



# Report on Recommendations of the Technical Committee on Business Taxation

## Assessment of Impacts on the Economics of Mining Projects

*September 1999*

*Prepared for the Mintz Report Study Group*

*of the*

*Intergovernmental Working Group on the Mineral Industry*





## Preface

Following the 1998 Mines Ministers' Conference in Calgary, a government-industry task force reviewed the recommendations of the Report of the Technical Committee on Business Taxation (TCBT) to analyze their potential effects on investment in the mining industry. The task force, named the Mintz Report Study Group, comprises representatives of the federal and provincial governments and the mining industry under the auspices of the Intergovernmental Working Group on the Mineral Industry.

This report provides a synthesis of the results of the Study Group's review. It was prepared by the Minerals and Metals Sector of Natural Resources Canada (NRCan), on behalf of the members of the Mintz Report Study Group, and with their active participation.

Since the TCBT recommendations pertain to federal business income taxes, the focus of this report is strictly on the potential effects of proposed changes to the federal corporate income tax and the related Large Corporations Tax. The repercussions of recommended changes on related provincial corporate income tax payments are not considered. Thus, the reader should bear in mind that the average effective tax rates that are discussed in the report are not a measure of the total tax burden facing the mineral industry in Canada. A comprehensive review of all taxes borne by this industry would have to include other federal levies and charges, and all provincial and local taxes.

The approach of the study, the computer runs, and the analysis of impacts of the TCBT recommendations were led by the Economic and Financial Analysis Branch of the Minerals and Metals Sector of NRCan. For follow-up on this report, please contact the principal authors:

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## Table of Contents

<b>Preface</b>	<b>i</b>
<b>Table of Contents</b>	<b>ii</b>
<b>Table of Figures</b>	<b>iv</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Study Group Mandate	1
1.2 Study Group Process	1
<b>2 Background</b>	<b>2</b>
2.1 History of the TCBT Report	2
2.2 Summary of the Recommendations of the TCBT Report	3
2.2.1 General Corporate Income Tax Provisions	3
2.2.2 Capital Taxes	3
2.2.3 Research and Development	4
2.2.4 Resource Industry Specific Provisions	4
2.2.5 Atlantic Canada Investment Tax Credit	4
2.2.6 International Taxation	4
2.2.7 Integration	5
2.2.8 Employer Contributions to Employment Insurance	5
2.2.9 Environmental Taxes	5
2.2.10 Federal-Provincial Harmonization	5
<b>3 Scope of the Analysis</b>	<b>6</b>
3.1 Federal Income Tax Changes	6
3.2 Provincial Coverage and Project Configurations	6
3.3 Tax Instruments	7
<b>4 Methodology</b>	<b>8</b>
4.1 General	8
4.2 Sensitivity Analysis	8
4.3 Indicators of Tax Changes Used for Quantitative Assessment	10



4.4	Tax Modelling Assumptions	11
<b>5</b>	<b>Analysis and Conclusions</b>	<b>12</b>
5.1	General Overview	12
5.2	Inter-Provincial Differences	14
5.3	Intra-Sectoral Tax Neutrality	15
5.4	Financing by Debt	17
5.5	Cyclical Price Variations	18
5.6	Inflation	19
<b>6</b>	<b>Potential Ramifications for Provincial Income Taxes</b>	<b>20</b>
	<b>Appendix A: Mine Model Cash Flow Descriptions</b>	<b>21</b>
	<b>Appendix B: M1-series Tax Calculation Results</b>	<b>25</b>
	<b>Appendix C: M2-series Tax Calculation Results</b>	<b>29</b>



## Table of Figures

Figure 1 - Detailed Parameters of Sensitivity Analysis	9
Figure 2 - M1-Series: Frequency Distribution of Cases, by Size of Change to the AETR	13
Figure 3 - M2-Series: Frequency Distribution of Cases, by Size of Change to the AETR	13
Figure 4 - Changes to the Average Effective Tax Rates, by Province	14
Figure 5 - Variation of AETR According to Profitability for Selected M1 Projects	15
Figure 6 - Variation of AETR According to Profitability for Selected M2 Projects	16
Figure 7 - AETR Effects of TCBT Proposals for Two Project Configurations	16
Figure 8 - AETR Effects of TCBT Proposals for High Debt Leverage	17
Figure 9 - AETR Effects of TCBT Proposals for Cyclical Prices	18
Figure 10 - AETR Effects of TCBT Proposals for High Inflation	19
Figure 11 - Description of M1 Mine Models	23
Figure 12 - Description of M2 Mine Models	24
Figure 13 – AETRs Calculated for the M1-Series	27
Figure 14 – M2 Series: Tax Point Differentials Resulting from the TCBT Changes	27
Figure 15 – AETRs Calculated for the M2-Series	31
Figure 16 – M2 Series: Tax Point Differentials Resulting from the TCBT Changes	31

## 1 Introduction

### 1.1 Study Group Mandate

The report of the Technical Committee on Business Taxation (TCBT), which was released on April 6, 1998, represents the most significant analysis of Canada's business tax system since the report of the Royal Commission on Taxation in 1967. If implemented, the TCBT recommendations could transform the taxation of mineral income in Canada and, therefore, have far-reaching impacts on future mineral investment.

The TCBT report was discussed by Mines Ministers at the 55<sup>th</sup> Mines Ministers' Conference (MMC) held in July 1998 in Calgary; it was also the focus of the conference workshop on investment climate. Ministers directed that, over the subsequent months, a government-industry study group under the auspices of the Intergovernmental Working Group on the Mineral Industry (IGWG) should examine the recommendations of the report.

Seven provinces (British Columbia, Alberta, Saskatchewan, Ontario, Quebec, New Brunswick and Newfoundland), The Mining Association of Canada, the Ontario Mining Association, the Quebec Prospectors Association, the Quebec Mining Association, representatives from the coal mining industry, and Natural Resources Canada agreed to form the Mintz Report Study Group to respond to the ministerial directive.

The Mintz Report Study Group's (the Study Group) mandate is to jointly evaluate the quantitative impacts of selected TCBT proposals on the economics of new mineral investment in different provinces. It should be noted that this mandate does not include the review of impacts of the TCBT recommendations on ongoing mineral operations.

