

## Micro-Economic Policy Analysis Branch Bulletin

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## Development: The Conflict Between Catching Up, Competitive Advantage, and Sustainability

Development is a very broad concept that means many things to many people. It is linked to growth as well as to the stage of advancement of a society and to the level of economic and social conditions. Economic development is concerned with issues such as trade and investment liberalization, knowledge facilitation and technology transfers, increased participation in the world economy, and generally raising regions from a lower to a higher stage of development. Regional development is concerned with getting poorer regions to catch up to richer ones. Regions, in this sense, may be within a country or across countries, and comparisons can be made among "developed" or "developing" regions, or between both of these types.

Lastly, there is the concept of sustainable development, or development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This is an approach to development that integrates and contributes to economic, environmental, and social objectives

The theme of development is also the kernel binding together the articles in this issue. Philippe Crabbé guides us through the ideological debate about the concept of sustainable development, while Peter Hardi and Stephan Barg explore the practical limits to its measurement. Serge Coulombe examines the issue of convergence – that is, the catching up of poor economies with rich economies, whether at the regional or the international level. Foreign investment brings with it the acquisition of new technologies, management approaches, and corporate governance arrangements; these are key components on the road to growth and in the transition to a knowledge-based, sustainable economy. The issue of trade and investment policies is the subject of two articles in this edition of *Micro*, one devoted to a study by Ronald Hirshhorn and the other to a lecture delivered by Gary C. Hufbauer. Barry Bosworth's lecture contributes to the observation that capital accumulation and increases in educational attainment are essential factors in moving from a lower to a higher stage of development. Finally, Erwin Diewert contributes an explanation of the slowdown in productivity growth in the industrialized world.



## INDUSTRY CANADA RESEARCH AND PUBLICATIONS PROGRAM

### RECENT RELEASES

#### WORKING PAPER SERIES

No. 19: *Inter-Industry and U.S. R&D Spillovers, Canadian Industrial Production and Productivity Growth*, Jeffrey I. Bernstein.

This paper examines the extent to which inter-industry and intra-industry R&D spillovers exist from U.S. to Canadian industries, and determines the production cost, factor intensity and productivity growth effects associated with these spillovers.

#### OCCASIONAL PAPER SERIES

No. 18: *Reducing Regulatory Barriers to Trade: Lessons for Canada from the European Experience*, Ramesh Chaitoo and Michael Hart.

This paper reviews the European experience with removing regulatory barriers to trade, and assesses its relevance to Canada in promoting freer trade and providing policy options to strengthen the liberalization process.

No. 19: *Analysis of International Trade Dispute Settlement Mechanisms and Implications for Canada's Agreement on Internal Trade*, E. Wayne Clendenning and Robert J. Clendenning.

This paper provides an update of recent developments and changes to dispute settlement mechanisms, as well as an analysis of the implications for the dispute settlement mechanism established under the Canadian Agreement on Internal Trade.

### FORTHCOMING

#### WORKING PAPER SERIES

No. 20: *Information Technology and Labour Productivity Growth: An Empirical Analysis for Canada and the United States*, Surendra Gera, Wulong Gu, and Frank C. Lee.

No. 21: *Capital-embodied Technical Change and the Productivity Growth Slowdown in Canada*, Surendra Gera, Wulong Gu, and Frank C. Lee.

#### DISCUSSION PAPER SERIES

No. 6: *International Market Contestability and the New Issues at the World Trade Organization*, Edward M. Graham.

### ANNOUNCEMENTS

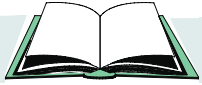
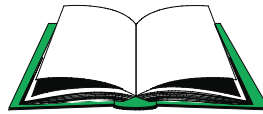
#### UPCOMING DISTINGUISHED SPEAKERS LECTURES

April 30, 1998: *International Comparisons of Prices and Quantities*, Robert Summers.

May 22, 1998: *Wage Inequality from Technical Change and Global Competition*, Edward E. Leamer.

May 29, 1998: *How Much Do National Borders Matter?*, John Helliwell.

*MICRO* is a quarterly newsletter highlighting micro-economic research findings, published by the Micro-Economic Policy Analysis Branch of Industry Canada. Abstracts of Industry Canada research volumes, and the full text of working papers, occasional papers, discussion papers, and *MICRO* can be accessed via STRATEGIS, the Department's online business information site, at <http://strategis.ic.gc.ca>. For more information about our research publications, or to place an order, contact the Micro-Economic Policy Analysis Branch, Industry Canada, 5th Floor, West Tower, 235 Queen Street, Ottawa, ON, K1A 0H5. Telephone: (613) 952-5704; facsimile: (613) 991-1261. ISSN 1198-3558.



## FEATURED RESEARCH

### ***SUSTAINABLE DEVELOPMENT: PASSING FANCY OR PRAGMATISM?***

**S**ustainable development (SD) is a phrase much bandied about but little understood. The term was coined in 1980 by an environmental non-governmental organization, the International Union for the Conservation of Nature and Natural Resources. The concept of sustainable development quickly garnered political support and spread swiftly, especially in developed countries. It was widely disseminated by the United Nations through the Brundtland Commission Report and was to be implemented internationally at the Earth Summit in Rio de Janeiro in 1992.

The Brundtland definition describes sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition is deliberately vague so as to appeal to all groups of people and to induce them to develop their own, more substantive interpretations of the term. The definition allows everyone to have a different conception of sustainable development, and it enables many groups to champion their particular version of SD.

