
MICRO

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Corporate Governance Conference

Objectives

The poor economic performance of the OECD countries and the serious economic difficulties of many large and well-known global companies in the 1980s and 1990s highlighted the importance of corporate governance for effectively managing the challenges of structural changes and economic adjustment.

Industry Canada in collaboration with the Financial Research Foundation of Canada commissioned 18 research papers to thoroughly examine various aspects of corporate governance and their interrelationships with corporate decision making and corporate performance.

The research is focused on the following important aspects of corporate governance in Canada: corporate governance and economic growth, ownership concentration, the Board, director liability, institutional investors, executive compensation, minority shareholder protection and long-term investment decisions.

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The output from this research effort is expected to provide policy support on two fronts. First, it is expected to improve the understanding of the growth performance of firms, and hence nations, and the role of business and government in this process. Second, it will provide analytical support for the planned revisions to federal business legislation through amendments to the *Canada Business Corporations Act*.

The Toronto Conference, held March 20 and 21, served as a peer review of the commissioned papers. The revised version of the conference papers will be published by Industry Canada. Professors **Ron Daniels** (University of Toronto, Faculty of Law) and **Randall Morck** (University of Alberta, Faculty of Business) will serve as the General Editors of the volume.

Main Findings

The corporate governance structure in Canada differs a great deal from the American governance structure in three important ways:

- 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.

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- 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.

Although banks play an active role in the governance of non-financial corporations in both Japan and Germany, there is no clear evidence their practices result in superior corporate performance. Much of the evidence suggests that the involvement of banks is motivated by non-financial considerations.

The case study of two Canadian conglomerates (Hees-Edper Corporate Group and BCE Inc.) suggests that their poor performance might be the result of an ineffective governance system such as the director-manager monitoring system. Canadian pension fund managers have identified the perceived lack of independence of Canadian directors and the use (actual and potential) of poison pills (anti-takeover devices) as the major governing issues in Canadian corporations. The available evidence does not suggest that markets and managers are myopic with respect to longer-term investments in R&D and human capital, indicating no major market failure problem.

Nonprofit institutions play a large part in the Canadian economy, and their importance will continue to grow. In 1992, it was estimated that they account for close to 10 percent of Canadian gross domestic product. This highlights the importance of the effective governance of nonprofit institutions for economic growth in Canada. Informational asymmetries between majority and minority shareholders are important impediments to protecting minority shareholders.

The composition of the Board (the outside/inside director ratio), a crude proxy for the independence of the Board, is positively related to size of the corporation and negatively related to number of voting rights held by insiders (employees of the company). The correlation between executive compensation and firm performance

measures is not robust. Whistleblowing by employees can play an important role in both detecting and preventing corporate wrongdoing.

Policy Implications

Framework policies, especially corporate laws and policies, could play an important role in improving the economic performance of firms and nations:

- The corporate governance debate in the United States and the suggested policies and actions for business and government are not very relevant to Canada because of the sharp differences in ownership structure in the two countries. Issues such as size and composition of the Board, executive compensation and institutional ownership are not as important in Canada as in the United States. Instead, protection of minority shareholders, improving communication between shareholders, directors' and company liability, poison pills, disclosure of information and whistleblowing are some of the important governance issues in Canada.
- Continued liberalization of factor, product and capital markets will play an important role in improving the corporate governance system in Canada.
- Adoption of the German and Japanese systems of a close relationship between banks and non-financial corporations in Canada is not warranted.
- The economic rationale for subsidizing longer-term corporate investments is not very strong.

Knowledge-based Growth Conference

What is the precise relationship between knowledge and economic growth? And how should this relationship be incorporated in the formulation of micro-economic policies? Eleven research papers tackling these questions were reviewed by business, university and government representatives at a conference sponsored by Industry Canada in Ottawa on March 30 and 31. Professor John Helliwell (University of British Columbia) served as Rapporteur for the conference, outlining the main research findings and highlighting policy implications.

The papers fell into three broad groups:

- discussion of sources of knowledge and conceptual and measurement issues that are requisite if knowledge is to be treated explicitly in the study of economic growth
- a knowledge-based approach to framework policy issues that studies the impact of international trade, interprovincial trade barriers, intellectual property regimes, industrial policies and local clusters on the structure and pace of knowledge-based growth
- a spotlight on the global telecommunications revolution, emphasizing international comparisons of information infrastructure, productivity growth attributable to the communications industry, and the implications of the information highway for the rest of the economy.

