

THE INAUGURAL HARRY KITCHEN LECTURE

**POLICY BLUEPRINTS
FOR THE
INFORMATION AGE:**

Implications for Markets and Enterprise

By

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I: INTRODUCTION AND OVERVIEW

Century 21 is synonymous with the blossoming of a new global order, variously referred to as the Information Age, globalization and the knowledge/information revolution, the knowledge-based economy (KBE), the network society, among others. Whatever term one selects (and in what follows we shall usually opt for the Information Age) the scope of the structural transformation from the previous paradigm is profound and pervasive, embracing the technological, economic, cultural and institutional (governmental) dimensions. Underpinning this Information Age is a new general purpose technology (GPT) based on the dramatic enhancement in our capacity for “information processing and communication made possible by the revolutions in microelectronics, software, and genetic engineering” (Castells, 2004, 9). And at the heart of this technological revolution is the Internet which, in turn, is the technological basis for the pre-eminent and ubiquitous organizational form of the Information Age, namely the networkⁱ. With technology as the enabler and the network as the transformative agent, Castells (2004) subsumes the resulting restructuring of roles of, and relationships among, governments, citizens and enterprise under the term “network society.” Moreover, driven by the technology of the Internet, networks are inherently global and are providing real substance to the concept of globalization (or to an Information Age global economy), namely “an economy with the capacity to work as a unit in real time on a planetary scale” (Castells, 1996,92).

These then are the structural building blocks underpinning the Information Age – a new general purpose technology or GPT, a knowledge-based economy and society, a new societal organizational form (networks), and real-time globalization. The role of the larger study (which will incorporate the essence of the present paper) is to assess the implications of these forces in

terms of society's four pillars (citizens, markets/enterprise, governments and civil society) and then, as the title of this lecture indicates, to articulate a series of policy blueprints appropriate for the Information Age for each of the pillars.

OVERVIEW

The focus in the present paper is on the manner in which the dictates of the Information Age have influenced the evolution of markets and enterprises, as well as the nature of the policy blueprints required to ensure that innovation, productivity growth and competitiveness will be hallmarks of 21st century Canada. Toward this end, Part III focuses on the nature of the KBE, dealing initially with the transition from a government-driven, nation-state-centered vision of capitalism to a liberalized-markets (private-sector) driven and global-centered vision of capitalism. This is followed by an elaboration of the dramatic changes in the nature of what might be called the “competitive dynamic” inherent in the Information-Age business model – the shift from a decreasing-returns paradigm to an increasing-returns and creative-destruction paradigm. Part IV then directs attention series of concerns relating to Canada's falling star in terms of various international comparisons and rankings: the World Economic Forum's competitiveness rankings; our declining productivity; our weakness in terms of value chains, and our falling share of North America inward foreign direct investment (FDI). Parts V and VI focus on the roles of taxation and exchange rates, respectively, in delivering productivity and competitiveness. Finally, Part VII presents a set of policy blueprints designed to develop a KBE playing field informed by the requisites of the Information Age, with the ultimate goal of increasing innovation, productivity growth and competitiveness.

Prior to turning attention to the nature of KBE capitalism and the accompanying business

model, it seems appropriate to outline the parameters of the more comprehensive Information Age research agenda.

II: A TOUR D'HORIZON OF THE LARGER STUDY

This paper on ensuring that our approach to markets and enterprise is KBE-consistent is sandwiched among the analyses of the Information-Age implications for citizens, for governments and governance, and for civil society. The not-yet-finalized highlights from each are likely to include the following analysis and policy blueprints.

CITIZENS

Thanks to the democratization of access to technology and information, citizens are emerging as the principal beneficiaries of the Information Age. When combined with the preeminence of knowledge in this new order, the result is that the Information Age is privileging skills and human capital in the same way that the Industrial Revolution privileged physical capital. Indeed, as Lester Thurow (1993) proclaimed: "If capital is borrowable, raw materials are buyable, and technology is copyable, what are you left with if you want to run a high wage economy? Only skills, there isn't anything else." And given that the returns to education are rising, the best news of all is that ensuring equality of opportunity for all Canadians to enhance their skills and human capital is emerging as the principal avenue by which to promote *both* economic competitiveness and social cohesion.

This leads to the articulation of two "framework blueprints" that are in the nature of societal mission statements that ought to underpin all aspects of the Information Age. The first has already been alluded to, namely ensuring equality of opportunity for all Canadians to enjoy a

human capital future. The second is more instrument related, namely to embrace the concept, if not the policy reality, of a children's bill or charter of human capital rights, on the demonstrable grounds that if we fail at this early childhood level then the overall mission statement is also likely to fail.

The remainder of the section then articulates a series of policy blueprints that deal with areas like early childhood education, the education crisis for aboriginal peoples, the transferability of credentials across provinces, increasing the employability of immigrants by allowing employers to play a larger role in the selection process and by making immigration much easier for our foreign visa students, leveling the taxation playing field so that we can retain our human capital, and finding creative ways to increase access to PSE (such as keeping first year tuition to an absolute minimum and providing an income-contingent repayment plan for loans). What all these have in common is their focus, along the mission statement lines, on enhancing the opportunity for all Canadians to acquire knowledge and skills in order to contribute to their and others' socio-economic well-being. Success on these fronts will contribute the requisite skills and human capital that are essential to ensuring that the Information-Age markets and enterprise can deliver on their goals of innovation, productivity and competitiveness.

GOVERNMENTS AND GOVERNANCE

Under the aegis of the Information Age powers are being transferred upward and downward (and even outward) from the central governments of nation states, a process that I have labeled *glocalization* (a contraction of globalization and localization). The globalization component of the Information Age underpins the upward transfer, since mobile capital and transnational enterprises (TNEs) were much faster off the mark in spanning the globe than were

governments. With economic space thus transcending political and institutional space, the result was the creation, in countervail fashion, of supra-national institutions and regulatory bodies (EU, NAFTA, WTO). Relatedly, the increased mobility of goods and factors as a result of “real-time globalization, ” as defined earlier, also led to transferring longstanding national icons to the international arena, e.g., national central banks and national currencies, as reflected in the creation of the European Central Bank and the supra-national euro respectively. In terms of the downward transfer or decentralization of powers, the key factor is the informatics component of the Information Age, and particularly the dramatic decline in the costs of computation, communication and coordination which have served to breathe new life into the principle of subsidiarity (i.e., of bringing programs and implementation “closer to the people”).

Whether powers are being passed upwards, downwards or outwards, the organizational form in play is, again, the network. These networks of governance and power are both vertical (up and down the hierarchy of cities, provinces, nations and supra-national institutions) and horizontal (among and between nation states, or among and between provinces as in the Council of the Federation). In the Canadian context this line of thinking has been championed by Janice Gross Stein, in her 2006 article “Canada by Mondrian: Networked Federalism in an Era of Globalization.” This networked or multi-level governance approach is in sharp contrast with Prime Minister Harper’s “open federalism” with its implicit, even explicit, “watertight compartments” respect for the existing constitutional assignment of jurisdictional powers. Intriguingly, the role for the promised reworking of the federal spending power will presumably be two-fold: to curtail Ottawa’s arbitrary exercise of the spending power in areas of exclusive provincial jurisdiction on the one hand, and, on the other, to provide creative processes for some version of networked or coordinated federalism when multi-level governance is deemed desirable

by all parties. This provides an entrée to other related federal-provincial issues such as vertical and horizontal fiscal imbalances, social and economic unions, and asymmetrical arrangements.

However, the main thrust of the government and governance section is to address the reality that the Information Age has catapulted global city regions (GCRs) into the role of key nodes in the new geo-economic networks. This is so because it is in these GCRs that one finds the dense concentrations of human capital, R & D, high-value-added services and the like that allow them to become the key coordinating and integrating networks in their regional economies on the one hand, and the dynamic national nodes in the international networks that drive growth, trade, and innovation in the global information economy on the other. In effect, “the world, economically and in management terms, has become a network of ... prosperous city regions (Ohmae, 2001,33).

The challenge here is to bridge the gulf between the GCRs potential and their on-the-ground Canadian reality. In particular, in comparison with their counterparts elsewhere, our GCRs are fiscally weak and jurisdictionally constitutionless. Much of the remainder of the analysis will draw on comparative international experience and practice and on my earlier writings (2006 and 2007) to address ways in which Canada's GCRs and cities generally can be brought more fully and more formally into the operations of Canada's political and fiscal federalism. In terms of the ensuing analysis of markets and enterprise, the bottom line here (and borrowing from Harris (2002)) is that the degree to which Canada can sustain itself as an innovative, productive and competitive economy will in no small way depend on how our GCRs will fare in terms of their counterparts in the US and elsewhere.

CIVIL SOCIETY

If citizens, as individuals, are the principal beneficiaries of the Information Age, then

citizens acting in concert with like-minded citizens domestically and/or internationally have made civil society a powerful force, one that arguably qualifies as one of the four societal pillars. As Lawrence Grossman, former head of NBC news, has noted the technology/information revolution is at the base of this flourishing of civil society (cited in Friedman, 1999,45):

Printing made us all readers;
Xeroxing made us all publishers;
Television made us all viewers;
Digitization makes us all broadcasters.