In a recent paper,\* Philippe Crabbé endeavours to identify the main characteristics of sustainable development found in the literature. According to Mr. Crabbé, if SD is to be more than a passing fad, it must be defined precisely and its implications for society as a whole, as well as for the major social groups, must be explicit. He asserts that SD's sphere of application goes beyond economics to reach into the realm of ethical, societal, institutional, and environmental concerns as well. Indeed, the ethical aspects of SD are what distinguishes it from environmental economics. Environmental economics considers the management of environmental public goods in an economy without questioning the objective of maximizing present value, whereas SD is concerned first and foremost with intergenerational equity and requires a fundamental

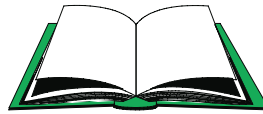
reorientation of ethics towards the future. The fact that ethical values related to development, to the quality of human life, and to respect for nature are multiple and overlapping is one of many factors that make SD difficult to "pin down."

Sustainable development as a concept can be likened to a three-legged stool, with each leg – environmental sustainability, social sustainability, and economic sustainability – equally important in ensuring the well-being of current and future generations. Environmental sustainability requires that renewable resources, as well as non-renewable resources and their potential substitutes (possibly including renewable resources), be exploited on a sustainable-yield basis so that the physical harvesting rate does not deplete the stock of resources. Social sustainability is related to social capital, including the moral, cultural, organizational, and political stock of society. And economic sustainability requires full-cost pricing and the constancy of the value of the capital stock.

Mr. Crabbé identifies eight major features of sustainable development:

- 1) it is concerned with development, not with growth;
- 2) the economic system is an open system with respect to its physical environment;
- 3) factors of production are complementary to natural capital;
- 4) equity, both intergenerational and intragenerational, must be respected;
- 5) socio-ecological decisions must be decentralized;
- 6) there is a need to reinforce property rights on the environment, to internalize environmental externalities, and to determine the public-good dimension of many environmental services;
- 7) there is a need to take an intergenerational perspective in order to lengthen the horizon of economic decisions; and,
- 8) there is a need to apply precautionary and irreversibility principles to socio-ecological decisions.

*Sustainable development lends itself most readily to analysis at the global, or at least, international level.*



These features help to prescribe the type of growth that is desirable and sustainable.

The concept of SD lends itself most readily to analysis at the global, or at least international, level. The pervasiveness of environmental externalities and global public goods transforms all economies into open economies that interact with each other through traded and non-traded commodities. However, measures of sustainability are national even in open economies. No single or composite measure exists to evaluate global sustainability. Environmental standards are also national unless the environmental effect crosses borders and is subject to international agreements.

While it is difficult to conceive of a single economy as sustainable, Mr. Crabbé nonetheless reports that round-table processes have developed in Canada at the federal, provincial, local, and sectoral levels. The round-table approach is a means of encouraging participation in the definition and implementation of sustainable development at a broad level. Various stakeholders are involved in seeking consensus about courses of action and formulating principles. The Canadian experience had shown that there are limitations to the process as well, reports Mr. Crabbé, especially in the area of intragenerational equity.

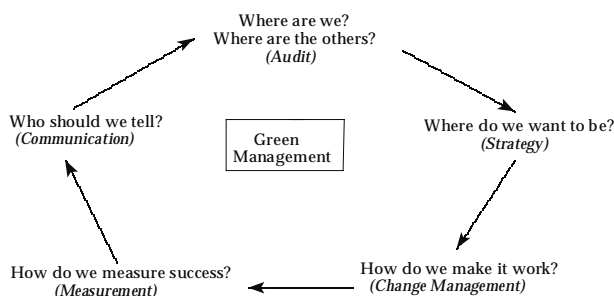
Firms are the primary engine of sustainable development. They have the financial resources, the technical knowledge, and the institutional capacity to implement it. Mr. Crabbé reports that firms' attitudes towards the environment have been changing, thanks to such factors as government-imposed regulation and incentives to changing internal conditions within the firm (for example, shifting management attitudes) through various external factors such as the emergence of "green" consumerism and the damage to reputation, fines, and lawsuits arising from environmental industrial accidents. And of course, companies are also discovering that reducing material and energy intake, increasing energy efficiency, and decreasing waste all save money. The new attitude of business towards the environment is depicted in the management wheel below.

*\* Sustainable Development: Concepts, Measures, Market and Policy Failures at the Open Economy, Industry and Firm Levels Occasional Paper # 16  
By Philippe Crabbé*

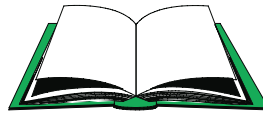
## **PITFALLS IN MEASURING SUSTAINABLE DEVELOPMENT**

It has been more than ten years since the release of the Brundtland Commission Report and about six years since the 1992 Earth Summit in Rio de Janeiro. The sustainable development (SD) movement has quickly gained popular and political support in the wake of these two events. Now, we are all doing our part, no matter how small, to contribute to the overall goal by such gestures as separating out of our garbage our compostables and recyclables or refusing to purchase products with excessive packaging, or in a multitude of other ways.

The SD movement is "picking up steam and leaving the station," and we are all aboard. But how do we know that we are making any progress towards sustainable development? The question is simple enough, and its importance is equally clear. Peter Hardi and Stephan Barg, with Tony



**The green management wheel**



*There are two different approaches to sustainable development measures in Canada -- one by Environment Canada, and the other by the National Round Table on the Environment and the Economy.*

Hodge and Laszlo Pinter attempt to shed light on this very question in a recent study reviewing the leading approaches to the measurement of sustainable development.\*

There are many reasons for measuring progress towards sustainable development, ranging from a general commitment to the environment and to the sustainable and equitable use of natural, human, and social resources, to specific commitments to more efficient government operations and institutional accountability. Unfortunately, there is no general agreement on what should be sustainable or what "sustain" means, and little agreement on what can or should be measured. So what, if anything, are we measuring?

