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Micro

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Productivity Dimensions

The pursuit of improvements in living standards and quality of life are key objectives of micro-economic policy. The experience of both developed and developing countries indicate that productivity growth is the major driver of income growth. Therefore, much effort is being expended to better understand various dimensions of productivity growth. Two of the papers highlighted in this issue of *Micro* are contributions to this effort.

Richard G. Harris, of Simon Fraser University and the Canadian Institute for Advanced Research examines the role of social policy in productivity growth. In *Social Policy and Productivity Growth: What are the Linkages?*, Harris finds there is yet no conclusive evidence that more

social spending or policies that reduce inequality increase productivity growth.

The transformation of the Irish Republic from Europe's poorest country at the end of the 1980s, to one of the ten richest countries in the world has been examined by Pierre Fortin of the Université du Québec à Montréal and the Canadian Institute for Advanced Research, with significant contribution from Brendan Walsh of the National University of Ireland-Dublin. In *The Irish Economic Boom: Facts, Causes and Lessons*, he concludes that several favourable conditions as well as growth enhancing policies were behind the Irish miracle. One of Fortin's findings is that foreign direct investment was a significant factor in Ireland's success.

Upcoming Events

Social and Labour Market Aspects: North American Linkages

Industry Canada and Human Resources Development Canada are jointly commissioning a dozen papers on issues related to social and labour market aspects of North American Linkages. These will be published as an Industry Canada research volume.

Round-table on Investment

The Micro-Economic Policy Analysis Branch of Industry Canada will be holding an expert round-table on "Making Canada the Destination of Choice for Internationally Mobile Resources (IMRs)" in the fall of 2002. The purpose of this round-table will be to examine the research issues and policy challenges associated with the attraction and retention of IMRs, with a view to undertaking more in-depth research. IMRs range from manufacturing facilities, the high valued functions associated with the headquarters of multinational companies such as investment, research and development facilities and strategic planning to highly skilled human capital. Keith Head and John Ries, both of the University of British Columbia, will be preparing a "think piece", which will be the basis for round-table discussion and for commissioning research papers.

**The views expressed in the articles are those of the authors and do not reflect in any way those of Industry Canada or the Government of Canada.*

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INDUSTRY CANADA RESEARCH AND PUBLICATIONS PROGRAM

RECENT RELEASES

OCCASIONAL PAPER SERIES

No. 28 — *Electronic Commerce and Productivity Growth: Defining and Assessing the Linkages* by Steven Globerman.

WORKING PAPER SERIES

No. 36 — *Foreign Direct Investment and Domestic Capital Formation*, by Walid Hejazi and Peter Pauly.

RECENT RELEASES

DISCUSSION PAPER SERIES

No. 11 — *Social Policy and Productivity Growth: What are the Linkages?* by Richard G. Harris.

No. 12 — *The Irish Economic Boom: Facts, Causes and Lessons*, by Pierre Fortin.

THE INDUSTRY CANADA RESEARCH SERIES

Vol. 10 — *Productivity Issues in Canada*

MICRO is a quarterly newsletter highlighting micro-economic research findings, published by the Micro-Economic Policy Analysis Branch of Industry Canada. Summaries 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.gc.ca/research>. 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; e-mail: <micro.news@ic.gc.ca>; or facsimile: (613) 991-1261. ISSN 1198-3558. Canada Post Agreement No. 181-5199.

The third paper featured in this issue assesses foreign direct investment (FDI) flows, in and out of Canada. *Foreign Direct Investment and Domestic Capital Formation*, by Walid Hejazi and Peter Pauly of the University of Toronto, examines the common contention that when net investment abroad increases, domestic

investment, employment and production are reduced.

In a Distinguished Speakers session also covered in this issue, *The Role of Tax and Industrial Policies in Ireland's Economic Renaissance* was delivered by Brendan Walsh of the National University of Ireland. His conclusion:

neutral regimes are best for promoting economic growth.

Another Distinguished Speaker featured in this issue is the University of Chicago's Gale Johnson. He argues that knowledge creation and dissemination are key to raising productivity growth and improving people's lives.