The research papers, designed to improve understanding of the nature and economic implications of knowledge-based growth, will be published in one volume in the fall of 1995 under the title *The Implications of Knowledge-based Growth*. Professor Peter Howitt (University of Western Ontario) is the General Editor.

Measurement of Knowledge-based Growth

The consensus of participants at the conference was that there are three main problems in measuring knowledge-based growth:

- the "R&D input problem": conventional R&D measures exclude many informal searches for better ways to do things, as well as the private costs of education
- the "knowledge investment problem": the costs of increasing the stock of knowledge are treated as current expenditures rather than capital investment, resulting in understatement of the measured productivity when the investment is made, and overstatement when the knowledge is put to use
- the "quality improvement problem": errors in measurement of productivity growth and price changes in different sectors occur when quality improvements are either ignored, as frequently happens in services, or underestimated in the construction of price and quantity indexes for gross domestic product.

It was evident that a strong correlation exists between innovation and both formal and informal training within a firm.

The higher-knowledge industries have had faster growth rates of output and employment over the 1980s, while the lower-knowledge industries have had faster rates of productivity growth.

Framework Policy Issues

A literature review indicates that increased sharing of knowledge internationally is resulting in the convergence of real income per capita levels across countries. This is due to faster rates of productivity growth rather than simply faster rates of capital spending in the poorer countries. However, more research has to be done to understand the relative importance of capital goods and skills in transferring knowledge and how trade and investment policies will influence knowledge transfers, growth rates and output levels. An initial assessment of the impact of interprovincial trade barriers on knowledge transfer and, consequently, on economic growth suggests that this effect is probably small.

Research on the implications of intellectual property regimes for economic growth suggests that different regimes may well be optimal for different countries, industries and areas of science.

Recent research indicates that, except for the largest R&D investors such as the U.S. and Japan, most countries acquire leading-edge knowledge through international spillovers rather than from within. To maintain the momentum of international economic growth, therefore, systems must provide easy entry of foreign direct investment as well as multinational access to R&D consortia. However, one of the research papers presents a spirited argument for treating innovation as a locally based activity that feeds on specialized networks in specific locations. The question of the appropriate domain for policy setting in this matter strikes to the heart of the debate and merits further research.

Most innovation takes time. Big changes especially are marked by false starts and uncertain decisions. Major public efforts in search of major technological leaps are therefore discouraged. It is more important to nurture an institutional environment where catch-up and crawl-ahead innovations can be made. In this vein, policies promoting information sharing may be of special importance in advancing efficient learning from the failure and success of others. Case studies reveal that successful inno-

vation policies must be single-objective policies. When governments have multiple objectives, the uncertainties of innovation decisions make it fairly certain that non-technical objectives will dominate.

The Global Telecommunications Revolution

One of the research studies identifies possible global externalities arising from telecommunications infrastructure. There is a two-way causation between economic growth and telecommunications: faster growth encouraged by better telecommunications, and increased demand for telecommunications resulting from higher growth.

Another of the studies focuses on the same question but investigates whether the Canadian communication equipment industry is a source of R&D spillovers and productivity growth in the Canadian manufacturing sector. Results suggest small positive spillovers from the Canadian industry's R&D, but significant and much larger spillovers from U.S. manufacturing R&D.

Conclusions

A number of significant policy implications emerged from this peer review conference. Firstly, government initiatives which foster a favourable climate for technological innovation and the accumulation of knowledge are essential. Given the uncertainty inherent in innovative activity, these policies need to be flexible, facilitate research activity and reduce uncertainty. Secondly, a coordinated approach that recognizes the relationship between innovation and training is likely to have a bigger impact than just focusing on innovation or training.

Thirdly, countries should continue to move toward having an open economy, since increased trade liberalization is likely to induce faster economic growth. However, there is still a lack of understanding as to how international trade interacts with human capital, investment or domestic R&D in the determination of economic growth.

Fourthly, although the initial assessment of the impact of interprovincial trade barriers on knowledge transfer and economic growth suggests that this effect is probably small, if there are significant internal barriers that stop important interregional exchanges from taking place,

then they need to be removed. Fifthly, since research on the implications of intellectual property regimes for economic growth suggests that different regimes may be optimal for different countries, industries and types of science, any policy framework to be implemented must be adaptive and flexible.

