to have higher capital intensity than the larger firms.

## Corporate Performance and Governance Structure

Tables 5 and 6 summarize the Canadian and American regression results for the corporate performance variables depicted in Figure 9 (Model 2). A more detailed output of the Model 2 regression results is contained in Appendix 6. The size of the F-statistics suggests that the equations explain the inter-firm variation in the corporate performance variables fairly clearly. But, like the equations for corporate decision variables, the Canadian results are not as robust as the American results.

### *Profitability*

For the U.S. sample, both the ROE and the ROA are significantly positively related to institutional ownership, inside ownership, and inside director ratio. Widely held and effectively controlled firms exhibit significantly higher profitability than the legally controlled firms. Similarly, the profitability of firms in the largest size class (sales over US\$ 2 billion) is significantly better than firms in the two smallest size classes (firms with less than US\$ 100 million).

In the case of Canadian firms, only one of the governance variables (inside director ratio) is significantly positively related to profitability. Like the U.S. results, the profitability of firms in the two smallest size classes is significantly inferior to that of firms with sales over US\$ 2 billion.

### *Growth*

The relationship between the two growth measures and the governance variables for American firms is very similar to the findings for the two profitability measures described above. The growth of sales and assets are significantly positively related to institutional ownership, inside ownership, and the inside director ratio. Similarly, the growth performance of firms in the two smallest size classes is significantly weaker than firms with sales over US\$ 2 billion. However, the growth performance of firms with sales between US\$ 500 million and US\$ 1 billion is significantly better than firms in the largest size class.

In the Canadian sample, the asset growth is significantly positively correlated with the CEO as the Chairperson of the Board, the foreign director ratio, the inside director ratio, and size of the Board. However, sales growth is somewhat positively related to only the size of the Board. Unlike the U.S. results, the growth performance of firms with sales under US\$ 100 million is somewhat better than the performance of firms with sales over US\$ 2 billion.

### *Productivity*

Both labour and capital productivity of American firms are significantly positively related to the inside ownership ratio. Like profitability and growth, productivity levels of firms in the two smallest size classes are significantly lower than the levels of firms in the largest size

**Table 5**  
**Canadian Corporate Performance and Corporate Decision-Making Regression Results**

	Return on Equity	Return on Assets	Sales Growth	Asset Growth	Sales Employee	Sales Assets	Labour Prod. Growth	Capital Prod. Growth	EPS Growth
(Constant)	0.1765 <sup>b</sup>	0.0391	0.0419	-0.0733	1077695 <sup>a</sup>	2.4883 <sup>a</sup>	0.0680	0.1152 <sup>c</sup>	0.9702
Assets/Employee	0.0000	0.0000	0.0000 <sup>b</sup>	0.0000	0 <sup>a</sup>	0.0000 <sup>a</sup>	0.0000 <sup>b</sup>	0.0000	0.0000
Debt/Assets	-0.1997 <sup>a</sup>	-0.0532 <sup>b</sup>	-0.0234	-0.0485	139295	-0.7129 <sup>a</sup>	-0.0349	0.0250	-1.1762 <sup>b</sup>
Board Size	-0.0040	0.0003	0.0005	0.0047 <sup>c</sup>	-20842 <sup>a</sup>	-0.0301 <sup>a</sup>	0.0000	-0.0042 <sup>c</sup>	-0.0380
CEO is Chair	-0.0025	0.0108	0.0955 <sup>c</sup>	0.1203 <sup>b</sup>	101535	-0.2206	0.0669	-0.0247	0.0819
CEO is Chair n/a	-0.0444	-0.0033	-0.0342	-0.0331	-60893	-0.0092	-0.0384	-0.0011	0.2190
Foreign Director Ratio	0.0558	-0.0044	0.0733	0.2960 <sup>a</sup>	-440007	-0.2477	0.0876	-0.2227 <sup>b</sup>	0.9288
Inside Director Ratio	0.2112 <sup>a</sup>	0.0691 <sup>b</sup>	0.0422	0.1112 <sup>c</sup>	8906	0.1922	0.0232	-0.0690	0.4137
Inside Ownership	-0.0004	0.0002	-0.0003	-0.0004	-672	0.0014	-0.0004	0.0001	0.0014
Institutional Ownership	-0.0001	0.0000	-0.0005	-0.0005	-211	0.0003	-0.0006	-0.0001	-0.0058
Widely Held	-0.0045	-0.0050	-0.0018	0.0203	-13106	-0.1585	-0.0209	-0.0221	-0.3349
Effectively Controlled	0.0095	-0.0139	0.0069	0.0210	-22336	-0.0453	-0.0007	-0.0141	-0.2455
F	2.3287	1.7335	2.5521	2.8663	9,2013	13.4619	2.3230	1.2780	1.2529
t <sup>2</sup>	0.1219	0.0937	0.1307	0.1460	20,3543	0.4453	0.1217	0.0708	0.0695
n	463	463	463	463	463	463	463	463	463

a = 1% b = 5% c = 10% t - statistic significance

Notes: This table summarizes the Canadian regression results illustrated in Figure 9, Model 2. Each column represents one of the equations depicted in Regression Equations Set 2. The contents of each cell indicate the coefficient value and its significance in the regression equation. Industry and Size dummy variables, described in Table 2, have been included in the regressions as control variables but have been omitted from this summary table.

Table 6

## American Corporate Performance and Corporate Decision-Making Regression Results

	Return on Equity	Return on Assets	Sales Growth	Asset Growth	Sales Employee	Sales Assets	Labour Prod. Growth	Capital Prod. Growth	EPS Growth
(Constant)	0.0187	0.0296 <sup>b</sup>	0.0435	0.0743 <sup>b</sup>	547177 <sup>a</sup>	2.1237 <sup>a</sup>	0.1054 <sup>a</sup>	-0.0307	-0.0657
Assets/Employee	0.0000 <sup>b</sup>	0.0000 <sup>b</sup>	0.0000 <sup>b</sup>	0.0000 <sup>a</sup>	0 <sup>a</sup>	0.0000 <sup>a</sup>	0.0000 <sup>b</sup>	0.0000	0.0000
Debt/Assets	-0.1904 <sup>a</sup>	-0.0500 <sup>a</sup>	-0.0521 <sup>b</sup>	-0.1541 <sup>a</sup>	-69544	-0.4930 <sup>a</sup>	-0.0235	0.1020 <sup>a</sup>	-0.1348
Board Size	-0.0001	-0.0003	0.0001	0.0001	-947	-0.0042	-0.0005	0.0000	0.0068
CEO is Chair	-0.0011	-0.0014	-0.0060	0.0023	3613	-0.0058	-0.0067	-0.0083	0.0128
Inside Director Ratio	0.0975 <sup>a</sup>	0.0263 <sup>b</sup>	0.0500 <sup>b</sup>	0.0487 <sup>b</sup>	63148	0.0784	-0.0173	0.0012	0.4879 <sup>a</sup>
Inside Ownership	0.0008 <sup>a</sup>	0.0002 <sup>b</sup>	0.0004 <sup>b</sup>	0.0005 <sup>b</sup>	649 <sup>c</sup>	0.0021 <sup>b</sup>	0.0002	0.0000	0.0004
Institutional Ownership	0.0012 <sup>a</sup>	0.0005 <sup>a</sup>	0.0007 <sup>a</sup>	0.0007 <sup>a</sup>	176	-0.0016 <sup>c</sup>	0.0001	0.0000	0.0035 <sup>b</sup>
Widely Held	0.0427 <sup>a</sup>	0.0111 <sup>b</sup>	0.0110	0.0082	-26840	-0.0591	-0.0076	0.0028	-0.0832
Effectively Controlled	0.0201	0.0036	0.0149	0.0051	-22908	0.0740	-0.0072	0.0097	-0.2321 <sup>a</sup>
F	10.4983	7.0906	4.3160	5.9267	28.4526	46.9150	1.6636	2.8886	2.2912
t <sup>2</sup>	0.1591	0.1133	0.0722	0.0965	0.3389	0.4581	0.0291	0.0495	0.0397
n	1357	1357	1357	1357	1357	1357	1357	1357	1357

a = 1% b = 5% c = 10% t - statistic significance

Notes: This table summarizes the American regression results illustrated in Figure 9, Model 2. Each column represents one of the equations depicted in Regression Equations, Set 2. The contents of each cell indicate the coefficient's value and its significance in the regression equation. Industry and Size dummy variables, described in Table 2, have been included in the regressions as control variables but are omitted from this summary table.

class. Labour and capital productivity of Canadian firms are significantly negatively correlated with the size of the Board. Productivity levels of Canadian firms with less than US\$ 100 million are also significantly lower than the firms with sales over US\$ 2 billion.

### **Corporate Performance and Corporate Decision-Making**

Profitability and the growth performance of American firms are significantly negatively related to the degree of leverage (Tables 5 and 6). Although the profitability measures are also significantly negatively related to leverage in Canada, sales and asset growth of Canadian firms are only weakly related to leverage. In both the Canadian and American samples, leverage has a strong negative effect on capital productivity. However, leverage does not have a significant effect on labour productivity in the two countries.

The capital-to-labour ratio has a strong negative relationship with both profitability and growth in the American equations. Canadian firms' profitability and growth, however, are weakly (negatively) correlated with capital intensity. But, as expected, labour productivity of both American and Canadian firms is strongly positively related to the capital-to-labour ratio.

### **Total Effect of Governance Variables on Corporate Performance**

Here, we will summarize the direct and indirect impact of governance variables. Recall that the model in Figure 8 investigates the relationship between corporate decision-making and corporate governance structure variables, controlling for size and industry effects. Also recall that the model in Figure 9 investigates the direct relationship between corporate performance and corporate governance structure variables, controlling for size, industry and corporate decision-making variables. These two models are depicted by the first two columns that appear under each country in Table 7. The third column, direct and indirect performance, summarizes the two effects (net impact of direct and indirect) on performance. These total effects are very similar to the results obtained by the reduced form equations.<sup>10</sup>

In Table 7, the label in each cell corresponds to the signs and levels of significance found for the corporate governance variable (row). For example, the association between decision-making and institutional ownership in Canada is labelled "mixed". "Mixed" means that the number of times the governance variable is significantly positively related to the decision-making and/or performance variables is similar to the number of times that it is significantly negatively related. The institutional ownership variable is found to be both significantly positively and negatively related to decision-making variables in the model's set of regression equations – i.e., institutional ownership is significantly positively related to the capital-to-labour ratio and significantly negatively related to outward orientation. "No impact" means that the corporate governance variable in question was not found to be significant, either positively or negatively, in the two sets of regression equations. "Weak positive" or "weak negative" means that the governance variable was significant in one of the equations in the two sets of regression equations. "Positive" or "negative" and "strong

<b>Table 7</b>						
<b>Summary of Regression Analysis</b>						
	<b>CANADA</b>			<b>UNITED STATES</b>		
	<b>Decision-Making</b>	<b>Performance</b>		<b>Decision-Making</b>	<b>Performance</b>	
	Indirect	Direct	Direct & Indirect	Indirect	Direct	Direct & Indirect
Institutional Ownership	Mixed	No Impact	No Impact	Weak Positive	Strong Positive	Strong Positive
Inside Ownership	Weak Positive	No Impact	No Impact	Weak Positive	Strong Positive	Strong Positive
Concentration of Ownership	No Impact	No Impact	No Impact	Weak Negative	Negative	Weak Negative
Board Size	Positive	Negative	Weak Negative	No Impact	No Impact	No Impact
Foreign Director Ratio	Weak Positive	Mixed	Weak Positive	n/a	n/a	n/a
Inside Director Ratio	Weak Negative	Positive	Positive	Weak Negative	Strong Positive	Positive
CEO/Chairman	Weak Positive	Weak Positive	Weak Positive	Weak Negative	No Impact	No Impact

positive” or “strong negative” means that the governance variable was significant in two and more than two of the regression equations, respectively.

## Summary

In general, the corporate performance of American firms is positively correlated (both directly and indirectly) by institutional ownership, the inside director ratio, and inside ownership, and negatively correlated with corporate ownership concentration. The Canadian results are not as strong and robust as the American findings.

The inside director ratio and the foreign director ratio seem to have a positive influence on the performance of Canadian firms. Similarly, the size of the Board seems to exert a positive influence (mainly indirectly via leverage and capital formation) on the economic performance of Canadian firms. The growth performance of Canadian firms is also significantly positively related to the foreign director ratio. Likewise, the growth performance of companies where the CEO is also the Chairperson of the Board is significantly better than companies where the two positions are not held by one person.

In general, the economic performance (productivity, growth and profitability) of both Canadian and American firms with sales under US\$ 100 million is considerably inferior to the performance in the largest size class (sales over US\$ 2 billion).

## 5. CONCLUSIONS

The major objective of this study has been to examine the corporate governance structure in Canada and the United States, and to provide an empirical analysis of the degree of association between the governance, corporate decision, and performance variables in the two countries. Toward this goal, drawing from three major sources of company data, a large database on governance, decision and performance variables for 766 Canadian and 3,000 American firms was created. Some of the major findings of our study follow.

- The majority of Canadian firms in all size classes and in most industry groups is legally controlled (one or a small group of shareholders owning, directly or indirectly, more than 50 percent of the voting shares of the company). On average, 55 percent of Canadian firms are legally controlled, compared to less than 25 percent of American firms.
- Differences in the ownership structure of American and Canadian companies are more pronounced for very large firms.
- In the Canadian sample, on average, over 20 percent of company shares are held by insiders (directors or officers of the firm), compared to less than 10 percent in the United States.
- On the other hand, U.S. firms, on average, exhibit a much higher level of institutional ownership (percentage of shares held by institutional investors) than Canadian firms (53.3 percent versus 38.2 percent).
- In the two samples, the number of directors and senior officers increases with firm size (measured by total sales).
- On average, the inside director ratio (the number of directors who are also officers of the firm over the total number of directors) in the Canadian sample (20 percent) is lower than in the U.S. sample (22 percent).
- The foreign director ratio averages 15 percent for Canadian firms.
- On average, only 34.5 percent of Canadian firms have the CEO as the Chairperson of the Board, compared to over 60 percent for U.S. firms.
- Profitability, productivity and growth performance of American firms are significantly positively correlated (both directly and indirectly) by institutional ownership, the inside ownership ratio, and the inside director ratio.

- The economic performance of widely held and effectively controlled American firms is significantly better than the performance of legally controlled firms.
- In Canada, the inside director ratio has a positive effect on corporate performance.
- The growth performance of Canadian firms, especially asset growth, is positively related to the foreign director ratio.
- The size of the Board, and whether the CEO is the Chairperson of the Board, do not seem to matter much for corporate performance in the two countries.

In short, our findings indicate that the governance structure variables are not strongly correlated with the corporate decision-making and performance variables. However, the governance variables related to ownership – institutional ownership, inside ownership, and concentration of ownership – are strongly correlated with performance variables in the United States.

These results imply the need for different policy approaches in the two countries. In the United States, governments and corporate actions aimed at improving institutional activism, increasing the inside ownership and reducing the ownership concentration would improve corporate performance. In Canada, on the other hand, government and corporate efforts to improve corporate governance practices such as reducing executive entrenchment and differential voting rights, enacting minority shareholder provisions, enforcing director liability, and enhancing disclosure requirements might be more relevant for improving corporate performance.

Efforts to develop data on corporate governance practices would be very helpful in shedding further light on the importance of corporate governance for firms' adaptability, flexibility and dynamism. Future Industry Canada research in this area may focus on this effort.

## ENDNOTES

- 1 The Toronto Stock Exchange Committee on Corporate Governance in Canada, “‘Where Were The Directors?’ Guidelines For Improved Corporate Governance in Canada,” Draft Report (May 1994).
- 2 This study uses accounting-based, rather than market-based, measures of firm performance. Market-based performance measures are both easy to compute and reliable. However, they cannot be used to evaluate a firm’s decision-making and performance in absolute terms, but only in relation to market expectations of the firm. The expected performance of a well- managed firm will be built into the firm’s current stock price and only unexpected deviations will be picked up by the future stock performance.
- 3 The Canadian and American Corporate Governance Environment Summaries are from Framework Conditions for Industry Draft Agenda, OECD, 1994.
- 4 The definition of inside directors used in this study differs from that used by Amoako-Adu and Smith (1995). Their definition also includes the directors appointed from employees of parent companies, subsidiaries and affiliates. Therefore, our estimate of the inside director ratio will be biased downward, compared to the estimates of Amoako-Adu and Smith (1995). However, it is difficult to determine, *a priori*, which of the two measures captures better the independence of directors.
- 5 The Canadian Business Corporations Act (CBCA) uses country of citizenship to distinguish between domestic and foreign directors. Because the Compact Disclosure data sources used in this study do not include citizenship information, we use the country of residency to estimate the foreign director ratio.
- 6 The concentration of economic power in Canadian and American firms should also take into account executive entrenchment. However, like concentration, executive entrenchment is significantly higher in Canada. Canadian executives are much more entrenched than their American counterparts for several reasons: the absence of class actions by shareholders in the Canadian legal system; the consequent difficulty of dismantling poison pills and other takeover defenses in Canada; and the coattails provisions in Canadian corporate acquisitions that, while benefiting small shareholders, make the transfer of corporate control more expensive. The widespread use of multiple classes of shares in Canada adds further to the entrenchment of Canadian executives.
- 7 The relationship between firm performance and ownership concentration, taking into account size, industry, governance structure, and corporate decision-making variables, is discussed later in this section.

- 8 Patricia Lipton, Head of the Wisconsin State Retirement System.
- 9 In the section on the Analytical Framework of this study, we assume that the relationships among the governance, decision-making, and performance variables are linear. However, we tested for the presence of non-linear relationships among the variables. In general, the non-linear regression results are very similar to the results from the linear model. Nevertheless, the rate of return and growth performance variables are found to be somewhat non-linearly related to the Inside Director ratio (see Appendix 8).
- 10 The reduced form equations regress the performance variables only on the governance, industry and size variables. The results of the reduced form equations are presented in Appendix 7.

## **APPENDIX 1**

### **SOURCES AND CHARACTERISTICS OF THE DATABASE**

This Appendix briefly describes the data sources, data grouping, and the characteristics of sample companies in the two countries.

#### **Sources of Micro Data**

The database for this study is developed from three main sources of company financial data: Compact Disclosure Canada, Compact Disclosure SEC, and Compact Disclosure Worldscope. All three databases are provided in CD-ROM format by Disclosure Incorporated.<sup>1</sup> When necessary, information was supplemented by Moody's International Company Database provided by Moody's Investors Services.

The Compact Disclosure Canada database consists of over 8,500 Canadian public and private companies and Crown corporations. Companies included in the database are those that are incorporated in Canada, either federally or in one of the provinces or territories, and that trade on a Canadian exchange. Company records include annual financial statement data, interim financial statement detail, stock issue data, legal and company status indicators, and textual data.

The Compact Disclosure SEC database consists of over 12,000 public companies that file reports with the U.S. Securities and Exchange Commission. Company data is extracted from the company's 10K or 20F statements.

The Compact Disclosure Worldscope database consists of over 11,000 public companies from 40 countries. Company data is obtained from annual and periodic reports filed with each of the national stock exchange commissions.