Finding the Irish Republic's Pot o' Gold

In the past decade, the Irish Republic has become one of the ten richest countries in the world. The average Irish resident now enjoys a higher standard of living than the average European, British, or Canadian resident. Real domestic income in Ireland has doubled since 1989, while it has risen just 16 percent in Canada. Since 1993, Ireland's job performance has recovered all the ground lost during the previous 20 years, with unemployment rates dropping from 16 percent to less than 5 percent today, a boom in employment that has no parallel in post-war Europe.

The reasons for this astounding transformation are tracked in Industry Canada Discussion Paper Number 12, *The Irish Economic Boom: Facts, Causes and Lessons*, by Pierre Fortin of the Université du Québec à Montréal and the Canadian Institute for Advanced Research.

In addition to detailing the economic trends, he provides an analysis of the factors that led to the boom and examines some practical policy-making lessons that can be learned.

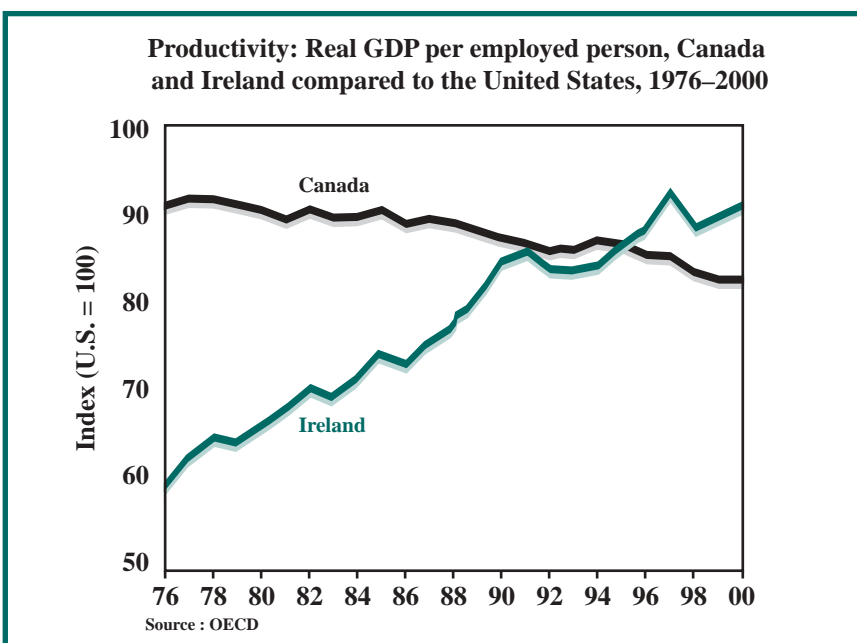
The Irish have been developing the right conditions for this boom for the last fifty years—conditions that enabled Ireland to take advantage of the solid economic recovery in Europe and the United States in the 1990s. Fortin says it was understood early on that with a population slightly larger than that of Greater Montreal, the Irish Republic had to promote free trade and monetary integration in order to expand its small open economy. By the early 1970s, this

resulted in a liberal policy toward foreign direct investment. Taxation policies have supported investment since the 1950s. The encouragement of free secondary and low-cost higher education, interacting with a late baby boom, made for a plentiful supply of well-educated young workers.

Fortin observes that these long-term policies contributed to remarkably rapid growth in productivity per worker in Ireland—its productivity now surpasses Canada's and is getting close to that of the United States. He, however, attributes some of the credit to favourable short-term factors. On the

“It turns out that, for several decades, Ireland has been remarkably supportive of long-term productivity growth through its openness to free international trade and investment, its business-friendly industrial and tax policies, and its free secondary and low-cost higher education.”

—Pierre Fortin



“The sudden turnaround of Ireland’s job performance since 1994 is exactly what is behind the economic boom. Huge numbers of unemployed, women and immigrants have been put (or put back) to work.”

—Pierre Fortin

demand side, these include fast growing trading partners in Europe and the U.S., as well as stable fiscal policy and low real interest rates. On the supply side, plenty of new resources were available to meet demand without generating

inflation prematurely. Ireland was able to draw on a very large pool of women who had never been in the labour force before, and on large inflows of immigrants. Wages grew more slowly than productivity, largely

due to consensus-based National Wage Agreements that have been negotiated periodically since 1987. In short, the confluence of long-term policies and favourable short-term conditions led to a massive inflow of foreign investment, particularly from the United States.

There are three main policy lessons for Canada which the author draws from the Irish experience:

Support free international trade and investment.