By way of elaboration, the fact that of the 25,000 INGOs (international NGOs) existing on January 1, 2000, some 20,000 of them were not around a decade earlier, undermining the role of the Internet as the INGO driver.

Civil society comes in many forms: NPOs (non-profit organizations) come between citizens and markets(non-profit daycare or eldercare); NGOs come between citizens and governments (charter schools, children's aid societies); and CSOs (civil society organizations) which typically pursue roles relating to rights, to democracy, to the environment and to humanitarian issues among others. Despite their recent proliferation, civil society institutions play little role in the teaching or practice of economics, in part perhaps because we have no analytical framework by which to assess them. My tentative approach in this direction will be to view them from the familiar equilibrium/disequilibrium perspective. Just as a firm will enter a market in response to a profit- making opportunity, so too will a CSO respond to what might be called a "societal-enhancing opportunity." From this perspective, the twin facts i) that the presence of a democracy or a power imbalance at the international level creates a *demand* for CSOs and, at the same time, ii) that the information revolution and particularly the Internet facilitates the *supply* of CSOs, means that the these civil society "markets" have in effect become *contestable*, politically,

democratically, or whatever the nature of the societal-enhancing opportunity may be.

With this as backdrop the analysis will then focus on the various roles played by civil society, running the gamut from providing institutional space where citizen engagement at the local level helps develop new bonds of citizenship through to the international level where CSOs can help put a more democratic or humanitarian face on some of the rough edges of the Information Age. In this context, the role of the policy blueprints in relation to civil society is to provide guidance and/or recommendations to ensure that these institutions are efficient, innovative, accountable, internally democratic, etc., in light of the larger and larger roles they are playing in our economy and society.

This then is the larger environment within which the ensuing analysis of markets and enterprise proceeds, beginning with the manner in which the Information Age has transformed the nature of capitalism on the one hand and the nature of the prevailing business model and competitive dynamic on the other hand.

III: MARKETS AND ENTERPRISE: THE KBE MODEL

With employment rates currently at or near record highs, with our deficit and debt performance the envy of the G7, and with the economy in high gear, it may well border on the embarrassing to attempt to make the case that in selected key areas of the new global order Canada is not faring well. And perhaps there is no need to worry about this. After all, since the rise of China and India plays directly into the resource-rich nature of the Canadian economy and since these two countries' economic stars are still in their ascendancy, there is less pressure on Canada to embrace the essence of the Information Age, replete with emphasis on knowledge, innovation and Schumpeterian creative destruction. There is an alternative and I think preferable

vantage point, namely viewing the ongoing resource boom as providing not only the economic and fiscal means but, as well, the “breathing time,” as it were, to make a successful transition toward embracing the dictates of a knowledge-based economy and society.

In any event, the analysis will, en route to the elaboration of a set of policy blueprints, proceed by articulating a vision of how the KBE has dramatically altered not only the underlying business model but, as well, the economic policy paradigm appropriate to the Information Age.

THE TRANSITION TO THE KBE

Sociologist Manuel Castells, in his insightful 2004 article “Informationalism, Networks, and the Network Society: a Theoretical Blueprint,” views the transformation to the new global order as a combination of a policy (ideological) shift and a technology shift. While ideologically-laden, his characterization of the transformation from the old paradigm to the new nonetheless merits quotation (2004, 15-16, selected passages).

...the industrial model of development hit the buffers of its limits to increase productivity growth as the organizations, values, and policies of the industrial society could not manage the transition to knowledge-based productivity growth by using the potential unleashed by information and communication technologies.

In the case of capitalism, this meant the calling into question of the Keynesian model...That model was based on the ability to increase both profits and social redistribution through government guidance and funding, largely in a controlled, domestic policy environment.

...the decisive shift to a different model of accumulation came from governments, albeit in harmony with corporations. It can be related to the twin victories of Thatcher ... and Reagan. ... They came to government with a mission: to recapitalize capitalism, thus ushering in the era of economic liberal policies...

A new orthodoxy was established throughout the world. We call this process globalization. It is, to be sure, unfettered capitalist globalization, spearheaded by the liberalization of financial markets ... and enshrined in asymmetrical trade globalization represented by the new managing authority, the World Trade Organization. Under the new conditions, global

capitalism recovered its dynamism, and increased profits, investment, and economic growth, at least in the core countries and in the networks that connected areas of prosperity around the world....

Castells then notes that this ongoing transformation was then joined by a process that developed rather independently, namely the technological revolution including the Internet, the combined result of which is perhaps best described as “globalization and the information revolution,” although the preferred labels in this paper are the KBE or the Information Age.

Several observations are appropriate here. The first is that GATT, the predecessor to the WTO, was largely engaged in “shallow integration,” namely a series of ‘thou shalt nots” related to how a country treated its trading partners. In sharp contrast to this “negative integration,” the WTO (and, indeed, the Information Age itself) more about “positive integration,” namely a proactive meshing of national rules and regulations which is much more intrusive of national sovereignty.

Second, it should not be surprising that one result of this new model was that mobile capital and especially transnational corporations were, as already noted, much faster off the mark in “globalizing” than were national governments which, in turn, meant that scope and effectiveness of economic space was transcending political space. This has led national governments to transfer, in countervail fashion, selected powers upward to supranational agencies and institutions, such as the EU. Canada’s version of these supra-national agreements include the FTA and later NAFTA. And thanks to these trade agreements and the consequent dramatic increase in Canada-US trade (see Figure 3 below for the mushrooming of our exports to the US in the wake of NAFTA) the result has been a fundamental change in the nature of “Canadian” economic space. Specifically, Canada is less and less a single east-west or national economy and more and more a series of north-south, cross-border economies, a feature that underpins aspects

of the analysis in this section and one that is at the core of the later focus (in the larger study) on what will be referred to as global city regions.

With these summary comments on the transformation of geo-economic space as well as the underlying conception of Information-Age capitalism, attention now turns to the even more dramatic changes in the nature of the economic or enterprise model.

THE KBE MODEL: INCREASING RETURNS AND CREATIVE DESTRUCTION

Paul Romer (2007) contrasts the “decreasing returns” nature of the physical economy of resource extraction and commodity production (i.e., the industrial economy) and the “increasing returns” nature of the knowledge/innovation economy of the Information Age by way of the following simple, but instructive, example:

Economic growth occurs whenever people take resources and rearrange them in ways that are more valuable. A useful metaphor for production in an economy comes from the kitchen. To create valuable final products, we mix inexpensive ingredients together according to a recipe. The cooking one can do is limited by the supply of ingredients, and most cooking in the economy produces undesirable side effects. If economic growth could be achieved only by doing more and more of the same kind of cooking, we would eventually run out of raw materials and suffer from unacceptable levels of pollution and nuisance. Human history teaches us, however, that economic growth springs from better recipes, not just from more cooking. New recipes generally produce fewer unpleasant side effects and generate more economic value per unit of raw material.

The general point here is that the physical world (more cooking) is characterized by decreasing returns and eventually increasing costs for additional units, whereas the world of ideas (new recipes) is characterized by increasing returns and decreasing costs. In other words, while scarcity rules the physical world, ideas are not only not scarce but they are non-rival (I can use them without diminishing your ability to use them) so that they build on themselves, or cumulate, and make further new recipes ever more likely.

This leads to the fundamental difference in the underlying competition dynamic between diminishing-returns and increasing-returns industries. Again from Romer (1997,3) and focussing first on industries where there are increasing unit costs to producing more and more:

In the physical economy, there is a natural equilibrating process. If one firm tries to take over the whole market, other firms would gain an advantage and will enter [the market]. When the whole process settles down, there will be many firms and a competitive market.

Things are much different in the knowledge economy (Romer, 1997, 3-4):

Let's think about operating systems and world computers.... Let's say you have one firm, like Microsoft, which is going to produce Windows NT. Once it produces its first copy, it then faces no cost disadvantage. It can produce millions or billions of copies of NT at little additional cost. It truly can supply the entire worldwide market for operating systems. If anything, it probably gets easier for Microsoft because the larger its market size gets, the more attractive it is to adopt its software because of what we call bandwagon effects.

While competition in the former paradigm occurs by having new firms producing the same product but at a lower price, this will not work in the knowledge economy. Here, competition occurs by having *new firms enter with new and better products*, i.e., by *innovating*. This “leap-frogging” innovation is the essence of the ongoing computer/Internet revolution. We also know this as the Schumpeterian process of “creative destruction,” which Romer (1997,5) describes as “a sequence of temporary monopolies that are superseded by new monopolists selling new products and services.”

Philippe Aghion and Peter Howitt (2005) breathe further reality into the Schumpeterian growth process by focussing on the appropriate type of institutions based on a country's “distance from the technological frontier.” Specifically, a country “far from the frontier will maximize growth by favouring institutions that facilitate implementation [or replication]; however, as it catches up with the technological frontier to sustain a high growth rate the country will have to

shift from implementation-enhancing institutions to innovation-enhancing institutions”(2005,9).

