

# **Tax Policy, Competitiveness and Prosperity in Ontario: *Options for the 21<sup>st</sup> Century***

*prepared for:*

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# Study Objective

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## Set of 8 Tax Policy Simulations

- **The objective of this assignment was to simulate a set of tax policy options and review their impact on Ontario's economy**

## Impact on Competitiveness & Prosperity

- **The analysis is intended to help inform the debate surrounding policy options to improve Ontario's competitiveness and prosperity**

# C<sub>4</sub>SE Model of the Ontario Economy

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## Structure

- **Multi-sector model<sup>1</sup> of Ontario's economy designed for medium to long-term simulations and policy analysis**
- **Neoclassical structure with wages and migration adjusting to return the unemployment rate, over time, to its natural rate**
- **Cobb-Douglas (constant returns to scale<sup>2</sup>) production technology**

# C<sub>4</sub>SE Model of the Ontario Economy

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## Assumptions

- **All tax rate changes are permanent**
- **Shocks are not “revenue neutral” – the change in tax rates affects government revenue and deficits; no other taxes or spending are changed to offset the impact**
- **The exchange rate and interest rates are determined outside the model and are not affected by these policies**
- **International and interprovincial migration is affected by economic conditions – the province’s labour force adjusts to maintain, over time, its natural rate of unemployment**

# Model Enhancements

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## Rotman School of Management

- The C<sub>4</sub>SE worked closely with Jack Mintz and Duanjie Chen of the University of Toronto's Rotman School of Management to incorporate the cost of capital structure used in their METR analysis in the model

## Cost of Capital

- Cost of capital equations and data were developed for the 14 industry sectors in the model (see Appendix)

## Other Enhancements

- Capital tax – modelled its impact on capital costs and tax revenues
- Capital cost allowance – modelled its impact on tax revenues

# Tax Simulations

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- 1 Eliminate the provincial corporate capital tax
- 2 Set the provincial corporate income tax rate to 7% for all (large and small) corporations
- 3 Set the provincial corporate income tax rate to 8% for large corporations; small business rate remains unchanged
- 4 Raise machinery & equipment CCA rates by 25% of current levels on new capital only
- 5 Harmonize the PST at 7%
- 6 Harmonize the PST at 8%
- 7 Remove the PST from capital
- 8 Reduce provincial personal income tax by 10% of current rate

# Impact on Living Standards

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## Living Standards

- **Living standards are defined as real GDP per capita. This provides a measure of gains in the value of goods and services that Canadians can consume**
- **Economic gains from the tax policies encourage higher net migration to Ontario so real GDP rises by more than living standards**