### 1.2 Study Group Process

During the course of a conference call on October 13, 1998, it was then agreed that:

- The Mining Association of Canada (MAC) and Natural Resources Canada (NRCan) would both undertake independent computer modeling studies to assess the potential impacts of the TCBT report's recommendations on hypothetical mine models simulating representative investment opportunities; and
- NRCan would ensure that Study Group participants received copies of background reports, analyses and members' contributions.

In December 1998, on behalf of MAC, PriceWaterhouseCoopers (PWC) released a study entitled *The Mintz Committee Report: Analysis of the Impact of Major Recommendations on the Mining Industry in Canada*.

This report represents NRCan's contribution to the work of the Study Group. Essentially, it complements the PWC study by evaluating the combined effects of key TCBT proposals on the federal income taxes that would be paid by typical new mineral projects under a variety of economic conditions likely to face the mining industry in the coming years.



## 2 Background

### 2.1 History of the TCBT Report

*The Technical Committee on Business Taxation was appointed by the Minister of Finance on March 6, 1996. Under its original terms of reference, the TCBT was asked to examine taxes related to investment and business activity, and consider ways of:*

- improving the tax system to promote job creation and economic growth in an open economy;*
- simplifying the taxation of business income to facilitate compliance by taxpayers and administration by Revenue Canada; and*
- enhancing fairness in the tax system by ensuring that all businesses share the cost of providing government services.*

The 1996 Budget Plan also specifically mentioned that the Government had asked the TCBT to assess the resource tax provisions as part of its review of the business tax system.

Through its review, the Committee was asked to take into account fiscal constraints faced by governments and the need to coordinate federal and provincial taxes.

The Committee was composed of an independent panel of nine members with legal, accounting and economic expertise in the tax field. It was chaired by Professor Jack Mintz of the University of Toronto.

On November 5, 1996, the TCBT had its original deadline extended by one year to allow further research and consideration of policy options in key areas such as:

- the taxation of income earned from international investment;
- the integration of corporate and personal taxes; and
- the employment impact of payroll taxes.

The final report of the Committee was released to the public on April 6, 1998. Its recommendations reflect the views of the Committee and not of the Government of Canada.

Since then, the Minister of Finance has asked the House of Commons Standing Committee on Finance to review the report in the context of its ongoing examination of policy issues over the coming years. Professor Mintz appeared before the Standing Committee on May 26, 1998. A transcript of the proceedings is available on the Parliamentary Internet site at the following addresses:

<http://interparl.parl.gc.ca/InfocomDoc/FINA/Meetings/Evidence/FINAEV87-E.HTM> (English)

<http://interparl.parl.gc.ca/InfocomDoc/FINA/Meetings/Evidence/FINAEV87-F.HTM> (French)



An electronic copy of the *Report of the Technical Committee on Business Taxation* (in Adobe Acrobat PDF format) can be downloaded from one of the following Finance Canada sites:

[http://www.fin.gc.ca/taxstudy/brie\\_e.html](http://www.fin.gc.ca/taxstudy/brie_e.html) (English)

[http://www.fin.gc.ca/taxstudy/brie\\_e.html](http://www.fin.gc.ca/taxstudy/brie_e.html) (French)

## 2.2 Summary of the Recommendations of the TCBT Report

The Committee recommended a wide array of changes to business tax rates and structure, including changes to the federal corporate income tax, employment insurance premiums, and excise taxes. It also suggested changes to provincial corporate and capital taxes.

The Committee held that the recommendation package was designed around a *balanced strategy* to create new opportunities for economic growth and job creation for all Canadians, without changing the aggregate of tax revenues paid by business. This balanced strategy was based on:

- lowering tax rates toward international norms in order to create a new incentive for business to invest and create employment; and
- broadening the corporate tax base in order to promote fairness, efficiency and equity in the corporate tax structure.

This section presents an outline of the TCBT's recommendations that could have a significant impact on the mineral investment climate, if they were to be all implemented. Also, with each recommendation, the reader will find a reference to the pertinent page of the TCBT report. Finally, the recommendations are classified according to the area of their impact.

### 2.2.1 General Corporate Income Tax Provisions

- After a transition period, the general federal and provincial corporate tax rates should be lowered to 33 percent on average. The general federal rate should be reduced from 28 percent to 20 percent, and the average provincial rate should be reduced by one point to 13 percent. In addition, the current federal corporate income surtax should be repealed at the same time. [page 4.5]
- There should be no special manufacturing and processing rate. [page 4.5]
- A review of the current classification system and associated rates for capital cost allowance (CCA) should be undertaken in order to ensure that the new CCA rates truly reflect the economic lives of the underlying assets. [page 4.11]

### 2.2.2 Capital Taxes

- The federal and provincial governments should harmonize their capital tax bases to reduce compliance and administration costs. [page 4.22]
- Provincial capital taxes should not be deductible for corporate income tax purposes, after a reasonable transition period. [page 11.13]



### 2.2.3 Research and Development

- The immediate deductibility of Scientific Research & Experimental Development (SR&ED) capital assets should be phased out. [page 5.18]
- The general SR&ED tax credit for large companies should be reduced from 20 percent to 15 percent after a reasonable transition period. [page 5.21]

### 2.2.4 Resource Industry Specific Provisions

- *Resource allowance.* After consultation with the provinces, the resource allowance should be restructured so that it will be based on income from resource activities, net of all deductions, at the current rate of 25 percent. Any such changes should occur only after an appropriate transition period of at least five years. [page 5.31]
- The gradual lowering of the general corporate tax rate should not apply to resource income until such consultations have been carried out, and the interrelation between the base broadening and general rate reduction proposals as applied to this industry and the restructuring of the resource allowance have been fully reviewed. [page 5.31]
- *Development costs.* The maximum rate of write-off on development costs in both mining and oil and gas should be reduced from 30 percent to 25 percent (declining balance). This recommendation would only apply after a three-year period of advance notice. [page 5.32] The Committee also suggests specifically that the Government should review the tax treatment of the pre-production costs of new mines and major expansions, and consider treating them as development costs instead of exploration costs.
- *Capital cost allowances.* The capital costs incurred in connection with new mines or major expansions of existing mines should not be immediately deductible, in full, against the income from the project. Rather, such costs should be placed in a new class and only be deductible up to a maximum of 25 percent of the declining balance. The recommendation would only apply after a five-year period of advance notice. [page 5.32]
- The costs of acquiring new mining properties should, as is the case for oil and gas, be treated as a capital cost, deductible at a 10 percent annual rate after transition. [page 5.32]
- Given the aforementioned reductions in corporate income tax rates, adjustments to flow-through share rules should be made in order to reflect the new relationship between corporate and personal income tax rates. [page 4.18]