Messrs. Hardi et al. focus their attention on key examples of ongoing measurement work. Their survey ranges from international cases through national and sub-national projects to local authorities and corporate examples. They examine the best known or most promising experiments with sustainable development measures and exclude experimental and theoretical approaches that have not yet been tested. All of the approaches described have been designed to assess performance by measuring changes in the environment, the economy, society, and people. However, at the outset, the authors stress that there is no standardized method for measuring "sustainability" or "sustainable development performance": no textbook provides a methodology that is generally accepted and applicable across regions and sectors.

At the international level, there are several approaches to measuring sustainable development. For example, there is an indicator framework approach being pursued by the UN Commission on Sustainable Development (UNCSD). Another approach is one developed by the World Bank, originally to measure wealth but refashioned to measure sustainable development. A third methodology is being applied by the UN Division of Statistics and by several national statistical offices (including Statistics Canada), and focuses on how to calculate a "green" gross domestic product (GDP).

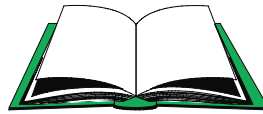
After the Rio Summit in 1992, national governments pledged to report their progress towards sustainable development to the UNCSD annually. There are two conceptually different approaches to SD measurement frameworks and indicators for national use in Canada. One is based on the work of Environment Canada and includes a comprehensive, national set of environmental indicators that profiles the state of the environment and helps to measure progress towards sustainable development. The other is based on work of the National Round Table on the Environment and the Economy (NRTEE) that is aimed at defining a new, whole-system approach to a set of indicators that captures the values implied by SD, with parallel concern and respect for the ecosystem and the people within. Efforts at SD measurement at the national level are also taking place outside Canada, for example in the Netherlands and the United States.

Messrs. Hardi et al. also identify and report on projects developed at a variety of sub-national levels. Numerous examples can be found at the provincial and state levels, and at the local community level. Still others focus on ecosystems rather than geopolitical units, such as the Great Lakes region or British Columbia's "southern interior ecoprovince."

Efforts are also under way at the corporate level. Broadly speaking, corporate-level reporting can be broken down into four categories, the first two of which are legally required measurements (e.g., regulated pollutants) and measurements of other emissions (such as non-hazardous solid waste). The third category consists of broader sustainable-development measurements that capture economic, environmental, and human impacts. Often, measurement and goal setting for these types of measures are expressed in terms of ongoing improvement in the absence of specific targets. Full SD measurement at the corporate level is the fourth category. Unfortunately, no framework relating the scale of the corporation to global sustainable development exists yet.

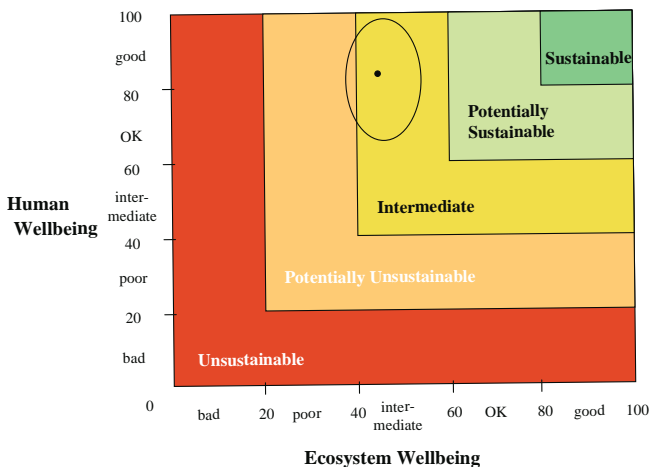
Several experimental SD measurement tools have also been developed. Three are of particular interest – the

*The ideal measure of sustainable development would be holistic and include the essential elements that define sustainable development, have a well-defined scope, and focus on priority issues.*



"ecological footprint model," the "barometer of sustainability," and the "genuine-progress indicator." The ecological footprint model calculates in a single aggregate index the virtual amount of productive land area that an entity (person, city, nation, world) requires for the maintenance of its resource consumption and for waste assimilation. The barometer of sustainability is a combination of ecosystem and human well-being indicators that are scored against desired levels. These indicators are chosen only if it is possible to define them in numerical terms with regard to desirability, acceptability, and unacceptability. Finally, the genuine-progress indicator seeks to develop estimates for the economic contributions of more than 20 aspects of economic life that GDP (the traditional measure of economic well-being) ignores.

**Barometer of Sustainability**



While no single particular set of sustainable development indicators is endorsed by all experts and practitioners, the authors suggest several guidelines for developing and using SD measurement tools and indicators. As a starting point, they suggest, it is helpful to establish a vision of sustainable development and clear goals that provide a practical definition of that vision in terms that are meaningful for decision-making purposes. The content of the measure should cover four closely related issues:

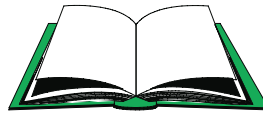
- 1) it should be based on a holistic, or whole-system, approach, with equal consideration being given to the well-being of the human, ecological, and economic subsystems, their component parts, and the interactions between the parts;
- 2) it should include the essential elements that define sustainable development (i.e., issues of equity, the ecological conditions supporting life, and the success of economic development);
- 3) it should have a well-defined scope – that is, the measurement of progress should focus on a pared-down, explicit set of categories and cover a temporally and spatially adequate range; and,
- 4) it should focus on priority issues.