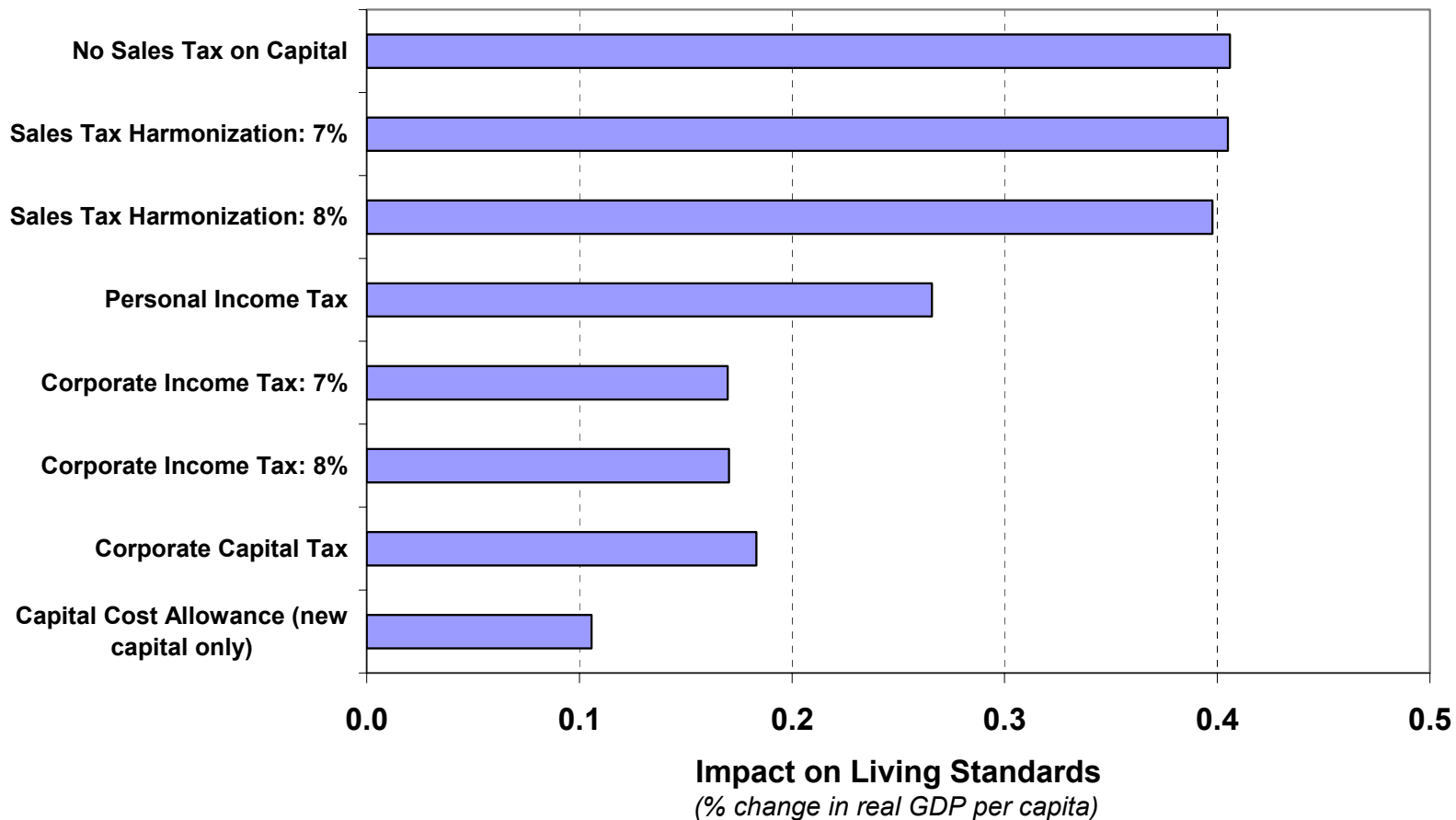
## Tax Policy Impacts

- **After 10 years, the policies to reform the PST yield the largest increases in living standards**

# Impact on Living Standards

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## Impact on Living Standards (after 10 years)



# Impact on Provincial Gov't Revenue

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## Government Revenue Impact