### 2.2.5 Atlantic Canada Investment Tax Credit

- The Atlantic Canada Investment Tax Credit should be phased out and replaced by a cost-effective development assistance program that would not rely on the tax system. [page 5.33]

### 2.2.6 International Taxation

- Several recommendations deal with the taxation of foreign income of Canadian investors [page 6.10], interest expenses related to foreign investment of Canadian investors [page 6.18], foreign accrual property income (FAPI) [page 6.22], and taxation of income of non-resident investors. [pages 6.26 and 6.30]



### 2.2.7 Integration

- A system of corporation distribution tax (CDT) and dividend tax credit should be adopted. [page 7.11]

### 2.2.8 Employer Contributions to Employment Insurance

- Employer contributions under the Employment Insurance program should be set according to employer layoff experience. [page 8.12]

### 2.2.9 Environmental Taxes

- The federal government, in coordination and consultation with the provinces, should consider replacing the federal fuel excise tax with more broadly based environmental taxes that raise equivalent revenue and that are designed to reduce emissions of pollutants and environmentally damaging activities. [page 9.16]

### 2.2.10 Federal-Provincial Harmonization

- The federal and provincial governments should use a common neutral base, and a common method of allocating income and capital subject to corporate tax in each jurisdiction. [page 11.9]
- The federal and provincial governments should use tax credits or surtaxes rather than altering the common tax base if either the federal or a provincial government wishes to provide incentives through the tax system or to obtain additional tax revenues from business. [page 11.9]



### 3 Scope of the Analysis

#### 3.1 Federal Income Tax Changes

TCBT recommendations for change that are the subject of this report only pertain to the federal corporate income tax. They are as follows:

- Reduction of the statutory federal corporate income tax rate from 28 percent to 20 percent;
- Elimination of the 4 percent federal corporate income surtax;
- Non-deductibility of provincial capital taxes;
- Elimination of accelerated capital cost allowances (ACCA); the capital cost allowance rate is restricted to 25 percent;
- Cash cost of mineral properties amortized at a rate of 10 percent;
- Canadian Development Expenses (CDE) deduction reduced from 30 percent to 25 percent;
- Canadian Exploration Expenses (CEE), CDE and interest costs deducted before the resource allowance calculation;
- Elimination of the Atlantic Canada Investment Tax Credit.

The TCBT does not formally recommend changes to the income tax treatment of pre-production development expenses. However, it specifically suggests that costs primarily related to bringing a mineral property into production should be treated as development costs instead of exploration costs. In its analysis, NRCan added the following change as part of the TCBT reform package:

- Pre-production development costs treated as CDE (deducted at a rate of 25 percent) instead of CEE (deducted at a rate of 100 percent).

To analyze the impact of proposed changes, taxes are calculated on hypothetical mine models over the life of the project, first using current tax rules, and then using tax rules that would apply after the tax changes have been fully implemented. Transition rules are not considered. No attempt has been made to evaluate the impact of possible provincial responses to a hypothetical federal implementation of TCBT proposals.

#### 3.2 Provincial Coverage and Project Configurations

The provincial and territorial jurisdictions covered are: British Columbia, the Northwest Territories, the Yukon, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, and Newfoundland.

For each jurisdiction, two mine models are used that are representative of the types of mineral investment likely to be envisaged in the medium term. These models are essentially the same as those used in the study that PWC carried out for MAC. The first project configuration represents a relatively small mine with a production life of 10



years where most of the investment takes place during a pre-production period of 3 years. The second project configuration represents a larger mine with a production period of 18 years and with two distinct phases of investment.

Detailed characteristics of the two mine models are presented in Appendix A.

### **3.3 Tax Instruments**

The study measures the impact of TCBT recommendations on payments relating to the federal income tax and the Large Corporations Tax only. The federal tax rules applied are those that were in effect at the beginning of 1999.

The impacts of the proposed tax reform on provincial tax payments critically depend on provincial responses that cannot be assumed to be uniform for all provinces. Section 6 briefly discusses the potential ramifications of TCBT recommendations for provincial income and capital taxes.

Other federal taxes such as payroll taxes and sales taxes are not included in the analysis. The TCBT report principally addresses issues with the federal income tax; there are no definite proposals relating to changes to payroll or sales taxes whose impact can be measured using the methodology employed for the study. Such taxes, therefore, are assumed to be invariable with respect to the comparison of pre- and post-TCBT results. They are assumed to be included in the cost of doing business and are implicitly deducted for income tax purposes in both the pre- and post-TCBT scenarios.



## 4 Methodology

### 4.1 General

The approach taken is to impose the federal income tax regime that would result from the implementation of the TBCT recommendations on the income statements relating to a selection of representative mine models. Then, the resulting tax liabilities are compared to the tax liabilities that would apply on the same mine models if current tax rules were used. For each mine model, a sensitivity analysis is performed on key economic and financial parameters to ensure that the effects of the proposed tax reform are measured under realistic conditions.

Comparative results are not provided to separately evaluate the effect of each incremental tax change because the TCBT proposals were presented as a comprehensive package of tax measures. Also, analyzing the effect of each measure separately could be misleading because such an approach would not capture the important interactions (compensating or reinforcing effects) that exist among the various tax changes proposed.

### 4.2 Sensitivity Analysis

NRCan's past experience with tax modelling has indicated that the effects of changes to the income tax structure and write-off rates are very sensitive to a number of key parameters such as project profitability, financing structure, variability of revenues, opportunity to apply project deductions against other revenues, and inflation. For example, reducing write-off rates tends to affect marginal projects more than highly profitable ones because start-up cost recovery deductions represent a higher proportion of cash flow when the profitability is lower.

Hence, a comprehensive evaluation of the possible effects of proposed tax changes requires the simulation of a realistic range of economic conditions that face the mining industry. To that effect, NRCan performs, for each mine model (the M1 and the M2), a series of sensitivity analyses as shown in Figure 1.