Two criteria were used to select the firms that comprise the database for this study. First, only those firms that disclosed a full set of corporate governance variables are included. Second, only those firms that had sales and assets values greater than US\$ 10 million are included. The final database consists of 766 Canadian firms and 3,000 American firms.

The two country samples refer to December 1993, or the latest reported date. However, data related to both level and growth values of the firms' corporate decision and corporate performance variables are based on five-year averages for the period 1988 to 1993.<sup>2</sup>

Each firm in the sample is categorized by a size class and a major industry group. The size of the firm is measured by the total dollar value of sales. The firm's major industry group is

based on the firm's primary business activity. Individual firm data is aggregated into these size classes or major industry groupings using the weighted average method, which permits the major industry or size averages to capture the relative importance of the firms within the grouping.<sup>3</sup>

## Characteristics of Sample Firms

### *Size Distribution*

The firms in our study vary in size from a minimum of US\$ 10 million in sales and assets to US\$ 138 billion in sales and US\$ 219 billion in assets for the United States sample and US\$ 16.5 billion in sales and US\$ 102 billion in assets for the Canadian sample. Total sales and assets of the Canadian firms are US\$ 397 billion and US\$ 1.2 trillion while total sales and assets for the American sample are US \$3.6 trillion and US \$7.0 trillion.

In an effort to examine the differences in governance structure between firms of different sizes, both the Canadian and the American firms are grouped into six size classes based on the dollar value of their total sales. Table A1-1 displays the size classes used in this study.

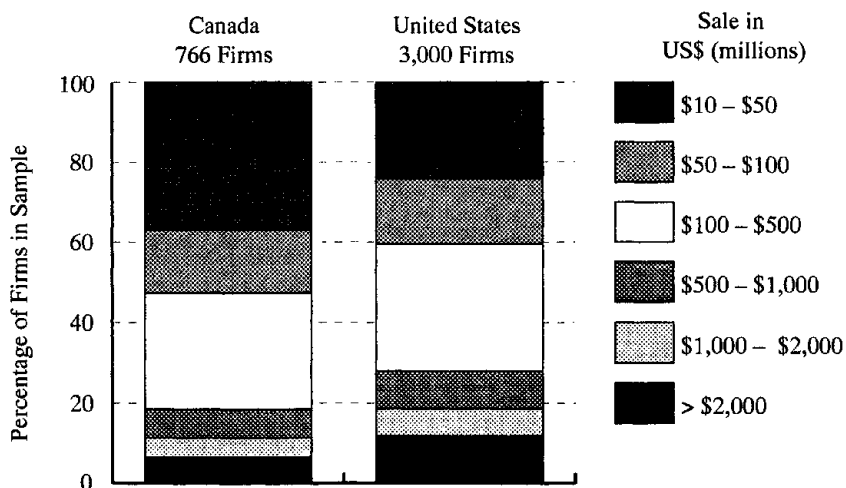
Although the size groupings are chosen somewhat arbitrarily, they seem to capture adequately the differences in governance variables by the size of sales. In general, the Canadian sample is dominated by more smaller firms than the American sample. Over 80 percent of the Canadian firms have sales less than US\$ 500 million while only just over 70 percent of the American firms fall into the same category. On the other hand, the American sample is dominated by extremely large firms – almost 19 percent of the American firms have sales over US\$ 1 billion compared to only about 11 percent of the Canadian firms (Figure A1-1). However, the average size of sales and assets for Canadian firms with sales below US\$ 2 billion compares very favourably with those of their U.S. counterparts (Table A3-1).

The most striking feature of the sample firms is that although large firms (sales over US\$ 1 billion) account for a small proportion (less than 20 percent) of total firms, they contribute to over 70 percent of sales and assets in the two samples (Table A3-2).

**Table A1-1**

**Size Classes determined by Sales Volume**

Size Class	Sales Criteria (US\$ millions)
1	10 to 50
2	50 to 100
3	100 to 500
4	500 to 1,000
5	1,000 to 2,000

**Figure A1-1****Sample Distribution of Canadian and American Firms by Size Class**

Source: Based on Table A3-1.

### *Industry Distribution*

In order to capture the differences in governance structure and practices across industrial activities, the 3766 companies are grouped into three digit industry groups based on their U.S. Standard Industrial Classification 1986 (SIC) code as determined by the companies' primary business activity. These industries are further aggregated into 11 major industry groups.<sup>4</sup> Table A1-2 describes the major industry groupings used in this study.

Table A3-3 depicts the average sales and asset value of firms in the 11 major industries. Unlike the size classes, the average sales size of American firms tend to be at least twice as large as their Canadian counterparts in all the major industry groups except in the Agriculture, Forestry and Fishing industries, and the Finance, Insurance and Real Estate industries. The higher ratios of average sales to average assets for the U.S. firms implies that, on average, capital productivity of the American firms is significantly higher than the productivity of Canadian firms.<sup>5</sup>

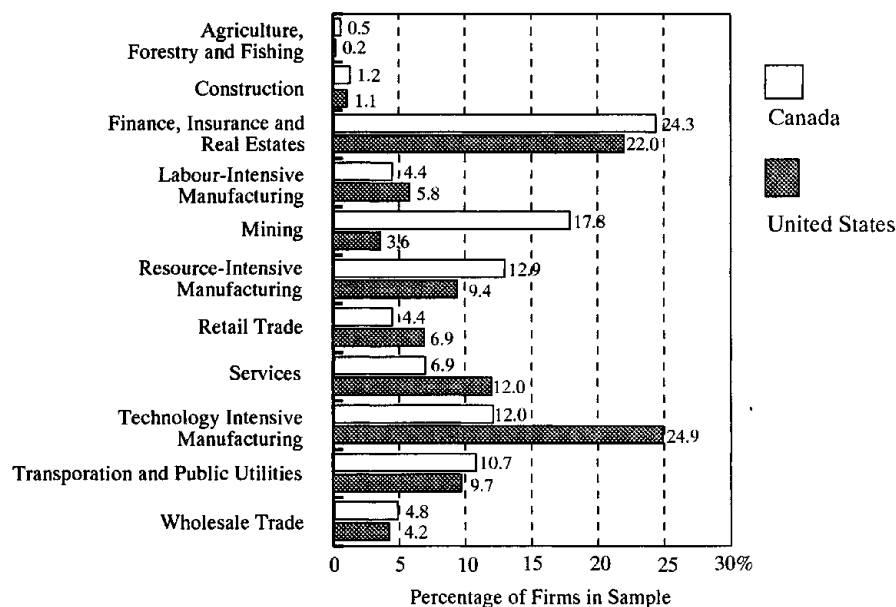
Over three-quarters of the Canadian firms are from just five major industries: Finance, Insurance and Real Estate; Mining; Resource-Intensive Manufacturing; Technology-Intensive Manufacturing; and Transportation and Public Utilities. In addition, these five major industries account for 85 percent of the total sales and over 95 percent of the total assets in the Canadian sample (Appendix 3, Table A3-4). The Finance, Insurance and Real Estate industry, alone, represents close to one-quarter of all Canadian firms and accounts for nearly three-quarters of the total assets of the Canadian sample.

<b>Table A1-2</b>	
<b>Components of the Major Industry Groupings</b>	
<b>Major Industry Grouping</b>	<b>Industry</b>
<b>Agriculture, Forestry and Fishing</b>	—
<b>Construction</b>	—
<b>Finance, Insurance and Real Estate</b>	Depository Institutions Non-depository Institutions Securities and Brokers Insurance Other Financial Services
<b>Labour-Intensive Manufacturing</b>	Clothing Furniture and Fixtures Leather and Products Miscellaneous Manufactured Goods Printing and Publishing Textiles
<b>Mining</b>	—
<b>Resource-Intensive Manufacturing</b>	Fabricated Metals Food and Products Lumber and Wood Non-Metallic Minerals Paper and Allied Petroleum Refining Primary Metals Tobacco
<b>Retail Trade</b>	—
<b>Services</b>	Commercial Services Health Services Other Services
<b>Technology-Intensive Manufacturing</b>	Aircraft and Parts Chemicals and Allied Communications Equipment Computer and Office Electrical Products Light Machinery Machinery, excluding Electrical Miscellaneous Electrical Products Motor Vehicles and Equipment Other Transportation Equipment Rubber and Products
<b>Transportation and Public Utilities</b>	—
<b>Wholesale Trade</b>	—

The Finance, Insurance and Real Estate industry also plays an important role in the American sample with just over 20 percent of the number of firms and just over half of the total assets. The Technology-Intensive Manufacturing and Services industries are better represented in the American sample, while the Mining industry has a higher proportion of firms, sales and assets in the Canadian sample (Figure A1-2).

Figure A1-2

## Sample Distribution of Canadian and American Firms by Industry Grouping



Source: Based on Table A3-4.

Although the sample selection method did not appear to have introduced any systematic bias toward any major industry in the two countries, it is interesting to note that the Canadian sample has a higher proportion of firms in Finance, Insurance and Real Estate, the Mining, and the Resource-Intensive Manufacturing industries than in the United States. On the other hand, the American sample has a higher proportion of Technology-Intensive Manufacturing and Services industries. The industrial distribution of firms in the two samples reflects the comparative advantage position of the two countries (Eden, 1994, and the Industry Canada Working Paper Number 1).

## ENDNOTES TO APPENDIX 1

- 1 Disclosure Incorporated, 5161 River Road, Bethesda, MD 20816.
- 2 Although accounting-based measures are ideally suited to measure the effectiveness of managers' decision-making and firm performance, the numerous conventions that are necessary in implementing an accounting system often leave us perplexed about accounting measures. To overcome both these ambiguities (which tend to be resolved over extended time periods) and short-term fluctuations, our analysis includes a five-year average of accounting variables.

- 3      The weights used in the averaging process are the value of the variables in the denominators of the ratios being averaged. For instance, employment values are used as weights in calculating the average value of the Asset/Employment ratio.
  
- 4      This industry grouping is consistent with the commonly used practices of the (former) Economic Council of Canada and the OECD.
  
- 5      The average value of capital productivity, the ratio of average sales to average assets, is 0.3416 for Canada and 0.5139 for the United States. The capital productivity, excluding the Mining industry, averages 0.3326 and 0.5023 for Canada and the United States, respectively, implying that the lower average value in Canada is not due to the inclusion of the Mining industry.

## APPENDIX 2

### GOVERNANCE ENVIRONMENT IN NORTH AMERICA

<b>Table A2-1 Canadian Governance Environment</b>								
	Concentration of Ownership and Control	Strategic Role of Boards	Strategic Information of Owners	Use of Take- overs as Restructuring Tools	Concentration of Creditors	Combination of Equity and Credit by "Universal" Investors	Use of Bankruptcy as Exit Tools	Rate of Return of Investment
<b>Laws and Regulations</b>	Competition and certain financial and investment legislation regulate the concentration of ownership and control.	Directors are to manage or supervise the management of corporations. Directors must retain ultimate control over the corporation.	Corporate and securities laws ensure widespread information available to the public. Strategic information is protected.	Takeovers usually allowed as governance tools. Minority shareholders generally protected.	Guidelines with respect to federal deposit-taking institutions (DTIs) discourage concentration of credit positions.	DTIs are not restricted in combining debt and equity. Limits are imposed on the amount of equity DTIs provide for non-financial firms.	Comprehensive exit procedures provided for corporations and financial institutions. Procedures aimed at survival.	Corporate law stresses maximization of shareholder value as key objective.
<b>Standard Practices</b>	High level of corporate ownership concentration. Approval required for certain mergers and acquisitions.	Directors manage or supervise the management of corporations. Institutional investors are increasing their influence.	Detailed annual, quarterly information on public companies is provided. Analytical information available from securities industry.	Corporate and corporation articles generally do not discourage takeovers. Few anti-takeover devices upheld by courts.	Standard practice for larger firms is small-size bank loans and dispersed bond ownership.	Equity and debt are separate instruments. Financial non-DTIs are increasing their equity holdings substantially.	Creditor or debtor may invoke both exit and reorganization processes.	Equity securities values are traded according to returns.

Table A2-1 (Cont'd)

	Concentration of Ownership and Control	Strategic Role of Boards	Strategic Information of Owners	Use of Takeovers as Restructuring Tools	Concentration of Creditors	Combination of Equity and Credit by "Universal" Investors	Use of Bankruptcy as Exit Tools	Rate of Return of Investment
<b>Implicit Rules</b>	Corporations aiming at concentrated ownership generally go private.	Boards work closely with senior management. They are increasingly independent.	Widespread use of financial information. Aggregate statistical information available.	General acceptance of takeovers as part of adjustment process.	DTIs and bondholders keep arm's-length relations with borrowing companies.	Ownership and creditorship entail different rights and responsibilities.	Bankruptcy recognized as a risk of business. Process seen as providing an orderly, efficient and fair reallocation of assets.	Corporations recognized as profit maximizing organization.
<b>Observed Outcomes</b>	Vast majority of Canadian corporations are privately held. Over 80% of public corporations have a dominant shareholder.	Boards are increasing management and supervision of corporations to avoid potential liabilities.	Public information widely used. Strategic information generally not available.	Increasing number of takeovers. Poison pills often disallowed by courts.	Highly dispersed credit positions with respect to large firms.	Financial non-DTIs have increased their involvement in corporate governance.	Liquidations outnumber reorganizations. Recent legislation promotes more reorganizations and survivals of existing entities.	Average Return on Capital 1933 = 16.2% 1992 = 16.0%

Source: Corporate Governance Branch, Industry Canada.

Table A2-2 United States Governance Environment							
	Concentration of Ownership and Control	Strategic Role of Boards	Strategic Information of Owners	Use of Takeovers as Restructuring Tools	Combination of Equity and Credit by "Universal" Investors	Use of Bankruptcy as Exit Tools	Rate of Return of Investment
<b>Laws and Regulations</b>	Securities and investment legislation contains, and discourages, the concentration of ownership and control.	Regulatory rules discourage shareholders entering the boards. But legally the board rules and fiduciary duties of directors were recently strengthened.	Company and securities law prescribe widespread public financial information. Strategic and prospective information from within firms is classified.	Legal recognition of take-overs as governance tool, recent state anti-takeover legislation.	Banking legislation discourages concentration of credit positions.	Elaborated bankruptcy legislation. In bankruptcy, creditor claims may be subordinated to company survival.	Company law stresses profitability as key corporate objective.
<b>Standard Practices</b>	(Private stock exchange rules discourage concentration of ownership.) Dispersed owners do not usually exercise their proxy rights.	Standard corporate charters and practice do not provide for strategic/operational role for boards.	Detailed quarterly financial information, additional analytical information by securities firms. "Price sensitive" insider information not diffused.	Corporate charters designed to permit takeovers; recent toleration of anti-takeover devices.	Standard practice is small-size bank loans and dispersed bond ownership.	Standard bankruptcy procedures are available. Creditors are incited to use them rather than negotiate out-of-court rescue arrangements.	Equity securities valued and ownership trade according to returns.

Table A2-2 (Cont'd)								
	Concentration of Ownership and Control	Strategic Role of Boards	Strategic Information of Owners	Use of Takeovers as Restructuring Tools	Concentration of Creditors	Combination of Equity and Credit by "Universal" Investors	Use of Bankruptcy as Exit Tools	Rate of Return of Investment
<b>Implicit Rules</b>	Corporations aiming at concentrated ownership and control are expected to go "private" (no public issuance of securities).	The board needs to function as an amicable and advisory body to the CEO. But this understanding is changing for a more independent role.	Widespread credibility and use of financial information. Other more strategic information should be made available only if evenly available to all investors.	Perceived legitimacy and acceptance of takeovers as part of adjustment process.	Banks and bondholders keeps arm's-length relations with borrowing companies.	Ownership and creditorship entail essentially different rights and responsibilities.	Bankruptcy risks are recognized and accepted.	Companies recognized as profit-maximizing organizations.
<b>Observed Outcomes</b>	Dispersed ownership in industry, but some recent consolidation through institutional ownership.	Large majority of boards dominated by management, but recent cases of reversals.	Excellent diffusion of public information, containment of insider strategic information	Large number of takeovers but recent curbs in several states.	Highly dispersed credit positions.	Very few investors have an owner and creditor perspective.	Large number of exits settled via bankruptcies. Possible excess in the number of bankruptcies.	US-BW 1000 companies, return on equity 1993 = 18.4% 1992 = 14.9%

Source: OECD Framework Conditions for Industry, Draft.

## APPENDIX 3

### CORPORATE GOVERNANCE STRUCTURE: DETAILED TABULATIONS

<b>Table A3-1</b>						
<b>Database Summary - Number of Firms, Average Sales and Average Assets by Size Class (US\$ millions)</b>						
Sales Class	Canada			United States		
	# of Firms	Average Sales	Average Assets	# of Firms	Average Sales	Average Assets
10 to 50	284	25,808	92,733	725	28,066	117,643
50 to 100	120	72,422	228,667	491	71,760	186,368
100 to 500	221	238,012	439,353	948	237,393	464,385
500 to 1,000	54	708,941	3,548,411	279	681,204	1,385,208
1,000 to 2,000	37	1,375,530	2,567,314	204	1,411,930	2,454,547
> 2,000,000	50	4,796,452	14,532,434	353	8,064,429	15,614,259

<b>Table A3-2</b>						
<b>Database Distribution - Firms, Sales and Assets by Size Class (US\$ millions)</b>						
Sales Class	Canada			United States		
	% of Firms	% of Total Sales in Sample	% of Total Assets in Sample	% of Firms	% of Total Sales in Sample	% of Total Assets in Sample
10 to 50	37.1	2	2	24.2	1	1
50 to 100	15.7	2	2	16.4	1	1
100 to 500	28.9	13	8	31.6	6	6
500 to 1,000	7.0	10	16	9.3	5	6
1,000 to 2,000	4.8	13	8	6.8	8	7
> 2,000,000	6.5	60	62	11.8	79	79

Major Industry Grouping	Canada			United States		
	Total No. of Firms	Average Sales	Average Assets	Total No. of Firms	Average Sales	Average Assets
Agriculture, Forestry & Fishing	4	219,492	115,817	7	108,216	113,009
Construction	9	102,962	90,279	34	659,264	596,291
Finance, Insurance & Real Estate	186	749,953	4,650,208	660	767,971	5,590,339
Labour-Intensive Manufacturing	34	298,532	254,979	175	526,732	388,407
Mining	136	232,421	469,695	108	1,492,697	1,473,019
Resource-Intensive Manufacturing	99	509,715	580,386	281	2,090,011	1,956,505
Retail Trade	34	818,165	333,030	208	1,850,427	1,104,318
Services	53	106,200	109,232	361	347,574	373,289
Technology-Intensive Manufacturing	92	682,665	316,210	747	1,474,520	1,682,977
Transportation & Public Utilities	82	610,032	1,399,244	292	1,731,911	2,977,955
Wholesale Trade	37	481,884	187,504	127	922,843	294,044
Simple Average	766	519,087	1,519,712	3,000	1,201,821	2,338,690

