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# Micro

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*Micro-Economic Policy Analysis Branch Bulletin*

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## ***Future Directions for North American Free Trade***

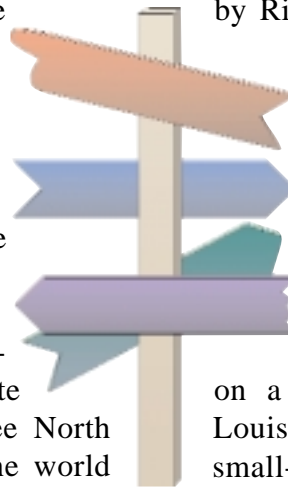
A decade ago, Canada entered into the Free Trade Agreement with the United States. Five years later, this was expanded to include Mexico in the North American Free Trade Agreement. These agreements have accelerated the development of Canada's already close commercial relationship with the United States. At the same time, globalization continues to integrate the economies of all three North American partners into the world economy. As a result, Canada's trade linkages with the United States and Mexico are far from static and continue to evolve, creating new opportunities and raising new questions.

One of the key questions is: What form will North American economic integration take in the future?

The possible answers are many and complex, reflecting the increasing

complexity of North American linkages and the asymmetries between Canada and the United States. This issue of *MICRO* presents a review by Richard Harris of the many issues arising from the ongoing North American economic integration. Harris also outlines a research agenda designed to help answer some of these questions. In addition, the current issue reports on a study by Élisabeth and Louis Lefebvre on the role of small- and medium-sized enterprises in exports and job creation, and on a review of the determinants of innovation, by Randall Morck and Bernard Yeung.

This issue of *MICRO* also features a review of two lectures presented as part of Industry Canada's Distinguished Speakers Series: one by Paul David on computers and productivity growth; and the other by J. Bradford De Long on economic trends over the next century.



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## INDUSTRY CANADA RESEARCH AND PUBLICATIONS PROGRAM

### RECENT RELEASES

#### OCCASIONAL PAPER SERIES

No: 25: *The Economic Determinants of Innovation*, by Randall Morck, and Bernard Yeung.

No: 26: *SMEs, Exports and Job Creation: A Firm-Level Analysis*, by Élisabeth Lefebvre and Louis A. Lefebvre.

### FORTHCOMING

*Sectoral Impacts of Kyoto Compliance*, by Randy Wigle.

*R&D Performance of Foreign-Controlled Firms*, by Jianmin Tang and Someshwar Rao.

*North American Economic Integration: Issues and a Research Agenda*, by Richard Harris.

*Industry Level Productivity and International Competitiveness between Canada and the United States*, Dale W. Jorgenson and Frank C. Lee, editors.

### PUBLICATIONS

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### DISTINGUISHED SPEAKERS

- |               |   |
|---------------|---|
| 9 March 2001  | Dale Jorgenson, Harvard University on <i>Information Technology and Economic Growth</i> .                       |
| 6 April 2001  | Josh Lerner, Harvard University, <i>TBA</i> .   |
| 20 April 2001 | Nancy Gallini, University of Toronto, on <i>The Importance of Intellectual Property Rights for Innovation</i> . |
| 4 May 2001    | Charles Hulten, University of Maryland, on <i>Productivity</i> .  |
| 11 May 2001   | Catherine Mann, Institute for International Economics, on <i>High-Tech and Productivity Growth</i> .            |

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## North American Economic Integration: Issues and a Research Agenda

Since the signing of the North American Free Trade Agreement (NAFTA), North American economic integration has increased rapidly. At the same time, the process of globalization continues to integrate all three NAFTA partners more closely into the

**“Deeper economic integration of Canada into North America carries both costs and benefits to Canada.”**

**Richard Harris**

world economy. From the perspective of Canadians, this means that the domestic economy has become smaller in relative terms in the global economy and more dependent on North American developments for its economic future. As a result, it is critical to identify the key research and policy challenges raised by the economic integration of North America if we are to achieve a better understanding of the risks and opportunities the future holds for Canada. In an effort to fill this need, Richard Harris identifies areas of concern which merit further research in Industry Canada's Discussion Paper Number 10, entitled *North American Economic Integration: Issues and a Research Agenda*.