The authors go on to suggest that a plausible story is that the European economy caught up technologically to the US following WWII, but then growth began to slow down before the gap with the US had been closed because Europe's policies and institutions were not designed to optimize growth close to the frontier. In more detail:

...competition policy in Europe has emphasized competition among incumbent firms, but paid insufficient attention to entry. Entry, as well as exit and the turnover of firms, are more important in the United States than Europe. For example, 50% of new pharmaceutical products are introduced by firms that are less than 10 years old in the United States, versus only 10% in Europe. Similarly, 12 percent of the largest US firms by market capitalization at the end of the 1990s had been founded less than twenty years before, against only 4 percent in Europe, and the difference between US and Europe turnover rates is much bigger if one considers the top 50 firms. (Ibid., 12).

Three further implications derive from the Aghion-Howitt analysis. The first focuses on the “destruction” side of creative destruction, the second on competition policy and the third on human capital. In terms of the first of these, Howitt (2007,10-11) comments as follows:

The destructive side of creative destruction is a phenomenon that affects not just individual firms and workers; the whole economy can suffer, at least during a transition period, as a result of widespread technological change. This is especially true when technological change involves the introduction of a new “general purpose technology (GPT) – a new technology that is used throughout the economy, has a profound effect on the way that economic life is organized, and gives rise to a wave of complementary innovations associated with its increasing use. The succession of GPT's – including the steam engine, electric power, and the computer – introduced since the Industrial Revolution has greatly enhanced standards of living. However, the period during which a new GPT is being introduced can be one of wrenching adjustment for individuals, firms, and the economy as whole.

As Lipsey, Carlaw and Bekar (2005) note, the productivity enhancement arising from a GPT may be delayed until labour and capital are transferred to the new GPT applications and the requisite set of complementary institutions and enterprises are put in place. The implicit if not explicit

implication (and certainly excellent news) is that we probably have not yet seen anywhere near the full productivity advances that will flow from the Information-Age GPT.

In terms of competition policy, for a country that is at or near the technological frontier, (i.e., a country that is, or ought to be, in the innovation mode rather than the imitation mode), it is imperative that its firms not be sheltered from competition, given that both theory and recent empirical work point to a positive relationship between product market competition on the one hand and productivity growth and/or innovativeness within a firm or industry on the other (Howitt, 2007). This is of course Michael Porter's "innovate or die" dictum.

The third of the Aghion-Howitt implications relates to education, namely that human capital does not affect innovation and imitation uniformly. In particular, higher (tertiary) education investment should have a bigger effect on a country's ability to make leading-edge innovations, whereas primary and secondary education are more likely to make a difference in terms of the country's ability to implement existing ... technologies (2005, 26)

The fruits of a successful transition to the Information Age are an innovative and productive economy. Have we made the transition?

IV: PRODUCTIVITY/ INNOVATION/COMPETITIVENESS: HOW ARE WE FARING?

Over the longer term our standard of living will be driven by how well we do in terms of innovation and productivity. In spite of the fact that Canada's unemployment rate is at a thirty-year low and our consumers are revelling in an above-parity loonie, all is not well on the productivity front. Canada's newly-created Competition Policy Review Panel (henceforth CPRP) notes in its 2007 consultation paper (*Sharpening Canada's Competitive Edge*), that our productivity growth has been declining, particularly with respect to the US but also in relation to

our other main competitors:

From 2001-05, Canada's average productivity growth rate ranked twenty-first, well below the OECD average, and second lowest in the G7. ...In 2006, Canadian labour productivity per hour worked was only 81.4% of US levels, down considerably from 87.4% as recently as 2001. ...The output per hour in the Canadian business sector grew only 1% annually over the past five years, in contrast with 3% annual growth in the US over this same period. (CPRP, 2007,7)

Among other factors contributing to Canada's poor productivity performance the CPRP identifies "underinvestment in machinery, equipment and technology, which are all important drivers in boosting productivity, because new technologies enhance efficiency while also spurring innovation and enabling the creation of new products and technologies" (CPRP, 2007,7). Not surprisingly, this reality has carried over in terms of Canada's position in the World Economic Forum's competitiveness rankings: In 2006, Canada ranked 16th of 125 countries, down from 13th in 2004 and from 3rd in 2001 (loc.cit.).

Relatedly, in a recent paper, John Baldwin and Wulong Gu (2007) compare Canada and US productivity in terms of its three components – capital deepening, which is a measure of the amount of capital employed per hour worked; labour composition changes, which captures shifts in the education and workforce experience of workers; and multi-factor productivity (MFP) which is a residual and is assumed to capture factors such as technological progress, returns to scale, organizational changes, and acquisition of knowledge. They conclude:

The main contributor to the Canada-United States labour productivity growth gap from 2000 to 2006 was the slower MFP in Canada. Our estimates show that slower relative MFP growth in Canada accounted for 1.8 percentage points or 92% of the Canada-United States labour productivity growth gap. The difference in worker skills and capital intensity was not an important factor behind the labour productivity growth difference in the two countries.

Much the same holds for the longer 1980-2006 period.

These are disconcerting results, especially in light of the assertion by Howitt (2007, 11)

that “in the long run ... technical progress is the only thing that matters, because the amount of capital per worker stops growing as it approaches its long-term equilibrium value.” Moreover, our poor performance in terms of MFT suggests something rather ominous in terms of adapting to the requisites of the Information Age, namely that our shortfall in terms of innovation and productivity may be because we are lagging behind our competitors when it comes adopting the general purpose technology or GPT of the Information Age. Some evidence that this may be the case might be derived from the behaviour of inward and outward foreign direct investment (FDI) to which the analysis now turns.

FOREIGN DIRECT INVESTMENT

Almost by definition, the impact of globalization and the knowledge/information revolution in tandem with the integration of North American economic space has been to transform the prevailing industrial model from what might best be described as a “branch plant” and domestic-oriented model to an FTA/NAFTA-oriented and global model. Indeed in the former model the role of inward FDI was to leapfrog the Canadian tariff to produce for the Canadian market. Presumably, the new reality is that a key role for inward FDI would be to make Canada the location to produce for NAFTA economic space and beyond. What has been our experience with inward and outward FDI?

Conveniently, this is one of the one of the areas highlighted in the Competition Policy Review Panel’s discussion paper. By way of a useful overview of the nature of FDI, the discussion paper notes (2007, 11):

FDI is a form of investment involving ownership which provides investors a significant voice in the management of an enterprise outside their own country. FDI can occur through M & As [mergers and acquisitions], new greenfield and

brownfield investments, reinvested earnings and cross-border loans and capital transactions between related firms. For operational purposes, a direct investor is defined as having at least 10 percent ownership of the voting equity in an enterprise.

At one level, one would like to have Canada become a very appealing location for attracting global companies, hopefully with domestic head offices or global product mandates. One piece of evidence that this is indeed occurring would be impressive levels of inward FDI. At another level, encouraging our homegrown companies to expand into international players would presumably imply the need to acquire foreign companies or a foreign presence along the way, which would in turn require outward FDI from Canada.

Given the multiple roles for inward and outward FDI, it is perhaps not surprising that the empirical evidence relating to FDI is likewise not easy to interpret. However, one trend is very clear: the dramatic fall in Canada's share of inward North American FDI over the last quarter century. From 40% in 1980, to roughly 23% at the time of the FTA, and down further to the current (2005) 16.3% which, to be fair, is up from the low of 12% in 2002 (CPRP, 2007, Table 12). Presumably, some of this decrease in Canada's share reflects the fact that the high-tech boom was largely US centered and some reflects the awakening of Mexico after NAFTA (and even before in terms of the Maquilladores). Nonetheless, it is more than puzzling that Canada's share has fallen from that which prevailed prior to the FTA.

At a more detailed level, Table 1 presents the flows of inward and outward FDI, while Figure 2 presents data on the component of this FDI which reflects mergers and acquisitions. Figure 1 reveals an increase in inward FDI throughout the 1990s and peaking in 2000. This declines to zero in 2004 and rebounds thereafter. However, a comparison with Figure 2 reveals that a large amount of both inward and outward FDI is accounted for by M & A activity. The

CPRP (2007, 12-13) comments as follows:

M & As accounted for 51 percent of inward FDI into Canada between 2001 and 2006, but accounted for 71 percent of inward FDI in 2005 and 2006 [Figure 1]. By contrast, Canadian direct investment abroad in recent years has not been driven by M & A activity, instead primarily occurring through other investment flows such as the investment of capital into existing foreign affiliates. According to these data, Canada's M & A investments abroad accounted for only 31 percent of average outward FDI between 2001 and 2006 [Figure 2]. This implies a significant imbalance in the past two years, with foreigners acquiring more of Canada's corporate assets than Canadian businesses acquired abroad.

Overall, while Canada has for decades been the net recipient of FDI, the tables are now turned with Canada's cumulative stock of outward FDI now in excess of its cumulative inward FDI.

My personal view is that these data are not good news. Rather they are consistent with the story line thus far, namely that the attractiveness of the non-resource sectors of the Canadian economy to Canadian and foreign investors alike is well below potential.