**Table A3-4****Database Distribution - Firms, Sales and Assets  
by Major Industry Grouping**

<b>Major Industry Grouping</b>	<b>Canada</b>			<b>United States</b>		
	<b>% of Firms</b>	<b>% of Total Sales</b>	<b>% of Total Assets</b>	<b>% of Firms</b>	<b>% of Total Sales</b>	<b>% of Total Assets</b>
Agriculture, Forestry & Fishing	0.5	0	0	0.2	0	0
Construction	1.2	0	0	1.1	1	0
Finance, Insurance & Real Estate	24.3	35	74	22.0	14	53
Labour-Intensive Manufacturing	4.4	3	1	5.8	3	1
Mining	17.8	8	5	3.6	4	2
Resource-Intensive Manufacturing	12.9	13	5	9.4	16	8
Retail Trade	4.4	7	1	6.9	11	3
Services	6.9	1	0	12.0	3	2
Technology-Intensive Manufacturing	12.0	16	2	24.9	31	18
Transportation & Public Utilities	10.7	13	10	9.7	14	12
Wholesale Trade	4.8	4	1	4.2	3	1

<b>Table A3-5</b>						
<b>Concentration of Ownership by Size Class</b>						
Sales (US\$ millions)	Canada - % of Firms			United States - % of Firms		
	Widely Held	Effective Control	Legal Control	Widely Held	Effective Control	Legal Control
10 to 50	23.9	23.6	52.5	45.6	31.0	23.4
50 to 100	20.8	24.2	55.0	30.1	39.3	30.6
100 to 500	22.6	20.4	57.0	31.8	37.2	31.0
500 to 1,000	20.4	25.9	53.7	39.4	39.4	20.8
1,000 to 2,000	21.6	8.1	70.3	47.6	34.8	17.6
> 2,000	30.0	12.0	58.0	62.3	28.6	9.1
<b>Average of All Classes</b>	<b>23.1</b>	<b>21.4</b>	<b>55.5</b>	<b>40.2</b>	<b>35.1</b>	<b>24.7</b>

<b>Table A3-6</b>						
<b>Concentration of Ownership by Major Industry Grouping</b>						
Major Industry Grouping	Canada - % of Firms			United States - % of Firms		
	Widely Held	Effective Control	Legal Control	Widely Held	Effective Control	Legal Control
Agriculture, Forestry & Fishing	50.0	0.0	50.0	28.6	42.8	28.6
Construction	22.2	11.1	66.7	26.5	17.6	55.9
Finance, Insurance & Real Estate	15.1	15.6	69.3	58.2	29.5	12.3
Labour-Intensive Manufacturing	17.6	20.6	61.8	33.1	29.7	37.2
Mining	42.6	25.0	32.4	31.5	32.4	36.1
Resource-Intensive Manufacturing	21.2	15.2	63.6	36.7	40.2	23.1
Retail Trade	11.8	26.4	61.8	31.7	33.2	35.1
Services	15.1	37.7	47.2	21.6	44.6	33.8
Technology-Intensive Manufacturing	24.0	38.0	38.0	35.3	41.9	22.8
Transportation & Public Utilities	17.0	11.0	72.0	56.5	20.5	23.0
Wholesale Trade	32.4	13.5	54.1	33.9	37.0	29.1

**Table A3-7****Percentage Held by all of the Significant Shareholders, by Size Class**

Sales (US\$ millions)	Canada - Weighted Average
10 to 50	50.07
50 to 100	52.65
100 to 500	51.71
500 to 1,000	52.32
1,000 to 2,000	58.19
> 2,000,000	53.30
<b>Weighted Average of All Classes</b>	<b>53.55</b>

**Table A3-8****Percentage Held by All of the Significant Shareholders by Major Industry Grouping**

Major Industry Grouping	Canada - Weighted Average
Agriculture, Forestry & Fishing	12.26
Construction	54.75
Finance, Insurance & Real Estate	42.25
Labour-Intensive Manufacturing	51.49
Mining	53.98
Resource-Intensive Manufacturing	37.27
Retail Trade	58.69
Services	44.40
Technology-Intensive Manufacturing	80.63
Transportation & Public Utilities	63.77
Wholesale Trade	61.31
<b>Weighted Average of All Groups</b>	<b>53.55</b>

**Table A3-9****Number of Significant Shareholders with at least 10 Percent Ownership by Size Class**

Sales (US\$ millions)	Canada - Weighted Average	United States - Weighted Average
10 to 50	1.37	0.91
50 to 100	1.52	1.13
100 to 500	1.20	1.02
500 to 1,000	1.18	0.89
1,000 to 2,000	1.12	0.72
> 2,000	0.93	0.44
<b>Weighted Average of All Classes</b>	<b>1.03</b>	<b>0.54</b>

**Table A3-10****Number of Significant Shareholders with at least 10 Percent Ownership  
by Major Industry Grouping**

<b>Major Industry Grouping</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
Agriculture, Forestry & Fishing	1.60	2.44
Construction	3.30	1.76
Finance, Insurance & Real Estate	1.75	1.38
Labour-Intensive Manufacturing	2.45	2.18
Mining	1.76	1.23
Resource-Intensive Manufacturing	2.23	1.68
Retail Trade	2.31	1.97
Services	2.67	1.81
Technology-Intensive Manufacturing	2.06	1.41
Transportation & Public Utilities	1.88	1.31
Wholesale Trade	3.62	1.63
<b>Weighted Average of All Groups</b>	<b>1.03</b>	<b>0.54</b>

**Table A3-11****Percentage of Voting Shares Held by Insiders, by Size Class**

<b>Sales (US\$ millions)</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
10 to 50	34.58	25.71
50 to 100	24.52	25.77
100 to 500	13.18	22.30
500 to 1,000	15.13	15.31
1,000 to 2,000	20.98	14.13
> 2,000	22.18	7.46
<b>Weighted Average of All Classes</b>	<b>21.49</b>	<b>9.60</b>

**Table A3-12****Percentage of Voting Shares Held by Insiders, by Major Industry Grouping**

<b>Major Industry Grouping</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
Agriculture, Forestry & Fishing	n/a	17.88
Construction	n/a	10.58
Finance, Insurance & Real Estate	2.69	10.76
Labour-Intensive Manufacturing	9.97	13.90
Mining	54.14	3.05
Resource-Intensive Manufacturing	26.82	9.50
Retail Trade	n/a	19.52
Services	24.13	14.99
Technology-Intensive Manufacturing	1.99	6.99
Transportation & Public Utilities	22.15	5.18
Wholesale Trade	n/a	16.27
<b>Weighted Average of All Groups</b>	<b>21.49</b>	<b>9.60</b>
Note: n/a = data not available		

**Table A3-13****Institutional Ownership by Size Class**

<b>Sales (US\$ millions)</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
10 to 50	31.36	16.36
50 to 100	31.59	27.23
100 to 500	33.05	40.58
500 to 1,000	36.86	46.22
1,000 to 2,000	44.26	51.34
> 2,000	38.78	55.53
<b>Weighted Average of All Classes</b>	<b>38.24</b>	<b>53.27</b>

**Table A3-14****Institutional Ownership by Major Industry Grouping**

<b>Major Industry Grouping</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
Agriculture, Forestry & Fishing	9.57	56.19
Construction	44.20	56.28
Finance, Insurance & Real Estate	28.75	59.28
Labour-Intensive Manufacturing	39.58	51.02
Mining	40.27	55.68
Resource-Intensive Manufacturing	26.70	51.52
Retail Trade	24.16	49.40
Services	22.98	51.69
Technology-Intensive Manufacturing	68.73	56.56
Transportation & Public Utilities	52.82	44.72
Wholesale Trade	20.31	54.46
<b>Weighted Average of All Groups</b>	<b>38.24</b>	<b>53.27</b>

**Table A3-15****Number of Directors by Size Class**

<b>Sales (US\$ millions)</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
10 to 50	7.34	7.38
50 to 100	8.27	8.29
100 to 500	9.81	9.62
500 to 1,000	11.92	11.62
1,000 to 2,000	11.89	12.70
> 2,000	16.66	17.74
<b>Weighted Average of All Classes</b>	<b>14.33</b>	<b>16.36</b>

<b>Table A3-16</b>		
<b>Number of Directors by Major Industry Grouping</b>		
<b>Major Industry Grouping</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
Agriculture, Forestry & Fishing	12.28	14.73
Construction	8.93	10.15
Finance, Insurance & Real Estate	10.79	15.41
Labour-Intensive Manufacturing	11.28	13.43
Mining	10.54	15.15
Resource-Intensive Manufacturing	12.51	18.42
Retail Trade	11.83	13.54
Services	9.60	12.51
Technology-Intensive Manufacturing	11.24	18.89
Transportation & Public Utilities	13.70	14.71
Wholesale Trade	11.40	12.05
<b>Weighted Average of All Groups</b>	<b>14.33</b>	<b>16.36</b>

<b>Table A3-17</b>		
<b>Number of Officers by Size Class</b>		
<b>Sales (US\$ millions)</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
10 to 50	5.24	9.02
50 to 100	6.51	8.96
100 to 500	8.47	9.76
500 to 1,000	10.39	11.48
1,000 to 2,000	10.05	12.03
> 2,000	16.25	15.86
<b>Weighted Average of All Classes</b>	<b>13.45</b>	<b>14.84</b>

**Table A3-18****Number of Officers by Major Industry Grouping**

<b>Major Industry Grouping</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
Agriculture, Forestry & Fishing	10.14	13.79
Construction	4.43	12.31
Finance, Insurance & Real Estate	17.80	18.27
Labour-Intensive Manufacturing	10.92	12.31
Mining	9.05	14.24
Resource-Intensive Manufacturing	10.45	16.57
Retail Trade	11.43	12.23
Services	11.29	12.61
Technology-Intensive Manufacturing	10.94	14.21
Transportation & Public Utilities	13.05	14.87
Wholesale Trade	11.38	11.35
<b>Weighted Average of All Groups</b>	<b>13.45</b>	<b>14.84</b>

**Table A3-19****Inside Director Ratio by Size Class**

<b>Sales (US\$ millions)</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
10 to 50	0.30	0.39
50 to 100	0.30	0.35
100 to 500	0.22	0.31
500 to 1,000	0.19	0.25
1,000 to 2,000	0.18	0.24
> 2,000	0.19	0.21

<b>Table A3-20</b>		
<b>Inside Director Ratio by Major Industry Grouping</b>		
<b>Major Industry Grouping</b>	<b>Canada - Weighted Average</b>	<b>United States - Weighted Average</b>
Agriculture, Forestry & Fishing	0.23	0.13
Construction	0.25	0.28
Finance, Insurance & Real Estate	0.14	0.23
Labour-Intensive Manufacturing	0.21	0.27
Mining	0.27	0.31
Resource-Intensive Manufacturing	0.21	0.19
Retail Trade	0.18	0.24
Services	0.29	0.27
Technology-Intensive Manufacturing	0.30	0.20
Transportation & Public Utilities	0.14	0.19
Wholesale Trade	0.29	0.32
<b>Weighted Average of All Groups</b>	<b>0.20</b>	<b>0.22</b>

<b>Table A3-21</b>	
<b>Foreign Director Ratio in Canadian Firms by Size Class</b>	
<b>Sales (US\$ millions)</b>	<b>Canada - Weighted Average</b>
10 to 50	0.19
50 to 100	0.19
100 to 500	0.18
500 to 1,000	0.18
1,000 to 2,000	0.24
> 2,000	0.11
<b>Weighted Average of All Classes</b>	<b>0.15</b>

<b>Table A3-22</b>	
<b>Foreign Director Ratio in Canadian Firms by Major Industry Grouping</b>	
<b>Major Industry Grouping</b>	<b>Canada - Weighted Average</b>
Agriculture, Forestry & Fishing	n/a
Construction	0.14
Finance, Insurance & Real Estate	0.13
Labour-Intensive Manufacturing	0.10
Mining	0.17
Resource-Intensive Manufacturing	0.19
Retail Trade	n/a
Services	0.23
Technology-Intensive Manufacturing	0.15
Transportation & Public Utilities	0.17
Wholesale Trade	0.24
<b>Weighted Average of All Groups</b>	<b>0.15</b>
Note: n/a = data not available	

<b>Table A3-23</b>		
<b>CEO is on the Board of Directors by Size Class</b>		
<b>Sales (US\$ millions)</b>	<b>Canada - % of Firms</b>	
	<b>No</b>	<b>Yes</b>
10 to 50	23.7	76.3
50 to 100	19.2	80.8
100 to 500	12.3	87.7
500 to 1,000	7.4	92.6
1,000 to 2,000	11.1	88.9
> 2,000	10.2	89.8
<b>Average of All Classes</b>	<b>17.0</b>	<b>83.0</b>

**Table A3-24****CEO is on the Board of Directors by Major Industry Grouping**

Major Industry Grouping	Canada - % of Firms	
	No	Yes
Agriculture, Forestry & Fishing	25.0	75.0
Construction	22.2	77.8
Finance, Insurance & Real Estate	18.8	81.2
Labour-Intensive Manufacturing	18.2	81.8
Mining	20.6	79.4
Resource-Intensive Manufacturing	16.3	83.7
Retail Trade	14.7	85.3
Services	14.0	86.0
Technology-Intensive Manufacturing	16.7	83.3
Transportation & Public Utilities	9.9	90.1
Wholesale Trade	16.2	83.8
<b>Average of All Groups</b>	<b>17.0</b>	<b>83.0</b>

**Table A3-25****CEO is Chairperson of the Board by Size Class**

Sales (US\$ millions)	Canada - % of Firms		United States - % of Firms	
	No	Yes	No	Yes
10 to 50	73.3	26.6	55.3	44.7
50 to 100	100.0	0.0	46.2	53.8
100 to 500	53.3	46.6	40.1	59.9
500 to 1,000	71.4	28.6	31.7	68.3
1,000 to 2,000	83.3	16.7	29.4	70.6
> 2,000	50.0	50.0	18.2	81.8
<b>Average of All Classes</b>	<b>65.5</b>	<b>34.5</b>	<b>40.7</b>	<b>59.3</b>

**Table A3-26****CEO is Chairperson of the Board by Major Industry Grouping**

Major Industry Grouping	Canada - % of Firms		United States - % of Firms	
	No	Yes	No	Yes
Agriculture, Forestry & Fishing	n/a	n/a	50.0	50.0
Construction	n/a	n/a	38.2	61.8
Finance, Insurance & Real Estate	30.0	70.0	45.7	54.3
Labour-Intensive Manufacturing	100.0	0.0	36.0	64.0
Mining	81.2	18.8	37.0	63.0
Resource-Intensive Manufacturing	75.0	25.0	39.9	60.1
Retail Trade	n/a	n/a	33.2	66.8
Services	100.0	0.0	38.2	61.8
Technology-Intensive Manufacturing	83.3	16.7	43.4	56.6
Transportation & Public Utilities	25.0	75.0	34.7	65.3
Wholesale Trade	n/a	n/a	44.1	55.9
<b>Average of All Groups</b>	<b>65.5</b>	<b>34.5</b>	<b>40.7</b>	<b>59.3</b>

Note: n/a = data not available.

## APPENDIX 4

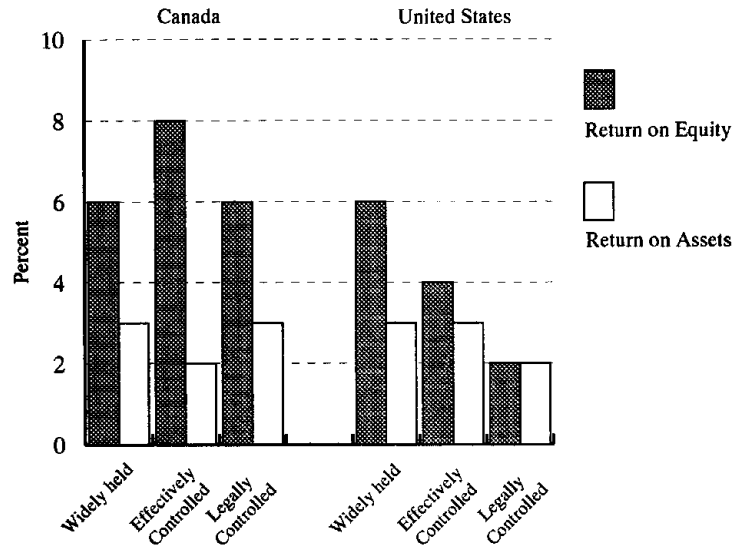
### CONCENTRATION OF OWNERSHIP TABULATIONS

Variable	United States											
	Canada											
	Widely Held	Effectively Controlled	Legally Controlled	All Firms	Widely Held	Effectively Controlled	Legally Controlled	All Firms	Widely Held	Effectively Controlled	Legally Controlled	All Firms
Number of Firms	177	164	425	766	1206	1054	740	3000				
Return on Equity	0.06	0.08	0.06	0.07	0.06	0.04	0.02	0.05				
Return on Assets	0.03	0.02	0.03	0.03	0.03	0.03	0.02	0.03				
Sales Growth	0.15	0.14	0.08	0.11	0.08	0.12	0.13	0.11				
Asset Growth	0.14	0.13	0.07	0.10	0.11	0.13	0.14	0.13				
Sales/Employee (\$)	449,484	398,493	412,880	418,908	233,417	219,865	248,713	232,420				
Sales/Asset	0.78	1.08	1.00	0.97	0.90	1.15	1.25	1.07				
Labour Prod. Growth	0.14	0.14	0.08	0.11	0.07	0.11	0.13	0.10				
Capital Prod. Growth	0.01	0.01	0.01	0.01	-0.02	-0.01	-0.01	-0.02				
EPS Growth	-0.13	-0.08	-0.16	-0.14	-0.02	-0.09	-0.02	-0.05				
Debt/Assets	0.21	0.27	0.26	0.25	0.20	0.20	0.23	0.21				
Assets/Employee (\$)	888,503	646,944	1,761,103	1,324,969	796,027	544,701	415,791	613,140				
Presence of Foreign Sales or Assets	0.23	0.17	0.12	0.16	0.36	0.46	0.36	0.40				
Institutional Ownership	6.18	18.75	48.33	32.26	31.69	41.18	30.37	34.70				
Inside Ownership	4.18	17.83	26.24	19.34	11.59	18.90	36.04	20.19				
Board Size	9.61	8.70	9.31	9.25	10.45	9.85	8.96	9.87				
Inside Director Ratio	0.24	0.28	0.26	0.26	0.30	0.30	0.33	0.31				
Foreign Director Ratio	0.03	0.03	0.04	0.04	n/a	n/a	n/a	n/a				
CEO is Chairperson of the Board	0.26	0.29	0.50	0.35	0.61	0.58	0.59	0.59				

Note: n/a = not available.

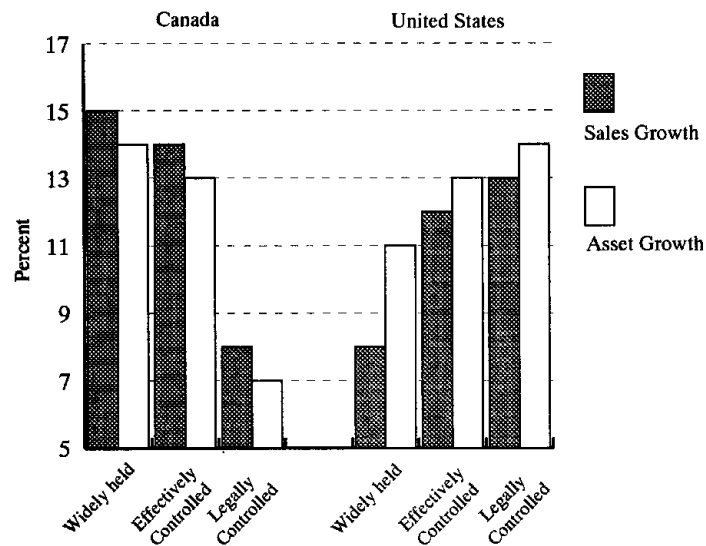
**Figure A4-1**

**Return Performance Grouped by Concentration of Ownership**



**Figure A4-2**

**Growth Performance Grouped by Concentration of Ownership**



Source: Table A4-1 for both Figures.