In setting the stage for his review, Harris notes that when NAFTA was signed, Canada and the United States already had strong economic ties with one another. And although the agree-

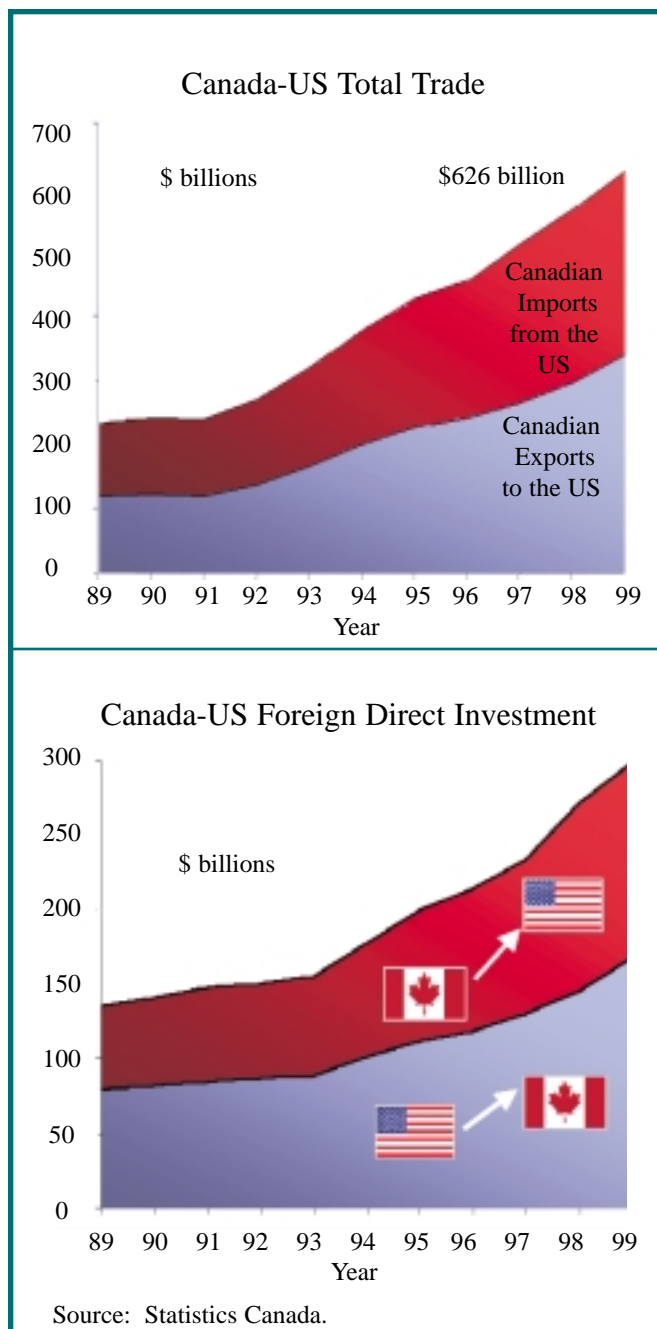
ment resulted in expanded trade and investment linkages, its impact in other areas and the changing nature of the trade and industrial structure are equally important and must also be studied. This requires a multi-dimensional approach which examines wider areas of concern, including environmental, innovation and human capital policies, taxation and regulation.

In addition, Harris rejects the traditional analytical framework of moving from free trade areas to customs unions to a common market, based on developments in Europe. He argues that the asymmetries in the relationships between the United States and both Canada and Mexico limit the usefulness of that approach.

Given the changing nature of trade relationships, the author identifies as a priority the documentation of trends in cross-border interactions outside the traditional trade framework, and an attempt to identify the forces driving them. He also identifies a range of research topics focusing on the changing structure of North American trade in a number of dimensions: geographically, by sector and by degree of specialization. He further identifies the regional agglomeration

question as a key issue for investigation.