This on-going story line continues with a focus on global value chains.

GLOBAL VALUE CHAINS

While workers in the Information Age may be relatively immobile, work surely is not. Indeed, a defining feature of the borderless business landscape is the growth of far-flung production networks that have come to be referred to as global supply chains or global value chains. By way of elaborating on these global value chains, the CPRP (2007,6) is again an appropriate source:

One response to these new competitive realities has been a trend toward the globalization of value chains. The value chain describes the broad range of activities that are required to bring a good or service from its initial conception to the marketplace. Previously, a firm might conduct all the activities in the value chain within its home country. The global era, however, has been typified by the disaggregation of this chain of activity, with the constituent elements of a single product being designed and produced in different countries and on several

continents, raising the competitiveness of the overall production process.

Readers will also recognize the concept of a “global product mandate” as being a global value chain in its own right as well as a component of a larger global value added chain.

The competitive issue line here is rather obvious: “the goal for Canada should be to make this country the location of choice for the higher value-added element of these global value chains – whether led by Canadian firms or as part of others’ supply chains – as higher value-added productive activity translates into higher wage and salaries, more occupational choice and a better quality of life for Canadians.” (CPRP, 2007, 6)

Guy Stanley (2007,68), writing in *Policy Options*, offers a wide ranging commentary on Canada’s productivity problem, including some concerns about our role in these global value chains:

Canada's lagging productivity growth, lack of top international brands and knowledge-based companies operating at the Fortune 500 level make us unique among the G-7 countries in that our relative standard of living is steadily decreasing. Every few months a new research report emerges, repeating the same recommendations – cut taxes on business inputs and incomes, reduce barriers to factor mobility and competition and increase support for science and technology (S&T). Over the last 10 years, including the federal budget of 2007, taxes have come down, depreciation has been somewhat accelerated, and from the Canada-US Free Trade Agreement onwards, barriers to factor mobility – principally capital but also labour to some extent – have been coming down. As well, government financing for S&T has grown to the point where it is proportionally the largest in the OECD. Result: not much change. Why?

Stanley’s answer (2007, 68-69):

Canada’s national innovation system has many strengths, but is crippled by three glaring weaknesses: there is a near-fatal disconnect between the national science capacity and the national ability to commercialize the research; Canada’s traditional value chains are not evolving rapidly enough to ensure future prosperity growth; and the inducements or automatic regulators that would enable the system to heal itself without significant change are almost entirely absent. ... To cite two examples: neither Canada’s medical technology nor telecommunications networks

is any longer leading edge, so there are few if any Canadian companies that might have built service businesses around them at a global level. Yet these are the among the largest business opportunities, going forward.

Overall, this is a sobering message in terms of the effectiveness of the range of policies that are generally presumed to be the keys to a more productive and competitive economy. For something more sobering still, there is nothing quite like the excesses of the income trust debacle.

INNOVATION, COMPETITIVENESS AND THE INCOME-TRUST MENTALITY

Canadians have had a front row seat in terms of the near-stampede away from an innovative environment and a flight toward security – the income trusts. The culprit here was the Canadian fiscal policy because the tax treatment of corporate income was not competitive, from a shareholders vantage point, with flowing that income through an income trust. From Cleary and MacKinnon (2006):

Basically, an income trust is set up as an entity that holds both the debt and equity securities of an underlying operating company. The operating company is set up so that interest payments on its debt make its taxable income close to zero. The trust itself essentially serves as a conduit, passing all the income it receives from the operating company on to its unitholders. As long as a trust distributes the cash flow from the operating company to the unitholders, the trust is not taxable. Because trusts are taxed at a high rate on any cash not distributed to unitholders, there is a great incentive to pay out virtually all of their cash flow each period.... Income trusts are therefore a tax-efficient way of getting cash flow from an underlying business into the hands of investors.

This preamble is prelude to one of the problems with income trusts: “because income trusts pay out virtually all of their cash, they will not have enough funds available to reinvest in the companies to remain viable enterprises or take advantage of attractive opportunities for future growth”(op cit).

To be sure there are some companies for whom converting to a trust format is ideal from a

variety of points of view. But Canadian firms (and their shareholders) got so carried away with this tax-induced institutional arrangement that Finance Minister Flaherty had little choice but to pull the plug on income trusts (in “trick” rather than “treat” fashion) on Halloween, 2006. No doubt there were better ways to alter the income trust environment and especially better ways than to lower the boom (retroactively) on the existing income trusts and their unitholders. But the relevant message for present purposes is that when the likes of Bell Canada (and apparently a cast of others in waiting) are pressured by their shareholders to convert to an income trust format, then things have gotten way out of hand. I hasten to add that this is not meant to blame Bell and/or its shareholders: they were simply acting rationally in the face of inappropriate regulatory and tax distortions.

Only two days after Mr. Flaherty’s announcement, Gwyn Morgan, founding CEO of EnCana Corp, reflected on the national competitiveness implications of income trusts as follows (Morgan, 2007):

Canadian business drives economic wealth through employment, economic development and investor value creation. The shareholders and employees of Canadian business provide the funds needed to run government programs and services. Therefore, research, reinvestment and growth are crucial to the future living standards of all Canadians. To the extent that trusts may have limited these things, the government had reason to be concerned

Of course, the trust phenomenon would never have gained such momentum if Canada’s corporate tax rates were competitive with those of other countries.

The government’s sense of urgency, no doubt, was brought to a head by proposals to convert Canada’s two largest telecom icons, but it is fair to say that Canadian directors and management teams have increasingly been faced with shareholders who are demanding to know why their corporations were not converting to a trust.

If, as Mr. Flaherty predicts, inaction would have resulted in an “income-trust economy,” then taking action is certainly in the longer term interest of Canadians.

While the new tax provisions serve to level the playing field between corporations and

income trusts so that the tax inducement to create trusts is much diminished, the lessons from this episode merit repeating: when major businesses, even icons, in sectors that are the presumed leaders in the Information Age are tempted by tax provisions to remove themselves from the creative-destruction fray, then something has really gone amiss with Canadian policy on the innovation and productivity fronts.

Prior to directing attention to a series of policy blueprints for enhancing innovation, competitiveness and productivity growth, the analysis will focus in some detail on two further issues, one that everyone believes is key to innovation and productivity, namely taxation, and the other that virtually no one associates with lagging competitiveness and productivity, namely Canada's volatile exchange rate with the US.

V: PRODUCTIVITY AND CORPORATE INCOME TAXATION (CIT)

Beyond the income trust example of the importance of taxation to competitiveness, the underlying reality is that for Canada to be an attractive, let alone a preferred location, for the capital, talent and innovative activity essential for the Information Age, our tax rates on mobile factors must be in line with those of our main competitors, and especially those in the US. In his October, 2007 Economic Statement, Finance Minister Jim Flaherty set in motion a process that would result in the federal corporate tax rate falling from the current 22% rate to 15% by 2012. He then asked for the cooperation of the provinces to reduce their CIT rates to the 10% rate in Alberta in order to achieve an overall 25% CIT rate which, if achieved, would give Canada the lowest CIT rate in the G7. This will be a daunting challenge since by 2012, and in the absence of any further changes to provincial CIT rates, these rates will vary from 10% in Alberta to 16% in New Brunswick and PEI, with Ontario's rate at 14%.

Actually, a related and even more daunting challenge has to do with the reality that five provinces (Prince Edward Island, Ontario, Manitoba, Saskatchewan and British Columbia) still maintain their Provincial Sales Taxes (PSTs), whereas the three other Atlantic provinces and Quebec have converted to a GST (value-added tax) format, while Alberta has no provincial sales tax. The problem with these PSTs is that they tend to tax intermediate capital inputs, which are not only not rebated but are embodied in export prices, whereas the GST has rebates on all levies on intermediate inputs and a full rebate of the GST on all exports. Moreover, several provinces still maintain capital taxes. The policy opportunity here, noted in the Economic Statement, is that by converting the remaining PSTs to GSTs and by eliminating the associated capital taxes Canada's marginal effective tax rate (METR) on business inputs would be reduced by about 7 percentage points. Indeed, the Economic Statement notes that "harmonizing with the GST is the single most important action that these [non-GST] provinces could take to improve their provincial and Canada's overall competitiveness." Intriguingly, in the IRPP's *A Canadian Priorities Agenda* project (Leonard et al, 2007) an equivalent PST recommendation scored second highest out of a choice set of 22 policy/instrument options.

Despite the fact that Bird and Smart (2006) have shown that provinces with provincial GSTs have fared considerably better in terms of investment growth for machinery and equipment than provinces with PSTs, this conversion from a PST to a GST is difficult politically, since the tandem of exempting intermediate business inputs on the one hand and extending the base to include all services on the other is a tough sell electorally.