## APPENDIX 5

### REGRESSION RESULTS OF MODEL 1: RELATIONSHIPS BETWEEN DECISION-MAKING AND CORPORATE GOVERNANCE STRUCTURE VARIABLES

This Appendix contains a description of the mnemonics used in the regression equations and a series of Tables showing the Canadian and American regression results of Model 1. This Model is used to analyze the relationship between the corporate governance structure and corporate decision-making variables.

#### Description of Regression Mnemonics

The mnemonics used in the regression analysis are classified according to the following scheme. The first letter of the variable mnemonic is either a “C” or a “U,” denoting the Canadian or United States sample, respectively. The second letter of the variable mnemonic is either a “G,” a “D” or a “P,” denoting Governance, Decision-Making and Performance variables, respectively. The third symbol of the variable mnemonic is a “dot,” except for major industry and size dummy variables.

The letters that follow the “dot” symbol represent the following variables:

BS	Board Size (number of directors)
CC1	CEO is Chairperson
CC2	CEO is Chairperson, information not available (only for Canadian sample)
FOR	Foreign Director Ratio
INS	Inside Director Ratio
INSD	Inside Ownership
IO	Institutional Ownership
OC1	Concentration of Ownership “widely held”
OC2	Concentration of Ownership “effectively controlled” (the control group is “legally controlled”)
DDASS	Leverage (debt to assets ratio)
ASSEM	Capital-Labour Ratio (assets to employees ratio)
RNDSS	R&D Intensity (R&D to sales ratio)
FTAG	Outward Orientation (presence of foreign sales or foreign assets)
ROE	Return on Equity
ROA	Return on Assets
SG	Sales Growth

ASSG	Asset Growth
SSEMP	Labour Productivity (sales per employee)
SSASS	Capital Productivity (sales per asset)
LPG	Labour Productivity Growth
CPG	Capital Productivity Growth
EPSG	Earnings per Share Growth

The 10 major industry dummy variables are defined as MI.1 to MI.10.

MI.1 is Agriculture, Forestry and Fishing

MI.2 is Construction

MI.3 is Finance, Insurance and Real Estate

MI.4 is Labour-Intensive Manufacturing

MI.5 is Mining

MI.6 is Resource-Intensive Manufacturing

MI.7 is Retail Trade

MI.8 is Services

MI.9 is Technology-Intensive Manufacturing

MI.10 is Transportation and Public Utilities

The control major industry is Wholesale Trade

The five firm size dummy variables are defined as SIZ.1 to SIZ.5. The size is measured as US\$ sales in millions.

SIZ.1 is between 10 and 50

SIZ.2 is between 50 and 100

SIZ.3 is between 100 and 500

SIZ.4 is between 500 and 1,000

SIZ.5 is between 1,000 and 2,000

The control firm size is 2,000 and more.

### **Detailed Regression Results**

This section contains a series of four Tables showing the detailed regression results for the Canadian sample (Tables A5-1 to A5-4) and a similar set of Tables for the U.S. sample (Tables A5-5 to A5-8). The dependent variables in each set of regression equations are the following:

- Leverage
- Capital-Labour Ratio
- R&D Intensity
- Outward Orientation

**Table A5-1**  
**Leverage Variable, Canadian Sample**  
**(Dependent Variable: CD.DDASS)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	0.3298	5.37
CG.BS	-0.0100	-4.56
CG.CC1	0.0494	1.07
CG.CC2	-0.0052	-0.15
CG.FOR	-0.0488	-0.61
CG.INS	-0.0685	-1.36
CG.INS D	$4.5112 \times 10^{-5}$	0.10
CG.IO	$-1.9752 \times 10^{-4}$	-0.48
CG.OC1	-0.0272	-0.90
CG.OC2	0.0298	1.29
CMI.1	0.1095	0.90
CMI.2	0.0824	1.23
CMI.3	0.1143	3.13
CMI.4	0.0833	1.80
CMI.5	0.0769	2.09
CMI.6	0.0924	2.50
CMI.7	0.0290	0.65
CMI.8	0.1214	2.78
CMI.9	0.0130	0.34
CMI.10	0.2165	5.52
CSIZ.1	-0.0885	-2.70
CSIZ.2	-0.1002	-3.00
CSIZ.3	-0.0559	-1.94
CSIZ.4	-0.0331	-1.02
CSIZ.5	0.0456	1.29
<i>F</i> = 4.30		
Adjusted <i>R</i> <sup>2</sup> = 0.123		
<i>n</i> = 565		

**Table A5-2**  
**Capital-Labour Ratio Variable, Canadian Sample**  
**(Dependent Variable: CD.ASSEM)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	3360297.0070	-3.20
CG.BS	101306.8361	0.12
CG.CC1	75627.7420	-0.09
CG.CC2	149820.8217	-0.24
CG.FOR	404899.6149	0.29
CG.INS	1428028.1910	-1.65
CG.INS D	15161.3751	1.88
CG.IO	32951.7883	4.76
CG.OC1	967610.1180	1.82
CG.OC2	405215.5897	0.97
CMI.1	-483181.5418	-0.26
CMI.2	29221.4345	0.02
CMI.3	3154717.1743	5.19
CMI.4	-430267.5822	-0.57
CMI.5	943088.3179	1.54
CMI.6	-11742.9482	-0.02
CMI.7	-196804.3882	-0.26
CMI.8	8354.9540	0.01
CMI.9	-232017.7509	-0.37
CMI.10	-357322.5828	-0.56
CSIZ.1	2008405.6416	3.45
CSIZ.2	2590719.9005	4.32
CSIZ.3	1982918.4810	3.76
CSIZ.4	1011067.4047	1.69
CSIZ.5	790257.0639	1.18
<i>F</i> = 10.13		
Adjusted <i>R</i> <sup>2</sup> = 0.258		
<i>n</i> = 631		

**Table A5-3**  
**R&D Intensity Variable, Canadian Sample**  
**(Dependent Variable: CD.RNDSS)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	0.3156	1.96
CG.BS	-0.0195	-2.36
CG.CC1	-0.0349	-0.42
CG.CC2	-0.0456	-0.96
CG.FOR	-0.1678	-1.03
CG.INS	-0.0451	-0.30
CG.INS <sub>D</sub>	8.2993×10 <sup>-4</sup>	0.91
CG.IO	-1.7984×10 <sup>-4</sup>	-0.20
CG.OC1	-0.0026	-0.05
CG.OC2	-0.0189	-0.36
CMI.3	0.1278	1.22
CMI.4	-0.0894	-0.47
CMI.5	0.0336	0.40
CMI.6	0.1056	1.08
CMI.7	-0.0278	-0.16
CMI.8	-0.0529	-0.54
CMI.9	0.0270	0.32
CMI.10	-0.1040	-0.60
CSIZ.1	-0.0789	-0.99
CSIZ.2	-0.0761	-0.93
CSIZ.3	-0.0705	-1.06
CSIZ.4	0.0329	0.40
CSIZ.5	0.1080	1.33
<i>F</i> = 1.09		
Adjusted <i>R</i> <sup>2</sup> = 0.022		
<i>n</i> = 89		

**Table A5-4**  
**Outward Orientation Variable, Canadian Sample**  
**(Dependent Variable: CD.FTAG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.1867	1.50
CG.BS	-0.0034	-0.78
CG.CC1	0.2948	3.15
CG.CC2	0.3356	4.84
CG.FOR	0.4825	2.67
CG.INS	-0.0228	-0.21
CG.INS D	-0.0011	-1.16
CG.IO	-0.0016	-1.87
CG.OC1	-0.0094	-0.15
CG.OC2	-0.0182	-0.38
CMI.1	-0.1113	-0.45
CMI.2	0.1460	1.08
CMI.3	0.1342	1.87
CMI.4	0.1708	1.85
CMI.5	0.1341	1.83
CMI.6	0.0927	1.24
CMI.7	0.1256	1.35
CMI.8	0.1770	1.95
CMI.9	0.1740	2.24
CMI.10	0.0257	0.32
CSIZ.1	-0.1760	-2.64
CSIZ.2	-0.1437	-2.08
CSIZ.3	-0.0787	-1.34
CSIZ.4	0.0615	0.92
CSIZ.5	0.1349	1.86
<i>F</i> = 4.95		
Adjusted $R^2$ = 0.147		
<i>n</i> = 550		

**Table A5-5**  
**Leverage Variable, U.S. Sample**  
**(Dependent Variable: UD.DDASS)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.2985×10 <sup>-4</sup>	9.76
UG.BS	-3.4113	-0.01
UG.CC1	0.0147	1.76
UG.INS	-0.0129×10 <sup>-4</sup>	-0.56
UG.INS D	-4.8190×10 <sup>-4</sup>	-2.17
UG.IO	-6.4793	-3.05
UG.OC1	-0.0507	-4.26
UG.OC2	-0.0279	-2.43
UMI.1	0.0274	0.33
UMI.2	-0.0065	-0.16
UMI.3	-0.1561	-7.18
UMI.4	6.7940×10 <sup>-4</sup>	0.03
UMI.5	0.0377	1.27
UMI.6	0.0186	0.85
UMI.7	-0.0171	-0.72
UMI.8	-0.0029	-0.12
UMI.9	-0.0391	-1.90
UMI.10	0.0958	4.32
USIZ.1	-0.0349	-1.70
USIZ.2	-0.0161	-0.95
USIZ.3	-0.0179	-1.50
USIZ.4	0.0133	1.00
USIZ.5	0.0024	0.17
<i>F</i> = 17.51		
Adjusted <i>R</i> <sup>2</sup> = 0.209		
<i>n</i> = 1,372		

**Table A5-6**  
**Capital-Labour Ratio Variable, U.S. Sample**  
**(Dependent Variable: UD.ASSEM)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	427933.6664	2.70
UG.BS	-4627.7597	-1.18
UG.CC1	-8903.3753	-0.22
UG.INS	-80081.4117	-0.77
UG.INSD	-1402.1721	-1.39
UG.IO	1475.1838	1.40
UG.OC1	-57818.4658	-1.02
UG.OC2	-35763.3162	-0.66
UMI.1	112636.9794	0.23
UMI.2	269467.1769	1.32
UMI.3	1860970.4643	17.71
UMI.4	-145898.1479	-1.18
UMI.5	447050.9785	3.14
UMI.6	-83117.9343	-0.73
UMI.7	-200390.1117	-1.68
UMI.8	-64673.3624	-0.58
UMI.9	-104297.4158	-1.01
UMI.10	250747.2362	2.20
USIZ.1	-158056.7726	-1.74
USIZ.2	-162492.2201	-1.84
USIZ.3	-67298.0667	-0.89
USIZ.4	-44361.8557	-0.50
USIZ.5	-123045.9600	-1.30
<i>F</i> = 72.69		
Adjusted $R^2$ = 0.349		
<i>n</i> = 2,940		

**Table A5-7**  
**R&D Intensity Variable, U.S. Sample**  
**(Dependent Variable: UD.RNDSS)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.4813	5.04
UG.BS	-0.0011	-0.76
UG.CC1	0.0085	0.55
UG.INS	-0.0703	-1.62
UG.INS D	-1.2095×10 <sup>-4</sup>	-0.31
UG.IO	-6.0958×10 <sup>-4</sup>	-1.48
UG.OC1	0.0056	0.26
UG.OC2	0.0162	0.82
UMI.1	-0.2045	-1.44
UMI.2	-0.3582	-2.19
UMI.3	-0.3700	-2.85
UMI.4	-0.1595	-1.74
UMI.5	-0.3473	-3.97
UMI.6	-0.1916	-2.23
UMI.7	-0.1260	-1.03
UMI.8	-0.2976	-3.54
UMI.9	-0.3032	-3.67
UMI.10	-0.3662	-3.65
USIZ.1	-0.0249	-0.73
USIZ.2	-0.0592	-1.79
USIZ.3	0.0018	0.06
USIZ.4	-0.0330	-0.91
USIZ.5	0.0728	1.99
<i>F</i> = 3.36		
Adjusted <i>R</i> <sup>2</sup> = 0.065		
<i>n</i> = 753		

**Table A5-8**  
**Outward Orientation Variable, U.S. Sample**  
**(Dependent Variable: UD.FTAG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.4681	5.49
UG.BS	-6.6430×10 <sup>-4</sup>	-0.35
UG.CC1	-0.0130	-0.57
UG.INS	-0.1444	-2.32
UG.INSD	-2.2022×10 <sup>-4</sup>	-0.37
UG.IO	0.0018	3.05
UG.OC1	-0.0115	-0.36
UG.OC2	0.0281	0.89
UMI.1	0.4145	1.71
UMI.2	-0.0147	-0.12
UMI.3	-0.1639	-2.70
UMI.4	0.0932	1.35
UMI.5	0.2993	3.57
UMI.6	0.1279	2.06
UMI.7	-0.2661	-3.98
UMI.8	0.1462	2.25
UMI.9	0.3791	6.51
UMI.10	-0.2292	-3.64
USIZ.1	-0.3790	-7.05
USIZ.2	-0.3477	-7.47
USIZ.3	-0.2189	-6.49
USIZ.4	-0.1731	-4.56
USIZ.5	-0.0872	-2.22
<i>F</i> = 31.79		
Adjusted <i>R</i> <sup>2</sup> = 0.307		
<i>n</i> = 1,530		

## APPENDIX 6

### REGRESSION RESULTS OF MODEL 2: RELATIONSHIPS BETWEEN PERFORMANCE, DECISION-MAKING, AND CORPORATE GOVERNANCE STRUCTURE VARIABLES

This Appendix contains a description of the mnemonics used in the regression equations and a series of Tables showing the Canadian and American regression results of Model 2. This Model depicts the impact of the corporate governance and decision-making variables on the performance variables.

#### Description of Regression Mnemonics

The mnemonics used in the regression analysis are classified according to the following scheme. The first letter of the variable mnemonic is either a “C” or a “U,” denoting the Canadian or United States sample, respectively. The second letter of the variable mnemonic is either a “G,” a “D” or a “P,” denoting Governance, Decision-Making and Performance variables, respectively. The third symbol of the variable mnemonic is a “dot,” except for major industry and size dummy variables.

The letters that follow the “dot” symbol represent the following variables:

BS	Board Size (number of directors)
CC1	CEO is Chairperson
CC2	CEO is Chairperson, information not available (only for Canadian sample)
FOR	Foreign Director Ratio
INS	Inside Director Ratio
INSD	Inside Ownership
IO	Institutional Ownership
OC1	Concentration of Ownership “widely held”
OC2	Concentration of Ownership “effectively controlled” (the control group is “legally controlled”)
DDASS	Leverage (debt to assets ratio)
ASSEM	Capital-Labour Ratio (assets to employees ratio)
RNDSS	R&D Intensity (R&D to sales ratio)
FTAG	Outward Orientation (presence of foreign sales or foreign assets)
ROE	Return on Equity
ROA	Return on Assets
SG	Sales Growth

ASSG	Asset Growth
SSEMP	Labour Productivity (sales per employee)
SSASS	Capital Productivity (sales per asset)
LPG	Labour Productivity Growth
CPG	Capital Productivity Growth
EPSG	Earnings per Share Growth

The 10 major industry dummy variables are defined as MI.1 to MI.10.

MI.1 is Agriculture, Forestry and Fishing

MI.2 is Construction

MI.3 is Finance, Insurance and Real Estate

MI.4 is Labour-Intensive Manufacturing

MI.5 is Mining

MI.6 is Resource-Intensive Manufacturing

MI.7 is Retail Trade

MI.8 is Services

MI.9 is Technology-Intensive Manufacturing

MI.10 is Transportation and Public Utilities

The control major industry is Wholesale Trade

The five firm size dummy variables are defined as SIZ.1 to SIZ.5. The size is measured as US\$ sales in millions.

SIZ.1 is between 10 and 50

SIZ.2 is between 50 and 100

SIZ.3 is between 100 and 500

SIZ.4 is between 500 and 1,000

SIZ.5 is between 1,000 and 2,000

The control firm size is 2,000 and more.