Finally, the conventional wisdom of relying upon market forces with sufficient competitive safeguards in place and direct subsidies extended is applicable to the information highway. Traditional government activities in the areas of education and training should also promote more effective and efficient use of this information.

These results will provide a basis to develop future micro-economic initiatives of Industry Canada.

Workshop on Science, Technology and Economic Growth

Technological change has put knowledge and information at the forefront of economic progress. This is the common message of five papers prepared for a workshop on science and technology (S&T) sponsored by Industry Canada on March 29, and attended by participants from business, university and government. The papers deal with fundamental questions about the role of S&T in economic growth and its implications for micro-economic policies.

The Role of S&T in Economic Growth

Two of the papers highlight the role of S&T in economic growth in general and for Canada in particular.

Since the 1970s, the economic growth of Canada and the other G7 countries has stalled. This situation is attributed mainly to a slowdown in labour productivity, the determinants of which are the rate of capital accumulation, technological progress, human capital accumulation, learning by doing and innovative activity. It is further exacerbated by discouraging demographic factors: labour force participation is expanding at a decreasing rate and the labour force is aging.

One study shows that the rate of capital accumulation

cannot solely account for the slowdown in labour productivity, nor is the slowdown unique to Canada.

Various means may be used to reverse the problem:

- technological progress can raise the efficiency of workers and induce capital accumulation by raising the profits of investment
- education and training, including on-the-job training and experience, can increase the productivity of workers (however, educational policies need to be tailored to a country's specific conditions)
- learning by doing can contribute to productivity growth through spillovers to other parts of the economy (public policy should encourage activities that generate these spillovers)
- technological inventions and innovations can lead to a greater stock of knowledge, allowing an economy to experience indefinite increases in productivity.

An essential ingredient of productivity growth is access to international markets. International trade provides access to both knowledge and markets, although the greater intensity of international competition may also have negative consequences for firms. Firm competitiveness depends crucially on getting the right information and knowledge. Diffusion is thus a key ingredient for economic growth and, it was suggested, can be enhanced by strategic policies. The policies could include, among other things, encouraging cooperative arrangements to increase the stock of knowledge.

One explanation put forward to explain current G7 structural unemployment is that firms, labour, management and governments have been too slow to adapt to the new information and communications technologies. One paper hypothesizes that policies that improve the way in which the economy diffuses knowledge and innovation would aid in combatting long-term structural unemployment.

Capital market imperfections should also be addressed. Recent research recognizes that the limited capacity of financial institutions to assess the risks of innovative activities impedes the financing of firms in knowledge-based industries.

Researchers note that although research and development (R&D) will enhance social welfare in some respects, it could lead to a monopoly or, by the introduc-

tion of new products, to the destruction of some firms' profits. Such R&D costs need to be factored into any analysis. Overall, however, the large spillover effects that R&D generates provide major benefits to society; therefore, more resources should be put into R&D, both in Canada and in the rest of the world.

Instruments to Support R&D

Two papers look at instruments appropriate to support R&D and its diffusion in the Canadian economy. A literature review on the proper role for government in R&D indicates that policies should be directed at R&D activities that promise large domestic spillovers, that have value-added benefits and that use Canada's unique domestic resources.

This study assesses various policy instruments and concludes that government R&D can produce large social benefits, especially if aimed at industry-wide problems and infra-technologies. However, cost-effective commercialization of R&D is generally not the forte of government.

Generally, governments use tax credits and subsidies to influence R&D. Evidence from Australia shows that tax incentives increase R&D conducted by firms and increase social welfare, but the results of R&D subsidies are not so clear-cut. Government procurement, on the other hand, can encourage innovative activity if government is a committed customer or an important first user of innovations.

A new finding is that spillovers from applied research may be greater than was once thought. Thus, a greater case can be made for government support of applied research using subsidies, tax credits or procurement.

The second study on R&D shows that government can play an important role in fostering university-industry linkages in R&D. Twenty-six percent of all Canadian R&D spending is conducted at universities and generates significant spillovers. Canada's programs work well for large firms — the primary customers of university R&D — and for high-tech small and medium-sized enterprises (SMEs). SMEs in traditional sectors, however, have weaker linkages with universities, indicating an area for potential improvement.

To promote successful linkages, communication and collaboration between universities and industry are neces-

sary. A good local knowledge base is essential for this, as are infrastructure, trained personnel, leadership from local government, government programs to support university R&D, and mechanisms to exchange information.

