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SM/00/6
Correction 1

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INFORMATION

March 2, 2000

To: Members of the Executive Board
From: The Secretary
Subject: **Canada—Selected Issues**

The following corrections have been made in SM/00/6 (1/11/00):

Page 5, para. 8, line 3: for “(Figures 3 and 4).” read “(Figures 3 and 4).⁹”

Footnote 9 added: “Some caution...therefore the ISP.”

Page 33, Figure 1, heading: revised

Page 35, footnote 3, last line: for “February 1999.” read “July 1999.”

Page 45: figures revised

Page 53, para. 9, last line: for “equity (i.e., ensuring...generations are) read “equity”

Page 54, line 1: for “equal to...generation) would call” read “would call”

Corrected pages are attached.

Att: (6)

Other Distribution:
Department Heads

TFP growth in Canada has declined sharply since 1973, and was negative between 1989 and 1995. Jorgenson and Yip note, however, that negative TFP growth was also observed in four other advanced economies during this period, where a marked improvement in the quality of labor and capital was experienced like in Canada.⁷ Jorgenson and Yip explain that the decline in “quality-adjusted” TFP growth since 1960 may reflect the diminished importance of the role played by investment and research and development in generating “positive externalities” and stimulating growth, as outlined in the models of Lucas (1988) and Romer (1986). Nevertheless, these results should be interpreted with some caution given the difficulties in measuring accurately and objectively improvements in capital and labor quality within and across countries.⁸

8. In comparing ISP and TNP growth between Canada and the United States, the results from the model show that, between 1988 and 1997, ISP grew faster and TNP declined faster in Canada than in the United States (Figures 3 and 4).⁹ ISP growth averaged about 4½ percent in Canada, compared with 3½ percent in the United States, while TNP growth was negative in both countries, averaging 1 percent and 0.1 percent, respectively. However, in the past few years, productivity growth in the United States has been stronger than in Canada. Since 1996, ISP in the United States has grown by 5 percent per year, in contrast to an average growth rate of 3¾ percent in Canada, while U.S. TNP growth has slightly exceeded that in Canada. TNP growth rates, however, have converged markedly since 1996 (-¼ percent per year in Canada compared with -0.1 percent in the United States). Given the high integration between both countries, the recent buoyant ISP growth in the United States could

investment in tangible and human capital. The quality of capital is calculated as the ratio of capital input to the capital stock, while the quality of labor is the ratio of the labor input index to total hours worked.

⁷ These countries are United Kingdom, Germany, Italy, and France. Only the United States and Japan experienced positive quality-adjusted TFP growth. According to the authors, Canada experienced the second strongest improvement in quality among the G-7 economies.

⁸ Jorgenson and Yip’s results for TFP growth—unadjusted for quality improvements—show an annual growth rate of 0.2 percent on average for the period 1989 to 1995, which is not significantly different from those by Statistics Canada, which show annual TFP growth of 0.3 percent over the same period.

⁹ Some caution is needed when comparing ISP growth between Canada and the United States due to differences in the way the deflators for equipment and machinery are constructed, particularly regarding the electronics and electrical parts. While BLS applies hedonix price adjustment to some products, Statistics Canada maintains the traditional matching method that uses the change in the cost of production as an indicator of the change in quality. This difference may bias somewhat the relative movements in the price deflators and therefore the ISP.

help accelerate the diffusion of new technologies, and therefore stimulate ISP and TNP growth in Canada in the period ahead.