### **Detailed Regression Results**

This section contains a series of nine Tables showing the detailed regression results for the Canadian sample (Tables A6-1 to A6-9) and a similar set of Tables for the U.S. sample (Tables A6-10 to A6-18). The dependent variables in each set of regression equations are the following:

- Return on Equity
- Return on Assets
- Sales Growth
- Asset Growth
- Labour Productivity Performance
- Capital Productivity Performance
- Labour Productivity Growth
- Capital Productivity Growth
- Earnings per Share Growth

**Table A6-1**  
**Return on Equity Variable, Canadian Sample**  
**(Dependent Variable: CP.ROE)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.1765	2.24
CD.ASSEM	-4.1592×10 <sup>-9</sup>	-1.14
CD.DDASS	-0.1997	-3.48
CG.BS	-0.0040	-1.38
CG.CC1	-0.0025	-0.05
CG.CC2	-0.0444	-1.07
CG.FOR	0.0558	0.53
CG.INS	0.2112	3.18
CG.INS2	4.2418×10 <sup>-4</sup>	-0.73
CG.IO	-5.3142×10 <sup>-5</sup>	-0.10
CG.OC1	-0.0045	-0.12
CG.OC2	0.0095	0.32
CMI.1	-0.0391	-0.28
CMI.2	0.0666	0.81
CMI.3	0.0483	0.10
CMI.4	0.0044	0.08
CMI.5	-0.0383	-0.83
CMI.6	-0.0893	-1.98
CMI.7	-0.0608	-1.12
CMI.8	0.0552	1.03
CMI.9	-0.0455	-0.96
CMI.10	0.0544	1.10
CSIZ.1	-0.1222	-2.90
CSIZ.2	-0.0614	-1.45
CSIZ.3	-0.0530	-1.47
CSIZ.4	-0.0218	-0.55
CSIZ.5	-0.0497	-1.12
<i>F</i> = 2.33		
Adjusted <i>R</i> <sup>2</sup> = 0.070		
<i>n</i> = 463		

**Table A6-2**  
**Return on Assets Variable, Canadian Sample**  
**(Dependent Variable: CP.ROA)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0391	1.23
CD.ASSEM	-7.93978×10 <sup>-10</sup>	-0.54
CD.DDASS	-0.0532	-2.29
CG.BS	3.1956×10 <sup>-4</sup>	0.28
CG.CC1	0.0108	0.50
CG.CC2	-0.0033	-0.20
CG.FOR	-0.0044	-0.10
CG.INS	0.0691	2.57
CG.INS D	1.5688×10 <sup>-4</sup>	0.67
CG.IO	1.2800×10 <sup>-6</sup>	0.01
CG.OC1	-0.0050	-0.33
CG.OC2	-0.0140	-1.15
CMI.1	-0.0229	-0.40
CMI.2	0.0471	1.41
CMI.3	-0.0180	-0.92
CMI.4	0.0037	0.16
CMI.5	0.0016	0.09
CMI.6	-0.0158	-0.86
CMI.7	-0.0055	-0.25
CMI.8	0.0252	1.15
CMI.9	-0.0020	-0.11
CMI.10	0.0161	0.80
CSIZ.1	-0.0408	-2.39
CSIZ.2	-0.0319	-1.85
CSIZ.3	-0.0132	-0.91
CSIZ.4	-0.0056	-0.35
CSIZ.5	-0.0030	-0.17
<i>F</i> = 1.73		
Adjusted <i>R</i> <sup>2</sup> = 0.040		
<i>n</i> = 463		

**Table A6-3**  
**Sales Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.SG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0420	0.55
CD.ASSEM	-7.6081×10 <sup>-9</sup>	-2.14
CD.DDASS	-0.0235	-0.42
CG.BS	5.0105×10 <sup>-4</sup>	0.18
CG.CC1	0.0955	1.82
CG.CC2	-0.0342	-0.85
CG.FOR	0.0734	0.72
CG.INS	0.0422	0.65
CG.INS D	-3.1076×10 <sup>-4</sup>	-0.55
CG.IO	-5.3803×10 <sup>-4</sup>	-1.06
CG.OC1	-0.0018	-0.05
CG.OC2	0.0069	0.24
CMI.1	0.1185	0.86
CMI.2	0.0551	0.69
CMI.3	6.6591×10 <sup>-4</sup>	0.01
CMI.4	-0.0150	-0.27
CMI.5	0.1200	2.67
CMI.6	-0.0297	-0.68
CMI.7	-0.0386	-0.73
CMI.8	0.0572	1.09
CMI.9	0.0653	1.42
CMI.10	0.0416	0.87
CSIZ.1	0.0642	1.57
CSIZ.2	0.0405	0.98
CSIZ.3	0.0472	1.35
CSIZ.4	0.0620	1.61
CSIZ.5	0.0052	0.12
<i>F</i> = 2.52		
Adjusted <i>R</i> <sup>2</sup> = 0.079		
<i>n</i> = 463		

**Table A6-4**  
**Asset Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.ASSG)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	-0.0733	-0.99
CD.ASSEM	-4.4962×10 <sup>-9</sup>	-1.30
CD.DDASS	-0.0485	-0.89
CG.BS	0.0047	1.73
CG.CC1	0.1203	2.36
CG.CC2	-0.0331	-0.85
CG.FOR	0.2960	2.97
CG.INS	0.1112	1.77
CG.INSD	-4.0543×10 <sup>-4</sup>	-0.74
CG.IO	-4.5336×10 <sup>-4</sup>	-0.92
CG.OC1	0.0203	0.57
CG.OC2	0.0210	0.75
CMI.1	0.0938	0.70
CMI.2	-0.0320	-0.41
CMI.3	-0.0900	-0.18
CMI.4	0.0346	0.65
CMI.5	0.0935	2.15
CMI.6	0.0095	0.22
CMI.7	-6.9937×10 <sup>-5</sup>	-0.00
CMI.8	0.0997	1.96
CMI.9	0.1095	2.45
CMI.10	0.0787	1.67
CSIZ.1	0.0412	1.03
CSIZ.2	0.0911	2.27
CSIZ.3	0.0542	1.59
CSIZ.4	0.0835	2.23
CSIZ.5	-0.0126	-0.30
<i>F</i> = 2.87		
Adjusted <i>R</i> <sup>2</sup> = 0.095		
<i>n</i> = 463		

**Table A6-5**  
**Labour Productivity Performance Variable, Canadian Sample**  
**(Dependent Variable: CP.SSEMP)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	1077694.9856	4.85
CD.ASSEM	0.1171	11.36
CD.DDASS	139295.4561	0.86
CG.BS	-20841.9212	-2.58
CG.CC1	101535.3564	0.67
CG.CC2	-60892.7169	-0.52
CG.FOR	-440007.0183	-1.48
CG.INS	8905.9540	0.05
CG.INS D	-672.4895	-0.41
CG.IO	-211.2639	-0.14
CG.OC1	-13105.9841	-0.12
CG.OC2	-22336.3356	-0.27
CMI.1	-493757.6259	-1.23
CMI.2	536160.7718	2.30
CMI.3	-553613.3395	-4.05
CMI.4	-532324.6397	-3.34
CMI.5	-193481.3214	-1.49
CMI.6	-494965.5179	-3.89
CMI.7	-599037.6624	-3.91
CMI.8	-441937.1961	-2.90
CMI.9	-449003.6924	-3.37
CMI.10	-456478.5457	-3.28
CSIZ.1	-343685.9377	-2.89
CSIZ.2	-318249.0906	-2.65
CSIZ.3	-90787.0425	-0.89
CSIZ.4	-202953.0658	-1.81
CSIZ.5	-141166.7471	-1.12
<i>F</i> = 9.20		
Adjusted $R^2$ = 0.316		
<i>n</i> = 463		

**Table A6-6**  
**Capital Productivity Performance Variable, Canadian Sample**  
**(Dependent Variable: CP.SSASS)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	2.4883	9.54
CD.ASSEM	-3.1655×10 <sup>-8</sup>	-2.62
CD.DDASS	-0.7129	-3.75
CG.BS	-0.0301	-3.17
CG.CC1	-0.2206	-1.24
CG.CC2	-0.0092	-0.07
CG.FOR	-0.2477	-0.71
CG.INS	0.1922	0.87
CG.INSD	0.0014	0.70
CG.IO	3.0885×10 <sup>-4</sup>	0.18
CG.OC1	-0.1585	-1.27
CG.OC2	-0.0453	-0.46
CMI.1	-0.2201	-0.47
CMI.2	-0.1246	-0.46
CMI.3	-1.0880	-6.79
CMI.4	-0.3962	-2.12
CMI.5	-1.2283	-8.04
CMI.6	-0.6304	-4.22
CMI.7	0.1282	0.71
CMI.8	-0.5939	-3.33
CMI.9	-0.4619	-2.95
CMI.10	-0.9092	-5.56
CSIZ.1	-0.4922	-3.52
CSIZ.2	-0.2911	-2.07
CSIZ.3	-0.1859	-1.56
CSIZ.4	-0.3174	-2.42
CSIZ.5	-0.2280	-1.55
<i>F</i> = 13.46		
Adjusted <i>R</i> <sup>2</sup> = 0.412		
<i>n</i> = 463		

**Table A6-7**  
**Labour Productivity Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.LPG)**

Variables in the equation	B	t-statistics
(Constant)	0.0680	0.90
CD.ASSEM	-7.7612×10 <sup>-9</sup>	-2.21
CD.DDASS	-0.0349	-0.63
CG.BS	5.1243	0.00
CG.CC1	0.0669	1.29
CG.CC2	-0.0384	-0.97
CG.FOR	0.0876	0.87
CG.INS	0.0232	0.36
CG.INS D	-4.2438×10 <sup>-4</sup>	-0.76
CG.IO	-6.4422×10 <sup>-4</sup>	-1.29
CG.OC1	-0.0209	-0.58
CG.OC2	-6.7336×10 <sup>-4</sup>	-0.02
CMI.1	0.1278	0.94
CMI.2	0.0502	0.63
CMI.3	0.0017	0.04
CMI.4	-0.0232	-0.43
CMI.5	0.1103	2.49
CMI.6	-0.0332	-0.77
CMI.7	-0.0386	-0.74
CMI.8	0.0301	0.58
CMI.9	0.0595	1.31
CMI.10	0.0338	0.71
CSIZ.1	0.0713	1.76
CSIZ.2	0.0430	1.05
CSIZ.3	0.0493	1.42
CSIZ.4	0.0548	1.44
CSIZ.5	0.0153	0.36
<i>F</i> = 2.32		
Adjusted <i>R</i> <sup>2</sup> = 0.069		
<i>n</i> = 463		

**Table A6-8**  
**Capital Productivity Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.CPG)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	0.1152	1.67
CD.ASSEM	-3.1119×10 <sup>-9</sup>	-0.97
CD.DDASS	0.0250	0.50
CG.BS	-0.0042	-1.66
CG.CC1	-0.0247	-0.52
CG.CC2	-0.0011	-0.03
CG.FOR	-0.2227	-2.41
CG.INS	-0.0690	-1.19
CG.INSD	9.4675×10 <sup>-5</sup>	0.19
CG.IO	-8.4663×10 <sup>-5</sup>	-0.19
CG.OC1	-0.0221	-0.67
CG.OC2	-0.0141	-0.54
CMI.1	0.0247	0.20
CMI.2	0.0868	1.20
CMI.3	0.0091	0.21
CMI.4	-0.0495	-1.00
CMI.5	0.0264	0.65
CMI.6	-0.0393	-0.99
CMI.7	-0.0386	-0.81
CMI.8	-0.0425	-0.90
CMI.9	-0.0442	-1.07
CMI.10	-0.0372	-0.86
CSIZ.1	0.0231	0.62
CSIZ.2	-0.0506	-1.36
CSIZ.3	-0.0070	-0.22
CSIZ.4	-0.0216	-0.62
CSIZ.5	0.0178	0.46
<i>F</i> = 1.28		
Adjusted <i>R</i> <sup>2</sup> = 0.015		
<i>n</i> = 463		

**Table A6-9**  
**Earnings per Share Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.EPSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.9702	1.42
CD.ASSEM	5.0900×10 <sup>-9</sup>	0.16
CD.DDASS	-1.1762	-2.37
CG.BS	-0.0380	-1.53
CG.CC1	0.0819	0.18
CG.CC2	0.2190	0.61
CG.FOR	0.9288	1.02
CG.INS	0.4137	0.72
CG.INS D	0.0014	0.27
CG.IO	-0.0058	-1.30
CG.OC1	-0.3349	-1.03
CG.OC2	-0.2455	-0.95
CMI.1	2.2649	1.84
CMI.2	0.1174	0.16
CMI.3	-0.0690	-0.17
CMI.4	-0.5050	-1.03
CMI.5	-0.1519	-0.38
CMI.6	-0.3895	-1.00
CMI.7	0.1447	0.31
CMI.8	0.0409	0.09
CMI.9	-0.0890	-0.22
CMI.10	0.6762	1.58
CSIZ.1	-0.3256	-0.89
CSIZ.2	-0.4942	-1.34
CSIZ.3	-0.4649	-1.49
CSIZ.4	-0.0526	-0.15
CSIZ.5	-0.1220	-0.32
<i>F</i> = 1.25		
Adjusted <i>R</i> <sup>2</sup> = 0.014		
<i>n</i> = 463		

**Table A6-10**  
**Return on Equity Variable, U.S. Sample**  
**(Dependent Variable: UPROE)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0187	0.55
UD.ASSEM	-9.4732×10 <sup>-9</sup>	-2.50
UD.DDASS	-0.1904	-6.51
UG.BS	-6.2916×10 <sup>-5</sup>	-0.09
UG.CC1	-0.0011	-0.12
UG.INS	0.0975	3.91
UG.INS D	8.2981×10 <sup>-4</sup>	3.48
UG.IO	0.0012	5.00
UG.OC1	0.0427	3.31
UG.OC2	0.0201	1.62
UMI.1	0.0913	0.84
UMI.2	-0.0523	-1.19
UMI.3	0.0495	1.97
UMI.4	0.0208×10 <sup>-4</sup>	0.80
UMI.5	0.0179	0.56
UMI.6	0.0116	0.50
UMI.7	0.0051	0.20
UMI.8	0.0068	0.27
UMI.9	0.0068	0.31
UMI.10	0.0465	1.94
USIZ.1	-0.1365	-6.10
USIZ.2	-0.0737	-4.05
USIZ.3	-0.0184	-1.43
USIZ.4	-7.8559	-0.05
USIZ.5	0.0013	0.09
<i>F</i> = 10.50		
Adjusted <i>R</i> <sup>2</sup> = 0.144		
<i>n</i> = 1,357		

**Table A6-11**  
**Return on Assets Variable, U.S. Sample**  
**(Dependent Variable: UP.ROA)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0296	2.11
UD.ASSEM	-3.7486×10 <sup>-9</sup>	-2.37
UD.DDASS	-0.0501	-4.16
UG.BS	-2.7240×10 <sup>-4</sup>	-0.91
UG.CC1	-0.0014	-0.37
UG.INS	0.0263	2.57
UG.INS D	1.9563×10 <sup>-4</sup>	1.99
UG.IO	4.6350×10 <sup>-4</sup>	4.87
UG.OC1	0.0111	2.09
UG.OC2	0.0036	0.70
UMI.1	0.0333	0.75
UMI.2	-0.0199	-1.10
UMI.3	-0.0253	-2.44
UMI.4	0.0246	2.28
UMI.5	-0.0045	-0.34
UMI.6	0.0069	0.72
UMI.7	0.0113	1.08
UMI.8	0.0125	1.22
UMI.9	0.0035	0.39
UMI.10	0.0155	1.57
USIZ.1	-0.0297	-3.23
USIZ.2	-0.0156	-2.09
USIZ.3	3.9406×10 <sup>-4</sup>	0.07
USIZ.4	0.0049	0.82
USIZ.5	0.0035	0.60
<i>F</i> = 7.09		
Adjusted <i>R</i> <sup>2</sup> = 0.097		
<i>n</i> = 1,357		

**Table A6-12**  
**Sales Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.SG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0435	1.47
UD.ASSEM	-7.2263×10 <sup>-9</sup>	-2.17
UD.DDASS	-0.0521	-2.06
UG.BS	1.2825×10 <sup>-4</sup>	0.20
UG.CC1	-0.0060	-0.77
UG.INS	0.0500	2.31
UG.INSD	4.4907×10 <sup>-4</sup>	2.17
UG.IO	7.0642×10 <sup>-4</sup>	3.52
UG.OC1	0.0110	0.98
UG.OC2	0.0149	1.39
UMI.1	-0.0372	-0.40
UMI.2	-0.0592	-1.56
UMI.3	-0.0241	-1.11
UMI.4	-0.0436	-1.92
UMI.5	-0.0075	-0.27
UMI.6	-0.0488	-2.41
UMI.7	-0.0164	-0.74
UMI.8	-0.0177	-0.82
UMI.9	-0.0248	-1.30
UMI.10	-0.0070	-0.34
USIZ.1	-0.0537	-2.77
USIZ.2	-0.0370	-2.34
USIZ.3	0.0263	2.35
USIZ.4	0.0162	1.29
USIZ.5	0.0107	0.84
<i>F</i> = 4.32		
Adjusted <i>R</i> <sup>2</sup> = 0.055		
<i>n</i> = 1,357		

**Table A6-13**  
**Asset Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.ASSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0743	2.24
UD.ASSEM	-1.0069×10 <sup>-8</sup>	-2.69
UD.DDASS	-0.1541	-5.41
UG.BS	1.0426×10 <sup>-4</sup>	0.15
UG.CC1	0.0023	0.26
UG.INS	0.0487	2.01
UG.INS D	4.9364×10 <sup>-4</sup>	2.12
UG.IO	7.4644×10 <sup>-4</sup>	3.31
UG.OC1	0.0082	0.65
UG.OC2	0.0051	0.43
UMI.1	0.0145	0.14
UMI.2	-0.0983	-2.30
UMI.3	0.0134	0.55
UMI.4	-0.0287	-1.13
UMI.5	-0.0032	-0.10
UMI.6	-0.0439	-1.93
UMI.7	-0.0092	-0.37
UMI.8	-0.0100	-0.41
UMI.9	-0.0380	-1.76
UMI.10	0.0028	0.12
USIZ.1	-0.0861	-3.95
USIZ.2	-0.0216	-1.22
USIZ.3	0.0167	1.33
USIZ.4	0.0142	1.01
USIZ.5	0.0088	0.61
<i>F</i> = 5.93		
Adjusted <i>R</i> <sup>2</sup> = 0.080		
<i>n</i> = 1,357		

**Table A6-14**  
**Labour Productivity Performance Variable, U.S. Sample**  
**(Dependent Variable: UP.SSEMP)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	547176.8090	10.10
UD.ASSEM	0.1215	19.90
UD.DDASS	-69544.3065	-1.50
UG.BS	-947.1487	-0.82
UG.CC1	3612.7342	0.25
UG.INS	63147.8734	1.59
UG.INSD	649.0607	1.71
UG.IO	176.2358	0.48
UG.OC1	-26840.2524	-1.31
UG.OC2	-22907.8169	-1.16
UMI.1	-226775.0788	-1.31
UMI.2	-264123.0226	-3.78
UMI.3	-437368.2425	-10.96
UMI.4	-366721.8595	-8.82
UMI.5	-197060.9697	-3.87
UMI.6	-282774.2793	-7.62
UMI.7	-381932.9846	-9.43
UMI.8	-339390.1589	-8.56
UMI.9	-334955.4663	-9.54
UMI.10	-238541.5653	-6.26
USIZ.1	-118415.8741	-3.33
USIZ.2	-123360.9096	-4.27
USIZ.3	-70948.8272	-3.46
USIZ.4	-46303.9670	-2.01
USIZ.5	-43501.3674	-1.85
<i>F</i> = 28.45		
Adjusted <i>R</i> <sup>2</sup> = 0.327		
<i>n</i> = 1,357		

**Table A6-15**  
**Capital Productivity Performance Variable, U.S. Sample**  
**(Dependent Variable: UP.SSASS)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	2.1237	16.63
UD.ASSEM	-7.7028×10 <sup>-8</sup>	-5.35
UD.DDASS	-0.4930	-4.50
UG.BS	-0.0042	-1.55
UG.CC1	-0.0058	-0.17
UG.INS	0.0784	0.84
UG.INSD	0.0021	2.29
UG.IO	-0.0016	-1.80
UG.OC1	-0.0591	-1.22
UG.OC2	0.0740	1.60
UML1	-1.0374	-2.56
UML2	-0.8760	-5.32
UML3	-1.5296	-16.27
UML4	-0.5068	-5.17
UML5	-1.1525	-9.60
UML6	-0.5821	-6.66
UML7	0.0782	0.82
UML8	-0.5572	-5.97
UML9	-0.6561	-7.93
UML10	-1.1150	-12.42
USIZ.1	-0.3464	-4.13
USIZ.2	-0.2494	-3.66
USIZ.3	-0.0541	-1.12
USIZ.4	-0.0277	-0.51
USIZ.5	-0.0361	-0.65
<i>F</i> = 46.92		
Adjusted <i>R</i> <sup>2</sup> = 0.448		
<i>n</i> = 1,357		