The study recommends:

- regional-level policies to facilitate research on university–industry linkages
- providing information to SMEs on technology diffusion and university–industry programs
- introducing a training program to equip young university faculty in science and engineering with know-how on forging university–industry linkages.

Assessing the Impact of S&T

The fifth paper explores how best to assess the impact of S&T on Canadian society and culture. It concludes that present Canadian mechanisms and practices for assessing S&T cannot adequately address social and cultural implications, notwithstanding the vast commitment of resources in this area.

There are at present no systematic processes in Canada to conduct risk, technology and environmental assessments. Past research has generally been scant, subject to the influence of interest groups, and has used narrow concepts of social, cultural and ethical issues. This study recommends:

- setting up special focus groups to assess controversial scientific issues
- monitoring the impact of the new computer and information technologies
- adoption of adaptable assessment mechanisms using consultation and research independently of ideologically biased interest groups.

Implications

The papers provide a thoughtful grand tour of the current state of knowledge on S&T, its links to economic growth and its implications for micro-economic policy. The studies have broad applicability to many countries, although they have a distinctly Canadian empirical focus. The issues addressed set an agenda for future research and policy work on S&T.

The five papers will be published separately for release during the summer of 1995.

Gender Tracking in University Programs

One of the serious educational questions of the day is the marked difference in first-to-second-year renewal rates between male and female students in natural sciences and engineering disciplines in Canada. The fundamental issue is how, once recruited, talented women can be retained in these programs.

This is the subject of Industry Canada's most recent Occasional Paper, *Gender Tracking in University Programs*, by Sid Gilbert (University of Guelph) and Alan Pomfret (University of Western Ontario). The paper examines how differences in preference, motivation and achievement variously influence men and women in deciding whether to pursue undergraduate science and engineering programs.

Men and women enter science with a different sense of values, both in relation to self and to others. The study identifies this as crucial to the understanding of why qualified women may decide not to pursue engineering and scientific studies. The academic and professional environment in these areas appears more compatible with men's than women's values. While women tend to be oriented toward response and care that stresses the connection of self to others, men place greater emphasis on the autonomous self. Female students in the highest achievement category value a supportive work environment and harmonious work/study environment much more so than comparable male students, and they anticipate more difficulty in combining family and career responsibilities. Women in the sciences are more negative about academic stress and personal difficulties in university life than are male students. And relative to women in non-science areas, they are less positive about the relevance of their courses to their careers or to personal development.

These differences affect recruitment into science programs, with able women being less attracted than similarly able men. They also appear to cause intellectually competent women to leave such programs. The authors also suggest that the value orientation difference between men and women may result in grade differences. Female students often achieve much lower grades initially than male science students, with only a partial recovery later in their educational careers. To the extent that low marks

influence women to quit and that value orientation differences affect marks, then value orientations indirectly cause women to leave science or engineering programs after the first year.

To enhance female recruitment into natural sciences and engineering programs, the authors propose initiatives such as public awareness efforts to improve the image of science as practised, and the creation of honoraria to finance presentations to high school students by women scholars.

To encourage women to stay in these disciplines, the authors propose social support initiatives, efforts to improve the teaching of science and less stringent renewal criteria.

Technology and the Economy: A Review of Some Critical Relationships

The complex and ever-changing relationship between technology and economic growth is a continual challenge to economists, particularly in this time of rapidly evolving information and computer technologies. In 1989, the Science, Technology and Industry Directorate of the OECD set up the Technology and Economy Project (TEP) to study the subject. Specifically, it looked at sources of economic growth and at why and how technological change occurs. Industry Canada asked Professor Michael Gibbons of the Science Policy Research Unit at the University of Sussex to examine how the world's understanding of technology has changed since TEP was founded. His response is a paper titled *Technology and the Economy: A Review of Some Critical Relationships*.

Professor Gibbons's use of appreciative, rather than formal, economic theorizing allows him to delve closely into empirical and institutional relationships, draw out complex interrelationships and establish logical connections. With such an approach, he can view technology as dynamic, complex and evolving, rather than as a static phenomenon. (Formal theorizing, on the other hand, can limit investigation because it tends to be more abstract and less closely attuned to factual information.)

Professor Gibbons supports the argument that technology is endogenously determined. In other words, inventive activity responds to economic incentives such as profit-making opportunities, costs of conducting R&D and government policies.