In this figure, simulation runs are identified by an alphanumeric code that is used consistently throughout the report. This code can be expressed as MX-Y, where X is a one-digit number representing one of the two NRCan mine models, and Y is a one-digit number identifying the nature of the sensitivity analysis performed. For example, code M1-3 represents the 10-year mine model (the M1 model) with a high debt configuration. Finally, in the last column of the figure, the MX-PWC code represents the two mine models configured in accordance with the PWC study.



*Figure 1 - Detailed Parameters of Sensitivity Analysis*

	<b>MX-1 Cases</b>	<b>MX-2 Cases</b>	<b>MX-3 Cases</b>	<b>MX-4 Cases</b>	<b>MX-5 Cases</b>	<b>MX-6 Cases</b>	<b>MX-PWC Cases</b>
<b><i>Transferability of tax deductions</i></b>	No deduction transfers allowed	Partial flow-through	No deduction transfers allowed	No deduction transfers allowed	No deduction transfers allowed	No deduction transfers allowed	No deduction transfers allowed
<b><i>Project financing</i></b>	50% debt	50% debt	75% debt	50% debt	50% debt	50% debt	50% debt
<b><i>Project profitability</i></b>	10% ROR pre-tax (unleveraged)	10% ROR pre-tax (unleveraged)	10% ROR pre-tax (unleveraged)	25% ROR pre-tax (unleveraged)	10% ROR pre-tax (unleveraged)	10% ROR pre-tax (unleveraged)	17.6%-22.6% ROR pre-tax (unleveraged)
<b><i>Stability of revenues</i></b>	Constant commodity prices	Constant commodity prices	Constant commodity prices	Constant commodity prices	Variable commodity prices	Constant commodity prices	Constant commodity prices
<b><i>Inflation</i></b>	2%	2%	2%	2%	2%	5%	0%



### 4.3 Indicators of Tax Changes Used for Quantitative Assessment

The TCBT tax reform package includes measures that would modify the total amount of taxes paid over the life of a project, as well as the distribution of such tax payments over time. These two effects have important repercussions on the economics and, ultimately, the viability of mineral projects. In fact, mining associations and individual companies have expressed concerns that both types of effects could impair the international competitiveness of Canada's mineral industry. Thus, the Study Group has a duty to ensure that both effects are correctly evaluated and measured.

Good indicators of tax changes correctly identify and interpret the size and direction of changes in the cumulative tax payments brought about by proposed measures, and the changes in the distribution of those tax payments over time.

The indicators that are used to measure and compare the effects of the TCBT tax proposals are:

- the net present value (NPV) of the total tax payments of a project; and
- the average effective tax rate (AETR).

The *net present value* (NPV) of the total tax payments of a project is the sum of adjusted annual tax payments that are made over the entire duration of the project. Each yearly component of that stream is adjusted by a compounded *discount rate* that reflects an investor's time value of money. The choice of an appropriate discount rate is debatable. For the purpose of our analysis, NRCan believes that it should not be based on the return that investors expect, or hope, from a specific project; rather, it should be based on a return on investment in mining or other sectors involving comparable risks. The discount rate chosen for our analysis is 7.5 percent real – a rate that reflects mining investors' weighted average cost of capital during the 1982-98 period.<sup>1</sup>

The *average effective tax rate* (AETR) is calculated as the NPV of cash tax payments over a mine's life, divided by the NPV of financial income before taxes for the mine. Financial income is measured by cash flow from operations after interest on (but before principal repayments of) debt financing, less a provision for depreciation of start-up and replacement capital assets (on a straight-line basis).

The rationale for using an adjusted financial income instead of project cash flow in the denominator is that the former measure is a better approximation of the ideal tax base that most existing income tax systems try to establish. If a tax system permits the same annual deductions as the annual costs allowed under the AETR calculation of financial income, the resulting AETR rate, by design, will be equal to the statutory tax rate. However, if allowed deductions are larger, or faster, a reduction of the NPV of the tax payments (the numerator in the AETR ratio) occurs, while the denominator remains the same. Consequently, the measured AETR will be lower than the statutory tax rate. The converse proposition also holds true. Hence, the AETR can be used to measure the

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<sup>1</sup> C.f. NRCan internal study entitled *The Expected Cost of Capital for the Canadian Mining Sector (1982-1998)*, May 1999.



extent to which (and the direction thereof) a tax system has departed – by design or not – from its theoretically neutral tax base, namely the statutory tax rate.

There has been some debate on the appropriateness of the AETR as an absolute measure of the tax rate. This debate stems from the fact that the results given by the AETR are sensitive to the discount rate used, and to assumptions relative to the calculation of financial income.

However, for the purpose of the analysis, we use the AETR mainly as a relative, not absolute, measure of the tax burden. In this capacity, most importantly, the AETR is capable of measuring changes in the time distribution of tax payments because all streams of cash flow entered into its calculation are discounted. Since we are mainly interested in the variations of AETRs resulting from changes in the economic and tax parameters, disagreements about the components of this indicator of the tax burden become much less important.

#### 4.4 Tax Modelling Assumptions

This section describes the assumptions used to perform the tax calculations for the various simulations.

Under current federal income tax rules, provincial capital tax payments are allowed as a deduction. Thus, while not integrated into the calculation of the study's average effective tax rates, provincial capital tax payments are calculated separately and deducted against federal taxable income when appropriate. Provincial rules in effect in January 1999 are used in the calculations.

A dividend payout ratio of 50 percent and a dividend growth rate of zero are assumed for the purposes of calculating provincial capital taxes and the Large Corporations Tax (LCT).

When applying proposed TCBT tax rules, NRCan assumes that the LCT payments would be creditable against 4 percent of regular income tax liabilities instead of the 4 percent surtax which would be repealed. The tax credit mechanism is an essential feature of the design of the LCT that causes it to act as a minimum tax.

Interest charges relating to pre-production costs are capitalized.

Tax calculations are performed in such a way as to bring the taxable income to its minimum for any given year. In the scenarios involving the use of project deductions to reduce other sources of income, amounts of income from other sources have been adjusted to reflect the industry's restricted capability to make use of additional tax deductions.



## 5 Analysis and Conclusions

### 5.1 General Overview

Study results from NRCan's models (described in Appendix A) clearly indicate that proposed reform of the federal corporate income tax regime is complex, and that its likely economic impact on the mining sector would vary significantly depending on the specific economic and financial circumstances of actual investment projects.

Detailed results, in terms of the impact of TCBT proposals on average effective tax rates (AETR) are presented in Appendix B for the M1 project runs, and in Appendix C for the M2 project runs. All figures shown in Section 5 are based on these detailed results.