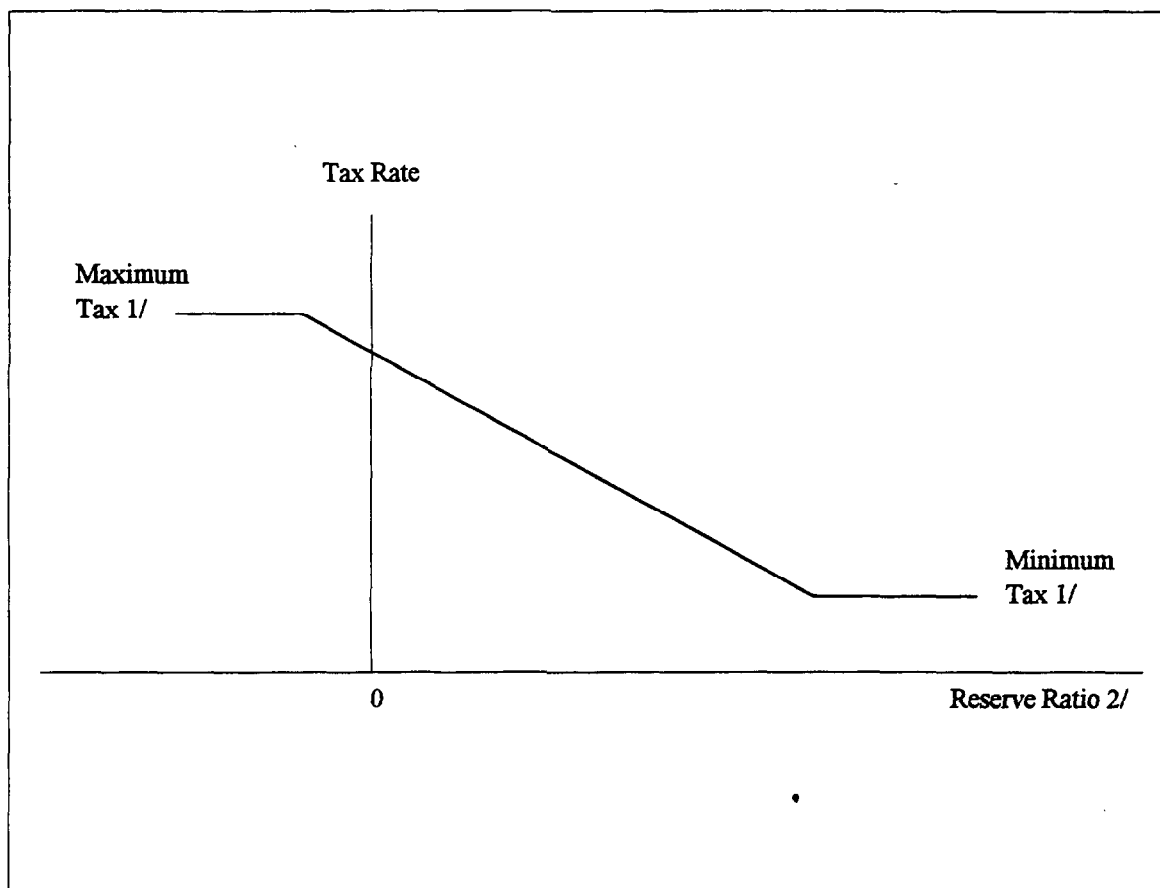
9. TFP growth at the industry level has varied significantly between the two countries. In particular, TFP growth in U.S. manufacturing has significantly outpaced that in Canada over the last decade and a half. Between 1961 and 1985, TFP growth in the manufacturing sectors in Canada and the United States was similar, averaging about 1¼ percent per year. However, between 1986 and 1996, TFP growth in U.S. manufacturing averaged about 1½ percent per year compared with 0.6 percent in Canada.

10. The gap in manufacturing productivity growth between Canada and the United States originates mostly in the strong performance of specific industries, such as electrical products and commercial and industrial machinery—which include computers and computer parts—where U.S. total productivity growth has significantly outperformed that of similar Canadian firms. Such a difference in performance, together with the fact that these industries have a larger share in manufacturing output in the United States, largely account for the differential productivity growth in manufacturing between the two countries. In fact, when comparing the performance of other Canadian manufacturing industries vis-à-vis the United States during 1990–95 (Figure 5), the differences are significantly smaller, or even show that TFP growth in certain Canadian industries—such as pulp and paper, transportation, and chemicals—has outstripped that in the same industries in the United States.

11. A recent study by Gu and Ho (1999), which follows the methodology used by Jorgenson and Yip, compared the performance between 33 industries in Canada and the United States. Their results show that “quality-adjusted” TFP growth in Canadian industries outpaced on average that in the United States between 1961 and 1988, but since then, “quality-adjusted” TFP growth in Canadian industries has grown at a slower rate than in the United States. In this recent period, however, about half of the Canadian industries experienced faster “quality-adjusted” TFP growth than in the United States. In particular, Canadian industries, such as chemicals, petroleum, and communications, had better productivity growth than their U.S. counterparts. In contrast, TFP growth in U.S. industries, such as machinery industry and mining, and textiles, was greater than in these industries in Canada.