For both technology and the economy, markets, institutions and firms are the key players, with diversity rather than convergence their characteristic feature. The result is variety in methods of production and in output. Diversity shows up as well in differences in the economic performance of countries.

The performance of a nation's firms hinges on their ability to adapt and learn. But most knowledge is tacit rather than codified. The challenge is for firms to find ways to capture and use tacit forms of knowledge. Data, information, knowledge and learning are then seen as the key ingredients for both firms and nations to gain competitive advantage. But a country's economic performance also depends on its unique historical, cultural and institutional make-up — as reflected in what has come to be called national systems of innovation.

Professor Gibbons compares the experience of the Asian Tigers with Latin American countries as an example of differences in national systems of innovation. East Asian countries have modernized their education systems at a rapid rate, while education systems in Latin America have deteriorated and have produced few engineers. While industry conducts a lot of R&D in Asia, this is not so in Latin American countries. S&T infrastructure and linkages with industry are also strong in East Asia. All of this has allowed the Asian Tigers to leap ahead in the race for economic growth.

New research on technological change identifies constraints affecting the ability of firms to be innovative. For example, it is now understood that financial institutions are limited in their ability to assess risks and uncertainties faced by innovating firms.

Empirical research points out that the employment record is best in those countries that have promoted knowledge. Countries that have tried to upgrade the skills of their work force in response to the marketplace and demands for new skills are most successful at avoiding unemployment. Such countries — Japan is an example — have also created the conditions to promote

knowledge-based industries and activities. The large European countries have been less successful in promoting knowledge-based growth.

Professor Gibbons envisages a new role for government in S&T. It is that of improving the national system of innovation by removing constraints to innovative activity rather than concentrating on funding R&D. He sees the power of the economy to diffuse information and knowledge as the key area where policy might refocus its efforts.

*Distinguished Speakers in Economics
Series: Trade Policy and Politics*

Theoretical research on trade policy traditionally assumes that governments act as benevolent servants of the public interest and that they are immune from political pressures. In the latest of Industry Canada's Distinguished Speakers in Economics lectures, Dr. Elhanan Helpman of Tel Aviv University presented a different view of the subject. He described the results of research conducted jointly with Dr. Gene Grossman of the Massachusetts Institute of Technology, in which the influence of domestic politics was included in an analysis of international economic relations.

Helpman and Grossman focused on the political interaction between organized special interest, or lobby, groups and incumbent governments. Their premise is: An incumbent government is interested in maximizing its political support to retain political power, and therefore — all things being equal — focuses most on the welfare of the "average" (the largest) voting block. Lobby groups, by contrast, focus on their members' welfare and try to influence government to enact policy in support of these narrower interests. Consequently, international relations involve two distinct stages of strategic interaction. In the initial stage, political competition among different interests in each country determines government policy. International equilibrium is determined in the second stage.

In international bargaining, the equilibrium agreement reflects the political pressures felt by both negotiating governments. To fashion an agreement that remains politically viable while reducing protection levels across a broad portion of an economy, governments might agree simply to exclude from the agreement those sectors whose inclusion would impose on them the greatest political cost.

Helpman and Grossman built a mathematical model that relates the protection an industry receives to the state of its political organization, the ratio of domestic output in the industry to net foreign trade, and the elasticities of import demand and export supply. For instance, a lobby group could wield maximum influence in determining trade protection if the industry it represents — or its market — is highly sensitive to changes in import prices but not to export prices.

Similarly, the amount of trade protection an industry receives will increase according to the size and influence of its lobby group and how much weight the government attaches to the group's welfare in relation to the general welfare.

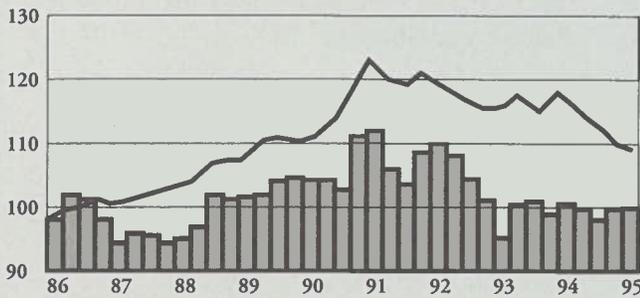
Helpman and Grossman's analytical principles are not restricted to trade policies and politics: they are equally applicable to such areas as social transfer schemes, environmental regulations or government spending programs.