Develop business-friendly industrial and tax policies.

Stick to free secondary and low-cost post-secondary education.

Social Policy: Fertilizer for Productivity?

Social policies may be an important determinant of productivity growth, in which case they would not only enhance equity, but also boost economic growth. The equity-efficiency trade-off would be broken. This would add yet another rationale for social policies in modern mixed economies. Canadians have demanded improved education, health and social insurance, not necessarily as a path to higher productivity, but as the benefits of an increasingly wealthy society, and out of general concerns for social justice.

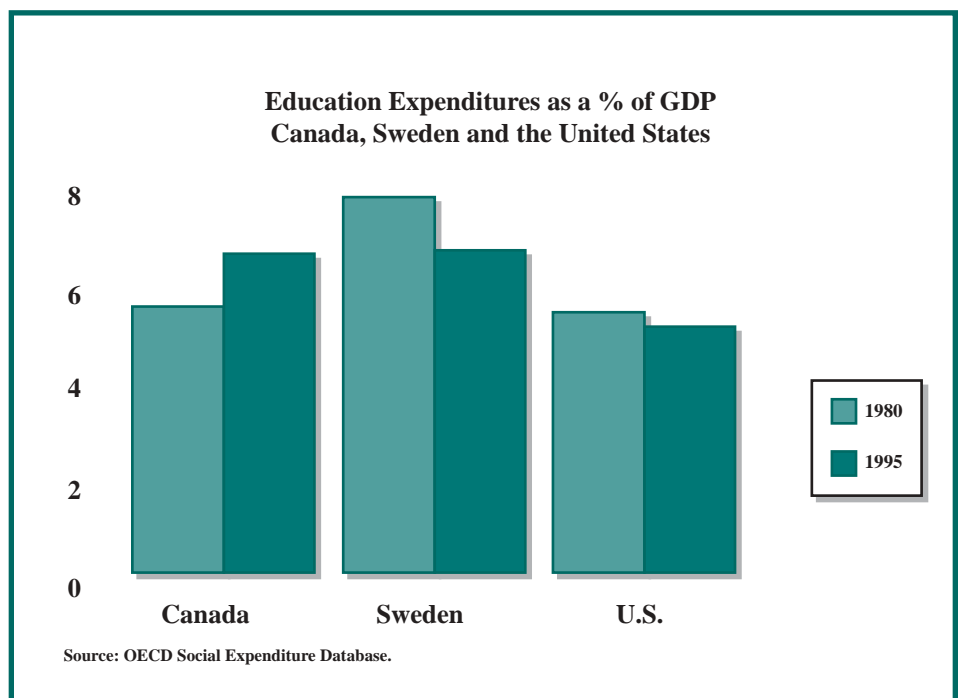
In Industry Canada Discussion Paper Number 11, *Social Policy and Productivity Growth: What are the Linkages?* Richard G. Harris, of Simon Fraser University and the Canadian Institute for Advanced Research, surveys the arguments and evidence advanced in the debate on the impact of social factors on productivity.

Harris finds that there is not yet conclusive evidence that productivity growth is increased by more social spending or policies that reduce inequality. New studies could sway the debate one way or another.

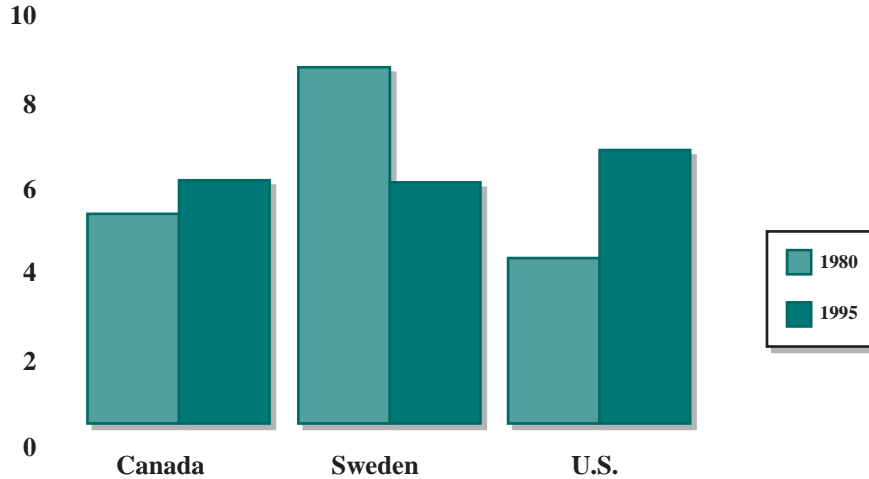
The one major exception is the work that links education to productivity growth, which shows that increasing education has a substantial and positive effect on productivity. A significant proportion of Canadian economic growth appears attributable to the high levels of education attained by the pop-