Harris argues that a North American customs union is the next logical step towards a deeper regional economic integration and, consequently, a priority area for research. In this context, he identifies several topics for investigation, including: the rules of origin sys-



tem, the consequences for NAFTA of overlapping bilateral agreements with other countries, and the role of contingent protection such as countervailing duties.

The author suggests that NAFTA could evolve into a formal common market as a result of a top-down agreement; but it could begin to resemble a common market through a process of bottom-up convergence in a number of policy areas. In his view, North America can secure a very high level of integration and a

substantial move towards completion of a common market even without a formal single market agreement. Consequently, he calls for an investigation of the implications of harmonization pressures in a wide range of policy areas, including: border issues, labour mobility, tax competition, exchange rates, regulation and competition policy, administrative trade policy (countervail and subsidy), environmental and resource issues, and intellectual property rights.

Harris concludes that because further North American integration is likely to take place in the absence of a formal common market framework, it is important that the research evaluate, in each area, how one policy would function, should it be implemented, in the event that some of the others would not. Researchers are thus faced with a multiplicity of alternative integration policy scenarios, making a multi-disciplinary approach even more important.

## *Conference on North American Linkages*

**June 2001 (tentatively)**  
in  
**Calgary, Alberta**

Building on the priorities outlined by Richard Harris in his paper entitled *North American Economic Integration: Issues and a Research Agenda*, Industry Canada has commissioned a number of research papers on key aspects of North American trade. These papers will be presented at a Conference on North American Linkages in Calgary, tentatively scheduled for June, 2001.

Additional information on conference registration may be obtained from Prakash Sharma by telephone at (613) 941-4974, or by e-mail, at sharma.prakash@ic.gc.ca.

### **The topics to be covered will include:**

- Canada's Trade and Foreign Direct Investment Patterns with the United States
- Cities, Regions and North American Integration
- Comparative Advantage and Trade in North America
- The Distribution of Foreign Direct Investment in North America
- Free Trade and Canadian Economic Performance
- Tax Treatment of Human Capital in Canada and the United States
- NAFTA: Forging New Approaches to Internet and Government
- Impacts on NAFTA Members of Multilateral and Regional Trading Arrangements and Initiatives and the Harmonization of NAFTA's External Tariffs
- The Changing Role and Impact of Labour Mobility within an Integrating North America
- Canada, the United States, and Deepening Economic Integration: Next Steps
- Social Policy and Canada-US Economic Integration
- Canada-US Integration and Labour Market Outcomes
- North American Integration and the Environment
- The Implications of Increasing North American Integration for Competition Policy and Intellectual Property Issues
- North American Integration: Implications for Business Taxation
- Pros and Cons of North American Monetary Integration

## ***SMEs, Exports and Job Creation: A Firm-Level Analysis***

Even though the share of world trade held by small- and medium-sized enterprises (SMEs) remains much lower than the share of larger firms, numerous studies indicate that many SMEs are nevertheless very

always significantly and positively related to export performance and behaviour. In low-knowledge industries, however, commercial capabilities are more significant. Nevertheless, in either low-, medium- or high-knowl-

relationship is strongest in small firms and in low-knowledge industries and it affects production employees more than other categories of employees. They note that exports play a strong moderating role in small firms and medium-knowledge industries. According to the authors, this indicates a mutual reinforcement effect between increased export activities and the continuous acquisition of technological and commercial capabilities, leading to higher job growth over time for this group of firms.

The authors conclude from the evidence reviewed that many SMEs are indeed capable of sustaining international competition by building strong technological and commercial capabilities. They note the OECD's finding that SMEs are not yet involved in the global economy to their full potential, and they call for a more accurate assessment of the contribution of SMEs to the global economy.