In the larger socio-economic and fiscal-federalism context, the GST is a strategically important tax. This is so because its export-import neutral feature makes it an ideal tax for a small open economy that desires to have a larger public sector than its principal trading partner (or

partners). Moreover, it is also ideally suited for the provincial level since consumption is allocated more equally per capita across the provinces than is personal income, let alone corporate income, which would require smaller equalization payments, all else being equal. The criticism leveled at Finance for cutting the GST would have been substantially reduced had this GST tax cut been tied to strong incentives for the five outlying provinces to embrace the GST. For example, and apart for the direct benefits as noted above, this would set the stage for creative initiatives, such as transferring further GST tax room to the provinces in return for a transfer of corporate income tax room upward to Ottawa. Even without these incentives, it is surprising that the province of Ontario remains an outlier. This is so because it has long had one of the most distortionary PST/capital-tax regimes which, when combined with its manufacturing export intensity, makes it the province with the most to gain from moving to a more competitive business tax regime. With the next election a full term away, harmonization ought to be at the top of Premier McGuinty's economic agenda. If Ontario's *Speech From The Throne* is any indication, the province seems profoundly indifferent to this and most other economic measures that might offer relief on the competitiveness/productivity front

Since the very airing of the tax challenge in relation to productivity and competitiveness is effectively to outline the nature of the solution, the above analysis is in reality a "policy blueprint" for taxation, and will be treated as such (i.e., it will not be replicated in any detail in the later policy blueprint section).

Now to the elephant in the room...

VI: PRODUCTIVITY, COMPETITIVENESS AND THE EXCHANGE RATE

The mainstream of the Canadian policy community believes, almost as an article of faith,

that exchange rates do not affect productivity, and particularly not in the long run. Some of this may come from the received wisdom that in the long run money is neutral, i.e., that monetary variables do not affect real variables over the longer term. And since the exchange rate is a monetary variable while productivity is obviously a real variable, productivity growth is (or ought to be) independent of the exchange rate.

One of the motivations (prejudices, perhaps, may be more apt) underlying the ensuing analysis is that this mainstream view is incorrect. Specifically, an exchange rate that is as volatile as the Canada-US exchange rate is far from neutral either in terms of productivity or competitiveness.

Toward this end, Figure 3 presents the movements in the exchange rateⁱⁱ and in our exports to the US, while Figure 4 presents the trends in Canadian and US indices of unit labour costs (where the underlying data were unit labour costs expressed in US\$). Attention is directed first to the sharp and prolonged depreciation of the \$C over the 1990-2002 period, where the exchange rate depreciated from roughly 90 US cents per Canadian dollar to just over 60 cents. This was accompanied by a veritable explosion of Canadian exports to the US – from roughly \$100 billion to \$350 billion (Figure 3). As a relevant aside, this is the era when Canadian economic activity veered dramatically north-south, as earlier noted. Drawing from Harris (2002 and 2003) and Courchene and Harris (1999), as well as on the reasonable assumption that capital equipment is likely to be priced in US dollars, the deep and prolonged depreciation meant that capital became much more expensive (in Canadian dollars) than labour in both absolute and relative terms, so that the incentives at the margin facing Canadian firms favoured meeting the increased demand for our exports by adding labour rather than by adding capital. Indeed this was the era where our employment rates reached hitherto highs.

Readers will also recall that this was also the time frame that the “brain-drain” issue came to the fore, since highly-skilled mobile labour (i.e., human capital) was tending to move to the US in search of the (exchange-rate driven) relative increases in US incomes. Therefore, in terms of both physical and human capital our capital-labour ratio was falling relative to that in the US. Arguably, this is one the reasons why, as noted earlier, Canada’s investment in the Information-Age GPT (machinery, equipment and software) fell relative to that in the US, and it is surely part of the story of why our productivity growth rates have lagged those in the US.

With the recent sharp and incredibly rapid \$C appreciation (Figure 3) and the corresponding dramatic upward spike in Canada’s relative ULCs (Figure 4) the pendulum has swung to the opposite extreme, in the sense that the substantial overvaluation of the \$C is now the challenge. At the time of writing (with the dollar in the 106 US cent range), the \$C has appreciated just over 70% from its 2002 level. Hence, the incentives facing Canada’s firms have now shifted markedly in the direction of *increasing* the capital-labour ratio. The mainstream view here is presumably that our decade-long concern about lagging Canadian productivity is about to be rectified: the sharp fall in the price of capital (expressed in Canadian dollars) will provide strong incentives to deepen capital (to increase the capital-to-labour ratio) and thereby to embark on higher productivity growth. In other words, the claim would be that we are (or soon will be) essentially at the same position in terms of the capital-labour ratio as we would have been had there been no exchange rate overshooting. Or, as stated at the outset, longer-term productivity growth is independent of the exchange rate since the short term deviations will cancel out as the exchange rate cycles around its purchasing-power-parity equilibrium rate.

However, there may well be a serious problem with this mainstream view. Specifically, before this 70% appreciation of the \$C has the opportunity to trigger capital deepening, the

economy will experience severe bouts of downsizing, out-sourcing abroad, off-shoring (locating) abroad, and even closing down completely. And not all of these will be concentrated in marginal firms, such as those that entered the market because of the earlier \$C undervaluation. Although the incentives are still in the direction of increasing the capital-labour ratio, the domestic capital base on which deepening will occur is now (perhaps substantially) lower. Moreover, the problems for Canadian firms associated with the overvalued currency are likely to get considerably worse, especially since the US economy will become very competitive at its existing exchange rate.

At a related but more general level, Canada is currently falling prey to a severe bout of the *Dutch Disease*, so named because Holland's North Sea energy exports so appreciated its exchange rate that this served to clobber Holland's manufacturing sector. Transferred to Canada, in the wake of energy prices nearing \$100 per barrel, the value of our energy exports and the related inward FDI directed toward our energy sector has so appreciated the Canadian dollar that our manufacturing and services exporters are also being clobbered. The underlying reality (from my vantage point) is that the Canadian currency area is too small, at least under highly volatile energy prices, to accommodate at the same time a world-class manufacturing sector and one of the world's most diversified and dynamic energy sectors. In addition, the resulting exchange rate volatility and uncertainty is likely to dissuade inward FDI (from Europe for example) from contemplating a Canadian location for servicing NAFTA economic space.

One obvious alternative would be to immerse Canada into some version of an FTA currency area, initially via fixed exchange rates with the US, but eventually evolving over time into some FTA or NAFTA version of the Euro.ⁱⁱⁱ Were such a system in place, rising and volatile energy prices would not compromise manufacturing access to the US market since the Canada-US exchange rate would be fixed (or non-existent under a euro equivalent). Another alternative

would be for Canada to take a page out of Norway's policy manual by redepositing any energy-price-related capital inflows (both from exports and FDI) back in international capital markets in order to temper to rise in the exchange rate (or in the Kronor in the case of Norway). Admittedly, this may not sit well with the inflation-targeting purists. While I agree that it would not be normal under inflation targeting for the central bank to temper "run-of-the-mill" currency movements in this manner. But the forces that are driving up energy prices and overvaluing the dollar are hardly normal (e.g., hurricanes, sabotaging oil wells). In any event, given the substantial time and effort that the government and the business sector is investing in ensuring greater *physical access* to the US market, it is surprising (incomprehensible is arguably more apt) that virtually none of the analysts focusing on productivity and competitiveness express concern that exchange-rate volatility is undermining our *economic access* to US markets. For example, the CPRP's consultation paper appears to completely ignore the possibility that exchange rates might have something to do with competitiveness and productivity.

Note that although the above discussion was cast in terms of the Dutch Disease, it would also apply more generally. Should we simply be inactive onlookers while the US dollar depreciates sharply for whatever reason? While Canada has diversified its exports in recent years, something like 70% of our exports are still destined to US markets. We would literally hit the roof if the US put a 70% import tariff on Canadian value-added shipments. Why, then, are we completely complacent when our chosen policy has led us to put an effective 70% export tax on the Canadian value-added component of our shipments to the US?

However, the current reality is that the proposal to consider a fixed exchange rate appears to have little traction economically or politically and, like the case for free trade in the early-to-mid-1980s, it is unlikely to gain such traction unless and until the business community comes on

side. Nonetheless, it is worth reminding ourselves of the very successful economic and social performance we experienced under the 1962-1970 fixed-exchange-rate system. This was the Pearson era, arguably the most important period in terms of social policy development in our history (the introduction of CPP/QPP, the comprehensive equalization system, the Canada Assistance Plan for welfare, key improvements in our hospital, medical and post-secondary education funding, among other socio-economic measures). When combined with the decision not to follow the US into Vietnam, the oft-cited claim that fixed exchange rates will compromise our policy sovereignty rings rather hollow. In addition this was also a prosperous time for Canada and Canadians in terms of the focus of this lecture: our productivity growth rate increased relative to the US and we closed the productivity gap considerably. Indeed, our productivity level as a percent of the US level was higher than it is now, in spite of the implementation of the FTA and NAFTA, which were touted, *inter alia*, as instruments for enhancing our productivity. Beyond this, the euro experience is pointing the way to the era when currencies will be viewed as supra-national public goods, given that virtually all of continental Europe is either in the euro area or is fixing their exchange rates to the euro.