Finally, Messrs. Hardi et al. suggest that the process of measurement should be open and transparent, and be based on broad public participation, and that the findings should be clearly and effectively communicated.

*\* Measuring Sustainable Development: Review of Current Practices Occasional Paper Series # 17 by Peter Hardi and Stephan Barg, with Tony Hodge and Laszlo Pinter.*

## **ARE CANADA'S REGIONAL DISPARITIES A LONG-TERM PHENOMENON?**

In a recent Industry Canada working paper,\* Serge Coulombe takes a historical look at Canada's regional disparities, focusing on their links with economic growth and on the convergence of disparities. Within Canada, regional disparities in per capita income and output, as well as in worker productivity, have tended to diminish over the past half century. Moreover, says the author, disparities between the Canadian provinces and 12 U.S. border states have also narrowed. This finding is based on a comparison between the 10 provinces (the territories are excluded) and 12 neighbouring states – Washington, Idaho, Montana, North Dakota, Minnesota, Michigan, Ohio, Pennsylvania, New York, Vermont, New

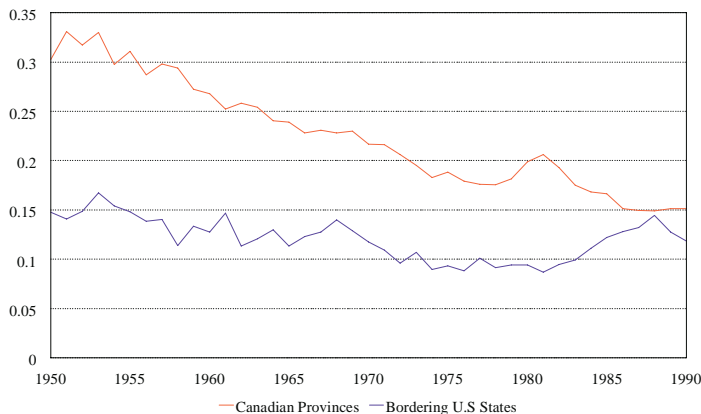


*Despite a long-term trend towards convergence, large per capita income disparities remain between the different regions of Canada.*

Hampshire, and Maine – that serve as a control group because of their close resemblance with the adjacent regions of Canada in terms of economic geography.

Mr. Coulombe documents a trend towards convergence in per capita income disparities in the 10 provinces of Canada. In contrast, the per capita income dispersion index for the neighbouring U.S. states has not changed much in the postwar period. In 1950, the relative dispersion index of per capita personal income in the different regions of Canada was almost three times what it was in the border states. The gap has narrowed since then because convergence in Canada has brought per capita income disparity levels closer to the levels on those 12 states. Nonetheless, large per capita income disparities remain between the different regions of Canada.

Personal Income Per Capita  
Standard Deviation of Logarithms



The difference between the Canadian provinces and the neighbouring states with regard to regional disparities in per capita output is also a long-term phenomenon. To assess the reasons for this, the author disaggregates the variance in per capita output differences between the two regions into three components: worker productivity, the unemployment rate, and the participation rate.

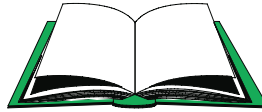
Mr. Coulombe finds that interregional differences in per capita output between the Canadian provinces persisted much longer so than those between the U.S. states. He suggests that this is because of greater disparities in Canadian employment and participation rates and not because of productivity differences between the two regions. This, he argues, indicates that the problem of regional disparities in Canada in the 1990s arises from factors relating to the labour market. He notes that in the border states with low productivity, employment and participation rates are relatively high, indicating that Americans choose to live in these regions only to the extent that they can work there. In contrast, many Canadians choose to live in low-productivity provinces even though they cannot find work there.

Finally, Mr. Coulombe turns his attention towards the speed at which regional disparities in Canada are converging. The results suggest that the slowdown in the convergence of regional disparities in Canada observed since the early 1980s is explained by the fact that regional disparities in worker productivity reached their long-term equilibrium during that decade. Further catching-up of differences in productivity and per capita output, based on diminishing returns, is unlikely.

Thus, concludes Mr. Coulombe, market forces may have finally played their part to eliminate, as far as possible, regional disparities in worker productivity since the 1960s. In other words, the forces of neoclassical convergence, which cause physical and human capital to accumulate more rapidly in regions where the capital is rare and, consequently, the rates of return are highest, are no longer able to diminish the needs for interregional redistribution in Canada.

*\* Regional Disparities in Canada: Characterization, Trends and Lessons for Economic Policy  
Working Paper Series # 18  
by Serge Coulombe*

*Industry Canada research suggests that Canada derives substantial net benefits from foreign direct investment.*



## **INVESTMENT RESEARCH AT INDUSTRY CANADA**

**T**he microeconomics research program of Industry Canada's Micro-Economic Policy Analysis Branch has been in existence for a few years now. Over this period, we have produced a considerable body of research. We will soon publish the twentieth study in our working paper series, and have almost reached the same point in our "occasional paper" series. At the same time, we have published eight conference proceedings. Thus our publication program has clearly reached a critical mass.

This publication, MICRO, is our primary vehicle for disseminating information about our research. The articles present an accessible summary highlighting a particular study or collection of conference papers. The primary focus of these efforts is on the topic at hand, with little consideration being given to linkages with other research. A recent discussion paper remedies this omission.\* Upon reviewing our publications, we found that a considerable amount of work sought to promote an understanding of the nature and effects of foreign direct investment in Canada and Canadian investment abroad. To gain a proper perspective on the results of these studies, we asked Ronald Hirshhorn to review and report on the policy implications of this body of research on foreign investment.