**“SMEs...are making an increasingly important contribution to global manufacturing activities.”**

**-Élisabeth Lefebvre and Louis A Lefebvre**

active abroad and rely increasingly on the development of foreign markets to ensure their growth. It is thus essential to examine how they perform in international markets and how they can improve their export performance. With this objective in mind, Élisabeth Lefebvre and Louis A. Lefebvre study the role of factors such as technological and commercial capabilities as determinants of export performance in SMEs, in Industry Canada's Occasional Paper Number 26, entitled *SMEs, Exports and Job Creation: A Firm-Level Analysis*.

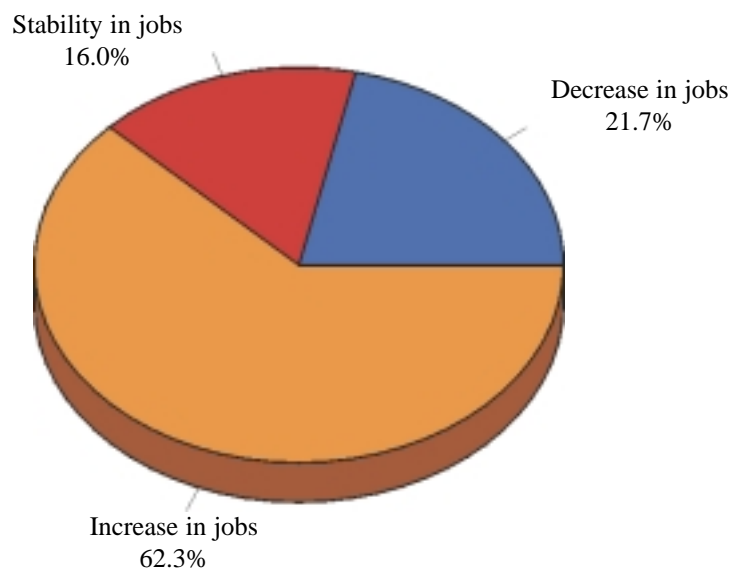
In general, the authors find that Canadian SMEs became increasingly active on foreign markets over the period 1994-97. The strongest determinants of export activity are: import activities, R&D, access to distribution, knowledge intensity and firm size. Product diversification, on the other hand, is negatively related to export performance.

The innovative capabilities of SMEs are a strong determinant of export performance but the relative importance of this factor varies with the knowledge intensity of the industrial sector in which these firms are actively involved. In high-knowledge industries, technological capabilities are

edge industries, R&D and knowledge intensity appear among the five strongest determinants. In the authors' view, this suggests that international competition is indeed knowledge-based.

With respect to job creation, the authors find that an expansion in exports is associated with an increase in the SMEs' workforce. This positive

Employment Changes in SMEs Experiencing Export Expansion  
1994-97



Source: Lefebvre and Lefebvre, *SMEs, Exports and Job Creation: A Firm-Level Analysis*, Occasional Paper Number 26, Industry Canada, December 2000.

## The Economic Determinants of Innovation

Economic growth theory ascribes a special role to innovation. In general, firms and countries that show more evidence of innovation are richer and grow faster. As a result, innovation has become a key focus of policy makers. Yet, despite a broad consensus on the importance of innovation, there is less agreement on what drives the innovation process and what are the most appropriate policies to encourage it. In order to provide more insight into the process of innovation, Randall Morck and Bernard Yeung offer an overview of the subject in Industry Canada's Occasional Paper Number 25, entitled *The Economic Determinants of Innovation*.

According to the authors, the importance of innovation derives from the fact that, in the knowledge-based economy, the primary competition is competition to innovate first, not competition to cut prices, as standard economics posits. Because exclusive ownership of an innovation bestows monopoly power, such monopolies reward investment in innovation. But unlike standard economic theory monopolies, innovation-based monopolies are temporary, for they last only until another innovator makes yesterday's innovation obsolete. Economic theory also suggests that intellectual property rights (IPRs) encourage more innovation by prolonging these monopolies and increasing the rewards to successful innovators. The authors note however that empirical studies seem to indicate that IPRs actually slow innovation by letting past winners rest on their laurels.

Morck and Yeung find that size matters. Larger firms have an advantage in innovations where large amounts of equipment are required. In general, such capital-intensive research is

focussed on refining previous innovations. Radical innovations, on the other hand, are associated with smaller firms.