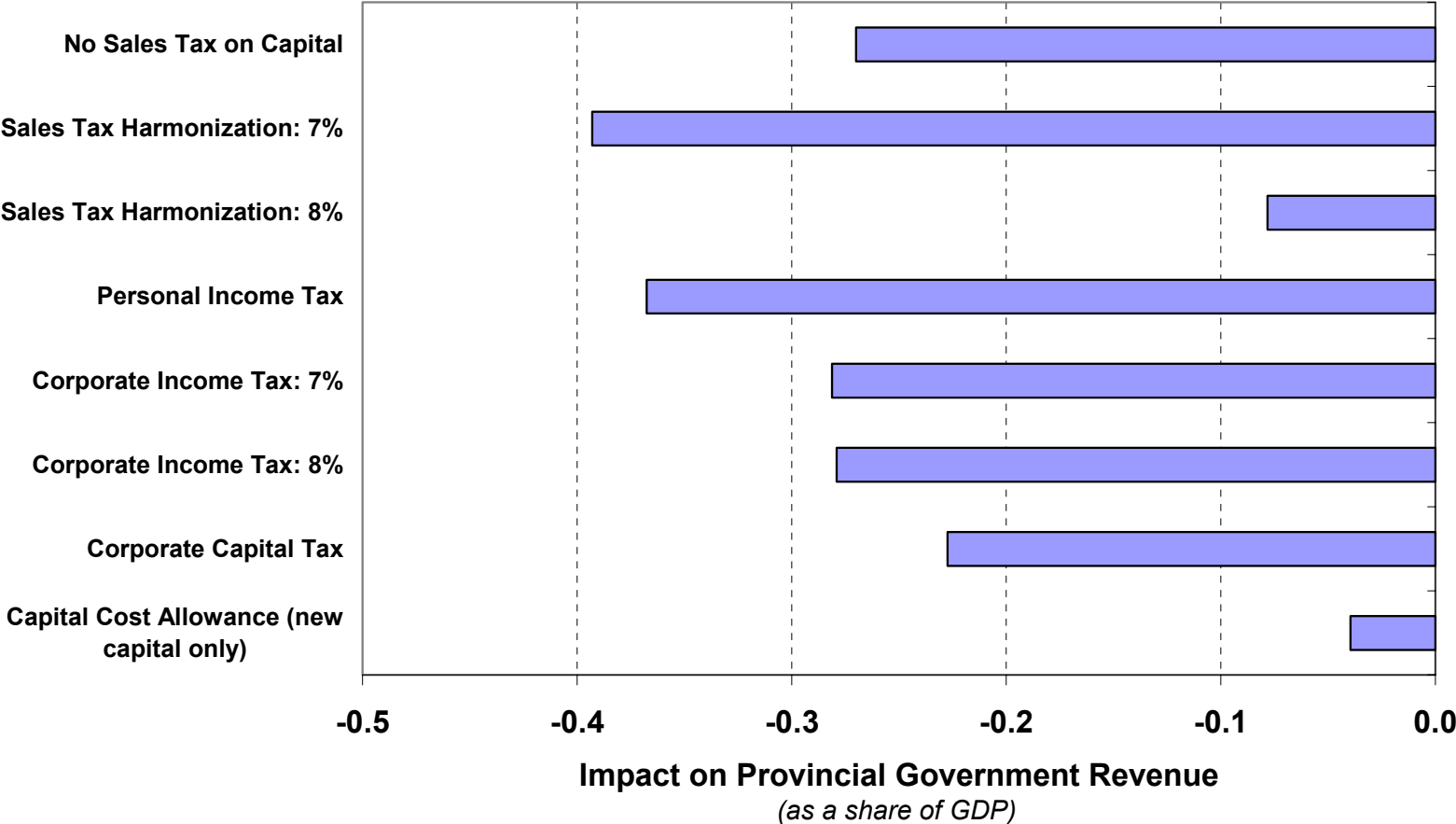
- **The provincial government revenue impact is measured as the change in the provincial government revenue to GDP ratio and is an indicator of the amount of revenue the government can generate**

## Tax Policy Impacts

- **The change in capital cost allowance and PST harmonization at 8% policy options have the smallest impact on government revenue after 10 years**
- **The policies that cut personal income taxes and harmonize the PST at 7% impose the largest costs on the provincial treasury**

# Impact on Provincial Gov't Revenue

Impact on Provincial Government Revenue  
(after 10 years)



# Provincial Tax Revenue Impacts

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## Recovery Rate

- **Summarizes the ability of the economy to generate new tax revenues to replace direct tax losses**
- **Recovery rate scales government revenue gain/loss to direct tax impact to allow comparison across simulations**