Inward foreign direct investment (FDI) has been an important focus of Canadian policy over the years, highlighted by the creation of the Foreign Investment Review Agency, the agency's transformation into Investment Canada, and its eventual integration into the Industry Canada (IC) mandate. According to Mr. Hirshhorn, the evolution of Canadian policy has reflected changing perceptions about the costs and benefits of inward foreign investment. Some of the early economics literature on this subject, circa 1960, raised concerns about market dominance and the potential political power of multinational enterprises (MNEs). More recent studies, by contrast, have noted the rivalry among MNEs themselves, along with the trends towards increasingly competitive global markets.

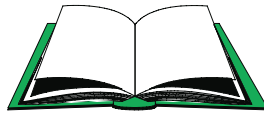
It has long been recognized that FDI can help host economies acquire technology and other important assets. Besides capital and technologies, FDI may bring new management approaches and corporate governance arrangements. Mr. Hirshhorn reports that the IC papers support the view that Canada derives substantial net benefits from FDI. Key findings suggest, amongst other things, that lags in transferring technology tend to be shorter when the transfer occurs within a firm rather than through licensing and other external arrangements; that the higher average productivity of foreign affiliates has had a positive net effect on total factor productivity; and that the highly productive nature of inward FDI has positive impacts on economic growth and jobs.

Despite the long-standing view that FDI brings net benefits, Canada, and indeed all countries, have limited foreign investment and/or applied special restrictions to the operations of foreign-owned firms in certain sectors. Finance, broadcasting and cultural industries, telecommunications services, energy production and public utilities, transportation, and the natural resource sectors make up the usual list of candidates for restrictions on inward FDI. Mr. Hirshhorn argues that the costs that result from reducing foreign investment need to be considered, as well, in assessing the role of investment restrictions as part of a strategy designed to counter the actions of other governments and to increase Canada's leverage in bilateral and regional negotiations.

Finally, according to the author, the results of the studies imply that government intervention in inward FDI – to further increase the gains arising from individual foreign investment transactions, for example – must be limited. Government efforts to extract concessions from foreign investors must not significantly discourage or distort foreign investment.

In contrast to the extensive work surrounding inward direct investment, somewhat less attention has been paid to outward FDI. The IC research supports the view that Canadian investment abroad contributes to the growth of the Canadian economy, and it documents linkages





*Government should focus efforts on establishing an overall policy framework that is conducive to Canada's full participation in the global economy.*

between outward FDI and a more competitive and dynamic economy, observes Mr. Hirshhorn. For example, income receipts from Canada's growing stock of outward investment made a contribution to income growth and to improvements to the current account balance during the 1980s. Other IC research credits outward FDI with larger-scale domestic operations, increased efficiency, and higher profitability. There is even case-study evidence suggesting that market growth through outward FDI stimulated R&D activity in Canada.

On the other hand, cautions Mr. Hirshhorn, while arguments about the labour-displacing effects of FDI lose much of their force when one takes into account the investment income generated by FDI and its contribution to exports and to increased efficiency within the home economy, there are still concerns about its impact on the composition of employment. The IC research implies that outward FDI is beneficial to higher-skilled, white-collar workers, but harmful to lower-skilled, blue-collar workers.

The broad policy implication that the author extracts from the research on both inward and outward investment is that the main focus of government should be on establishing an overall policy framework that is conducive to Canada's full participation in an increasingly global economy. There is no reason to differentiate between inward and outward FDI, he adds. Rather, the need is for an integrated approach that recognizes the role that MNEs play generally as investment bridges to the global economy and as agents of change within the Canadian economy.

The challenge facing Canada in adapting its policies is twofold, comments Mr. Hirshhorn. First, we need to ensure that the country's social and economic infrastructure helps Canadian firms and Canadian workers take full advantage of the opportunities arising from inward and outward investment. Important factors in that regard include the education and training available to workers and managers, the efficiency of capital markets, the existence of competitive domestic markets, secure access to the U.S. market, and the availability of mechanisms to facilitate economic adjustments.

The second challenge involves the design of tax and regulatory policies that will promote Canadian interests in a world where investment is extremely mobile. Mr. Hirshhorn remarks that in developing environmental, labour, and social regulations, policy makers need not be constrained to follow the lead of other countries, but they must consider how their decisions affect the relative costs and benefits of doing business in Canada.

Finally, on the international front, Mr. Hirshhorn argues that as well as contributing to the current multilateral efforts (e.g., the negotiations on the Multilateral Agreement on Investment within the OECD), Canada must continue to work with other countries to develop rules covering relevant issues in the areas of competition policy, technology policy, taxation, and environmental and labour regulation. The focus, he suggests, should be on pursuing opportunities both regionally and multilaterally to reduce intergovernmental frictions and to create an environment that fosters efficient international investment decision-making.

*\* Industry Canada's Foreign Investment Research: Messages and Policy Implications  
Discussion Paper # 5  
by Ronald Hirshhorn*



*What made East Asia stand apart from the other regions was its strong capital accumulation aided by significant increases in educational achievement.*



## DISTINGUISHED SPEAKERS SERIES

### **BARRY BOSWORTH CLARIFIES THE EAST ASIAN GROWTH STORY**



Factor accumulation, not industrial policy or "market-friendly" policies, is at the heart of the Asian growth process, says Barry Bosworth, Senior Fellow at the Brookings Institution. In a September 1997 Distinguished Speakers in Economics presentation, Dr. Bosworth outlined the results of a study on the determinants of economic growth across some eighty-eight countries, including most of East Asia, South Asia, and Latin America and the Caribbean, along with the OECD countries, China, and a good selection of countries in Africa and the Middle East.