**“In a knowledge-based economy, the primary competition is competition to innovate first...”**

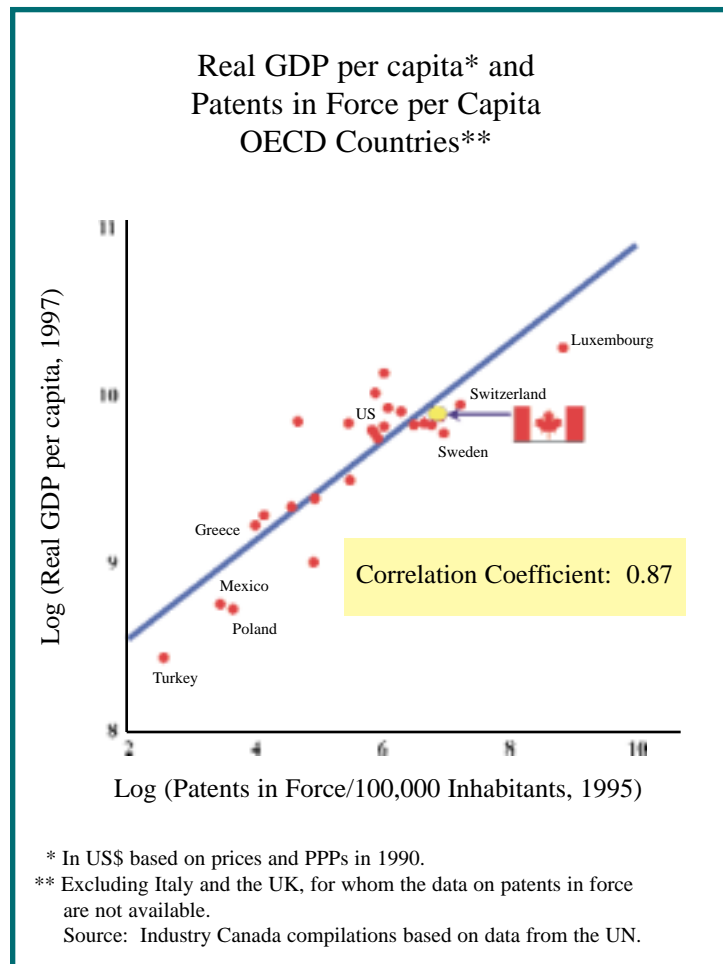
**-Randall Morck and Bernard Yeung**

They also highlight the tendency of innovative firms to form geographical clusters. Although a number of theories have been advanced to explain this, the authors conclude that the data seem most consistent with concentrations of skilled workers attracting firms that need them, these firms in turn attracting more skilled workers, in a positive feedback loop. If so, pools of skilled labour would seem to underlie cluster formation.

Their review shows that corporate governance also seems to matter. In their view, many of the classical capital budgeting tools used by corporate managers work poorly in assessing the returns to innovation. Newer and perhaps more appropriate techniques are being developed, but

they have not been applied in Canada to any significant extent. As well, incentive schemes and corporate intellectual property rights regimes that let innovative employees own stakes in their innovations appear to foster "basic research" within firms.

Morck and Yeung's wide-ranging review also identifies other key factors impacting innovation, including taxation, social structure and the existence of a competitive, knowledgeable financial system. Overall, their paper provides a comprehensive and useful overview of the complex structure of interdependent issues facing policy makers with respect to innovation.





## DISTINGUISHED SPEAKERS SERIES



### ***Productivity Growth and the Information Revolution***

***Paul David***  
***Stanford University***

Over the past forty years, computers have evolved from a specialized role in information processing to become a general purpose tool used virtually everywhere. This new technology has caused changes in patterns of work organization and worker productivity, job creation and loss, and, ultimately, prospects of economic growth and quality of life. In spite of this, there are wide divergences of opinion about the link between progress in information technologies and the productivity performance of the economy at large. Paul David addressed these issues in a lecture entitled *Productivity Growth and the Information Revolution*, presented on March 31, 2000.

