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It is interesting how there is, without any kind of international multilateral orchestration, an emerging consensus on approaches to innovation and pro-competitive policies. I think that you will be able to conclude that Canada and the United States are on similar tracks, although certainly not identical tracks, when it comes to innovation policy. Clearly this is not a new area, but it is an area that is increasingly being defined as knowledge-based and as whole innovation policy. People speak in terms such as "national systems of innovation" and the like. There is certainly no unanimity, however. As I look at the technology policy which is developing in the United States, I am amazed to see the United States take the lead in the Uruguay Round to increase the scope for taking subsidy action when it comes to R&D innovation practices.

In Canada we have gone in just the opposite direction. We, too, have been undergoing in the past year quite a massive re-engineering of government.

In the U.S. Congress they are talking about eliminating the Department of Commerce. In Canada, the federal government has made the decision to reduce the Department of Industry by forty-two-and-a-half percent over three years. It has, in essence, announced a total elimination of all subsidies to firms by the Department, and a sixty percent reduction in subsidization for all sectors across the government.

What is left is the hard-core of the program, including some agricultural subsidies. There is a bit of transportation here and there; but the subsidies to firms have ended. We are out of that game. That is not what Canada is about, and that is going to require significant adjustments.

We were talking a little earlier about the aerospace sector. Well, if you are in the aerospace game, you are into subsidies to aerospace firms. If you are not in the game of subsidies to aerospace firms, you are not going to participate in that sector.

There is a little footnote on what we put out in our budget in February. We did not quite eliminate subsidies to the aerospace firms, but we have essentially reduced them to almost negligible amounts, and we

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The following text was compiled from the transcript of the remarks made by Mr. Nymark at the Conference.

will be making final decisions in that area in the next few months. But by and large, we have turned the corner. We have taken action. We have reduced the size of government in its dealings with the private sector, and we have moved very strongly towards the elimination of subsidies at the firm level.

In North America we are supposed to be living in an integrated North American economy. There is supposed to be a level playing field, but when one government is, in fact, moving in a different direction then the other partners will find it very difficult to pursue pro-competitive policies.

The second driving force to innovation policy is a very profound change in the intellectual framework for growth theory and growth policy. I think it is probably a lot clearer to the private sector than to the intellectual or academic community that it really is ideas that drive economic growth. If it was the accumulation of labour, I think India would be leading the world; and if it was the accumulation of capital, the former Soviet Union would have led the world.

The simple concept that ideas have an actual impact on industry is really the basis for economic growth. We take and develop ideas within our environment and they are translated into economic activity and growth. There is a role for government in this process. Government does create part of the economic climate for idea generation, transmission, and application. So in Canada, public policy support for innovation now is very firmly rooted in a much broader objective for building a more innovative economy.

I might note at the outset that when we talk about innovation, it is not just microchips. Innovation occurs in all industries and in many forms. Firms are capable of being innovative in all sectors of the economy — and I have to particularly emphasize this when I am speaking to just the Canadian audiences. It may appear that we are abandoning our resource sectors because innovation and high-tech are considered just the advanced areas of, for instance, telecommunications. We are not!

Through the 1980s we aimed to identify the impediments to innovation and growth and then to provide support in areas such as financing, the regulatory system, infrastructure, and so on. We also, I think, over the course of the 1980s, came to a recognition, as most countries did, that in the macroeconomic area this was necessary, but not sufficient to get your fiscal and monetary climate right. But, in the constrained world we live in, this was not going to be the area of economic policy that would make the greatest contribution.

So the attention shifted dramatically from a focus on macro-policy in the 1980s to microeconomic policy in the 1990s and what agenda the government would follow. I emphasize again as we move to a microeconomic perspective that we are not talking about a top-down

approach. This is not the government picking winners and losers. It is the government in a supportive role.

The development of our microeconomic agenda has been based or guided by a number of principles such as: creation of partnerships, not increasing spending but reducing spending, and reallocating the spending, providing help for people and support to markets, and getting government right.

As the Canadian government addresses the issue of productivity growth, it is focusing on four policy areas: marketplace climate, trade, infrastructure, and technology policy.

I. Marketplace Climate

In Canada the first policy area is the marketplace climate. A document entitled *Building a More Innovative Economy*, released by the Canadian government last fall, emphasized a number of marketplace policies such as best practice policies— what Canada is trying to pursue.

In the area of financing there is quite a structural difference between Canada and the United States in terms of firm activity. In Canada, small or medium-sized business is overwhelmingly a larger portion of our economy than it is in the United States. It is also true that job creation in Canada, over the last decade or decade-and-a-half, has occurred almost entirely in small and medium-sized businesses and not in large businesses as it has in the United States.