The key feature of the study, said Dr. Bosworth, is that it analyses a large number of economies at different stages of development within a consistent framework. The approach disaggregates growth between various components in what is known as a generalized growth accounting framework. The advantage of this approach is that it does not require that assumptions be made about the specific form of the underlying production function.

Another feature of the study is that it is based on actual estimates of the capital stock instead of using the rate of investment as a proxy for capital. This, according to Dr. Bosworth, eliminates much of the downward bias inherent

in previous studies when it comes to evaluating the role of capital. He argued that using the investment rate as a proxy is only valid if the ratio of capital to output holds steady. However, this is not the case for many countries, which start off with very low capital-to-output ratios and, thanks to high rates of investment, see these ratios rise over time.

What emerges, after correcting for the downward bias in capital estimates of other studies and applying a standardized methodology, is a consistent set of estimates of the "proximate" determinants of growth for a large group of countries. This, in turn, enables one to apportion the causes of growth between factor accumulation and the increased efficiency with which factors are used.

- *Total factor productivity growth played only a small role in East Asia's success.*
- *Exceptionally strong capital accumulation was the major contributor to the East Asian miracle.*
- *The East Asian governments also achieved significant increases in the educational attainment of their population.*
- *Other factors, such as prudent macroeconomic policies, rapid export growth, and improvements in savings rates also contributed.*
- *The evidence is not supportive of roles for industrial policy and the liberalized markets.*

Turning his attention to the East Asian experience, which was the focus of his presentation, Dr. Bosworth summarized his findings in a number of important observations. First, total factor productivity growth, or the increased efficiency with which factors of production are combined, played a relatively small role in East Asia's success, although it did contribute positively towards growth in output. What made East Asia stand apart from the other regions was its strong capital accumulation.

"That's the main message," said Dr. Bosworth, "but a number of other factors also played a strong supporting role." Growth such as that experienced by the East Asian economies is not accomplished simply through greater factor accumulation. The East Asian governments also



*It appears that the East Asian economies have done well because they were willing to make the sacrifices necessary to accumulate physical and human capital at very high rates.*

achieved significant increases in the educational attainment of their population. Government expenditures tended to be concentrated on the lower grades, particularly where literacy rates were low. Spending at the post-secondary level was limited and was focused on strengthening technical skills, noted Dr. Bosworth. He estimated that the direct effect of increased schooling on growth in East Asia was the strongest of any region, adding 0.6 percentage points to annual growth.

Regarding the so-called strategy of industrial policy, "our decomposition clearly implies that this debate is misplaced," Dr. Bosworth declared. Similarly, arguments stressing the role of free markets in East Asia are likely to be without substantial base, since a detailed examination of the situation reveals highly disparate trade policies pursued by individual high-growth countries.

Still, other factors have contributed to the East Asian success story. Dramatic improvements in saving rates, in particular, were the hallmark of successful development in many countries. Rapid export growth is another feature shared by these countries.

On top of this, the East Asian countries have tended to follow prudent macroeconomic policies. Average fiscal deficits have been low, limiting the need for inflationary financing. Inflation rates have tended to be moderate and real interest rates have been stable. And black-market exchange rate premiums have been small.

Overall, summarized Dr. Bosworth, because of the exceptionally strong capital accumulation and of great advances in educational attainment, it is difficult to maintain either that the East Asian experience reflects the benefits of open, liberalized markets or that it illustrates the efficiency gains of activist governmental industrial policy. Instead, it appears that the East Asian economies have done well because they were willing to make the sacrifices necessary to accumulate physical and human capital at very high rates.

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## **GARY HUFBAUER ON TRADE AND INVESTMENT ISSUES**



In a recent Distinguished Speakers in Economics presentation, Gary C. Hufbauer, Vice President and Director of Studies at the (U.S.) Council on Foreign Relations, shared with Industry Canada staff his views on the issues and challenges facing trade and investment policies over the next five to ten years.

The broad shape of the world economy over the next decade will be characterized by "more of the same," said Dr. Hufbauer. That is to say, the so-called "Washington consensus" will endure, with macro policies continuing much along the same lines as today and micro policies concentrating on further privatization efforts, increasing the transparency of regulations, opening trade and investment policies, and so on.

The Northern European and Asian models of capitalism will also be gradually superseded by the Anglo-Saxon (largely North American) model. Common practices such as lifetime employment and large external programs for training will be replaced by the hurly-burly, competitive style of North America.

The next decade or so will also see increasing competition for investment dollars between countries; rising health care costs and social security burdens will put fiscal pressures on the OECD countries; tax systems will shift towards a consumption base and away from an income base; sub-federal levels of government will become more powerful in shaping the economic agenda; and periodic crises will rock financial markets.

Those were the broad brushstrokes that Mr. Hufbauer used to paint the economic landscape underlying his expectations about the issues and challenges facing trade and investment policies. It is important to keep these background assumptions in mind when discussing the



*There will be increasing pressures for sub-federal-level subsidies that the federal level of government will be unable to discipline.*

issues facing trade and investment, he added.