He argued that the anomalous slowdown in total factor productivity growth despite investment in information and communications technology in the United States is best explained by the fact that the economy is going through a long transition phase. As a result, the potential which will be realized is likely to be much more arduous, costly and drawn-out than was originally assumed. A similar decades-long transition phase occurred when electrical power displaced

steam power in industry.

It should not be surprising, therefore, that the supplanting of the old industrial regime by one built around information processing and its distribution via electronic networks has been a process in which disruption has been as manifest as improvements in efficiency. It should

have been anticipated that this transition would entail some reduction in the productivity of old assets and much new investment in ventures that remain experimental and adaptive in nature. As well, the "general purpose" trajectory followed by the development of the personal computer has reduced the price-

performance ratio of the hardware, without producing commensurate savings in the resource costs of carrying out many specific tasks.

At least three new directions are emerging in commercial applications which will have beneficial consequences for productivity. First, a growing range of purpose-built and task-specific information technologies, such as supermarket scanners and other data logging devices, has become available. Second, networking capabilities and the emergence of a networked environment are underpinning a re-configuration of work organization. Third, the development of Internet technology is introducing an entirely new class of organization-wide data processing applications. David concluded that these trends have the potential to yield faster productivity growth in the future.

**“Seen in longer historical perspective... recent developments hardly appear unprecedented and paradoxical..”**

- *The anomalous slowdown in total factor productivity growth despite rapid investment in information technology is characteristic of a transition from one industrial regime to another.*
- *The transition from steam to electricity also required several decades to work its way through the economy and realize its full potential.*
- *The general purpose trajectory followed by the development of the personal computer has limited productivity gains.*
- *The emergence of more specialized information appliances and the impact of networks on the organization of work have the potential to raise productivity .*



## *The Economic History of the Twenty-First Century*

*J. Bradford De Long*  
*University of California, Berkeley*

The past two centuries have seen a population explosion in the number of humans alive on this planet and an explosion in the level of economic productivity. On March 20, 2000, J. Bradford De Long shared his vision of how these trends will develop over the next century in a lecture entitled *The Economic History of the Twenty-First Century*. He focussed on three key trends: population, incomes and relative inequality, taking a relatively optimistic point of view with respect to the first two, but a more pessimistic view with respect to inequality.

He argued that by the middle of the twenty-first century, the population explosion will be largely over. All but a very few countries will have completed their demographic transitions and the principal domestic economic problem facing nations will not be educating the young and equipping a growing labour force, but caring for the old. According to De Long, one of the strongest regularities observed in social science is the demographic transition. Once the level of a country's agricul-

tural technology has progressed enough that child labour no longer enables a large increase in the family's production, and once women learn to read, the high birth rates that generate rates of natural population increase in excess of one percent per year come to an end. The population of North

America, however, is likely to double over the next century as a result of immigration.

The speaker also predicted that the world of the second half of the twenty-first century would appear to us remarkably rich. The growth in material wealth and new technology will continue. Overall, by 2050 a quarter of the people in the world (rather than a twentieth, as is the case today) will have a material standard of living higher than that of the average citizen of Canada or the United States today. On the pessimistic side, he predicted that the world will be, in relative terms, at least as unequal a place as the world is today: the gap between rich and poor may be an even greater multiple of the poor's income as the relative technology gap between rich and poor continues to grow.

De Long cautions that this relatively optimistic scenario could be overturned by several possible catastrophes—nuclear war, bioterrorism, or ecological distress—but his outlook is fundamentally positive.

**"Odds are that the world of the second half of the twenty-first century will appear to us to be remarkably, filthily rich."**

- *By the middle of the twenty-first century, the population explosion will be largely over.*
- *As a result, developing countries will come to resemble industrial nations in demographic structure.*
- *The growth in material wealth and new technology will accelerate.*
- *The gap between rich and poor may grow as the technology gap between rich and poor countries continues to grow.*



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