Figures 2 and 3 summarize the study findings. The horizontal axis shows the range of percentage point changes to the AETR that would result from the implementation of TCBT proposals. The vertical bars represent the frequency distribution of project runs, by size of changes to the AETR. The line graph shows the cumulative percentage of observations from left to right.

Figure 2 shows that, for the 63 simulations of the M1 project, 51 (81 percent) produced an increase in the AETR, and 12 (19 percent), a decrease. 34 runs (54 percent of the total) produced an increase in the AETR of more than 5 percentage points. Corresponding results for the M2 project runs are illustrated in Figure 3. It shows that all 63 runs produced an increase in the AETR, with 38 runs (60 percent) having tax increases of more than 10 percentage points.

It can be drawn from the detailed results (in Appendices B and C) that, under actual market conditions and financial arrangements, there would be a substantial increase in the average effective federal income tax rates for new mining projects. For the computer runs simulating a pre-tax internal rate of return of 10 percent, which is close to the level of profitability experienced by the mining industry since 1982 (see footnote on page 10), these AETRs increase on average by 11 percentage points from 8.0 percent to 19.2 percent.

The detailed results also reveal that the combination of circumstances that would have a mining project face the highest AETR increase under the proposed TCBT rules corresponds remarkably to a common profile of mining investment, namely, a moderately profitable project that:

- has a production life of more than 10 years;
- involves at least two distinct phases of investment;
- is financed in large part by debt;
- is undertaken by a corporation with other sources of taxable income;
- operates during a period of low inflation; and
- experiences fluctuating commodity prices.

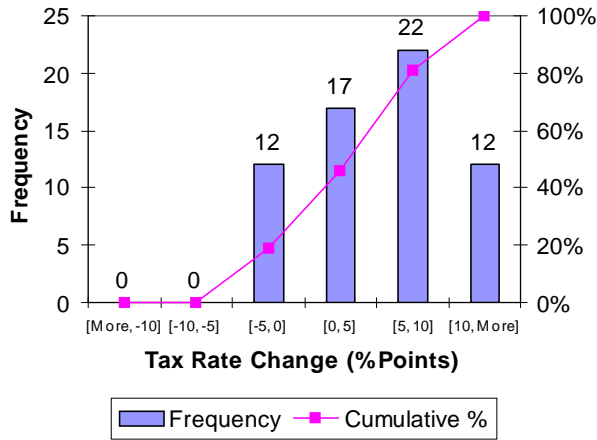
Notably, study results confirm the partial results obtained by the PWC study<sup>1</sup>, which investigated the restrictive cases of very profitable mines under conditions of zero

<sup>1</sup> *The Mintz Committee Report: Analysis of the Impact of Major Recommendations on the Mining Industry in Canada*, December 1998.

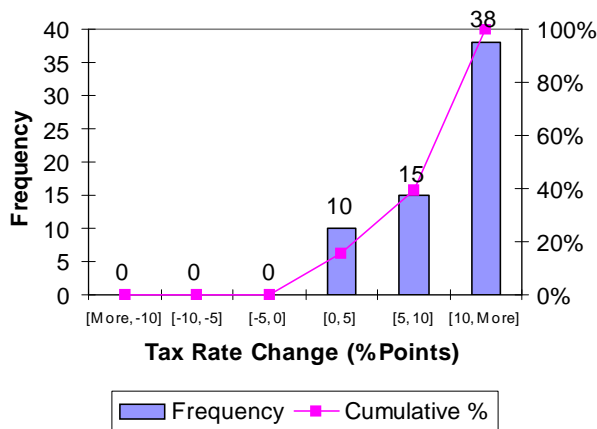


inflation. As found in the PWC study, NRCan's results indicate that the impact of TCBT recommendations would be significant for very profitable mining investments, but less severe than for moderately profitable projects.

**Figure 2 - M1-Series: Frequency Distribution of Cases, by Size of Change to the AETR**



**Figure 3 - M2-Series: Frequency Distribution of Cases, by Size of Change to the AETR**





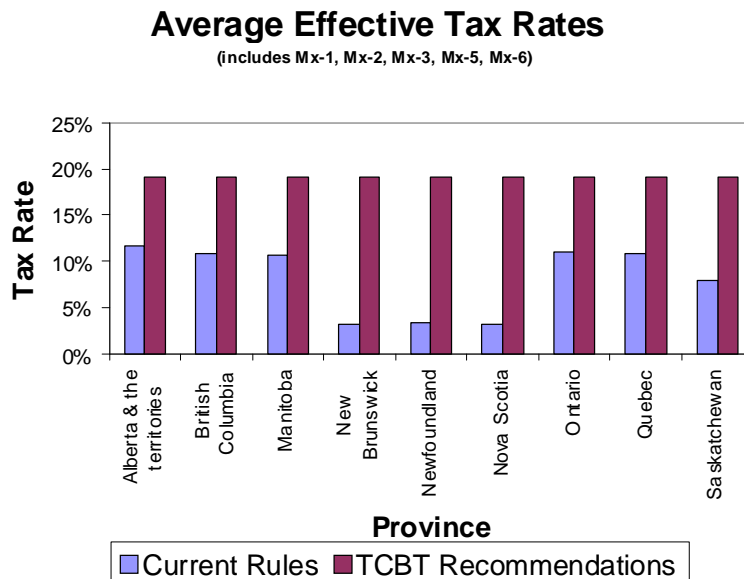
## 5.2 Inter-Provincial Differences

Figure 4 shows the effects of the TCBT recommendations for all provinces, in the case of projects earning 10 percent pre-tax profits (hence, the MX-4 and MX-PWC series are excluded from the calculation of these provincial averages).

Current federal income tax rules allow the deduction of all provincial capital tax payments, and provide a 10 percent tax credit (ITC) for qualified capital expenditures incurred in the three Atlantic provinces studied. As a result, federal income tax payments vary significantly according to a project's provincial location, as can be seen in Figure 4. Under proposed tax rules, all inter-provincial differences would be eliminated.