ulation. The work done on the link between productivity and health expenditures is much less compelling. In general, much more research is required to link particular social policies to productivity.

A promising perspective on the connection between social policy and



**Health Expenditures as a % of GDP
Canada, Sweden and the United States**



Source: OECD Social Expenditure Database.

now in Canada and other countries. Together with analyses of historical examples like the steam engine, electricity, and manufacturing assembly lines, this research is showing that social policy responds to the economic consequences of such shifts.

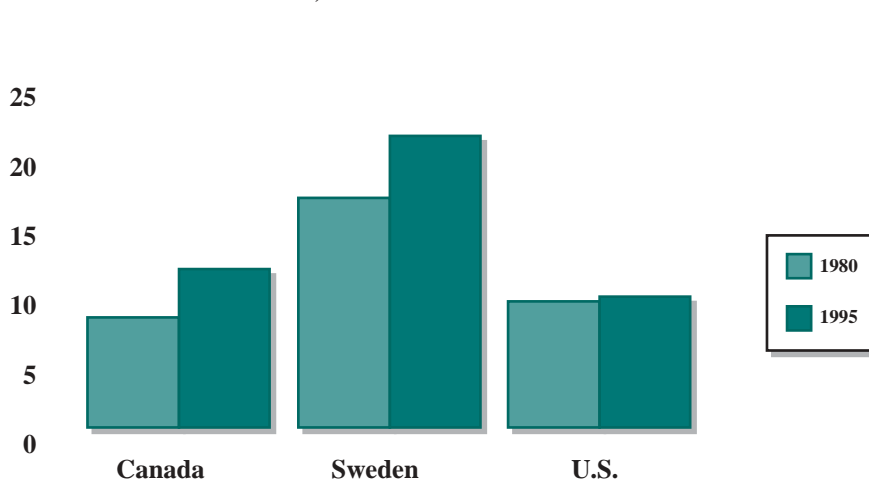
There is a period of adjustment as some skills and industries are made obsolete. Growth actually slows initially, leading to increased spending on social support systems, and to higher debt and deficits. As adoption of new innovations evolve, productivity grows, inequality in incomes persists, but incomes rise and pressure for spending on social programs abates. The final stage sees growth slowing slightly as the innovation is widely incorporated. Inequality falls, and social spending increases are again driven by the wealthier society's demands for a more equitable

productivity is found in the New Economy hypothesis, which traces the impacts of major economy-wide technological change. There is evidence that recent innovations in information and communications technology, namely, computers and telecommunications, are producing accelerated productivity growth, first in the United States, and

“This is one case where strong policy conclusions are well ahead of both theory and evidence.”

—Richard G. Harris

**Income Transfer Expenditures as a % of GDP
Canada, Sweden and the United States**



Source: OECD Social Expenditure Database.

distribution of the benefits of economic growth and social justice.

If this hypothesis is true as the early evidence suggests, the implications for social policy are considerable. The cost-benefit ratio of a particular policy will depend upon its capacity to facilitate the necessary structural adjustments to technological changes. Over the long run, the link between productivity and social policy may well be a complementary one. Failure to increase or keep pace with living standards in other advanced countries is ultimately the most serious threat to Canadian social programs.

All Foreign Direct Investment (FDI) is Not the Same

“The results indicate that, on a net basis, outward FDI has *not* had a statistically significant impact on capital formation in Canada. This is true for the total economy and for service industries and non-service industries.”

—Hejazi and Pauly

The news that there is less foreign direct investment (FDI) into Canada, and more Canadian investment abroad in recent years has concerned policy makers, because it is often assumed these changes have a negative impact on the Canadian economy. Despite serious data shortcomings, it is important to try to develop an understanding based on the best possible analysis in order to help guide policy-makers.