12. Judging by the sound macroeconomic framework in place, the structural reforms undertaken in the 1990s, and the current productivity boom in the United States, the results suggest that Canada appears poised for sustaining robust productivity growth in the period ahead. Even though TNP growth has stabilized, the fact that it has still been lagging suggests that there could be a “catch up” in productivity once the diffusion of new technologies is complete. However, the potential benefits for Canadian productivity stemming from the U.S. productivity boom could be significantly less if the strong productivity growth in the United States is narrowly concentrated in machinery, which is less important in Canada.

Figure 1. Experience-Rated Payroll Tax Schedule
(Reserve-Ratio Method)



1/ Tax rates across states vary considerably. Maximum tax rates in 1999 range from 5.4 to 10 percent, and minimum tax rates range from 0 to 2.8 percent.

2/ Equals ratio of reserves in employer's account to average taxable payroll over the last three to five years.

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IV. OPTIONS FOR INCOME TAX REFORM IN CANADA¹

1. The relatively high marginal and average personal income tax rates in Canada (federal and provincial combined) create disincentives to work and save. At the same time, the combined federal and provincial corporate income tax rate on general business income is generally higher than comparable rates in Canada's major trading partners. In addition, there is relatively high variation in corporate tax rates across provinces and across industries, creating economic inefficiencies and increased compliance costs. This paper briefly reviews the current personal and corporate income tax systems in Canada, identifies priorities for reform, and presents estimates of the fiscal costs of illustrative reform packages that are feasible given prospective fiscal resources.

A. An Overview of Income Taxes in Canada

Personal income taxes

2. Personal income is taxed at both the federal and provincial levels. The federal income tax system comprises three progressive marginal rates (17, 26, and 29 percent), a set of refundable tax credits, including the GST tax credit and the National Child Benefit (NCB),² and a high-income surtax.³ Since 1986, the system has been indexed to inflation only for that amount exceeding 3 percent, implying a de facto absence of any indexing since the early 1990s. With the exception of Québec, provincial income taxes are calculated as a percentage of the federal tax obligation plus any applicable surtaxes.

¹ Prepared by Vivek Arora and Michael Leidy.

² The GST credit was introduced in 1991 to ease the burden of the newly introduced goods and services tax on low-income Canadians. The GST credit is gradually reduced until it is eliminated once family incomes reach \$50,000. The NCB is a joint initiative of the federal and provincial governments that includes the Canada Child Tax Benefit (CCTB) and the National Child Benefit Supplement (NCBS). The CCTB is a tax-free monthly payment to eligible families with children. The NCBS is a monthly benefit to low-income families with children. The CCTB basic benefit begins being withdrawn if family net income exceeds \$29,590 (raised from \$25,921 in the 1999/00 Budget) and is fully withdrawn when family income exceeds \$70,000 for the first child. The NCBS begins being withdrawn when net family income exceeds \$20,921.

³ Individuals who owe basic federal tax of \$12,500 or more (roughly corresponding to incomes of \$65,000 or more) are subject to a 5 percent surtax. A 3 percent surtax, which previously applied to all taxpayers, was reduced in coverage in July 1998 and eliminated in July 1999.

3. While the ratio of total tax revenue to GDP in Canada is broadly in line with other G-7 countries, the ratio of personal income tax to GDP is relatively high (Figure 1). In part, this reflects the greater reliance of the tax system in Canada on personal income taxes relative to other taxes (Table 1). The high ratio also reflects the steep progressivity of personal income taxation in Canada. In comparison to the United States, which also relies substantially on personal income taxes, the statutory marginal tax rates in Canada (federal and provincial combined) are significantly higher and apply at far lower income levels (tabulation below). In comparison with other G-7 countries as well, the top statutory rate in Canada starts to apply at a relatively low-income threshold, both in absolute terms and in relation to average income (Table 2).

Statutory Marginal Tax Rates

Income (Thousands of Canadian dollars)	Canada 1/ (Percent)	United States 2/ (Percent)	Difference (Percent)
7-30	25	17	8
30-60	39	26	13
60-100	50	32	18
100-200	50	35	15
200-420	50	40	10
Over 420	50	45	5

Source: Tax Policy Branch, Department of Finance Canada.