The TCBT recommends disallowing the deduction for provincial capital tax payments, and replacing the ITC by a program outside the tax system. Alberta and the territories would not be affected by these specific recommendations because they do not impose any capital taxes and the ITC does not apply. For projects located elsewhere, this change, *per se*, would increase the federal income tax payments. For each jurisdiction, this increase can be measured by the difference between the Alberta AETR under current tax rules, and the corresponding AETR for the jurisdiction in question. Federal income taxes paid under current rules for the M1 and M2 projects located in Saskatchewan are noticeably lower than if the same projects were located in other non-Atlantic provinces because deductible capital tax payments are significantly larger in Saskatchewan.

**Figure 4 - Changes to the Average Effective Tax Rates, by Province**





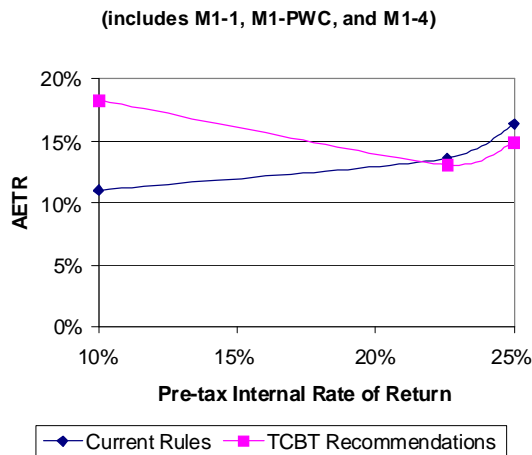
### 5.3 Intra-Sectoral Tax Neutrality

Figure 5 and Figure 6 show, respectively for projects M1 and M2, how the AETR varies according to project profitability under the current and proposed income tax systems. By allowing an accelerated write-off of pre-production investment in new mines, the current federal income tax system effectively provides significant assistance to less profitable mines while taking a progressively larger share of profits at higher project profitability. In contrast, the proposed tax regime would have the less profitable projects pay a higher proportion of their net income as taxes than the very profitable ones.

Consequently, projects that would be most negatively affected by the proposed TCBT rules are the less profitable ones, *ceteris paribus*. As profitability increases, some projects (M1) are shown to gain marginally from the proposed reform, while others (M2) experience a smaller tax increase than moderately profitable projects.

Figures 5 and 6 also indicate that the effects of proposed income tax reform would vary according to project configuration. Projects with long production lives (M2 in Figure 6) would be the most adversely affected by the proposed reform, with increases in the AETR of at least 5 percentage points at all ranges of profitability. By reducing the rates at which capital cost recovery deductions can be claimed, the proposed TCBT rules would have projects start paying taxes earlier than is the case under current tax rules. Long-life projects are the most sensitive to a cutback to their ability to defer tax payments because their investment payback period is usually longer. When a relatively large proportion of project revenues is realized in the distant future, even a small increase in tax payments early in the project life entails a significantly higher project AETR.

**Figure 5 - Variation of AETR According to Profitability for Selected M1 Projects**





**Figure 6 - Variation of AETR According to Profitability for Selected M2 Projects**

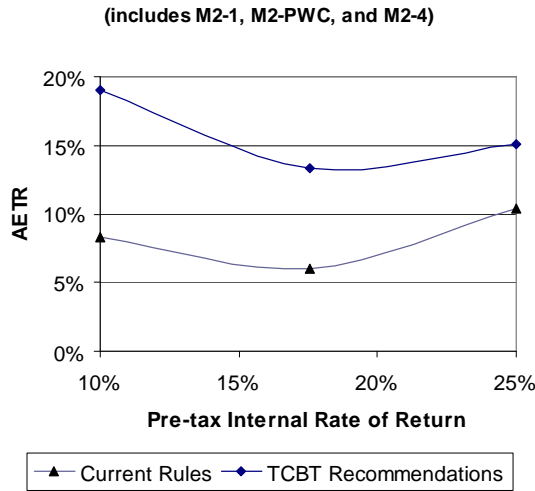
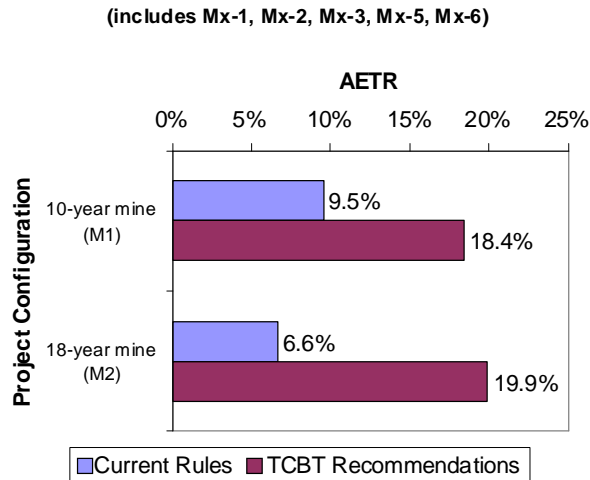


Figure 7 shows that under proposed tax reform, the long life projects (M2s) would be subject to a higher AETR than that experienced by the short life ones (M1s), which is a complete reversal of the situation under current tax rules.

Finally, the current tax system allows capital cost recovery deductions to be applied against a company's income from other sources. The high claiming rates of these deductions can confer a significant tax advantage to projects undertaken by large mining companies with other mines operating in Canada, relative to stand-alone projects. Under the proposed reform, this relative advantage would be sharply curtailed.

**Figure 7 - AETR Effects of TCBT Proposals for Two Project Configurations**



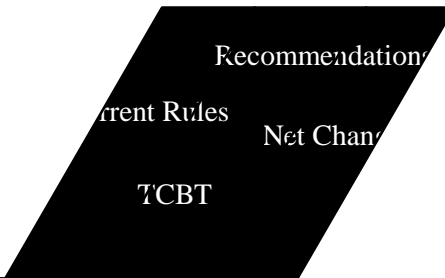


### 5.4 Financing by Debt

In the case of resource projects, current federal income tax rules provide for a preferential treatment of interest charges relative to other types of expenses. That is to say, interest charges are deductible at an effective tax rate of 28 percent while most other costs, and resource income, are subject to an effective tax rate of 21 percent. As a result, the average effective federal income tax rate tends to be lower at higher levels of debt.

In Figure 8, it can be seen that proposed changes would eliminate this incentive to finance resource projects by debt. They would result in a substantial increase in the AETRs for highly leveraged projects (an increase of up to 13 percentage points, from 8.5 percent to 21.3 percent, in the case of the study's M2 project).