The formation of new domestic capital is one indicator of the capacity of a country to generate future prosperity. The impacts that FDI has on capital formation in the country is assessed in Industry Canada Working Paper Number 36, *Foreign Direct Investment and Domestic Capital Formation*, by Walid Hejazi and Peter Pauly of the University of Toronto. This research tests the argument that there is a reduction in domestic employment and production when net investment abroad increases, which would have a negative impact on domestic capital formation.

Hejazi and Pauly ascertain that it is important to assess impacts at the industry level. To appreciate the effect of outward FDI on the Canadian economy, they believe it is necessary to consider what is driving this at the level of the firm. Lack of data makes this difficult, and the paper uses

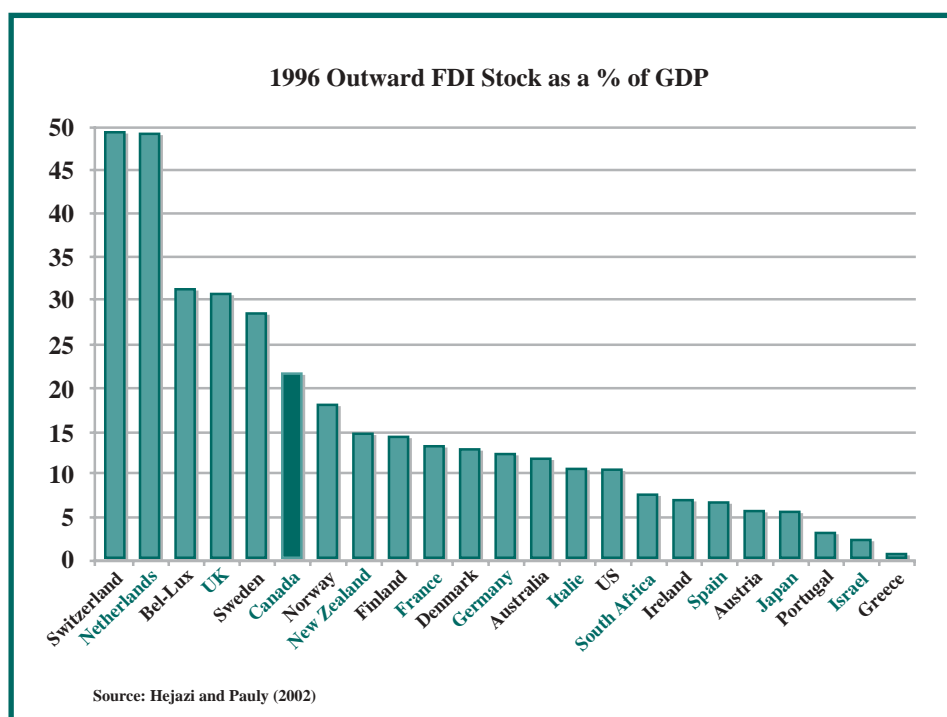
indirect evidence about decision-making at the firm level to assess the link between FDI and domestic capital formation.

A model is developed to measure the effect of FDI on capital formation. Other determinants of investment include the actual capital stock; levels of depreciation; corporate profits and taxes; research and development expenditure; and price indices for intermediate inputs and hours worked.

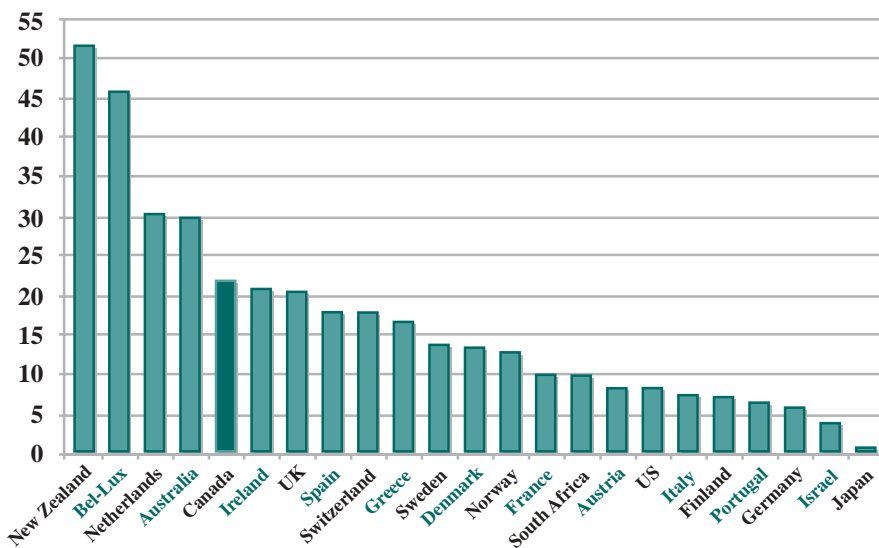
Industry-level data for the years 1983 to 1995 is analysed for both the overall impacts and changes within certain sectors.