1/ Includes average provincial income tax rates.

2/ Includes average state income tax rates.

4. The income tax burden is especially high on middle-income taxpayers, with the middle federal statutory tax rate (26 percent) starting to apply at a relatively low income threshold (\$29,590). In addition, the jump in the federal and provincial marginal income tax rate between the low and middle brackets (14.5 percentage points)⁴ is the largest among G-7

⁴ This is the difference between the marginal tax rates applicable at 66 percent and 100 percent of the average production wage.

Table 5. Canada: Fiscal Costs of Alternative Tax Reform Packages

(Millions of dollars)

Fiscal Years	2000-01	2001-02	2002-03	2003-04	2004-05
Fiscal surplus for planning purposes 1/ (current policies)	5,500	8,500	12,500	17,500	23,000
(percent of GDP)	0.6	0.8	1.2	1.5	1.9
Package 1 (modest reform)					
\$1,000 increase in 26 percent bracket threshold (\$29,590 to \$30,590)	600	600	600	600	600
Restore full indexation of tax parameters 1/	900	1,800	2,700	3,600	4,500
Middle PIT rate cut from 26 percent to 25 percent	1,050	1,050	1,050	1,050	1,050
Reduce the 2.5 percent and 5 percent CCTB base phase-out rates to 1.25 percent and 2.5 percent 2/	1,200	1,200	1,200	1,200	1,200
Cut general rate of corporate income tax (CIT) by 1 point and broaden base beginning in year 3	270	270	135	0	0
Total cost package 1	4,020	4,920	5,685	6,450	7,350
(percent of GDP)	0.4	0.5	0.5	0.6	0.6
Package 2 (more ambitious reform)					
\$2,000 increase in 26 percent bracket threshold (\$29,590 to \$31,590) 3/	1,200	1,200	1,200	1,200	1,200
\$2,000 increase in 29 percent threshold (\$59,180 to \$61,180)	90	90	90	90	90
Restore full indexation of nominal tax parameters 2/	900	1,800	2,700	3,600	4,500
Middle PIT rate cut from 26 percent to 24 percent over two years	1,050	2,100	2,100	2,100	2,100
Reduce 2.5 percent and 5 percent CCTB base phase-out rates to 1.25 percent and 2.5 percent	1,200	1,200	1,200	1,200	1,200
Cut corporate income tax by 1 point in year one and by another point in year 2 and broaden base beginning in year 3	270	540	405	270	270

Table 5. Canada: Fiscal Costs of Alternative Tax Reform Packages (Concluded)

(Millions of dollars)

Fiscal Years	2000-01	2001-02	2002-03	2003-04	2004-05
Total cost package 2	4,710	6,930	7,695	8,460	9,360
(percent of GDP)	0.5	0.7	0.7	0.7	0.8
Package 3					
Cost of package 2	4,710	6,930	7,695	8,460	9,360
Middle PIT rate cut from 24 percent to 23 percent in year 3 (added cost)	0	0	1,050	1,050	1,050
Total cost of package 3	4,710	6,930	8,745	9,510	10,410
(percent of GDP)	0.5	0.7	0.8	0.8	0.9

Source: Staff calculations based on data provided by the Department of Finance.

1/ This is the ex ante fiscal surplus under current policies less the contingency reserve and the economic prodeence.

2/ Assumes 1.5 percent inflation.

3/ The base benefit of the Canada Child Tax Benefit is currently phased out for family net incomes over \$29,590 at a rate of 2.5 percent for a one-child family and 5 percent for families with two or more children.

4/ assumes the additional \$1,000 increase costs the same as the first \$1,000.

importance placed by the current generation on its lifetime consumption and welfare relative to the consumption and welfare of future generations.

7. Another part of the literature has focused directly on the optimum quantity of government debt, and tried to determine the optimum quantity based on the tradeoff between the benefits and costs of government debt (e.g., Aiyagari and McGrattan, 1998). The benefits of government debt include the role that it plays in enhancing the liquidity of households by providing an additional means of smoothing consumption and by loosening borrowing constraints. The costs include the adverse wealth distribution and incentive effects of the taxes needed to repay the debt, as well as the crowding out of capital through higher interest rates and the lowering of private consumption. The optimum quantity of debt depends positively on the effectiveness of debt in smoothing out private consumption, negatively on the extent to which debt crowds out private capital, and negatively on the extent of the disincentive effects of distortionary taxes.