The first issue that Dr. Hufbauer discussed was the problem of the asymptotic approach to zero barriers by the OECD countries. Ten years from now, tariffs will be very low and quotas will be mainly abolished across most sectors. The remaining trade barriers will surround special-interest or difficult sectors, such as textiles and apparel, merchant marine, parts of agriculture, and anti-dumping and other safeguard areas. Meanwhile, the "emerging Big Five" countries (China, India, Brazil, Russia, and Indonesia) will retain relatively high border barriers, as will many smaller emerging economies. Under these circumstances, warned Dr. Hufbauer, the "mercantilistic arithmetic" that has supported past trade agreements will prove much harder to compute: the OECD countries will not have much by way of obstacles to reduce in quid pro quo negotiations towards reducing barriers in the emerging economies.

A second issue is that competition for investment will significantly erode the corporate tax base and further expand subsidization. A review of the economic literature reveals a high degree of sensitivity, or what economists call elasticity, between investment and taxes (or other cost differentials). According to Dr. Hufbauer, there will be a tendency for governments to overbid on tax breaks or other subsidies because the costs of such measures can frequently be disguised (as, say, infrastructure) while the benefits – good jobs, better retail trade, etc. – are viewed as demonstrations of the effectiveness of politicians. He expects to see increasing pressures for sub-federal-level subsidies that the federal level of government will be unable to discipline. He cited estimates that a 1 per cent

difference in U.S. state tax rates on corporations means about a 10 per cent difference in the amount of inward FDI received by that state, holding other considerations constant. Between countries, the elasticity is more likely to be of a magnitude of two or three instead of the magnitude of 10 between U.S. states.

Another issue is that the impact of the rapidly growing trade in services on wage differentials will likely be very different from that of trade in goods. Between 10 and 20 per cent of the increase in differentials in the U.S. wage

structure is attributable to the greater internationalization of the U.S. economy. Trade is also blamed for job insecurity. Whatever their validity, these arguments have led to widespread antagonism towards freer trade in Europe, the United States, and Canada. The coming boom in service trade is likely to affect a very different segment of the workforce – namely, highly skilled professionals. It will be their services – legal, engineering, accounting, computer programming, etc. – that will be sold electronically, not those

of the low-end service providers, such as taxi drivers, barbers, and hamburger flippers. Disputes are certain to arise about the accreditation of those doing the work; for example, will credentials recognized in India be recognized in Canada or the United States? In addition, Dr. Hufbauer pointed out, there is the matter of the taxation of services performed at a distance. Will governments attempt to tax providers of distance services? Encryption (especially of the payments system) also takes on a commercial as well as security/criminal significance in that context.

The border tax adjustment issue was also discussed. With the rise of consumption-based taxation, border taxes will become a more salient issue for a large range of

- *The Washington consensus will endure over the medium term.*
- *The "mercantilistic" approach that has supported past trade agreements will prove difficult to sustain in negotiations between the OECD countries and the emerging economies.*
- *Competition for investment will significantly erode the corporate tax base and further expand subsidization.*
- *The impact of rapidly growing trade in services on wage differentials will likely be very different from that of trade in goods.*



*The economic system of measurement is capturing the increased costs, but it is neglecting the increased consumer surplus. As a result, growth rates are biased downward.*

goods; the increase in service trade will further intensify the debate. Broadly speaking, there are two general systems of taxation: one is the origin system, where taxes are levied against the producer; the other is the point-of-consumption system, where taxes are levied on the consumer. With the first system, imports enter tax-free and exports are taxed, whereas the exact opposite occurs in the second system. Origin systems of taxation may be easier to administer, but they run against the tide towards consumption-based tax systems. The challenge will be to design destination systems that do not create an inordinate degree of international conflict, said Dr. Hufbauer.

The use of economic sanctions was the last issue dealt with by Dr. Hufbauer. The political drive to impose sanctions is quite high, despite the fact that they are confrontational and costly, and that their success rate is quite low. The major challenge will be simply to slow down the trend over the next five to ten years.

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## ***ERWIN DIEWERT DIAGNOSES DUMB PRACTICES IN THE MEASURE OF PRODUCTIVITY***



"I really have a hard time believing that we are stupider today than 25 years ago, but that is what the current productivity figures suggest," says Erwin Diewert, professor at the University of British

Columbia. If you take a look at charts showing productivity growth rates for the OECD countries over time – specifically, their total factor productivity rates – you will see an abrupt downturn towards the middle of the 1970s and a lingering weaker performance ever since. This suggests that we are stupider today than we were three decades ago, says the academic.

But today we are in a great information age, where data flows across countries are greater than ever before. Moreover, barriers to international trade are as low as they have ever been in history, so we should be enjoying the

benefits of international specialization. Why, then, are we doing so poorly, asks Professor Diewert?

There is no patent answer to this conundrum, as Mr. Diewert was to explain to Industry Canada staff in a November 1997 presentation under the aegis of the Distinguished Speakers in Economics Program. The UBC professor discussed several factors which, in his view, when taken together produce a plausible explanation of the productivity slowdown.

Part of the phenomenon has to do with the proliferation of new products, Professor Diewert argued. New products are coming to market at increasingly faster rates than ever before, yet they are costly to produce. Consider that these costs include: the costs of research and development to design the product; costs associated with gathering new capital to make the product; re-training costs for workers to adapt to the new machines; inventory costs; selling costs; and uncertainty costs related to the possible failure of the product. The benefit is, of course, broader consumer choice – what economists call "increased consumer surplus." According to Professor Diewert, the economic system of measurement is capturing the increased costs resulting from the proliferation of products but it is neglecting the increased consumer surplus. As a consequence, productivity growth rates are naturally biased downward, he says.