For all components of gross fixed capital formation (GFCF), the authors find that overall, a dollar of additional inward FDI increases domestic capital formation by about 45 cents. The impact for individual components is also estimated. Machinery and equipment capital increased by 22 cents; engineering construction capital 18 cents; and building construction capital formation only 5 cents. Inward FDI, however, has no net overall effect on capital formation in service industries.

The authors also find that outward FDI has no overall net impact on domestic capital formation in service industries. In non-service industries, the impacts vary by industry, but the net overall effect is insignificant. A dollar of outward investment tends



1996 Inward FDI Stock as a % of GDP



Source: Hejazi and Pauly (2002)

“The results indicate that, on a net basis, increases in Canada’s outward FDI stock do not explain (cause) reduced capital formation in Canada”

—Hejazi and Pauly

to reduce domestic machinery and equipment capital formation by 17 cents, and building and construction capital formation by 13 cents in non-service industries. But this was offset by a 29 cent increase in engineering capital formation.

The paper examines as well, whether the geographical source or destination

of FDI matters for domestic capital formation. They find that regardless of the source, investment flowing into Canada has a positive impact on domestic capital formation. On the other hand, while outward investment from Canada to the United States has a positive impact on capital formation in Canada, there is no significant effect when the investment flows to the

United Kingdom. Perhaps surprisingly, outward FDI to the rest of the world seems to have a strong negative impact on capital formation in Canada.

The authors suggest further research to determine what is driving Canadian companies to locate abroad, especially in the U.S. and the United Kingdom. They caution against an interpretation that would justify restrictions on FDI that transfers low value-added production to low-wage or low-cost countries. Instead, policies should directly address factors that negatively influence the location decisions of firms.

DISTINGUISHED SPEAKERS SERIES

Slaying Axioms Population, Food, and Knowledge



Gale Johnson
University of Chicago

At the beginning of the 18th century, the world was moving between two very different sets of circumstances affecting population growth. History until then gave

rise to the axiom that population growth was limited by the lack of resources to grow food, as outlined by Thomas Robert Malthus in 1798. Malthusian scarcity, with inevitable bouts of war, disease and starvation, was just the way things were.

In the two centuries since—with the same resources of land, water, sun and air, and very little change in the fertility rate—population growth has

defied the Malthusian concept. The circumstances that made this possible were described by Gale Johnson in a lecture titled Population, Food and Knowledge. Johnson notes that the increase in the world’s population in the 1980s was nearly as much as the entire population of the world in 1800—900 million. And while the population has exploded, it has not suffered. During the 1980s, the

increase in the world's gross domestic product per capita equalled the gross domestic product per capita of 1820.

What changed, Johnson argues, was the capacity of the world to produce knowledge and use it. Given the state of knowledge in the 18th century, the factor limiting food production was labour. More efficient mechanized methods of agriculture were developed during the eighteenth and nineteenth centuries, making it possible for people to move from the land into cities.

Throughout the 19th century the mortality rate in cities was worse than in rural areas, but the benefits of clean water and sanitation have combined to significantly change life expectancy and the quality of life for most people today. Life expectancy has increased 170 percent in the past century, and not just for the rich. Improvements have been made among those with lower real per capita incomes than those prevailing in the developed countries at the beginning of the 20th century. The large cities of the developing world now have infant mortality rates about a quarter of those of New York City in 1880.

Johnson contends that a spiral effect has taken hold in the production of knowledge. With a larger population,

we have more people who are capable of making a significant addition to knowledge. The benefits in productivity arising from knowledge allow a bigger share of the population to specialize in the creation of knowledge. In the last half of the 20th century, both the share and absolute amount of the world's resources devoted to the development of new knowledge was vastly increased through the explosive growth of universities and creation of research institutes.