Even if the above analysis is not persuasive in terms of the case for fixed exchange rates as the appropriate mechanism for ensuring the successful co-existence of the manufacturing and business services sector on the one hand and the resource sector on the other, it ought to be persuasive enough in terms of providing ample warning signals that we are punching way below our weight competitively. Compared to the US, we have a more sharing community, a better-educated labour force except perhaps at the very top, a safer and more law-abiding society, a better public school system, a Medicare system that represents a substantial cost advantage to business, and much better fiscal (debt and deficit) performance and prospects. Given all these

attributes, we are drawn back to a version of Guy Stanley's question: Why are we underperforming in terms of the indices relating to competitiveness and productivity? I think that the answers have to lie with our policy frameworks and the manner in which we are adapting (or not adapting) to the dictates of the Information Age. What follows are some tentative proposals to address these shortfalls, clothed in the no-doubt-inflated form of "policy blueprints."

VII: POLICY BLUEPRINTS

As prelude to outlining a series of policies directed toward enhancing innovation, productivity growth and competitiveness, we remind the reader once again that in terms of many key indicators such as employment and income growth Canada is doing exceedingly well, indeed much better than our neighbour to the south. Yet the US dominates Canada in terms of the indicators that measure innovation, productivity and competitiveness. One reason for this seemingly contradictory result has, of course, to do with the fact that Canada is drawing economic strength from its resource endowments and, relatedly, from the demands on these resources from the economic ascendancy of China, India, and Brazil among others. Therefore, one must interpret the recommendations that follow, important as they may be in terms of the objectives of this paper, from the perspective that our economy appears to be firing on all cylinders and Canadians' purchasing power vis-à-vis the Americans has never been higher. However, and as noted earlier, it may well be easier to right some of our obvious economic wrongs in good economic times than when the economic prospects have dimmed and the fiscal tap has run dry.

Recall, also, that leveling the international playing field by lowering corporate income taxes and by converting the remaining provincial sales taxes (and capital taxes) into a GST format was designated earlier as one of the policy blueprints. While we believe that this is a necessary

condition for enhancing competitiveness and productivity, it is not a sufficient condition. Phrased differently, lowering CIT rates will, in my view at least, have an effect that will be positively related to the degree to which some of the following policy blueprints are implemented or otherwise addressed. A further introductory issue relates to the environmental challenge: Canadian policy needs to come to grips with the severity of the global problem of climate change. Our (essentially default) approach in this paper is to accept the #1 policy choice (across all policy areas) emanating from the IRPP's *A Canadian Priorities Agenda*, namely a carbon management standard (with progressive temporal restrictions on emissions) proposed by Jaccard and Rivers (2007) and/or a carbon-air-pollutants tax to fund conservation initiatives proposed by Olewiler (2007). The final introductory issue is to remind readers that the obviously important role of public infrastructure (transportation corridors, mass transit, border crossings, etc) in enhancing innovation and especially productivity is deemed to belong in the policy-blueprints section of the government and governance component of the larger study.

With this as backdrop, the following proposals merit inclusion as policy blueprints for an Information Age, beginning with those that will tilt Canada in the direction of encouraging an innovative environment and culture, i.e., that will address both parts of “creative destruction:”

Toward An Innovative Culture: The Burden of Proof Must Not Rest with the Innovator. In *A State of Minds* (2001) I proposed that government should adopt as a principle the presumption that any private sector initiative is permissible unless it can be demonstrated to be the contrary to the public interest^{iv}. This differs from the traditional presumption that the innovation should be in the public interest. The difference relates to who must bear the burden of proof. Innovators should not have to prove that their initiatives are in the public interest. Rather it is the advocates of the status quo that must demonstrate that the initiative is contrary to the public interest. Far too often we place the burden of proof on the innovators, e.g., the chartered banking sector in the merger controversy and the innovators in many of the CRTC hearings. This is hardly conducive to fostering an innovative environment and culture

Toward An Innovative Culture: The Importance of Exit. From a forthcoming paper by

Carleton's Don McFetridge (2007):

“Any important innovation threatens existing interests and entitlements. Threatened groups may be able to forestall it politically. It is in the degree to which the political system is able to insulate itself from the pressures of entrenched interests that is the mark of an innovative society. A political environment in which innovation policy is merely a pay-off to one more lobby group (“the science lobby”) is unlikely to generate much in the way of either innovation or productivity growth.”

Sylvia Ostry aptly captured this by noting that while governments may be no better or no worse than anyone else in terms of picking winners, losers are incredibly adept at picking governments! Even though governments typically find allowing exit difficult, it nonetheless is the key to any innovation/adjustment process, in no small part because it frees resources to be employed more productively elsewhere. Even more persuasive from my perspective is that protection in one area will surely beget further protection elsewhere.

Sustaining Competition. Since innovation involves new products, processes or organizational structures, or as *The Economist* suggests, innovation involves “fresh thinking that creates value” (Vaitheeswaran, 2007), this will only come about if we hold enterprises to the fire of competition, as it were. But far too many sectors in Canada are sheltered from market forces. Thankfully, the Competition Policy Review Panel has been tasked with assessing whether and how selected regulated sectors (telecommunications, broadcasting, cultural industries, transportation services, uranium production and financial services) can be subjected to enhanced competition. For their part the provinces, perhaps under the aegis of the Council of the Federation, should also mount a corresponding panel to deal with competitive issues, or lack thereof, relating to the operations of the provincial commercial crowns (e.g., the hydros). While some regulation is obviously necessary, the Information Age concern is that these sectors will fall behind international best practice and become the regulatory equivalent of the income-trust sector.

R & D Incentives: Canada has a history of rather generous R & D incentives, replete with some embarrassing and high-profile excesses as well as some programs like IRAP (the Industrial Research Assistance Program) which are championed in many quarters. In general, these incentives for increasing innovation are rather like CIT rates in terms of increasing productivity and innovation: one needs to ensure that the Canadian playing field is level with international best practice, but beyond this the effectiveness of these policies depends on other policy frameworks being in place, e.g., an appropriate competition policy regime.

Given that Canada has a larger government sector than the US, it becomes ever more important that government itself becomes more efficient and more innovative. Accordingly, concern about fostering an innovative culture should also apply to our federal structure:

Embracing Competitive Federalism. With 10 provinces and three territories engaged in the production of public goods and services, there is ample scope for encouraging innovation

and competition both within and across provinces. This would apply to both the design and delivery public goods and services (education, training) as well as to the institutions (e.g., the MUSH sector – municipalities, universities, schools and hospitals). Demonstrably superior innovations in products or processes will influence policies in other provinces, driving up productivity in the process.

Although Medicare arguably falls under the government/governance component of the larger study, it merits highlight here. This is so because health care in the KBE is emerging as one of the leading-edge economic sectors for high-level employment, innovation, research and exports. Failure to be at the forefront of the remarkable diagnostic, treatment, and service delivery innovations will mean that we will assuredly fail in our objective of ensuring that Canadians will have access to state-of-the-art health care. The underlying issue here is that we tend to view the health care system as falling largely within the social envelope. Moreover, our approach seems to be to favour cost containment, subject to some national conception of an acceptable or appropriate standard of services. However, the reality is that in the Information Age the health care sector will need a massive infusion of physical, intellectual and financial capital to enable it to become a dynamic engine of economic growth with numerous spin-offs to other sectors. Viewing the health sector solely as a social policy endeavour will almost surely guarantee that it will never receive this requisite infusion of capital. This is why elsewhere (2003) I embraced the Kirby proposal (that the Canada Health Act should be agnostic about who provides health care so long as government remains the single funder) as an important initiative in the direction of enhancing both productivity and innovation in what is our largest and most-valued government expenditure area. This is all by way of emphasizing the importance of the “competitive federalism” policy blueprint.

Promoting the domestic and international economic unions is obviously essential to enhancing our innovation, productivity and competitiveness:

Securing the Canadian Economic Union. Goods, services, labour and capital must flow

free and freely across provincial boundaries. In the 2007 Economic Statement, the federal Finance Minister indicated his intention to use section 91(2), the federal trade and commerce power, to counter provincially-mounted barriers to internal trade. It is also important, however, that Ottawa be similarly constrained from fragmenting the internal market, especially since federal barriers can be, and are, every bit as distorting as provincial barriers – EI for example.

Securing Greater Access to NAFTA Economic Space. Even though Canada is appropriately diversifying its export markets of late, the US market remains central to our well-being. Because over 70% of Canada-US trade is inter-industry, enhancing access to the US market as well as working to deepen integration is essential in terms of continuing and increasing our participation in US supply chains^v. In terms of accommodating the post-9/11 homeland security concerns, Canada might look to Europe for creative approaches to moving goods and people across borders (e.g., rapid movement of people across boundaries where passport/security checks are carried out *en route* (in secure trains or buses) rather than at the physical border).

Lowering Import Duties. Given that global value chains are an increasingly common feature in the Information Age, it becomes important that Canada consider eliminating import tariffs on those foreign inputs that are essential to making Canadian production more competitive.