**Table A6-16**  
**Labour Productivity Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.LPG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.1054	3.63
UD.ASSEM	$6.4728 \times 10^{-9}$	1.98
UD.DDASS	-0.0235	-0.94
UG.BS	$-4.6024 \times 10^{-4}$	-0.75
UG.CC1	-0.0067	-0.87
UG.INS	-0.0173	-0.81
UG.INSD	$2.3842 \times 10^{-4}$	1.17
UG.IO	$1.0734 \times 10^{-4}$	0.55
UG.OC1	-0.0076	-0.69
UG.OC2	-0.0072	-0.68
UMI.1	-0.0664	-0.72
UMI.2	-0.0744	-1.99
UMI.3	-0.0543	-2.54
UMI.4	-0.0536	-2.41
UMI.5	-0.0525	-1.92
UMI.6	-0.0512	-2.58
UMI.7	-0.0616	-2.84
UMI.8	-0.0628	-2.96
UMI.9	-0.0328	-1.74
UMI.10	-0.0350	-1.72
USIZ.1	$-5.8846 \times 10^{-4}$	-0.03
USIZ.2	-0.0294	-1.90
USIZ.3	0.0136	1.24
USIZ.4	0.0056	0.46
USIZ.5	0.0174	1.38
<i>F</i> = 1.66		
Adjusted $R^2$ = 0.012		
<i>n</i> = 1,357		

**Table A6-17**  
**Capital Productivity Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.CPG)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	-0.0307	-1.15
UD.ASSEM	2.8425×10 <sup>-9</sup>	0.95
UD.DDASS	0.1020	4.46
UG.BS	2.3995×10 <sup>-5</sup>	0.04
UG.CC1	-0.0083	-1.17
UG.INS	0.0012	0.06
UG.INS D	-4.4571×10 <sup>-5</sup>	-0.24
UG.IO	-4.0018×10 <sup>-5</sup>	-0.22
UG.OC1	0.0028	0.28
UG.OC2	0.0097	1.01
UMI.1	-0.0517	-0.61
UMI.2	0.0390	1.14
UMI.3	-0.0375	-1.91
UMI.4	-0.0149	-0.73
UMI.5	-0.0044	-0.17
UMI.6	-0.0049	-0.27
UMI.7	-0.0073	-0.36
UMI.8	-0.0076	-0.39
UMI.9	0.0131	0.76
UMI.10	-0.0097	-0.52
USIZ.1	0.0324	1.85
USIZ.2	-0.0154	-1.08
USIZ.3	0.0096	0.95
USIZ.4	0.0021	0.18
USIZ.5	0.0020	0.17
<i>F</i> = 2.89		
Adjusted <i>R</i> <sup>2</sup> = 0.032		
<i>n</i> = 1,357		

**Table A6-18**  
**Earnings per Share Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.EPSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	-0.0657	-0.27
UD.ASSEM	9.3940×10 <sup>-9</sup>	0.34
UD.DDASS	-0.1348	-0.64
UG.BS	0.0068	1.31
UG.CC1	0.0128	0.20
UG.INS	0.4879	2.72
UG.INS D	3.5220×10 <sup>-4</sup>	0.21
UG.IO	0.0035	2.11
UG.OC1	-0.0832	-0.90
UG.OC2	-0.2321	-2.61
UMI.1	0.0978	0.13
UMI.2	-0.7237	-2.30
UMI.3	-0.1449	-0.80
UMI.4	-0.2680	-1.43
UMI.5	-0.0306	-0.13
UMI.6	-0.1998	-1.19
UMI.7	-0.3496	-1.91
UMI.8	-0.2062	-1.15
UMI.9	-0.3110	-1.96
UMI.10	0.1447	-0.84
USIZ.1	-0.3696	-2.30
USIZ.2	-0.2434	-1.87
USIZ.3	0.0211	0.23
USIZ.4	0.0237	0.23
USIZ.5	-0.0044	-0.04
<i>F</i> = 2.29		
Adjusted <i>R</i> <sup>2</sup> = 0.022		
<i>n</i> = 1,357		

## APPENDIX 7

### REGRESSION RESULTS FROM THE REDUCED FORM EQUATIONS: RELATIONSHIPS BETWEEN PERFORMANCE AND CORPORATE GOVERNANCE STRUCTURE VARIABLES

This Appendix contains a description of the mnemonics used in the reduced form model and a series of Tables showing the results from the reduced form equations for the Canadian and the U.S. samples.

#### Description of Regression Mnemonics

The mnemonics used in the regression analysis are classified according to the following scheme. The first letter of the variable mnemonic is either a “C” or a “U,” denoting the Canadian or United States sample, respectively. The second letter of the variable mnemonic is either a “G,” a “D” or a “P,” denoting Governance, Decision-Making and Performance variables, respectively. The third symbol of the variable mnemonic is a “dot,” except for major industry and size dummy variables.

The letters that follow the “dot” symbol represent the following variables:

BS	Board Size (number of directors)
CC1	CEO is Chairperson
CC2	CEO is Chairperson, information not available (only for Canadian sample)
FOR	Foreign Director Ratio
INS	Inside Director Ratio
INSD	Inside Ownership
IO	Institutional Ownership
OC1	Concentration of Ownership “widely held”
OC2	Concentration of Ownership “effectively controlled” (the control group is “legally controlled”)
DDASS	Leverage (debt to assets ratio)
ASSEM	Capital-Labour Ratio (assets to employees ratio)
RNDSS	R&D Intensity (R&D to sales ratio)
FTAG	Outward Orientation (presence of foreign sales or foreign assets)
ROE	Return on Equity
ROA	Return on Assets
SG	Sales Growth
ASSG	Asset Growth

SSEMP	Labour Productivity (sales per employee)
SSASS	Capital Productivity (sales per asset)
LPG	Labour Productivity Growth
CPG	Capital Productivity Growth
EPSG	Earnings per Share Growth

The 10 major industry dummy variables are defined as MI.1 to MI.10.

MI.1 is Agriculture, Forestry and Fishing  
 MI.2 is Construction  
 MI.3 is Finance, Insurance and Real Estate  
 MI.4 is Labour-Intensive Manufacturing  
 MI.5 is Mining  
 MI.6 is Resource-Intensive Manufacturing  
 MI.7 is Retail Trade  
 MI.8 is Services  
 MI.9 is Technology-Intensive Manufacturing  
 MI.10 is Transportation and Public Utilities  
 The control major industry is Wholesale Trade

The five firm size dummy variables are defined as SIZ.1 to SIZ.5. The size is measured as US\$ sales in millions.

SIZ.1 is between 10 and 50  
 SIZ.2 is between 50 and 100  
 SIZ.3 is between 100 and 500  
 SIZ.4 is between 500 and 1,000  
 SIZ.5 is between 1,000 and 2,000  
 The control firm size is 2,000 and more.

### **Results from the Reduced Form Equations**

This section contains a series of nine Tables showing the results from the reduced form equations for the Canadian sample (Tables A7-1 to A7-9) and a similar set of Tables for the U.S. sample (Tables A7-10 to A7-18). The dependent variables in each set of equations are the following:

- Return on Equity
- Return on Assets
- Sales Growth
- Asset Growth
- Labour Productivity Performance
- Capital Productivity Performance
- Labour Productivity Growth
- Capital Productivity Growth
- Earnings per Share Growth

**Table A7-1**  
**Return on Equity Variable, Canadian Sample**  
**(Dependent Variable: CP.ROE)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	0.1488	2.23
CG.BS	-0.0039	-1.64
CG.CC1	-0.0226	-0.41
CG.CC2	-0.0572	-1.40
CG.FOR	0.0160	0.19
CG.INS	0.1975	3.78
CG.INS D	-4.7045×10 <sup>-5</sup>	-0.09
CG.IO	-1.1299×10 <sup>-4</sup>	-0.26
CG.OC1	0.0134	0.40
CG.OC2	0.0129	0.51
CMI.1	-0.0503	-0.47
CMI.2	0.0559	0.73
CMI.3	0.0112	0.29
CMI.4	-0.0107	-0.22
CMI.5	-0.0414	-1.05
CMI.6	-0.1024	-2.57
CMI.7	-0.0467	-0.96
CMI.8	0.0996	2.21
CMI.9	-0.0142	-0.35
CMI.10	0.0036	0.09
CSIZ.1	-0.1405	-3.90
CSIZ.2	-0.0810	-2.15
CSIZ.3	-0.0598	-1.79
CSIZ.4	-0.0343	-0.90
CSIZ.5	-0.0638	-1.53
<i>F</i> = 3.33		
Adjusted <i>R</i> <sup>2</sup> = 0.069		
<i>n</i> = 754		

**Table A7-2**  
**Return on Assets Variable, Canadian Sample**  
**(Dependent Variable: CP.ROA)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0326	1.18
CG.BS	8.5857×10 <sup>-4</sup>	0.87
CG.CC1	0.0043	0.19
CG.CC2	-0.0048	-0.28
CG.FOR	-0.0119	-0.34
CG.INS	0.0480	2.22
CG.INS D	1.3580×10 <sup>-5</sup>	0.65
CG.IO	-9.9482×10 <sup>-5</sup>	-0.56
CG.OC1	-0.0056	-0.41
CG.OC2	-0.0182	-1.75
CMI.1	-0.0614	-1.38
CMI.2	0.0212	0.67
CMI.3	-0.0250	-1.58
CMI.4	-0.0047	-0.23
CMI.5	-0.0094	-0.58
CMI.6	-0.0191	-1.16
CMI.7	-0.0037	-0.18
CMI.8	0.0458	2.45
CMI.9	9.6184×10 <sup>-4</sup>	0.06
CMI.10	0.0034	0.20
CSIZ.1	-0.0325	-2.15
CSIZ.2	-0.0114	-0.73
CSIZ.3	0.0010	0.08
CSIZ.4	-0.0123	-0.78
CSIZ.5	-0.0050	-0.29
<i>F</i> = 3.06		
Adjusted <i>R</i> <sup>2</sup> = 0.062		
<i>n</i> = 754		

**Table A7-3**  
**Sales Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.SG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	2.5400×10 <sup>-4</sup>	-0.00
CG.BS	2.0400×10 <sup>-4</sup>	0.09
CG.CC1	0.0921	1.68
CG.CC2	-0.0100	-0.24
CG.FOR	0.1564	1.82
CG.INS	0.0407	0.78
CG.INS.D	1.3251×10 <sup>-4</sup>	0.26
CG.IO	-4.5883×10 <sup>-4</sup>	-1.07
CG.OC1	0.0285	0.86
CG.OC2	0.0297	1.18
CMI.1	0.1021	0.95
CMI.2	0.0086	0.11
CMI.3	0.0056	0.15
CMI.4	-0.0234	-0.47
CMI.5	0.0994	2.52
CMI.6	-0.0267	-0.66
CMI.7	-0.0019	-0.04
CMI.8	0.0729	1.62
CMI.9	0.0593	1.47
CMI.10	0.0376	0.89
CSIZ.1	0.0614	1.69
CSIZ.2	0.0557	1.48
CSIZ.3	0.0675	2.02
CSIZ.4	0.0649	1.70
CSIZ.5	0.0073	0.18
<i>F</i> = 3.07		
Adjusted <i>R</i> <sup>2</sup> = 0.062		
<i>n</i> = 754		

**Table A7-4**  
**Asset Growth Variable, Canadian Sample**  
**(Dependent Variable: CPASSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	-0.0494	-0.74
CG.BS	0.0022	0.93
CG.CC1	0.1106	2.03
CG.CC2	-0.0411	-1.01
CG.FOR	0.2313	2.70
CG.INS	0.0601	1.16
CG.INS D	1.2607×10 <sup>-4</sup>	0.25
CG.IO	-4.6255×10 <sup>-4</sup>	-1.08
CG.OC1	0.0407	1.23
CG.OC2	0.0300	1.20
CMI.1	0.0212	0.20
CMI.2	-0.0468	-0.67
CMI.3	0.0104	0.27
CMI.4	0.0509	1.03
CMI.5	0.0750	1.91
CMI.6	0.0109	0.28
CMI.7	0.0169	0.35
CMI.8	0.1015	2.26
CMI.9	0.0847	2.10
CMI.10	0.0531	1.27
CSIZ.1	0.0568	1.56
CSIZ.2	0.0695	1.86
CSIZ.3	0.0609	1.83
CSIZ.4	0.0687	1.80
CSIZ.5	-0.0294	-0.71
<i>F</i> = 2.95		
Adjusted <i>R</i> <sup>2</sup> = 0.059		
<i>n</i> = 754		

**Table A7-5**  
**Labour Productivity Performance Variable, Canadian Sample**  
**(Dependent Variable: CP.SSEMP)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	595888.4191	2.63
CG.BS	-4721.9862	-0.57
CG.CC1	24885.1811	0.14
CG.CC2	-112162.9622	-0.84
CG.FOR	-406315.3707	-1.34
CG.INS	-33650.5272	-0.18
CG.INS D	844.6666	0.49
CG.IO	3021.0818	2.03
CG.OC1	143389.0418	1.26
CG.OC2	123356.2845	1.37
CMI.1	-456378.5392	-1.16
CMI.2	506473.9817	1.98
CMI.3	-126784.8915	-0.96
CMI.4	-543950.6616	-3.33
CMI.5	-68148.8297	-0.51
CMI.6	-410232.7966	-3.10
CMI.7	-576032.6665	-3.57
CMI.8	-365204.3507	-2.36
CMI.9	-473293.9633	-3.50
CMI.10	-430799.9924	-3.09
CSIZ.1	-110783.6281	-0.88
CSIZ.2	-22936.8251	-0.18
CSIZ.3	124800.3841	1.11
CSIZ.4	-85834.4717	-0.67
CSIZ.5	123035.4967	0.87
<i>F</i> = 3.62		
Adjusted <i>R</i> <sup>2</sup> = 0.092		
<i>n</i> = 621		

**Table A7-6**  
**Capital Productivity Performance Variable, Canadian Sample**  
**(Dependent Variable: CP.SSASS)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	2.3194	10.97
CG.BS	-0.0306	-4.04
CG.CC1	-0.2690	-1.55
CG.CC2	-0.0537	-0.42
CG.FOR	-0.2858	-1.05
CG.INS	0.2753	1.67
CG.INS D	0.0019	1.19
CG.IO	-0.0012	-0.90
CG.OC1	-0.1821	-1.73
CG.OC2	-0.0326	-0.41
CMI.1	-0.3643	-1.07
CMI.2	0.0167	0.07
CMI.3	-1.2202	-10.11
CMI.4	-0.3813	-2.44
CMI.5	-1.2045	-9.65
CMI.6	-0.5506	-4.37
CMI.7	0.2764	1.79
CMI.8	-0.5484	-3.84
CMI.9	-0.3668	-2.86
CMI.10	-0.9682	-7.28
CSIZ.1	-0.4545	-3.94
CSIZ.2	-0.3274	-2.75
CSIZ.3	-0.1924	-1.82
CSIZ.4	-0.3608	-2.98
CSIZ.5	-0.2963	-2.24
<i>F</i> = 23.07		
Adjusted <i>R</i> <sup>2</sup> = 0.413		
<i>n</i> = 754		

**Table A7-7**  
**Labour Productivity Growth Variable, Canadian Sample**  
**(Dependent Variable: CPLPG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0218	0.33
CG.BS	-1.2106×10 <sup>-4</sup>	-0.05
CG.CC1	0.0656	1.21
CG.CC2	-0.0158	-0.39
CG.FOR	0.1609	1.89
CG.INS	0.0300	0.58
CG.INS D	-2.8454×10 <sup>-4</sup>	-0.06
CG.IO	-5.9440×10 <sup>-4</sup>	-1.39
CG.OC1	0.0098	0.30
CG.OC2	0.0211	0.85
CMI.1	0.1019	0.96
CMI.2	0.0032	0.04
CMI.3	0.0028	0.08
CMI.4	-0.0296	-0.60
CMI.5	0.0944	2.42
CMI.6	-0.0289	-0.73
CMI.7	-0.0021	-0.04
CMI.8	0.0548	1.22
CMI.9	0.0553	1.38
CMI.10	0.0305	0.73
CSIZ.1	0.0657	1.82
CSIZ.2	0.0564	1.51
CSIZ.3	0.0680	2.06
CSIZ.4	0.0580	1.53
CSIZ.5	0.0134	0.33
<i>F</i> = 2.84		
Adjusted <i>R</i> <sup>2</sup> = 0.056		
<i>n</i> = 754		

**Table A7-8**  
**Capital Productivity Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.CPG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0492	0.74
CG.BS	-0.0020	-0.84
CG.CC1	-0.0186	-0.34
CG.CC2	0.0311	0.76
CG.FOR	-0.0749	-0.87
CG.INS	-0.0195	-0.37
CG.INS D	$6.4375 \times 10^{-6}$	0.01
CG.IO	$3.7117 \times 10^{-6}$	0.01
CG.OC1	-0.0122	-0.37
CG.OC2	$-3.1572 \times 10^{-4}$	-0.01
CMI.1	0.0809	0.75
CMI.2	0.0553	0.73
CMI.3	-0.0050	-0.13
CMI.4	-0.0743	-1.50
CMI.5	0.0244	0.62
CMI.6	-0.0370	-0.93
CMI.7	-0.0188	-0.39
CMI.8	-0.0286	-0.63
CMI.9	-0.0254	-0.63
CMI.10	-0.0156	-0.37
CSIZ.1	0.0046	0.13
CSIZ.2	-0.0138	-0.37
CSIZ.3	0.0066	0.20
CSIZ.4	-0.0039	-0.10
CSIZ.5	0.0367	0.88
<i>F</i> = 0.65		
Adjusted <i>R</i> <sup>2</sup> = -0.011		
<i>n</i> = 754		

**Table A7-9**  
**Earnings per Share Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.EPSG)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	0.0932	0.18
CG.BS	-0.0155	-0.84
CG.CC1	0.0688	0.16
CG.CC2	0.0811	0.26
CG.FOR	0.9048	1.36
CG.INS	0.5913	1.47
CG.INSD	0.0022	0.56
CG.IO	-0.0025	-0.76
CG.OC1	0.0213	0.08
CG.OC2	0.0732	0.38
CMI.1	1.0262	1.24
CMI.2	0.0183	0.03
CMI.3	-0.0380	-0.13
CMI.4	-0.4200	-1.10
CMI.5	-0.1815	-0.60
CMI.6	-0.4891	-1.59
CMI.7	0.0822	0.22
CMI.8	-0.0736	-0.21
CMI.9	-0.0428	-0.14
CMI.10	0.2870	0.89
CSIZ.1	-0.0668	-0.24
CSIZ.2	-0.3702	-1.27
CSIZ.3	-0.2720	-1.05
CSIZ.4	0.0567	0.19
CSIZ.5	-0.3305	-1.03
<i>F</i> = 1.24		
Adjusted <i>R</i> <sup>2</sup> = 0.008		
<i>n</i> = 754		

**Table A7-10**  
**Return on Equity Variable, U.S. Sample**  
**(Dependent Variable: UP.ROE)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0241	1.40
UG.BS	-3.7363×10 <sup>-4</sup>	-0.88
UG.CC1	0.0024	0.54
UG.INS	0.0347	3.09
UG.INSD	2.6770×10 <sup>-4</sup>	2.45
UG.IO	7.3527×10 <sup>-4</sup>	6.44
UG.OC1	0.0351	5.68
UG.OC2	0.0132	2.24
UMI.1	-0.0669	-1.49
UMI.2	-0.0279	-1.25
UMI.3	0.0290	2.54
UMI.4	0.0167	1.24
UMI.5	0.0038	0.25
UMI.6	0.0041	0.33
UMI.7	0.0074	0.57
UMI.8	0.0153	1.27
UMI.9	0.0189	1.69
UMI.10	0.0170	1.37
USIZ.1	-0.0949	-9.66
USIZ.2	-0.0814	-8.47
USIZ.3	-0.0416	-5.08
USIZ.4	-0.0217	-2.26
USIZ.5	-0.0124	-1.21
<i>F</i> = 21.35		
Adjusted <i>R</i> <sup>2</sup> = 0.130		
<i>n</i> = 3,000		