**If greater than zero, the economy recovers a portion of the direct loss**

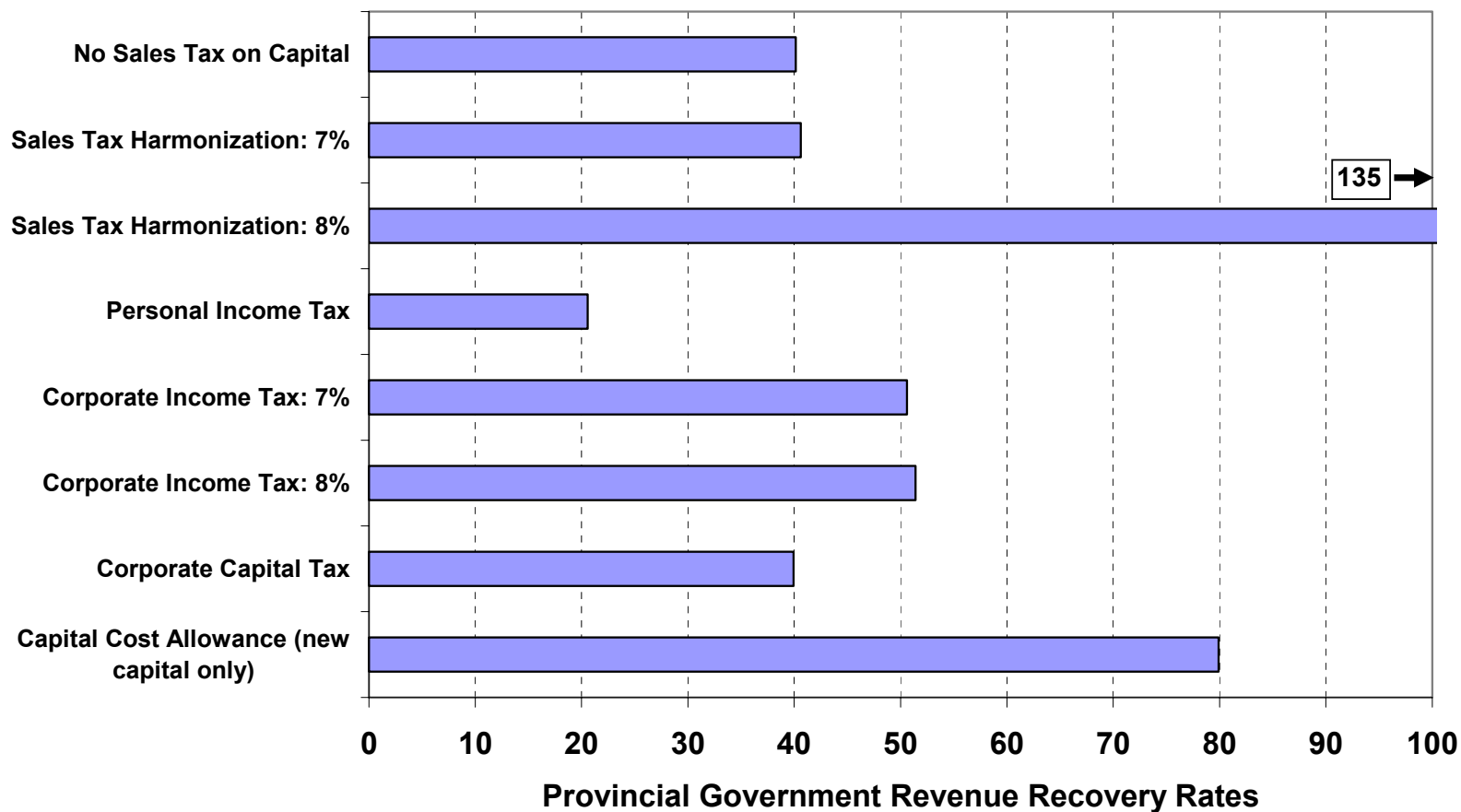
**If greater than 100, the economy generates more revenue than in the baseline simulation**

## Tax Policy Impacts

- **After 10 years, the economy raises more tax revenue than was lost in the PST harmonization at 8% simulation. All other simulations recover at most 80% of the direct tax loss**

# Tax Recovery Rates After 10 Years

## Tax Recovery Rates (after 10 years)



# Provincial Tax Revenue Impacts

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## Cumulative Provincial Gov't Fiscal Multiplier