Addressing the Dutch Disease. The impact of the energy-price-triggered appreciation of the currency is creating enormous problems for Canada's manufacturing sector, problems that will surely intensify the longer the substantial overvaluation remains. Moreover, given that the roughly 70% rise in the loonie relative to the US dollar is also a 70% rise against China's RMB, the prospect is for even more activity to be "offshored." As already noted, one solution is to move toward a common currency with the US. But unless business comes on board this proposal will have no traction politically. Perhaps we could follow the Norwegian approach in offsetting the foreign currency inflows by re-depositing an equivalent amount of foreign currency on international markets. The bottom line is that we need to find ways to ensure that a powerful domestic energy sector and a world-class manufacturing sector can co-exist. Finally, we need to recognize that Canadian monetary independence and flexible exchange rates are policy instruments, not policy goals. This being the case we ought to engage in a societal review as to whether they remain the most appropriate set of monetary instruments.

While this focus on the Dutch Disease, implicitly at least, pits the knowledge-based economy against the resource-based economy, the on-going reality is quite different in the important sense that the energy sector, and the resource sector more generally, are arguably where much of the new KBE general purpose technology (GPT) finds application. The size and diversity

(and therefore flexibility) of the western Canadian energy sector is such that it is well-positioned to become a global leader of low-carbon-emission fossil energy and the center of an international value chain where Canada's role must be (beyond providing the feedstocks) to locate itself well up this value chain, in contrast to the former resource-based mentality that led to labeling Canada and Canadians as hewers of wood and drawers of water. The potential to become a global leader is obvious because of the depth and breadth of our energy endowments (coal, oil, gas and tar sands in Saskatchewan and Alberta, gas and hydro in BC, hydro in Manitoba, uranium in Saskatchewan, and grain-based and forest-based feedstocks for ethanol throughout the west) which, in turn, provide the flexibility to "mix and match" as it were in the pursuit of a more environmentally friendly energy supply. Given California's stated intention of tracing the carbon imprint through to the source, and the likelihood that other US states will follow suit, this means that the response of the energy patch in terms of adapting to this emerging competitive reality may be every bit as important on the climate change front as our own deliberate environmental policies. By way of a final and likely controversial comment with respect to this issue, the fact that Alberta, for example, owns and has the right to manage its energy and resources should not imply that it can march to its own drummer on the energy/resource policy front. Actually, the same should apply to the crown hydros. Allowing the provinces to determine their energy and resource futures without recognition of the possible cross-province spillovers, externalities and/or complementarities will most likely run afoul of innovation and productivity concerns, let alone Canadian economic union issues. The essential point here is that we must allow our energy sector to take advantage of the opportunity to become a model Information-Age sector, with myriad and valuable spinoffs throughout the economy. This constitutes the final policy blueprint.

VIII: CONCLUSION

Canada excelled within the old paradigm. The UN survey of the most livable nations on earth annually told us so. However, we appear to be having considerable difficulty in mastering the requisites of the Information Age. Some of this may be due to the “luxury” of operating under a dramatically undervalued currency for the better part of a decade. Some of it may be due to the “return of the old paradigm” in the form of the China/India/Brazil ascendancy and the consequent resource and energy boom, where we again are excelling.

While a case can be made that the resource boom will be long-lived, which means that we can escape some of the Information-Age dictates, the underlying premise of the above analysis is that there is, in effect, no such free lunch. Thus, the longer we delay the inevitable adjustment the more difficult will the future be. This is not in any way to downplay Canada’s resource future. Indeed, the opposite is the case. It must become the model Information-Age sector – a leader in clean carbon energy, the central node in an energy/resource value chain where Canada operates well up the chain as well as the provider of the resource building blocks, and a sector that becomes aware of, and encourages, the myriad of valuable spinoffs that it can provide for the wide range of related sectors.

While the above focus on markets and enterprise is only one part of a larger research thrust, it is clearly a critical part. To be sure, others may have selected a quite different set of policy blueprints. So be it. My selection was determined by focusing on policies that i) address or accommodate the ways in which the underlying economic model and competitive framework have evolved in the Information Age, and ii) address some of Canada’s existing failings on the productivity/innovation/competitiveness fronts. It was also motivated by the consensus of the powerful policy lobby for whom there appears to be no productivity or competitiveness problem

for which a tax cut or a smaller government is not the appropriate solution. I much prefer the message contained in the subtitle article by Stanley (2007): "More Than Money Required." In any event, to arrive at the appropriate policies, one has to come to grips with the evolved nature of the underlying challenges in the Information Age. The purpose of this paper was to make some inroads in this direction.

Endnotes

i. Given the importance of networks to the ensuing analysis some further detail is warranted. Again Castells (2004, 3) is the source:

A network is a set of interconnected nodes. ...A network has no center, just nodes. ...Nodes increase their importance for the network by absorbing more relevant information and processing it more efficiently. The relative importance of a node does not stem from its specific features but from its ability to contribute to the network's goals....When nodes become redundant or useless, networks tend to reconfigure themselves. ...The network is the unit, not the node.

ii. These charts are reproduced from Courchene (2007a). The exchange rate is expressed in terms of the number of US cents for a Canadian dollar. Therefore, a change in the exchange rate from, say, 90 cents to 105 cents represents an appreciation of the \$C.

iii. For an analysis of the challenges and opportunities associated with moving toward a North American version of the Euro, see Courchene and Harris (1999).

iv. See Courchene (1983) and Ontario Securities Commission (1983).

v. This paragraph is adapted from Courchene (2003).

vi. See Dobson (2007) and Beckman and Goldfarb (2007).

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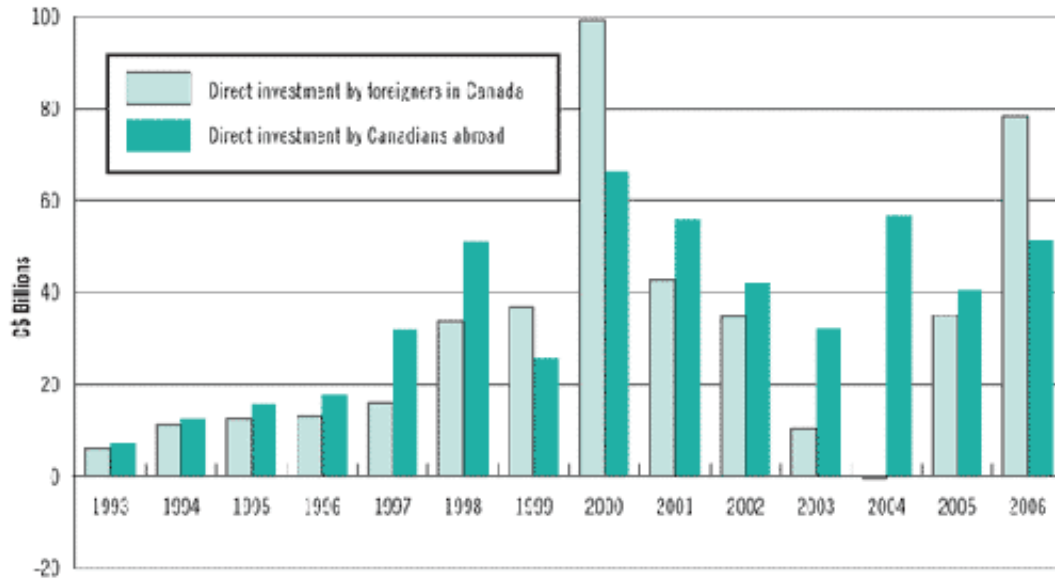
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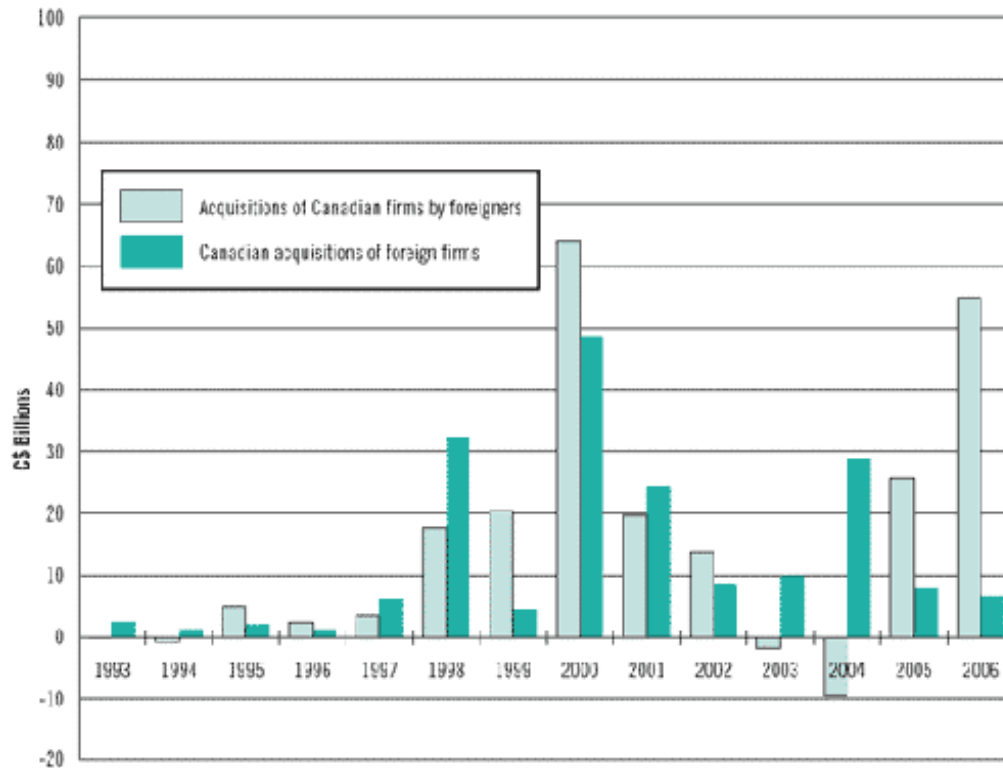
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Figure 1 – FDI Flows into Canada and Canadian Direct Investment, 1993-2006 (Billions \$C)



Source: Statistics Canada, CANSIM Table 376-0016.