**Table A7-11**  
**Return on Assets Variable, U.S. Sample**  
**(Dependent Variable: UP.ROA)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0172	2.15
UG.BS	-1.4464×10 <sup>-4</sup>	-0.73
UG.CC1	-0.0012	-0.56
UG.INS	0.0124	2.38
UG.INS D	6.4478×10 <sup>-4</sup>	0.13
UG.IO	3.2897×10 <sup>-4</sup>	6.19
UG.OC1	0.0130	4.51
UG.OC2	0.0051	1.87
UMI.1	-0.0025	-0.12
UMI.2	-0.0089	-0.86
UMI.3	-0.0078	-1.47
UMI.4	0.0188	2.99
UMI.5	-9.0974×10 <sup>-4</sup>	-0.13
UMI.6	0.0077	1.34
UMI.7	0.0101	1.67
UMI.8	0.0102	1.82
UMI.9	0.0147	2.83
UMI.10	0.0106	1.83
USIZ.1	-0.0341	-7.46
USIZ.2	-0.0287	-6.42
USIZ.3	-0.0106	-2.78
USIZ.4	0.0014	0.31
USIZ.5	-1.8550×10 <sup>-4</sup>	-0.04
<i>F</i> = 23.17		
Adjusted <i>R</i> <sup>2</sup> = 0.140		
<i>n</i> = 3,000		

**Table A7-12**  
**Sales Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.SG)**

<b>Variables in the equation</b>	<b>B</b>	<b>t-statistics</b>
(Constant)	0.0733	2.75
UG.BS	$3.7782 \times 10^{-4}$	0.57
UG.CC1	0.0053	0.78
UG.INS	0.0041	0.24
UG.INS D	$8.0127 \times 10^{-4}$	4.72
UG.IO	$9.5061 \times 10^{-4}$	5.36
UG.OC1	-0.0053	-0.56
UG.OC2	0.0058	0.64
UMI.1	-0.1454	-2.08
UMI.2	-0.1463	-4.22
UMI.3	-0.0999	-5.64
UMI.4	-0.0899	-4.29
UMI.5	-0.0470	-1.97
UMI.6	-0.1216	-6.32
UMI.7	-0.0746	-3.69
UMI.8	-0.0080	-0.43
UMI.9	-0.0701	-4.02
UMI.10	-0.0515	-2.67
USIZ.1	0.0541	3.54
USIZ.2	0.0738	4.95
USIZ.3	0.0623	4.90
USIZ.4	0.0362	2.43
USIZ.5	0.0102	0.64
<i>F</i> = 11.51		
Adjusted <i>R</i> <sup>2</sup> = 0.072		
<i>n</i> = 3,000		

**Table A7-13**  
**Asset Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.ASSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0406	1.38
UG.BS	2.6051×10 <sup>-4</sup>	0.36
UG.CC1	0.0104	1.36
UG.INS	0.0247	1.28
UG.INSD	0.0012	6.29
UG.IO	0.0012	6.04
UG.OC1	0.0044	0.42
UG.OC2	0.0063	0.62
UMI.1	-0.0458	-0.59
UMI.2	-0.0990	-2.58
UMI.3	-0.0308	-1.57
UMI.4	-0.0664	-2.86
UMI.5	-0.0328	-1.24
UMI.6	-0.1045	-4.90
UMI.7	-0.0513	-2.29
UMI.8	-0.0181	-0.87
UMI.9	-0.0630	-3.27
UMI.10	-0.0366	-1.71
USIZ.1	0.0476	2.82
USIZ.2	0.0756	4.58
USIZ.3	0.0638	4.53
USIZ.4	0.0239	1.45
USIZ.5	0.0087	0.49
<i>F</i> = 8.04		
Adjusted <i>R</i> <sup>2</sup> = 0.049		
<i>n</i> = 3,000		

**Table A7-14**  
**Labour Productivity Performance Variable, U.S. Sample**  
**(Dependent Variable: UP.SSEMP)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	557204.8884	11.43
UG.BS	-2242.0764	-1.85
UG.CC1	-181.5240	-0.01
UG.INS	37249.8229	1.16
UG.INS D	579.7146	1.87
UG.IO	-127.3559	-0.39
UG.OC1	-42002.0915	-2.40
UG.OC2	-25580.0685	-1.53
UMI.1	-239029.9240	-1.61
UMI.2	-112937.8347	-1.80
UMI.3	-122142.7939	-3.78
UMI.4	-291906.6255	-7.65
UMI.5	-63232.3731	-1.44
UMI.6	-233818.9312	-6.68
UMI.7	-349602.6740	-9.51
UMI.8	-285384.6961	-8.37
UMI.9	-257465.8535	-8.13
UMI.10	-100593.3284	-2.86
USIZ.1	-169507.0631	-6.06
USIZ.2	-137094.9622	-5.03
USIZ.3	-76266.9990	-3.29
USIZ.4	-11776.9150	-0.43
USIZ.5	-56608.5182	-1.95
<i>F</i> = 13.92		
Adjusted <i>R</i> <sup>2</sup> = 0.088		
<i>n</i> = 2,941		

**Table A7-15**  
**Capital Productivity Performance Variable, U.S. Sample**  
**(Dependent Variable: UP.SSASS)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	2.0224	22.35
UG.BS	-0.0011	-0.47
UG.CC1	-0.0133	-0.57
UG.INS	0.1492	2.52
UG.INSD	0.0028	4.88
UG.IO	-0.0027	-4.54
UG.OC1	-0.0147	-0.45
UG.OC2	0.0532	1.71
UMI.1	-0.9130	-3.85
UMI.2	-0.9167	-7.80
UMI.3	-1.6438	-27.36
UMI.4	-0.4775	-6.71
UMI.5	-1.2592	-15.54
UMI.6	-0.5804	-8.89
UMI.7	0.0370	0.54
UMI.8	-0.6611	-10.40
UMI.9	-0.6603	-11.18
UMI.10	-1.1696	-17.88
USIZ.1	-0.2845	-5.50
USIZ.2	-0.1297	-2.56
USIZ.3	-0.0169	-0.39
USIZ.4	0.0023	0.05
USIZ.5	-0.0181	-0.33
<i>F</i> = 114.76		
Adjusted <i>R</i> <sup>2</sup> = 0.455		
<i>n</i> = 3,000		

**Table A7-16**  
**Labour Productivity Growth Variable, U.S. Sample**  
**(Dependent Variable: UPLPG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.1045	3.89
UG.BS	1.5601×10 <sup>-4</sup>	0.23
UG.CC1	0.0053	0.76
UG.INS	-0.0208	-1.18
UG.INS D	6.9201×10 <sup>-4</sup>	4.04
UG.IO	6.1428×10 <sup>-4</sup>	3.44
UG.OC1	-0.0207	-2.14
UG.OC2	-0.0080	-0.87
UMI.1	-0.1124	-1.60
UMI.2	-0.1502	-4.30
UMI.3	-0.1055	-5.91
UMI.4	-0.0979	-4.64
UMI.5	-0.0608	-2.53
UMI.6	-0.1200	-6.19
UMI.7	-0.1003	-4.93
UMI.8	-0.0288	-1.53
UMI.9	-0.0764	-4.36
UMI.10	-0.0625	-3.22
USIZ.1	0.0686	4.46
USIZ.2	0.0827	5.51
USIZ.3	0.0585	4.57
USIZ.4	0.0336	2.24
USIZ.5	0.0154	0.96
<i>F</i> = 9.92		
Adjusted <i>R</i> <sup>2</sup> = 0.061		
<i>n</i> = 3,000		

**Table A7-17**  
**Capital Productivity Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.CPG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0327	1.15
UG.BS	1.1731×10 <sup>-4</sup>	0.17
UG.CC1	-0.0050	-0.69
UG.INS	-0.0206	-1.17
UG.INSD	-3.8122×10 <sup>-4</sup>	-2.11
UG.IO	-2.3649	-1.25
UG.OC1	-0.0098	-0.96
UG.OC2	-4.9567×10 <sup>-4</sup>	-0.05
UMI.1	-0.0996	-1.34
UMI.2	-0.0473	-1.28
UMI.3	-0.0690	-3.66
UMI.4	-0.0235	-1.05
UMI.5	-0.0142	-0.56
UMI.6	-0.0171	-0.84
UMI.7	-0.0233	-1.08
UMI.8	0.0101	0.51
UMI.9	-0.0070	-0.38
UMI.10	-0.0150	-0.73
USIZ.1	0.0064	0.40
USIZ.2	-0.0018	-0.12
USIZ.3	-0.0015	-0.11
USIZ.4	0.0124	0.78
USIZ.5	0.0015	0.09
<i>F</i> = 2.96		
Adjusted <i>R</i> <sup>2</sup> = 0.014		
<i>n</i> = 3,000		

**Table A7-18**  
**Earnings per Share Growth Variable, U.S. Sample**  
**(Dependent Variable: UPEPSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	-0.0666	-0.60
UG.BS	0.0028	1.00
UG.CC1	0.0023	0.08
UG.INS	0.1843	2.53
UG.INS D	4.4912	0.63
UG.IO	0.0019	2.50
UG.OC1	-0.0183	-0.46
UG.OC2	-0.0857	-2.24
UMI.1	0.1155	0.40
UMI.2	-0.3185	-2.20
UMI.3	-0.0164	-0.22
UMI.4	-0.1055	-1.21
UMI.5	-0.0633	-0.63
UMI.6	-0.0946	-1.18
UMI.7	-0.1459	-1.73
UMI.8	-0.0630	-0.81
UMI.9	-0.1579	-2.17
UMI.10	-0.0621	-0.77
USIZ.1	-0.0211	-0.33
USIZ.2	-0.0487	-0.78
USIZ.3	0.0037	0.07
USIZ.4	-0.0050	-0.08
USIZ.5	-0.0077	-0.12
<i>F</i> = 1.85		
Adjusted <i>R</i> <sup>2</sup> = 0.006		
<i>n</i> = 3,000		

## APPENDIX 8

### RESULTS FROM THE NON-LINEAR REGRESSION EQUATIONS: RELATIONSHIPS BETWEEN RATE OF RETURN, GROWTH PERFORMANCE, AND INSIDE DIRECTOR RATIO VARIABLES

This Appendix contains a description of the mnemonics used in the non-linear regression equations and a series of Tables showing the Canadian and American regression results from the non-linear model for the Canadian and U.S. samples.

#### Description of Regression Mnemonics

The mnemonics used in the regression analysis are classified according to the following scheme. The first letter of the variable mnemonic is either a “C” or a “U,” denoting the Canadian or United States sample, respectively. The second letter of the variable mnemonic is either a “G,” a “D” or a “P,” denoting Governance, Decision-Making and Performance variables, respectively. The third symbol of the variable mnemonic is a “dot,” except for major industry and size dummy variables.

The letters that follow the “dot” symbol represent the following variables:

BS	Board Size (number of directors)
CC1	CEO is Chairperson
CC2	CEO is Chairperson, information not available (only for Canadian sample)
FOR	Foreign Director Ratio
*INS	Inside Director Ratio
INSD	Inside Ownership
IO	Institutional Ownership
OC1	Concentration of Ownership “widely held”
OC2	Concentration of Ownership “effectively controlled” (the control group is “legally controlled”)
DDASS	Leverage (debt to assets ratio)
ASSEM	Capital-Labour Ratio (assets to employees ratio)
RNDSS	R&D Intensity (R&D to sales ratio)
FTAG	Outward Orientation (presence of foreign sales or foreign assets)
ROE	Return on Equity
ROA	Return on Assets
SG	Sales Growth
ASSG	Asset Growth

SSEMP	Labour Productivity (sales per employee)
SSASS	Capital Productivity (sales per asset)
LPG	Labour Productivity Growth
CPG	Capital Productivity Growth
EPSG	Earnings per Share Growth

The 10 major industry dummy variables are defined as MI.1 to MI.10.

- MI.1 is Agriculture, Forestry and Fishing
- MI.2 is Construction
- MI.3 is Finance, Insurance and Real Estate
- MI.4 is Labour-Intensive Manufacturing
- MI.5 is Mining
- MI.6 is Resource-Intensive Manufacturing
- MI.7 is Retail Trade
- MI.8 is Services
- MI.9 is Technology-Intensive Manufacturing
- MI.10 is Transportation and Public Utilities
- The control major industry is Wholesale Trade

The five firm size dummy variables are defined as SIZ.1 to SIZ.5. The size is measured as US\$ sales in millions.

- SIZ.1 is between 10 and 50
- SIZ.2 is between 50 and 100
- SIZ.3 is between 100 and 500
- SIZ.4 is between 500 and 1,000
- SIZ.5 is between 1,000 and 2,000
- The control firm size is 2,000 and more.

\* In order to test for the presence of a non-linear relationship between performance variables and the inside director ratio, nine dummy variables (ZINS1 to ZINS9) were created to replace the variable INS. The dummy variables represent the range of inside director ratios, the lowest, ZINS1, having a ratio with a value of less than 0.1 and the highest, ZINS9, having a ratio with a value of between 0.8 and 0.9. The control group is the inside director ratios between 0.9 and 1.0.

### **Results from the Non-Linear Regression Equations**

This section contains a series of four Tables showing the results from the non-linear regression equations for the Canadian sample (Tables A8-1 to A8-4) and a similar set of Tables for the U.S. sample (Tables A8-5 to A8-8). The dependent variables in each set of equations are the following:

- Return on Equity
- Return on Assets
- Sales Growth
- Asset Growth

**Table A8-1**  
**Return on Equity Variable, Canadian Sample**  
**(Dependent Variable: CP.ROE)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.3518	4.24
CD.ASSEM	-3.8826×10 <sup>-9</sup>	-1.06
CD.DDASS	-0.1986	-3.40
CG.BS	-0.0046	-1.59
CG.CC1	-0.0098	-0.18
CG.CC2	-0.0499	-1.20
CG.FOR	0.0630	0.60
CG.INSO	-3.9991×10 <sup>-4</sup>	-0.68
CG.IO	-1.2540×10 <sup>-4</sup>	-0.24
CG.OC1	-0.0062	-0.16
CG.OC2	0.0120	0.40
CMI.1	-0.0135	-0.09
CMI.2	0.0826	0.99
CMI.3	0.0472	0.97
CMI.4	0.0093	0.16
CMI.5	-0.0421	-0.91
CMI.6	-0.0986	-2.17
CMI.7	-0.0738	-1.35
CMI.8	0.0585	1.08
CMI.9	-0.0520	-1.10
CMI.10	0.0494	0.99
CSIZ.1	-0.1172	-2.68
CSIZ.2	-0.0656	-1.52
CSIZ.3	-0.0583	-1.59
CSIZ.4	-0.0262	-0.65
CSIZ.5	-0.0622	-1.38
ZINS1	-0.1289	-2.67
ZINS2	-0.1410	-2.89
ZINS3	-0.1443	-3.03
ZINS4	-0.0754	-1.36
ZINS5	-0.1402	-3.08
ZINS6	-0.0685	-1.40
ZINS7	-0.0900	-1.10
ZINS8	-0.1431	-2.87
ZINS9	-0.0620	-1.29
<i>F</i> = 2.01		
Adjusted <i>R</i> <sup>2</sup> = -0.700		
<i>n</i> = 459		

**Table A8-2**  
**Return on Assets Variable, Canadian Sample**  
**(Dependent Variable: CP.ROA)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0742	2.18
CD.ASSEM	-8.4524×10 <sup>-10</sup>	-0.56
CD.DDASS	-0.0532	-2.22
CG.BS	2.4018×10 <sup>-4</sup>	0.20
CG.CC1	0.0134	0.60
CG.CC2	-0.0036	-0.21
CG.FOR	-0.0023	-0.05
CG.INSO	1.8818×10 <sup>-4</sup>	0.78
CG.IO	2.9381×10 <sup>-6</sup>	0.01
CG.OC1	-0.0047	-0.30
CG.OC2	-0.0144	-1.17
CMI.1	-0.0234	-0.40
CMI.2	0.0434	1.27
CMI.3	-0.0194	-0.97
CMI.4	0.0039	0.17
CMI.5	3.0100×10 <sup>-5</sup>	0.00
CMI.6	-0.0174	-0.94
CMI.7	-0.0070	-0.32
CMI.8	0.0234	1.06
CMI.9	-0.0032	-0.16
CMI.10	0.0144	0.71
CSIZ.1	-0.0367	-2.05
CSIZ.2	-0.0292	-1.64
CSIZ.3	-0.0109	-0.72
CSIZ.4	-0.0043	-0.26
CSIZ.5	-0.0031	-0.17
ZINS1	-0.0250	-1.26
ZINS2	-0.0310	-1.55
ZINS3	-0.0196	-1.00
ZINS4	-0.0272	-1.19
ZINS5	-0.0279	-1.50
ZINS6	-0.0191	-0.95
ZINS7	-0.0137	-0.74
ZINS8	-0.0139	-0.68
ZINS9	0.0025	0.13

*F* = 1.28  
Adjusted *R*<sup>2</sup> = 0.020  
*n* = 459

**Table A8-3**  
**Sales Growth Variable, Canadian Sample**  
**(Dependent Variable: CP.SG)**

Variables in the equation	B	t-statistics
(Constant)	0.0680	0.84
CD.ASSEM	-7.8667×10 <sup>-9</sup>	-2.19
CD.DDASS	-0.0442	-0.77
CG.BS	7.7333×10 <sup>-4</sup>	0.27
CG.CC1	0.0882	1.64
CG.CC2	-0.0344	-0.85
CG.FOR	0.0609	0.59
CG.INSD	-2.2439×10 <sup>-4</sup>	-0.39
CG.IO	-5.2348×10 <sup>-4</sup>	-1.02
CG.OC1	-0.0014	-0.04
CG.OC2	0.0082	0.28
CMI.1	0.1141	0.82
CMI.2	0.0555	0.68
CMI.3	0.0082	0.17
CMI.4	-0.0132	-0.24
CMI.5	0.1274	2.80
CMI.6	-0.0207	-0.47
CMI.7	-0.0326	-0.61
CMI.8	0.0521	0.98
CMI.9	0.0699	1.51
CMI.10	0.0524	1.08
CSIZ.1	0.0549	1.28
CSIZ.2	0.0335	0.79
CSIZ.3	0.0419	1.17
CSIZ.4	0.0619	1.57
CSIZ.5	0.0078	0.18
ZINS1	-0.0389	-0.82
ZINS2	-0.0481	-1.00
ZINS3	0.0064	0.14
ZINS4	0.0047	0.09
ZINS5	-0.0081	-0.18
ZINS6	-0.0390	-0.81
ZINS7	-0.0016	-0.04
ZINS8	0.0222	0.45
ZINS9	-0.0266	-0.57