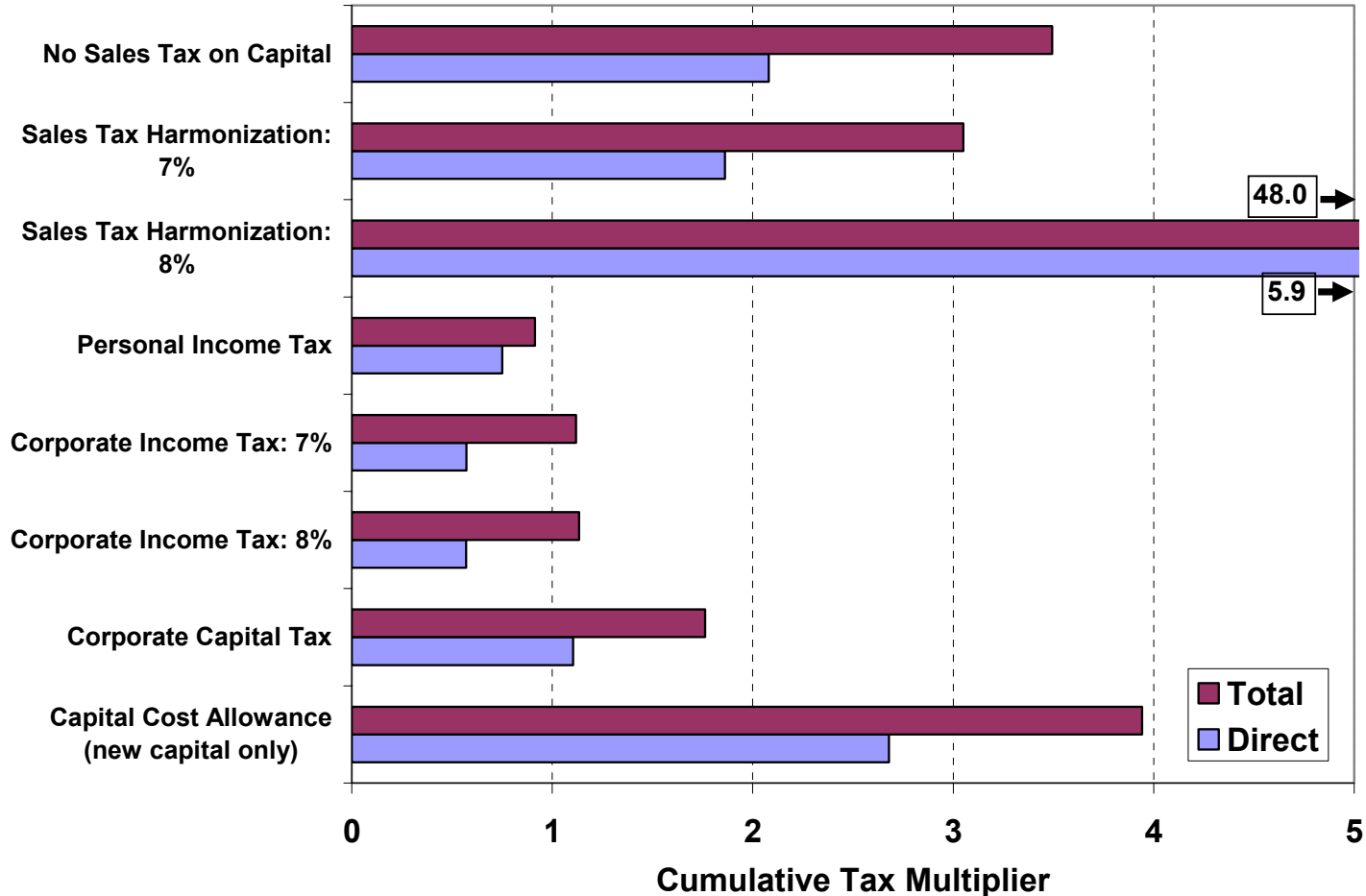
- Provides a standardized measure of the benefit to GDP of \$1 tax cut
- Measures the cumulative impact on real GDP divided by the overall reduction in provincial government revenue (for either the direct or the total tax impact)