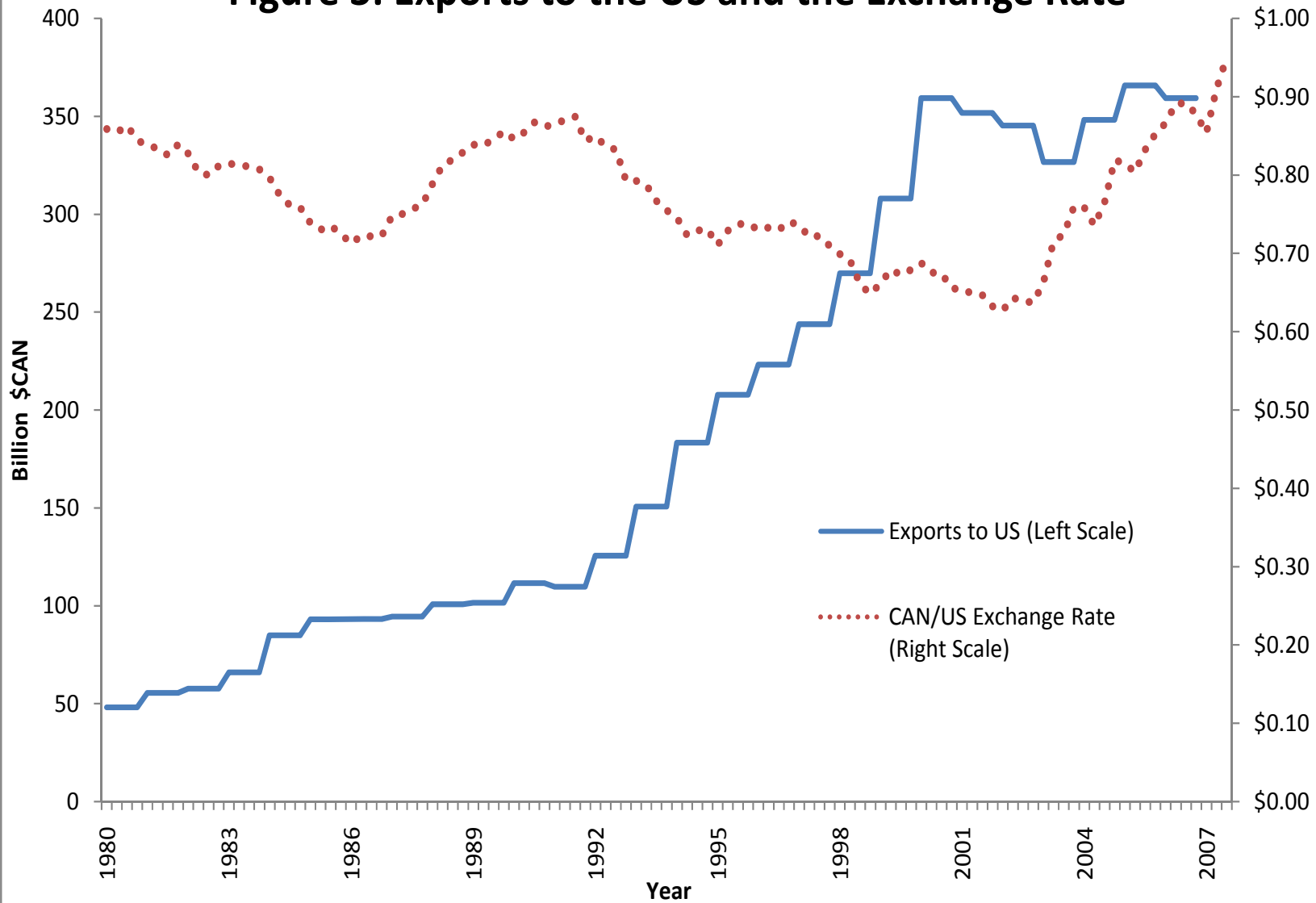
Figure 2 – Canadian Inward and Outward M&A Activity, 1993-2006 (Billions CAD)



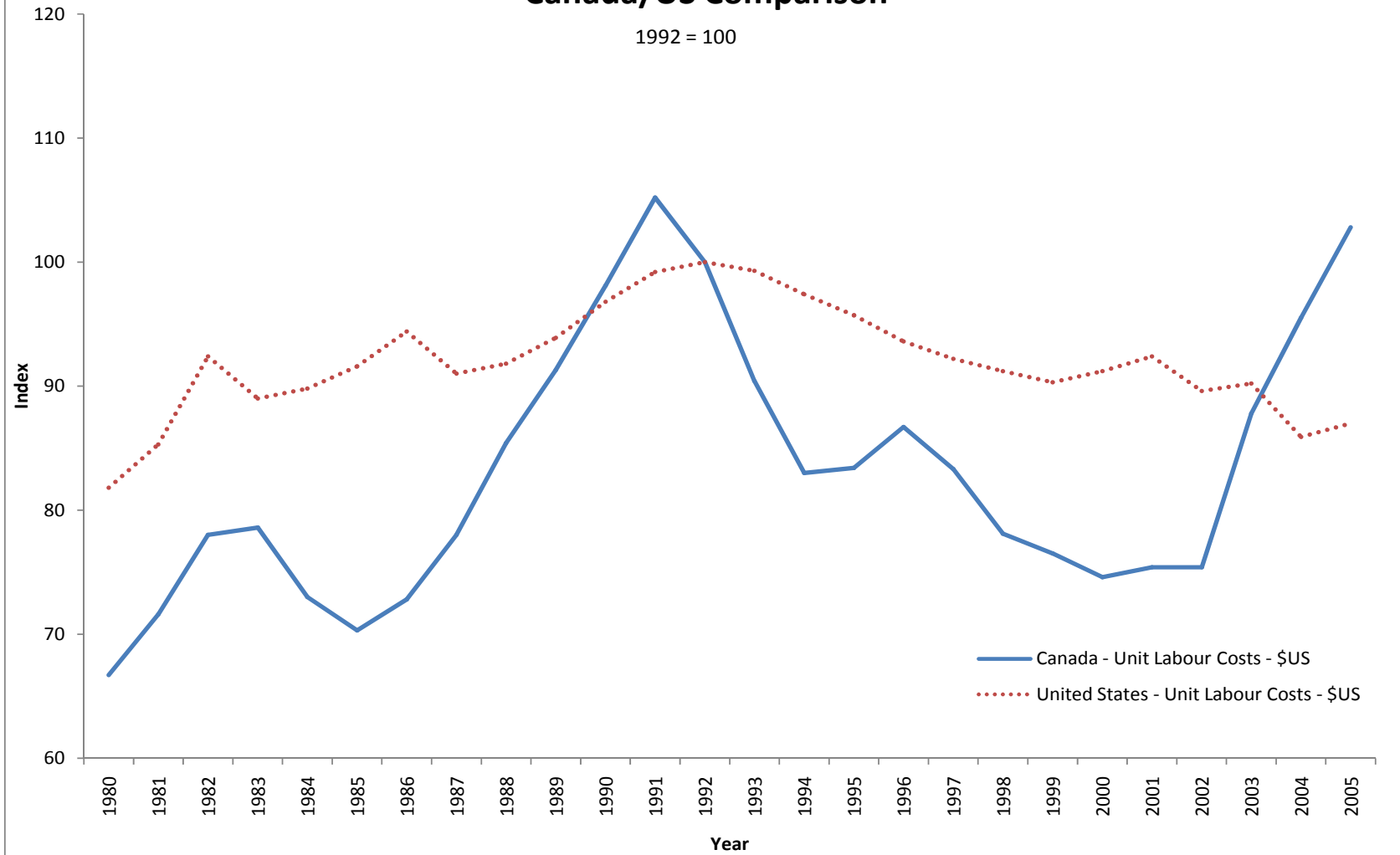
Source: Statistics Canada, CANSIM Table 376-0016.

Reproduced from CPRP (2007, Figures 7 and 6 respectively).

Figure 3: Exports to the US and the Exchange Rate



**Figure 4: Indices of \$US Manufacturing Unit Labour Costs:
Canada/US Comparison**



Figures 3 and 4 reproduced from Courchene(2007a)