$F = 2.04$   
Adjusted  $R^2 = 0.071$   
 $n = 459$

**Table A8-4**  
**Asset Growth Variable, Canadian Sample**  
**(Dependent Variable: CPASSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0177	0.23
CD.ASSEM	-4.2788×10 <sup>-9</sup>	-1.23
CD.DDASS	-0.0730	1.32
CG.BS	0.0048	1.72
CG.CC1	0.1225	2.34
CG.CC2	-0.0257	-0.65
CG.FOR	0.2881	2.87
CG.INS	3.3354×10 <sup>-4</sup>	-0.60
CG.IO	-4.6387×10 <sup>-4</sup>	-0.93
CG.OC1	0.0202	0.56
CG.OC2	0.0247	0.87
CMI.1	0.0826	0.61
CMI.2	-0.0388	-0.49
CMI.3	-0.0021	-0.05
CMI.4	0.0304	0.56
CMI.5	0.0977	2.22
CMI.6	0.0171	0.40
CMI.7	-4.9606×10 <sup>-4</sup>	-0.01
CMI.8	0.0999	1.95
CMI.9	0.1138	2.53
CMI.10	0.0911	1.93
CSIZ.1	0.0352	0.85
CSIZ.2	0.0907	2.21
CSIZ.3	0.0510	1.46
CSIZ.4	0.0797	2.09
CSIZ.5	-0.0123	-0.29
ZINS1	-0.0906	-1.98
ZINS2	-0.0791	-1.71
ZINS3	-0.0366	-0.81
ZINS4	-0.0536	1.02
ZINS5	-0.0894	-2.07
ZINS6	-0.0860	-1.85
ZINS7	-0.0718	-1.67
ZINS8	-0.0012	-0.03
ZINS9	-0.0470	-1.03
<i>F</i> = 2.37		
Adjusted <i>R</i> <sup>2</sup> = 0.092		
<i>n</i> = 459		

**Table A8-5**  
**Return on Equity Variable, U.S. Sample**  
**(Dependent Variable: UP.ROE)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0941	2.58
UD.ASSEM	-9.4126×10 <sup>-9</sup>	-2.44
UD.DDASS	-0.1913	-6.51
UG.BS	1.7190×10 <sup>-4</sup>	0.22
UG.CC1	-4.4262	-0.05
UG.INSO	8.4446×10 <sup>-4</sup>	3.52
UG.IO	0.0012×10 <sup>-4</sup>	5.01
UG.OC1	0.0425	3.29
UG.OC2	0.0201	1.61
UMI.1	0.0927	0.85
UMI.2	-0.0493	-1.12
UMI.3	0.0507	2.01
UMI.4	0.0225	0.86
UMI.5	0.0189	0.59
UMI.6	0.0135	0.58
UMI.7	0.0079	0.29
UMI.8	0.0069	0.28
UMI.9	0.0082	0.37
UMI.10	0.0472	1.96
USIZ.1	-0.1348	-5.99
USIZ.2	0.0720	-3.93
USIZ.3	-0.0182×10 <sup>-4</sup>	-1.41
USIZ.4	-7.6851	-0.05
USIZ.5	0.0011	0.08
ZINS1	-0.0863	-3.46
ZINS2	-0.0708	-2.97
ZINS3	-0.0590	-2.45
ZINS4	-0.0645	-2.61
ZINS5	-0.0541	-2.28
ZINS6	-0.0337	-1.31
ZINS7	-0.0515	-2.16
ZINS8	-0.0304	-1.31
ZINS9	-0.0333	-1.21
<i>F</i> = 7.95		
Adjusted <i>R</i> <sup>2</sup> = 0.141		
<i>n</i> = 1,357		

**Table A8-6**  
**Return on Assets Variable, U.S. Sample**  
**(Dependent Variable: UP.ROA)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0487	3.24
UD.ASSEM	-3.7608×10 <sup>-9</sup>	-2.37
UD.DDASS	-0.0516	-4.26
UG.BS	-3.0325×10 <sup>-4</sup>	-0.96
UG.CC1	-0.0013	-0.34
UG.INSB	1.9834×10 <sup>-4</sup>	2.01
UG.IO	4.6578×10 <sup>-4</sup>	4.87
UG.OC1	0.0107	2.02
UG.OC2	0.0033	0.65
UMI.1	0.0366	0.82
UMI.2	-0.0202	-1.11
UMI.3	-0.0247	-2.37
UMI.4	0.0252	2.33
UMI.5	-0.0032	-0.24
UMI.6	0.0074	0.76
UMI.7	0.0125	1.18
UMI.8	0.0132	1.28
UMI.9	0.0040	0.44
UMI.10	0.0165	1.66
USIZ.1	-0.0292	-3.14
USIZ.2	-0.0153	-2.03
USIZ.3	3.0296×10 <sup>-4</sup>	0.06
USIZ.4	0.0049	0.82
USIZ.5	0.0035	0.57
ZINS1	-0.0142	-1.38
ZINS2	-0.0186	-1.90
ZINS3	-0.0187	-1.88
ZINS4	-0.0129	-1.27
ZINS5	-0.0149	-1.52
ZINS6	-0.0051	-0.48
ZINS7	-0.0128	-1.30
ZINS8	-0.0029	-0.30
ZINS9	-0.0036	-0.32

*F* = 5.43  
Adjusted *R*<sup>2</sup> = 0.095  
*n* = 1,357

**Table A8-7**  
**Sales Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.SG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.0780	2.47
UD.ASSEM	-7.3506×10 <sup>-9</sup>	-2.20
UD.DDASS	-0.0576	-2.26
UG.BS	1.6883×10 <sup>-4</sup>	0.25
UG.CC1	-0.0054	-0.69
UG.INSO	4.4996×10 <sup>-4</sup>	2.17
UG.IO	7.1625×10 <sup>-4</sup>	3.56
UG.OC1	0.0102	0.91
UG.OC2	0.0148	1.38
UMI.1	-0.0274	-0.29
UMI.2	-0.0580	-1.52
UMI.3	-0.0223	-1.02
UMI.4	-0.0421	-1.85
UMI.5	-0.0034	-0.12
UMI.6	-0.0472	-2.32
UMI.7	-0.0131	-0.59
UMI.8	-0.0158	-0.73
UMI.9	-0.0230	-1.20
UMI.10	-0.0044	-0.21
USIZ.1	-0.0520	-2.67
USIZ.2	-0.0366	-2.31
USIZ.3	0.0261	2.33
USIZ.4	0.0167	1.32
USIZ.5	0.0106	0.82
ZINS1	-0.0250	-1.16
ZINS2	-0.0461	-2.24
ZINS3	-0.0332	-1.59
ZINS4	-0.0216	-1.01
ZINS5	-0.0243	-1.18
ZINS6	-0.0105	-0.47
ZINS7	-0.0246	-1.19
ZINS8	5.3159×10 <sup>-4</sup>	0.03
ZINS9	-0.0163	-0.68

*F* = 3.49  
Adjusted *R*<sup>2</sup> = 0.056  
*n* = 1,357

**Table A8-8**  
**Asset Growth Variable, U.S. Sample**  
**(Dependent Variable: UP.ASSG)**

Variables in the equation	<i>B</i>	<i>t</i> -statistics
(Constant)	0.1084	3.05
UD.ASSEM	-9.8773×10 <sup>-4</sup>	-2.63
UD.DDASS	-0.1556	-5.43
UG.BS	-3.1172×10 <sup>-4</sup>	-0.04
UG.CC1	0.0022	0.25
UG.INSO	4.9745×10 <sup>-4</sup>	2.13
UG.IO	7.2789×10 <sup>-4</sup>	3.21
UG.OC1	0.0077	0.61
UG.OC2	0.0047	0.34
UMI.1	0.0208	0.20
UMI.2	-0.0981	-2.28
UMI.3	0.0135	0.55
UMI.4	-0.0279	-1.09
UMI.5	-0.0025	-0.08
UMI.6	-0.0438	-1.91
UMI.7	-0.0081	-0.33
UMI.8	-0.0084	-0.35
UMI.9	-0.0371	-1.72
UMI.10	0.0033	0.14
USIZ.1	-0.0868	-3.95
USIZ.2	-0.0227	-1.27
USIZ.3	0.0159	1.27
USIZ.4	0.0131	0.92
USIZ.5	0.0079	0.55
ZINS1	-0.0210	-0.86
ZINS2	-0.0336	-1.45
ZINS3	-0.0252	-1.07
ZINS4	-0.0116	-0.48
ZINS5	-0.0212	-0.92
ZINS6	-0.0093	-0.37
ZINS7	-0.0219	-0.94
ZINS8	0.0136	-0.60
ZINS9	0.0153	0.57
<i>F</i> = 4.51		
Adjusted <i>R</i> <sup>2</sup> = 0.077		
<i>n</i> = 1,357		

## BIBLIOGRAPHY

- Amoako-Adu, B. and B. F. Smith. "Outside Financial Directors and Corporate Governance - Draft," 1995.
- Bacon, J. "Corporate Boards and Corporate Governance." The Conference Board, Number 1036 (1993).
- Baysinger, B. D. and H. N. Butler. "Corporate Governance and the Board of Directors: Performance Effects of Changes in Board Composition," *Journal of Law, Economics and Organization*, 1, 1 (1985):101-24.
- Baysinger, B. D. and R. E. Hoskisson. "The Composition of Boards of Directors and Strategic Control: Effects on Corporate Strategy," *Academy of Management Review*, 15, 1 (1990):72-87.
- Beck, S. "The Corporation and Canadian Society," presented at the Canadian Corporate Governance: A Multi-Disciplinary Perspective Conference held at the C.D. Howe Institute. (February 1994).
- Clarkson, M. B. E. and M. C. Deck. "'Straddling Fences Makes it Difficult to Walk in a Straight Line': A Commentary Prepared in Response to 'Where Were The Directors?' The Draft Report of the TSE Committee on Corporate Governance in Canada May 1994." The Centre for Corporate Social Performance and Ethics, (July 1994).
- Dalton, D. R., I. F. Kesner, and P. L. Rechner. "Corporate Governance and Boards of Directors: An International, Comparative Perspective." *Advances in International Comparative Management*, 3 (1988):95-105.
- Daniels, R. and P. Halpern. "The Canadian Quandary: Accounting for the Survival of the Closely Held Corporation." Draft presented at the Canadian Corporate Governance: A Multi-Disciplinary Perspective Conference held at the C.D. Howe Institute. (February 1994).
- Daniels, R. and J. MacIntosh. "Towards a Distinctive Canadian Corporate Law Regime." *Osgoode Hall Law Journal*, 29, 4 (Winter 1991):864-933.
- Densetz, H. and K. Lehn. "The Structure of Corporate Ownership: Causes and Consequences." *Journal of Political Economy*, 93, 6 (1985).
- Dey, P. et al. "Where Were The Directors?", The TSE Committee on Corporate Governance in Canada. (May 1994).

- Donaldson, G. "Voluntary Restructuring: The Case of General Mills." *Journal of Financial Economics*, 27 (1990):117-141.
- The Economist. "A Survey of Corporate Governance." (January 29th, 1994).
- Eden, L., *Multinationals in North America*, The Industry Canada Research Series. Calgary: University of Calgary Press, 1994.
- Friedlander, A. F., E. R. Berndt and G. McCullough. "Governance Structure, Managerial Characteristics, and Firm Performance in the Deregulated Rail Industry." *Brookings Papers: Microeconomics*. 1992.
- Herzel, L. "Corporate Governance Through Statistical Eyes." *Journal of Financial Economics*, 27 (1990):581-93.
- Industry Canada, *Institutional Activism in Canada (Draft)*, Corporate Governance Branch, September 1994.
- Industry Canada. *Economic Integration in North America: Trends in Foreign Direct Investment and the Top 1,000 Firms*, Working Paper Number 1. ( January 1994).
- Jensen, M. C. "The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems." *Journal of Finance*, 48, 3 (July 1993):831-80.
- Jensen, M. C. and W. Meckling. "Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure." *Journal of Financial Economics*, 3 (October 1976):305-60.
- MacIntosh, J. G. "The Role of Institutional and Retail Investors in Canadian Capital Markets." *Osgoode Hall Law Journal*, 31, 2 (1993).
- Morck, R. K. and D.A. Stangeland. "Corporate Performance and Large Shareholders" (Working Paper No. 4-94). Institute for Financial Research, Faculty of Business, University of Alberta, 1994.
- Morck, R. K. "On the Economics of Concentrated Ownership," Draft presented at the Canadian Corporate Governance: A Multi-Disciplinary Perspective Conference held at the C.D. Howe Institute, February 1994.
- Neave, E. H., "Organizational Economics and Directors' Control (Draft presented at the Canadian Corporate Governance: A Multi-Disciplinary Perspective Conference held at the C. D. Howe Institute)," February 1994.

- 
- Porter, M. E. "Capital Disadvantage: America's Failing Capital Investment System." *Harvard Business Review*. (September-October 1992):65-82.
- \_\_\_\_\_. "Capital Choices: Changing the Way America Invests in Industry." *The Council on Competitiveness and The Harvard Business School*. 1992.
- Roe, M. J. "Political and Legal Restraints on Ownership and Control of Public Companies." *Journal of Financial Economics*, 27 (1990):117-41.
- Romano, R. "A Cautionary Note on Drawing Lessons from Comparative Corporate Law." *Yale Law Journal*, 102 (1993): 2021-37.
- \_\_\_\_\_. "Public Pension Fund Activism in Corporate Governance Reconsidered." *Columbia Law Review*, 93, 4 (May 1993).
- Roth, C. W. "Concentration of Ownership and the Composition of the Board: An Examination of Canadian Publicly-Listed Corporations " (Draft). *Industry Canada*, 1994.



## INDUSTRY CANADA RESEARCH PUBLICATIONS

### *INDUSTRY CANADA WORKING PAPER SERIES*

- No. 1 **Economic Integration in North America: Trends in Foreign Direct Investment and the Top 1,000 Firms**, Industry Canada, Micro-Economic Policy Analysis Staff including John Knubley, Marc Legault, and Someshwar Rao, 1994.
- No. 2 **Canadian-Based Multinationals: An Analysis of Activities and Performance**, Industry Canada, Micro-Economic Policy Analysis Staff including Someshwar Rao, Marc Legault, and Ashfaq Ahmad, 1994.
- No. 3 **International R&D Spillovers Between Industries in Canada and the United States**, Jeffrey I. Bernstein, Carleton University and the National Bureau of Economic Research, under contract with Industry Canada, 1994.
- No. 4 **The Economic Impact of Mergers and Acquisitions on Corporations**, Gilles McDougall, Micro-Economic Policy Analysis, Industry Canada, 1995.
- No. 5 **Steppin' Out: An Analysis of Recent Graduates Into the Labour Market**, Ross Finnie, School of Public Administration, Carleton University and Statistics Canada, 1995.
- No. 6 **Measuring the Compliance Cost of Tax Expenditures: The Case of Research and Development Incentives**, Sally Gunz, University of Waterloo, Alan Macnaughton, University of Waterloo, and Karen Wensley, Ernst & Young, Toronto, under contract with Industry Canada, 1996.
- No. 7 **Governance Structure, Corporate Decision-Making and Firm Performance in North America**, P. Someshwar Rao and Clifton R. Lee-Sing, Industry Canada, 1996.

### *INDUSTRY CANADA DISCUSSION PAPER SERIES*

- No. 1 **Multinationals as Agents of Change: Setting a New Canadian Policy on Foreign Direct Investment**, Lorraine Eden, Carleton University, 1994.
- No. 2 **Technological Change and International Economic Institutions**, Sylvia Ostry, Centre for International Studies, University of Toronto, under contract with Industry Canada, 1995.
- No. 3 **Canadian Corporate Governance Policy Options**, Ronald J. Daniels, Faculty of Law, University of Toronto, and Randall Morck, Faculty of Business, University of Alberta, 1996.

*INDUSTRY CANADA OCCASIONAL PAPER SERIES*

- No. 1 **Formal and Informal Investment Barriers in the G-7 Countries: The Country Chapters**, Industry Canada, Micro-Economic Policy Analysis Staff including Ash Ahmad, Colleen Barnes, John Knubley, Rosemary D. MacDonald and Christopher Wilkie, 1994.
- Formal and Informal Investment Barriers in the G-7 Countries: Summary and Conclusions**, Industry Canada, Micro-Economic Policy Analysis Staff including Ash Ahmad, Colleen Barnes and John Knubley, 1994.
- No. 2 **Business Development Initiatives of Multinational Subsidiaries in Canada**, Julian Birkinshaw, University of Western Ontario, under contract with Industry Canada, 1995.
- No. 3 **The Role of R&D Consortia in Technology Development**, Vinod Kumar, Research Centre for Technology Management, Carleton University, and Sunder Magun, Centre for Trade Policy and Law, University of Ottawa and Carleton University, under contract with Industry Canada, 1995.
- No. 4 **Gender Tracking in University Programs**, Sid Gilbert, University of Guelph, and Alan Pomfret, King's College, University of Western Ontario, 1995.
- No. 5 **Competitiveness: Concepts and Measures**, Donald G. McFetridge, Department of Economics, Carleton University, 1995.
- No. 6 **Institutional Aspects of R&D Tax Incentives: The SR&ED Tax Credit**, G. Bruce Doern, School of Public Administration, Carleton University, 1995.
- No. 7 **Competition Policy Dimension of Economic Policy: A Comparative Perspective**, Robert D. Anderson and S. Dev Khosla, Economics and International Affairs Branch, Bureau of Competition Policy, Industry Canada, 1995.
- No. 8 **Mechanisms and Practices for the Assessment of The Social and Cultural Implications of Science and Technology**, Liora Salter, Osgoode Hall Law School, under contract with Industry Canada, 1995.
- No. 9 **Science and Technology: Perspectives for Public Policy**, Donald G. McFetridge, Department of Economics, Carleton University, Under contract with Industry Canada, 1995.
- No. 10 **Endogenous Innovation and Growth: Implications for Canada**, Pierre Fortin and Elhanan Helpman, Université du Québec à Montréal and the Canadian Institute for Advanced Research, and Tel Aviv University and the Canadian Institute for Advanced Research, under contract with Industry Canada, 1995.

- No. 11 **The University-Industry Relationship in Science and Technology**, Jérôme Doutriaux and Margaret Barker, University of Ottawa and Meg Barker Consulting, under contract with Industry Canada, 1995.
- No. 12 **Technology and the Economy: A Review of Some Critical Relationships**, Michael Gibbons, University of Sussex, under contract with Industry Canada, 1995.
- No. 13 **Management Skills Development in Canada**, Keith Newton, Industry Canada, 1995.

***JOINT PUBLICATIONS***

**Capital Budgeting in the Public Sector**, in collaboration with the John Deutsch Institute, Jack Mintz and Ross S. Preston eds., 1994.

**Infrastructure and Competitiveness**, in collaboration with the John Deutsch Institute, Jack Mintz and Ross S. Preston eds., 1994.

**Getting the Green Light: Environmental Regulation and Investment in Canada**, in collaboration with the C.D. Howe Institute, Jamie Benidickson, G. Bruce Doern and Nancy Olewiler, 1994.

**To obtain copies of documents published under the *RESEARCH PUBLICATIONS PROGRAM*, please contact:**

Publications Officer  
Micro-Economic Policy Analysis  
Industry Canada  
5th Floor, West Tower  
235 Queen Street  
Ottawa, Ontario K1A 0H5

Telephone: (613) 952-5704  
Facsimile: (613) 991-1261