FROM THE COMPETITIVENESS NOTEBOOK

FOCUS ON PRIMARY METAL INDUSTRIES

Unit Labour Cost

Index, 1986=100

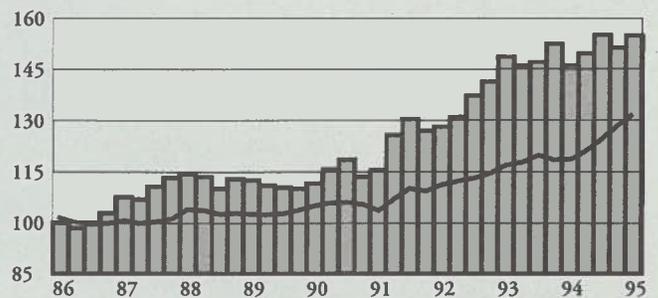


■ Primary Metals
— All Manufacturing

Source: Statistics Canada

Labour Productivity: Output per Employee

Index, 1986=100



■ Primary Metals
— All Manufacturing

Source: Statistics Canada

- Primary metal industries account for about 7.5 percent of the output of the manufacturing sector. The grouping comprises the primary steel industry, steel pipe and tube industries, iron foundries, non-ferrous metal smelting and refining industries, and aluminum, copper and other metal rolling, casting and extruding industries.
- The fortunes of these industries are very cyclical in nature, linked strongly to the ebb and flow of the business cycle. Currently, the industries are riding economic expansion. Demand from the United States has been the key driving force. Output has been exported directly and as part of more manufactured products such as automobiles.
- With large fixed operating and investment costs, fluctuations in demand throughout the business cycle have a greater impact on price than on output. To illustrate, prices dropped over 18 percent from 1988 to 1991 while output declined by about 9.5 percent. This price cycling puts immense pressure to control/reduce costs and improve efficiency.
- Primary metal industries have made solid progress. Over the past decade, especially in the early 1990s, labour productivity rose faster than that for all of the manufacturing sector while increases in unit labour costs were kept lower.
- With the profits associated with the current economic upturn, it appears that firms are continuing to improve their competitiveness by replacing obsolete production methods with newer technologies and processes.

PUBLICATIONS

NOW AVAILABLE

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- No. 1 - *Economic Integration in North America: Trends in Foreign Direct Investment and the Top 1,000 Firms*, Micro-Economic Policy Analysis Staff, January 1994.
- No. 2 - *Canadian-Based Multinational Enterprises: An Analysis of Activities and Performance*, Micro-Economic Policy Analysis Staff, June 1994.
- No. 3 - *International R&D Spillovers Between Canadian and U.S. Industries*, Jeffrey I. Bernstein, September 1994.
- No. 4 - *The Economic Impact of Mergers and Acquisitions on Corporations*, Gilles McDougall, February 1995.
- No. 5 - *Steppin' Out: An Analysis of Recent Graduates into the Labour Market*, Ross Finnie, May 1995.

Industry Canada Occasional Papers

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The Country Chapters (Volume 1)
Summary and Conclusions (Volume 2)
- No. 2 - *Business Development Initiatives of Multinational Subsidiaries in Canada*, Julian Birkinshaw, January 1995.
- No. 3 - *The Role of R&D Consortia in Technology Development*, Vinod Kumar and Sunder Magun, February 1995.
- No. 4 - *Gender Tracking in University Programs*, Sid Gilbert and Alan Pomfret, March 1995.
- No. 5 - *Competitiveness: Concepts and Measures*, Donald G. McFetridge, April 1995.
- No. 6 - *Institutional Aspects of R&D Tax Incentives: The Scientific Research and Experimental Development Tax Credit*, G. Bruce Doern, April 1995.
- No. 7 - *Competition Policy as a Dimension of Economic Policy: A Comparative Perspective*, Robert D. Anderson and S. Dev Khosla, May 1995.

Industry Canada Discussion Paper Series

- No. 1 - *Multinationals as Agents of Change: Setting a New Canadian Policy on Foreign Direct Investment*, Lorraine Eden, November 1994.

Research Volume Series *

- Volume III - *Multinationals in North America*, General Editor: L. Eden, 1994.
- Volume IV - *Canadian-based Multinationals*, General Editor: S. Globerman, 1994.

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