There are some statistical problems here. The large companies are shedding and creating small businesses, so how do you really measure those things? There does appear to be a structural difference. When we look at financing issues in Canada, we look at them largely from the point-of-view of small and medium-sized businesses and in terms of the knowledge-based economy.

We are looking at how our financial system, which is based on relatively few players with very large networks, is responding to that shift. Traditionally small and medium-sized enterprises (SMEs) in Canada have relied on the banks for their financing. That is not the case in the United States. So there is interest by the government to encourage alternative sources for financing for SMEs, particularly knowledge-based firms.

In the area of deregulation there are similar trends as well between our two countries and around the world. The massive leaps forward in deregulation and privatization, particularly in the North American economy, are largely behind us, with some notable exceptions. Canada is focusing now on the process of deregulation or re-regulation. It takes an interminable amount of time for business and government to modernize regulatory systems which, everybody would agree, we need for environmental or safety reasons.

We are modernizing the way we regulate — we have introduced in Parliament the Regulatory Efficiency Act which allows some companies to apply to enter into agreements with governments to meet regulatory requirements in fields such as biotechnology and health.

Technology and innovation are very much linked to the issue of technical standards. In Canada we have a national voluntary system of standard making which has resulted in a very diversified system of standards. We are radically overhauling the Standards Council of Canada to help small and medium-sized enterprises influence the development of standards both within Canada and with the application of Canadian standards abroad.

Training and education must really be the centerpiece of economic development policy for countries, and that does lead to, in Canada as well as in the United States, a merging of economic and social policies to an unprecedented extent.

In addition to the training and education focus, we are looking at the full Social Security system in Canada; everything from unemployment insurance to health to secondary education. That whole range of activity, amounting to seventy billion Canadian dollars annually, was put on the negotiating table in 1994. That is significant, because it represents ten percent of our GDP.

You have attempted to look at health reform comprehensively. We, too, have attempted to look at health reform and all the other things that make up Social Security. I expect that there will be, over the course of the next couple of years, fundamental changes in Canada. We have already announced that our entire relationship vis-à-vis the provinces in social policy will be changed to one large block fund transfer with very few conditions attached.

We have in the last few years not only participated in the international negotiations in a variety of fora, but we have amended and modernized five intellectual property Acts over the last three years and are in the process of updating our Copyright Act. It is those kinds of environmental policies that affect innovation and are very much at the heart of our agenda.

II. TRADE

In the second area, trade, we had developed our manufacturing base behind a tariff wall. We turned that corner about fifteen years ago and have leapt out to the forefront with you both multilaterally, regionally, bilaterally, and in any other way we can to pursue trade liberalization.

We have, on the international scene, like the Europeans, pursued an internal trade agreement over the last couple of years. We signed an internal trade agreement in the summer of 1994, and it will be implemented as of July 1, 1995.

I know Americans typically think of Canada as being relatively more balkanized than the United States. I do not think that stands up to an empirical evaluation. While your constitution allows you to step in on interstate commerce, ours does not, except in the goods area. However, you are traditionally very reticent to do so.

I have looked at interstate trade barriers in the United States and they probably put a heavier dead weight loss of efficiency in the United States than in Canada, but they appear to be an agenda which you choose not to pursue, and I never really understood that.

III. Infrastructure

The third area of policy action is on building an efficient infrastructure for tomorrow in the area of transportation, telecommunications, and information networks. In the areas of transportation and telecommunications, the multilateral rules that are based on negotiations that take place from time to time are virtually now a permanent feature given that the World Trade Organization is not really where the action is. I think the private sector is so far ahead of government policymaking at the domestic level in this area that it is just light years ahead of us policymakers on the international field, and that is probably a good thing. I am glad to see the private sector leading in this area.

Certainly in the area of telecommunications regulation in Canada, as well as the United States, we are struggling to keep up with the impact of technology. We have adopted a very strong pro-competitive stance and are working now with our regulatory bodies to restructure them to support that direction.

IV. Technology Policy

The fourth area is technology policy. How do we harness it in support of innovation? In Canada, over the last year, we have undertaken a major review of science and technology. We do not spend seventy-two billion dollars a year as you do, but we have spent six billion dollars per year in science and technology. As a result of our last budget, we did not just shuffle the deck. We reduced the envelope by twenty percent. So even in an area which we are defining as the heart of innovation and economic development policy in Canada, it too is not spared from the need to reduce the size of government. The challenge is to reduce expenditures and reallocate them to the most critical areas where the private sector is not able to deal with these matters on their own.

Our Prime Minister's National Advisory Board on Science and Technology will report in the next few weeks on a long-term strategy for science and technology policy in Canada, and the government will

be responding shortly.