## Tax Policy Impacts

- After 10 years, the only policy option to generate less than an additional \$1 of GDP for each dollar of direct and total tax revenue lost is the personal income tax cut
- The total revenue multiplier for the corporate income tax simulations is boosted by the shifting of taxable income from other jurisdictions in response to lower tax rates

# Cumulative Provincial Government Fiscal Multiplier After 10 Years

Cumulative Provincial Gov't Fiscal Multiplier  
(after 10 years)



# Simulation Summary

10 Year Impact on:	Living Standards	Employment	Labour Productivity	Gov't Revenue (% of GDP)
Corporate Capital Tax	0.2	0.3	0.1	-0.2
Corporate Income Tax: 7%	0.2	0.3	0.1	-0.3
Corporate Income Tax: 8%	0.2	0.3	0.1	-0.3
Capital Cost Allowance (new capital only)	0.1	0.2	0.1	0.0
Sales Tax Harmonization: 7%	0.4	1.0	0.1	-0.4
Sales Tax Harmonization: 8%	0.4	0.5	0.3	-0.1
Remove Sales Tax on Capital	0.4	0.7	0.3	-0.3
Personal Income Tax	0.3	0.3	0.0	-0.4

**Relative impacts across simulations do not materially change after 10 years**

Simulation Rank	
First	
Second	
Last	

# Observations

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- **No free lunch – no one policy option dominates the others**
- **The sales tax reform scenarios yield the most positive outcomes. Harmonizing the PST at a rate above 7% would promote capital formation and growth without a significant impact on the provincial treasury**
- **Lowering personal and corporate income taxes reduces provincial tax revenue while providing moderate economic benefit**
- **Eliminating the capital tax has a moderate impact on provincial tax revenues and provides modest economic benefits**
- **Raising CCA rates on new capital has a small impact on provincial tax revenues and provides modest economic benefits**

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Additional Slides



# Appendix: Cost of Capital Equations

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$$UCC = PI * (RCF+RD) * (1 - CIT*PVCCA + CCT*(1-CIT) / (RCF+PE+RCCA)) / (1-CIT)$$

$$PVCCA = RCCA / (RCF+PE+RCCA)$$

$$RCF = RM * (D\%EQ*(1-CIT) + (1-D\%EQ)*Q) - PE$$

UCC	User cost of capital
PI	Investment price index - including sales taxes
RCF	Real financing cost
RD	Economic depreciation rate
CIT	Combined statutory corporate income tax rate
PVCCA	PV of tax allowance for depreciable assets
CCT	Average provincial capital tax rate
PE	Expected inflation rate
RCCA	Capital consumption allowance rate
RM	Long-term yield on corporate bonds
D%EQ	Debt to assets ratio
Q	Personal income tax deduction for equity financing

**Equations in the model also include adjustments  
for the federal surtax (minimum tax)**

# Provincial Corporate Capital Tax<sup>3</sup>

**Provincial corporate capital tax is eliminated**

**Living standards (real GDP per capita) and productivity (real GDP per worker) both rise 0.2% after 25 years**

**Direct tax loss of \$1.5 billion and net loss of \$0.9 billion in tax revenue in the first year**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.2	0.2	0.4	0.4	0.4	0.5
% Difference in Real Per Capita Gross Provincial Product	0.1	0.0	0.2	0.2	0.2	0.2
% Difference in Real Personal Disposable Income	0.2	0.2	0.4	0.3	0.4	0.4
% Difference in Employment	0.1	0.1	0.3	0.3	0.3	0.3
% Difference in Labour Productivity (GDP per worker)	0.0	0.1	0.1	0.1	0.1	0.2
% Difference in Real Capital Stock	0.2	1.1	1.3	1.4	1.4	1.6
Difference in Provincial Government Revenue as % of GDP	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2