Another part of the explanation lies in the practice of classifying all business expenditures as intermediate inputs. Professor Diewert used the example of a business lunch. The lunch, or a certain percentage of it, is treated as a deduction from business revenues, but in fact, the speaker argued, there is a consumption benefit derived from the lunch. Again, he pointed out, the benefit does not show up in the consumption statistics: it shows up only as an increase in intermediate business expenditures and thus drags down the measure of productivity. Were this type of transaction treated as consumption rather than an intermediate business expenditure, it would show up as a benefit instead of a cost.

*The oil price shock cannot be responsible for the big productivity drop -- its share of trade in the world economy is too small.*



Yet another factor is the mismeasurement of outputs in the service industries, which account for about 60 to 70 per cent of the economy. We are not doing a good job of measuring prices and outputs in the service sector, Professor Diewert stated. Sometimes, the measurement is just very dumb, he added. For example, the official statistical measure of output in the insurance industry is obtained by subtracting claims from net premiums, but it does not take account of the fact that insurance is purchased for protection from risk. This latter measure is positive and quantifiable, whereas premiums less claims should more or less average out to around zero – or maybe even register a negative result, if one takes into account the fact that premiums are paid up front for a benefit (protection) that only comes later. This brings capital elements into the measurement of insurance output. And, continued the speaker, on the whole the national accounts approach does not lend itself well to the treatment of interest, capital gains, and the measurement of capital.

He described problems in several other areas of the service industry – banking, gambling, telecommunications, airlines, and medicine – to show the full range of possible pitfalls in the current method of measuring outputs in the service sector.

Thus there are many suspects in seeking an explanation for the productivity slowdown. But the troublesome part, said the speaker, is that all of these potential culprits – the proliferation of new products, the mismeasured increase in intermediate business expenditures, the mismeasurement of outputs in the services industries – only act gradually. None of these potential causes of mismeasurement have

sudden impacts that would explain why productivity dropped off so dramatically in the mid-1970s.

Another piece of evidence suggests a solution to this dilemma: the output-to-price growth rates. Just before 1970, inflation began to accelerate, really picking up about 1973-74 and hitting every country without exception. It remained high over the rest of the 1970s and throughout the 1980s; only in the 1990s is inflation returning to the levels seen in the early 1960s. This, according to Professor Diewert, makes one suspect that the mechanism explaining the produc-

tivity drop may be associated with the sudden increase in inflation. What mechanism could possibly be at work and have such a universal impact, affecting all countries at roughly the same time?

At first sight, the oil price shock and the resulting macroeconomic and microeconomic adjustment costs might be tapped as the main cause of the big productivity drop. However, Professor Diewert dismissed this explanation by arguing that the share of petroleum

trade in the world economy was too small and could not possibly explain the huge movements in total factor productivity that occurred at the time. Something even broader than the oil shock of the early 1970s had to be at work, the speaker maintained.

There are two contenders for this universal mechanism, he added. The first is taxes – more specifically, the system of business taxation and the lack of adjustment for the effects of inflation. According to Professor Diewert, inflation interacts with the current system of business taxation

- *Part of the phenomenon has to do with the proliferation of new products.*
- *Another part of the explanation is the practice of classifying all business expenditures as intermediate inputs*
- *Another factor is the mismeasurement of outputs in the service industries.*
- *Inflation interacts with the system of business taxation in a way that reduces the productivity of the economy as a whole.*
- *Inflation impacts on the system of allocating costs in a multi-product firm and leads to a loss of productive efficiency and broad deadweight loss to the economy.*



*Behind the scenes, all the little biases have been accumulating. We just have not invested the resources needed for the statistical system to reflect the shift from manufacturing to services.*

in a way that reduces the productivity of an economy as a whole. This is because the purchase price of a durable input exceeds the present value of the asset's tax-permissible string of depreciation allowances; as a result, the tax system implicitly imposes a real cost on users of durable inputs. As inflation rises, nominal interest rates also increase (in an approximately additive manner), or as the asset life increases, the present value of the depreciation deductions falls and drives a larger wedge between the two prices of the input. Thus, Professor Diewert pointed out, this difference in prices caused by the tax system leads to a loss in productive efficiency for the economy. He estimated that the magnitude of this choking off of productive efficiency is equal to between 1 and 3 per cent of gross domestic product.

The other broad mechanism advanced by the UBC professor is linked to the failure of traditional cost-accounting methods to deal adequately with the cost allocation problem of the multi-product firm. The current method assigns the cost of a product on the basis of its primary labour and materials costs, to which are added factory indirect expenses proportionately distributed over products by using either direct labour or direct labour plus materials as the allocator. According to Professor Diewert, there are a number of problems with this approach: 1) indirect expenses are not accurately allocated to products (for example, they do not account for "machine and organization" expenses); 2) interest charges on the use of capital equipment are specifically excluded from costs; and 3) depreciation charges are not indexed for inflation. During periods of rapid inflation, nominal interest rates rise and the neglect of interest as a cost leads to increasing errors in pricing. This, in turn, leads to a loss of productive efficiency, a misallocation of resources, and a broad dead-weight loss to the economy.

This brings us up to the present, concluded the speaker. Inflation is almost dead, so why have we not seen a recovery of productivity? His hypothesis is that the pricing problems caused by inflation were obscuring the broad measurement difficulties outlined at the beginning of his presentation. Behind the scenes, all the little biases – e.g.,

product proliferation – have been accumulating. We still have not caught up to the point of considering the benefits of increased product variety and measurement issues in services, he pointed out. If we could achieve this lofty goal, we could go home at night, secure in the knowledge that we really are not any more stupid than people were 25 years ago; we just have not invested the resources needed for our statistical systems to reflect fully the shift from manufacturing to services.