There are several key elements which are emerging, however. The first is science and technology policy in the context of economic growth, per sé, and I have touched on the obvious connection. In Canada we have traditionally relied on the government sector for doing a large part of the science and technology effort. That is not sustainable. We have to find ways to shift the relative burden of innovation expenditures to the private sector — not an easy thing to do. There are no easy answers.

The OECD suggests that Canada has the most generous R&D tax credits in the world. Why is it then that Canada's private sector's performance does not match that level of generosity. I think that we are, as you are in the United States, looking at fundamental reform in terms of how we operate our government labs. We do too much intramural research and not enough extramural research.

Institutions in the private sector are changing rapidly. Institutions in the government sector must also change rapidly, and that must happen at the lab level. We have to believe in fundamental research, but we also believe in relevance.

One of the things which has become very clear to us in the review of our science and technology efforts in Canada is the inaccurate statistical base upon which the government's policy is developed. The system of national accounts that most countries have built up over the last forty years is the basic infrastructure which forecasters in our treasury or finance ministries and in the private sector must absolutely rely on. There is no similar statistical base when it comes to innovation and science and technology. All we measure is input, in other words, how much we spend. We do not measure the output, and the ability to formulate public policy in the area of innovation is severely hampered by that. I think that both the United States and the OECD increasingly recognize this as a fundamental flaw.

The second element in the science and technology strategy has to be related directly to quality of life. But in an era of increasingly restrained resources where, in fact, social expenditures are the largest part of government expenditures, we, too, infrequently turn to science and technology to ask: How can we do that more efficiently both in terms of what services we deliver and how we deliver them?

I do not think that Canadians are willing to reduce their expectations in terms of quality of life and the role of government in supporting quality of life. But I do think that Canadians and Americans believe that we pay far too much in terms of government expenditures in delivering the kind of outputs that we are looking for. In the area of health care, for example, a group of researchers working under the direction of Judith Maxwell, the former head of the Economic Council of Canada, has estimated that with simply more appropriate use of fa-

cilities and better practice, Canadian health care costs could be reduced by as much as seven billion dollars per year. That would be a very large savings.

On the broader front of quality of life I think that we are moving towards anticipation and resolution of problems before they actually become problems. This is particularly true in the area of sustainable development.

The third element of a science and technology strategy is the maintenance and enhancement of the science foundation itself. Scientific research remains the core of the ability of industrialized countries to sustain growth.

Sylvia Ostry of Canada and Richard Nelson of the United States in their forthcoming book *Techno-Nationalism and Techno-Globalization: Conflict and Cooperation*, highlight the importance of support at the government level for basic research. In Canada we are aiming to maintain a solid base of world class fundamental research; but as I just mentioned, while excellence remains the most important criterion, we are increasingly looking to the issue of relevance to economic and social objectives in guiding the decisions of allocating our expenditures in fundamental research.

The fourth element of a science and technology strategy is how we manage it. As in the United States, science and technology is increasingly seen in Canada as being fundamental to every aspect of government policy. So every government department has a role in it. They have a mandate to produce certain output. Science and technology is one of the inputs they use. But there must be interagency cooperation. Allocation of science and technology resources must conform to a sense in society that we are supporting those areas that are of greatest importance. Every country in the world is experimenting with the institutional framework for this. In the United States you have experimented in a number of different directions in the last couple of decades, but you really are moving towards a more centralized system right now.

In Canada we, too, are experimenting with science and technology governance. The Prime Minister of Canada does not have a formal role in the evolution of science and technology policy to the degree it is centred in the White House in the United States. We do not have the formal relationship between the Prime Minister's office, the Secretary of State (Science, Research, and Development), and our Treasury Board to the degree you have it between the White House and the expenditure allocation functions in your government.

Science and technology governance is a serious matter because it can fundamentally alter how priorities are set and how funding decisions are made. That is a debate which has been on-going for some time, but which we hope to at least resolve in some way in the next few months.

Let me mention, just as I am closing, that there are very strong relationships between Canada and the United States in the area of science and technology. We are, for example, working together on the space station project, in the establishment of standards for information highways, and in the development of the next generation of manufacturing technology through the Intelligent Manufacturing System Program. Our respective diffusion networks are already collaborating with each other. We are developing diagnostic tools to help small and medium-sized businesses innovate and we are collaborating to some degree on looking at the role of benchmarking in an innovation policy. We have actually just signed between the U.S. Department of Commerce and Industry Canada a Memorandum of Understanding exchanging personnel. We also plan to collaborate in such things as National Science and Technology Week.

But my bottom line is again, we spent the 1980s taking the large leap forward towards an integrated North American economy, levelling the playing field, understanding that in each and every industrial sector in our economy there is now an invisible border between our two economies. I think it is incumbent that our two governments cooperate at the level of the microeconomic agenda to ensure that, indeed, there is a level playing field between us.