8. None of the above theoretical approaches lead to strong conclusions about how large the government debt should be. The government is assumed to try and maximize social welfare, with the social welfare function usually involving a tradeoff between equity and efficiency and both an intra- and an intertemporal dimension. Optimization involves several unobservable parameters—such as the weights that are placed on competing objectives, the rate of time preference, and the elasticity of labor supply with respect to tax rates—and the results can vary significantly depending on the assumptions about these parameters. In addition, in the optimum debt calculations derived by Aiyagari and McGrattan (1998), the welfare function calibrated for the U.S. economy is found to be relatively flat. Thus, the welfare cost of having a government debt equivalent to 0 percent of GDP instead of 60 percent of GDP (which is found to be the optimal level) is estimated to be less than 0.1 percent of total consumption.⁶ If government debt were to increase to 100 percent of GDP, only a marginal (0.02 percent of consumption) additional loss in welfare would result. The small welfare losses incurred by deviations from the optimal debt level suggest that undue importance should not be attached to the specific value of the debt ratio that emerges from this analysis.

C. Alternative Debt-Reduction Paths and Tradeoffs

9. While acknowledging the lack of clear conclusions from economic theory, a recent empirical analysis of Canadian federal government finances, which takes a relatively pragmatic approach, provides some target ranges for the debt ratio over the longer term. Scarth and Jackson (1997) note that considerations of economic efficiency do not lead to any specific conclusion about the size of the debt. However, considerations of intergenerational equity would call for reducing federal government debt to 20–25 percent of GDP. In their

⁶ In 1998, the ratio of U.S. government debt to GDP was 44 percent, compared to the estimated “optimum” level of 60 percent.

analysis, debt reduction raises living standards of future generations by allowing for lower future taxes and by reducing foreign debt-service obligations.⁷ The positive effect of debt reduction on living standards are judged to offset what otherwise would be a negative effect arising from the projected aging of the Canadian population.

10. Using a simple calibrated model for the Canadian economy, Robson and Scarth (1999) demonstrate the importance of how a particular debt target is achieved, given uncertainties about future economic outcomes and about the structure of the economy. A large number of simulations were run based on two broad budget approaches that have the objective of reducing the debt-to-GDP ratio to 30 percent over the next 15–20 years and maintaining it at that level, which the authors suggest would aim to accommodate foreseeable fiscal pressures associated with the aging of the population.⁸ The first approach is described as “drifting,” under which the government is assumed to target budget balance when the economy is strong and a budget deficit when the economy is weak. The second approach involves the government following an explicit debt-reduction objective. Within the latter approach, the government is given the choice between paths for the annual budget that emphasize debt reduction in the early years (i.e., target budget surpluses) or aim for budget balance. Within each of the two debt-reduction approaches the government faces two further choices: whether to maintain the budget target unchanged in the face of the business cycle (“rigid”) or to alter it (“flexible”).⁹

11. To capture the potential effects of uncertainties, Robson and Scarth incorporate in each simulation its own set of random economic disturbances, designed to mimic economic cycles and temporary shocks, and its own set of values for key parameters in the model. The estimates reported in Table 1 are the median values derived from the multiple scenarios. The

⁷ The model treats labor supply as exogenous and does not allow for the possibility that lower taxes may increase labor supply and national income, nor does it allow for the gains (such as the positive effects on output and consumption) arising from the lower interest rates associated with debt reduction. While endogenizing the labor supply response would raise living standards, the authors argue that lower interest rates would spur output but may discourage private saving, so that the long-run benefits for living standards may be questionable.

⁸ The authors suggest that achievement of such a debt target over this timeframe would be sufficient to meet the budgetary implications of population aging as estimated in a recent report by the Canadian Auditor General.

⁹ Specifically, the government is assumed in the “flexible” case to increase or decrease the budget target by 0.4 percentage points of GDP for each percentage point by which output is above or below potential, respectively.