# Provincial Corporate Income Tax: 7%

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**Provincial corporate income tax set to 7% for all corporations in 2004 – raised for small business, lowered for large business**

**Living standards rise 0.2% and productivity rises 0.1% after 25 years**

**Reduction in average tax rate from 11% to 7% results in direct tax loss of \$2.7 billion and a net tax loss of \$1.4 billion in the first year**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.1	0.2	0.4	0.4	0.4	0.4
% Difference in Real Per Capita Gross Provincial Product	0.1	0.0	0.2	0.2	0.1	0.2
% Difference in Real Personal Disposable Income	0.1	0.2	0.3	0.3	0.3	0.3
% Difference in Employment	0.1	0.1	0.3	0.2	0.2	0.3
% Difference in Labour Productivity (GDP per worker)	0.0	0.1	0.1	0.1	0.1	0.1
% Difference in Real Capital Stock	0.2	1.0	1.1	1.1	1.2	1.3
Difference in Provincial Government Revenue as % of GDP	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3

# Provincial Corporate Income Tax: 8%

**Provincial corporate income tax set to 8% for large corporations in 2004 – small business rate unchanged**

**Living standards rise 0.2% and productivity rises 0.1% after 25 years**

**Reduction in average tax rate from 11% to 7% results in direct tax loss of \$2.7 billion and net tax loss of \$1.4 billion in the first year**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.1	0.2	0.4	0.4	0.4	0.4
% Difference in Real Per Capita Gross Provincial Product	0.1	0.0	0.2	0.2	0.1	0.2
% Difference in Real Personal Disposable Income	0.1	0.2	0.3	0.3	0.3	0.3
% Difference in Employment	0.1	0.1	0.3	0.2	0.2	0.3
% Difference in Labour Productivity (GDP per worker)	0.0	0.1	0.1	0.1	0.1	0.1
% Difference in Real Capital Stock	0.2	1.0	1.1	1.2	1.2	1.3
Difference in Provincial Government Revenue as % of GDP	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3

# Capital Cost Allowance for new capital only

**Capital cost allowance for new machinery and equipment 25% higher than baseline**

**Living standards and productivity both rise 0.1% after 25 years**

**Higher CCA results in direct tax loss of \$116 million and net tax revenues fall \$10 million in the first year.**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.1	0.1	0.2	0.2	0.2	0.3
% Difference in Real Per Capita Gross Provincial Product	0.1	0.0	0.1	0.1	0.1	0.1
% Difference in Real Personal Disposable Income	0.1	0.1	0.2	0.2	0.2	0.2
% Difference in Employment	0.1	0.1	0.2	0.2	0.2	0.2
% Difference in Labour Productivity (GDP per worker)	0.0	0.1	0.1	0.1	0.1	0.1
% Difference in Real Capital Stock	0.1	0.7	0.7	0.8	0.8	0.8
Difference in Provincial Government Revenue as % of GDP	0.0	-0.1	0.0	0.0	0.0	0.0

# Full Sales Tax Harmonization: 7%

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**PST harmonized with the GST at a 7%**

**Living standards rise 0.4% and productivity rises 0.2% after 25 years**

**Change in tax base and rate results in direct tax loss of \$2.7 billion and net tax loss of \$2.2 billion in the first year**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.3	0.8	1.2	1.1	1.2	1.3
% Difference in Real Per Capita Gross Provincial Product	0.3	0.0	0.4	0.3	0.3	0.4
% Difference in Real Personal Disposable Income	0.5	1.0	1.2	1.1	1.2	1.2
% Difference in Employment	0.3	0.7	1.0	0.9	1.0	1.0
% Difference in Labour Productivity (GDP per worker)	0.0	0.1	0.1	0.2	0.2	0.2
% Difference in Real Capital Stock	0.5	2.8	3.0	3.2	3.4	3.6
Difference in Provincial Government Revenue as % of GDP	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4