*Figure 8 - AETR Effects of TCBT Proposals for High Debt Leverage*



M1-1 (50% debt)	11.0%	18.3%	<b>7.3%</b>
M1-3 (75% debt)	8.7%	19.6%	<b>10.8%</b>
<b>Net difference</b>	<b>-2.3%</b>	<b>1.3%</b>	
M2-1 (50% debt)	8.3%	19.0%	<b>10.7%</b>
M2-3 (75% debt)	8.5%	21.3%	<b>12.8%</b>
<b>Net difference</b>	<b>0.2%</b>	<b>2.3%</b>	



### 5.5 Cyclical Price Variations

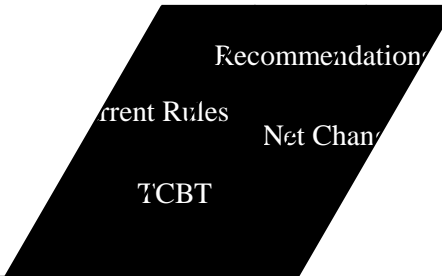
The TCBT recommendations would severely restrict a taxpayer's flexibility to claim capital cost recovery deductions. Under normal mineral industry conditions of cyclical prices, such restrictions would likely result in tax payments occurring much earlier in the life of a project. This acceleration of tax payments would translate into substantially increased effective tax rates relative to current tax rules.

Thanks to a high degree of flexibility in claiming capital cost deductions, the current tax system allows a new project to defer tax payments until all pre-production investment is recovered. Effectively, this feature provides for an effective income averaging mechanism during periods of turbulent commodity prices by allowing a deferral of tax payments until investment becomes less at risk when the project has achieved payback and the period of higher debt servicing charges is over.

The MX-5 models simulated a situation where a project starts during a commodity boom, followed by a period of depressed prices.

In these simulations, proposed tax changes entail tax payments during the boom years, while substantial amounts of unclaimed costs have to remain in tax pools. Some capital costs have to remain unclaimed until the subsequent commodity down-cycle period is over. As a result, the two projects considered in the analysis, in Figure 9, have effective tax rates that are almost twice as high as those imposed under current tax rules.

*Figure 9 - AETR Effects of TCBT Proposals for Cyclical Prices*



	Current Rules	TCBT	Net Change
M1-1 (stable price)	11.0%	18.3%	7.3%
M1-5 (cyclical price)	6.3%	16.9%	10.5%
<b>Net difference</b>	<b>-4.7%</b>	<b>-1.4%</b>	
M2-1 (stable price)	8.3%	19.0%	10.7%
M2-5 (cyclical price)	8.9%	23.7%	14.9%
<b>Net difference</b>	<b>0.6%</b>	<b>4.7%</b>	



### 5.6 Inflation

Effective tax rates are sensitive to inflation under current tax rules because capital and other pre-production expenditures are amortized at historical costs -- often at a time when net revenues from operations have been subject to the effect of several years of inflation. Thus, effective tax rates are higher in direct proportion to the inflation rate and to the amount of time it takes for capital cost recovery deductions to be claimed.

Figure 10 shows that, all other things being equal, the proposed tax reform would reduce the sensitivity of the effective tax rates to inflation. Relative to the results obtained under current tax rules, the tax savings that would result from having inflated revenues subject to a substantially lower statutory tax rate would more than compensate for the cost of further delays in the claiming of capital cost recovery deductions.

However, this interesting result would be achieved at the expense of a substantially increased AETR in all cases.

*Figure 10 - AETR Effects of TCBT Proposals for High Inflation*

	Current Rules	TCBT	Net Change
M1-1 (2% inflation)	11.0%	18.3%	<b>7.3%</b>
M1-6 (5% inflation)	15.2%	20.4%	<b>5.2%</b>
<b>Net difference</b>	<b>4.2%</b>	<b>2.2%</b>	
M2-1 (2% inflation)	8.3%	19.0%	<b>10.7%</b>
M2-6 (5% inflation)	9.1%	19.0%	<b>9.9%</b>
<b>Net difference</b>	<b>0.8%</b>	<b>0.0%</b>	



## 6 Potential Ramifications for Provincial Income Taxes

Before the TCBT recommendations or a variation thereof were to be implemented, the participation and support of provinces would likely be sought. The consultation process could result in modifications to the income tax proposals and in provincial adjustments to the calculation of provincial taxes, depending on a province's own needs and priorities. Thus, the impact of the proposed TCBT income tax reform on provincial income taxes cannot be quantified in a study like this without resorting to simplified, and perhaps unrealistic, assumptions about provincial responses.

Any speculation about the nature of the provincial response would have to take into account the diversity of federal-provincial income tax arrangements that have evolved over time. Three provinces—Alberta, Ontario and Quebec—administer an independent corporate income tax system. Other provinces and the territories have a corporate income tax collection agreement with the federal government, but British Columbia and Saskatchewan have special rules that mitigate the effects of certain federal income tax provisions. This situation illustrates that the trade-off between the desire to achieve uniformity and the need to pursue an independent tax policy has tended to be solved, historically, by partial harmonization.

Under current income tax arrangements, the federal adoption of the TCBT proposals would cause the changes in the federal income tax base to become automatically applicable for provincial income tax purposes in all provinces except Alberta, Quebec and Ontario. For the latter three provinces, the adoption of the federal changes would require a legislative action.

If the proposed changes to the income tax base were adopted integrally by provinces, their effects on provincial corporate income taxes paid by new mining projects could be generally comparable to those measured at the federal level in this study. However, this statement would hold true only to the extent that provincial authorities accorded the same proportional reduction in their tax rates or, alternatively, where applicable, a reduction of capital taxes of equivalent value.