Responding to questions following his lecture, Johnson discussed what may be the next big impact of this knowledge spiral on food and population. It is estimated that in 1990, 19 percent of the population in developing countries was malnourished, the majority in rural areas. He expects that the knowledge to genetically modify food organisms will be used to make the available food supply more nutritious.

- *Significant advances in agricultural productivity in the eighteenth and nineteenth centuries made the development of cities possible.*
- *Increasing population and rising incomes led to the rapid development of universities and research institutes.*
- *The benefits of the growth of knowledge have not been restricted to the countries responsible for advances, but have spread throughout most of the world.*
- *There has been great improvement in well-being, both absolutely and relatively, in the lives of people in the low-income developing countries.*
- *Population growth was not limited by the supply of food, but by the decisions of the families.*

“... for several important measures of well-being there has been great improvement, both absolutely and relatively, in the lives of people of the low-income developing countries.”

—Gale Johnson

Releasing the Celtic Tiger The Roles of Tax and Industrial Policies in Ireland's Economic Renaissance



Brendan Walsh
National University
of Ireland—Dublin

While some economists are doing post mortems on so-called Asian tigers, the Celtic tiger survives to be studied for ways to propa-

gate its success. The economy of the Irish Republic went from “worst to first” in Europe in a decade, and escaped the forces that snared most other economies in Europe and Asia. A key trait, though not the only important factor, is the tax and industrial policy Ireland has pursued since the 1960s.

In a lecture titled *The Roles of Tax and Industrial Policies in Ireland's Economic Renaissance*, Brendan Walsh of the National University of Ireland pointed out that a favourable climate for overseas investment in Ireland was established in the 1960s. During three decades until the 1990s, *ad hoc* evolution in tax and industrial

policies in response to various circumstances brought Ireland to a situation where it was primed to take advantage of Europe's merger into one large economic unit.

Other factors in Ireland's success include a language and business culture that is familiar to U.S. business, and the availability of a well-educated work force that is inexpensive relative to the rest of Europe. Walsh asserts that these taxation policies and social factors were able to have an effect largely because Ireland painfully corrected major imbalances in public finances in the 1980s.

- *The Irish tax system has evolved towards greater uniformity and less targeting.*
- *A zero tax rate on export profits to promote industry in the 1960s and 1970s brought little success.*
- *A 10 percent rate was applied to all manufacturing and internationally traded services in the 1990s.*
- *The new commitment is to a 12.5 percent tax on all corporate profits by 2010.*
- *Cuts in public spending beginning in 1987 helped set the stage for economic growth that makes reductions in the overall tax burden.*

The initial approach to correcting the fiscal imbalance involved high individual taxes that led to capital flight and cross-border shopping, resulting in a soaring unemployment rate. In 1987, public expenditure was pruned and higher growth ensued, enlarging the tax base substantially. However, it is very difficult to determine if accelerated growth was due to lower taxes, or if taxes fell in response to growth.

Since 1989 the taxation burden in Ireland has fallen sharply, while continuing to grow in the European Union. Ireland now has one of the lowest tax burdens among OECD members, relative to Gross Domestic Product.

Ireland has pursued a system providing generous grants and low corporate taxes to footloose multinational projects that add high value, and a higher tax rate to captive

sectors such as local services. Ireland now has a 10 percent preferential tax for profits from manufacturing and internationally traded services, although pressure from the EU has forced Ireland to apply a uniform rate of 12.5 percent by 2010, and to end remission of local taxes and special capital allowances.

While warning against simplistic conclusions that ascribe too much credit to tax policy, Walsh believes there is clear evidence the favourable environment for corporate investment enhanced Ireland's share of FDI coming into the EU.

Distortions in the system are being purged under pressure from the EU, but there is now a virtuous circle of tax cuts, growth and improved public finances. The evidence is that the best policy for long-run economic development is a non-distortionary, low tax regime.

“... no dramatic changes in tax rates or in the structure of taxation occurred in the late 1980s can be identified as the factor that triggered the boom. And it is obvious that the rapid decline in the tax/GDP ratio during the 1990s was primarily a reflection of the large inflow of FDI and exceptional growth of GDP rather than *vice versa*.”

—Brendan Walsh

Notes

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