# Full Sales Tax Harmonization: 8%

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**PST harmonized with the GST at an 8% rate**

**Living standards rise 0.4% and productivity rises 0.3% after 25 years**

**Change in tax base results in direct tax loss of \$0.8 billion and net tax loss of \$0.4 billion in the first year**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.3	0.4	0.8	0.8	0.8	0.9
% Difference in Real Per Capita Gross Provincial Product	0.2	0.1	0.4	0.4	0.4	0.4
% Difference in Real Personal Disposable Income	0.2	0.3	0.7	0.6	0.6	0.7
% Difference in Employment	0.2	0.2	0.5	0.5	0.5	0.5
% Difference in Labour Productivity (GDP per worker)	0.0	0.2	0.3	0.3	0.3	0.3
% Difference in Real Capital Stock	0.4	2.4	2.7	2.8	3.0	3.2
Difference in Provincial Government Revenue as % of GDP	-0.1	-0.1	-0.1	-0.1	-0.1	0.0

# PST Removed from Capital Spending

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**PST remains at 8% but tax base for capital spending harmonized with the GST**

**Living standards rise 0.4% and productivity rises 0.3% after 25 years**

**Change in tax base and rate results in direct tax loss of \$1.7 billion and net tax loss of \$1.3 billion in the first year**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.3	0.5	0.9	0.9	0.9	1.0
% Difference in Real Per Capita Gross Provincial Product	0.3	0.1	0.4	0.4	0.4	0.4
% Difference in Real Personal Disposable Income	0.3	0.4	0.8	0.7	0.7	0.8
% Difference in Employment	0.3	0.3	0.7	0.6	0.6	0.7
% Difference in Labour Productivity (GDP per worker)	0.0	0.2	0.3	0.3	0.3	0.3
% Difference in Real Capital Stock	0.5	2.5	2.8	3.0	3.1	3.4
Difference in Provincial Government Revenue as % of GDP	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2

# Provincial Income Tax Reduction

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**Average provincial personal income tax rate reduced by 10%**

**Living standards rise 0.2% but productivity remains at baseline levels after 25 years**

**Change in tax base and rate results in direct tax loss of \$2.0 billion and net tax loss of \$1.7 billion in the first year**

<b>Difference from Baseline: # of years</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>	<b>25</b>
% Difference in Real Gross Provincial Product	0.2	0.3	0.3	0.3	0.3	0.3
% Difference in Real Per Capita Gross Provincial Product	0.2	0.2	0.3	0.2	0.2	0.2
% Difference in Real Personal Disposable Income	0.8	0.9	0.9	0.9	0.9	0.9
% Difference in Employment	0.1	0.3	0.3	0.3	0.3	0.3
% Difference in Labour Productivity (GDP per worker)	0.0	0.0	0.0	0.0	0.0	0.0
% Difference in Real Capital Stock	0.0	0.3	0.3	0.3	0.3	0.3
Difference in Provincial Government Revenue as % of GDP	-0.4	-0.4	-0.4	-0.4	-0.4	-0.3

# Endnotes

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- 1. Macroeconomic models of this type are not able to address microeconomic issues of allocative efficiency which suggest a uniform corporate tax rate of 7% would be superior to a policy with the tax rate set to 8% for large corporations and 5% for small business. The same argument holds for harmonizing the PST versus just removing the PST on capital spending.**
- 2. Constant returns to scale in a production function implies that if the amount of inputs (capital and labour) is doubled then output will also double.**
- 3. The results for each policy simulation are reported in tables that show the immediate impact and the impact after 5, 10, 15, 20 and 25 years. The impacts are reported as “difference from baseline” : this compares the level of the concept after the introduction of the tax policy with its level before the shock – either as a percent or absolute difference. A positive value indicates that the variable is higher after the change in policy than it was before. If the value keeps rising over time then it means that the concept continues to grow faster after the change in policy than it did before. If the value gets smaller then the concept is actually growing slower than it was in the baseline simulation but remains above its original value as long as it is above zero.**

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