## Appendix A: Mine Model Cash Flow Descriptions



**Figure 11 - Description of M1 Mine Models****Description of Mine Model M1 (10-year, Open-pit Gold Mine)**

<b>Salient project information</b>	M1-PWC	M1-1	M1-2	M1-3	M1-4	M1-5	M1-6
<b>Run ID</b>	M1-PWC	M1-1	M1-2	M1-3	M1-4	M1-5	M1-6
<i>Scenario</i>	PWC study	base case	parent income	high debt	high profits	cyclical prices	high inflation
<i>Commodity produced</i>	Gold	Gold	Gold	Gold	Gold	Gold	Gold
<i>Pre- production period, years</i>	3	3	3	3	3	3	3
<i>Projected mine life, years</i>	10	10	10	10	10	10	10
<i>Mill throughput, tpd</i>	5,143	5,143	5,143	5,143	5,143	5,143	5,143
<i>Average net smelter return per tonne (\$)</i>	50.00	42.40	42.40	42.40	51.75	41.38	42.40
<i>Average operating cost per tonne (\$)</i>	31.67	31.67	31.67	31.67	31.67	31.67	31.67
<i>Pre-production capital cost (\$K)</i>	105,000	105,000	105,000	105,000	105,000	105,000	105,000
<i>Total capital cost (\$K)</i>	118,500	118,500	118,500	118,500	118,500	118,500	118,500
<i>Depreciable assets as % of total capital</i>	67%	67%	67%	67%	67%	67%	67%
<i>Processing assets as % of total capital</i>	48%	48%	48%	48%	48%	48%	48%
<i>Price cycles</i>	NO	NO	NO	NO	NO	YES	NO
<i>Debt financing</i>	YES	YES	YES	YES	YES	YES	YES
<i>Inflation</i>	NO	YES	YES	YES	YES	YES	YES
<i>Transfer of tax deductions to parent</i>	NO	NO	Partiel	NO	NO	NO	NO
<i>Operating margin before interest expenses</i>	37%	25%	25%	25%	39%	23%	25%
<b>Real IRR, unleveraged, pre-tax</b>	<b>22.6%</b>	<b>10.0%</b>	<b>10.0%</b>	<b>10.0%</b>	<b>25.0%</b>	<b>10.0%</b>	<b>10.0%</b>
<i>Real IRR, leveraged, pre-tax</i>	28.6%	10.4%	10.4%	10.8%	34.3%	10.5%	10.1%
<b>NPV of real pre-tax cash flow, unleveraged (\$K)</b>	<b>89,141</b>	<b>12,173</b>	<b>12,173</b>	<b>12,173</b>	<b>106,872</b>	<b>9,341</b>	<b>12,173</b>
<i>NPV of real pre-tax financial income (\$K)</i>	112,463	32,223	32,223	25,794	126,921	29,391	31,759
<b>Financial and economic data</b>							
<i>Currency unit</i>	Can \$	Can \$	Can \$	Can \$	Can \$	Can \$	Can \$
<i>Copper price, (US\$/lb)</i>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<i>Gold price, (US\$/troy ounce)</i>	300	300	300	300	300	variable	300
<i>Exchange rate, currency unit/US\$</i>	1.40	1.40	1.40	1.40	1.40	1.40	1.40
<b>1<sup>st</sup> loan: debt as % of total capital</b>	<b>50%</b>	<b>50%</b>	<b>50%</b>	<b>75%</b>	<b>50%</b>	<b>50%</b>	<b>50%</b>
<i>1<sup>st</sup> loan: debt withdrawal period, years</i>	3	5	5	5	5	5	5
<i>1<sup>st</sup> loan: Interest rate, real</i>	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
<i>1<sup>st</sup> loan: Interest rate, nominal</i>	8.00%	10.16%	10.16%	10.16%	10.16%	10.16%	13.40%
<b>2<sup>nd</sup> loan: debt as % of capital</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>
<i>2<sup>nd</sup> loan: debt withdrawal period, years</i>	0	0	0	0	0	0	0
<i>2<sup>nd</sup> loan: Interest rate, real</i>	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
<i>2<sup>nd</sup> loan: Interest rate, nominal</i>	8.00%	10.16%	10.16%	10.16%	10.16%	10.16%	13.40%
<b>Inflation rate for revenues</b>	<b>0.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>5.00%</b>
<i>Inflation rate for costs</i>	0.00%	2.00%	2.00%	2.00%	2.00%	2.00%	5.00%
<i>Financial treatment of pre-prod. interest</i>	Capitalized	Capitalized	Capitalized	Capitalized	Capitalized	Capitalized	Capitalized
<i>Discount rate</i>	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%



Figure 12 - Description of M2 Mine Models

## Description des modèles d'exploitation minière M2 (durée d'exploitation de 18 ans, mine de cuivre ayant deux phases d'investissement)

<b>Salient project information</b>	M1-PWC	M2-1	M2-2	M2-3	M2-4	M2-5	M2-6
<b>Run ID</b>	M1-PWC	M2-1	M2-2	M2-3	M2-4	M2-5	M2-6
<i>Scenario</i>	PWC study	base case	parent income	high debt	high profits	cyclical prices	high inflation
<i>Commodity produced</i>	Copper	Copper	Copper	Copper	Copper	Copper	Copper
<i>Pre- production period, years</i>	4	4	4	4	4	4	4
<i>Projected mine life, years</i>	18	18	18	18	18	18	18
<i>Mill throughput, tpd</i>	20,278	20,278	20,278	20,278	20,278	20,278	20,278
<i>Average net smelter return per tonne (\$)</i>	31.63	30.68	30.68	30.68	33.00	30.22	30.68
<i>Average operating cost per tonne (\$)</i>	23.99	23.91	23.91	23.91	23.99	23.91	23.91
<i>Pre-production capital cost (\$K)</i>	371,750	371,750	371,750	371,750	371,750	371,750	371,750
<i>Total capital cost (\$K)</i>	602,000	602,000	602,000	602,000	602,000	602,000	602,000
<i>Depreciable assets as % of total capital</i>	61%	61%	61%	61%	61%	61%	61%
<i>Processing assets as % of total capital</i>	27%	27%	27%	27%	27%	27%	27%
<i>Price cycles</i>	NO	NO	NO	NO	NO	YES	NO
<i>Debt financing</i>	YES	YES	YES	YES	YES	YES	YES
<i>Inflation</i>	NO	YES	YES	YES	YES	YES	YES
<i>Transfer of tax deductions to parent</i>	NO	NO	Partial	NO	NO	NO	NO
<i>Operating margin before interest expenses</i>	24%	22%	22%	22%	27%	21%	22%
<b>Real IRR, unleveraged, pre-tax</b>	<b>17.6%</b>	<b>10.0%</b>	<b>10.0%</b>	<b>10.0%</b>	<b>25.0%</b>	<b>10.0%</b>	<b>10.0%</b>
<i>Real IRR, leveraged, pre-tax</i>	42.5%	11.3%	11.3%	16.8%	56.9%	15.0%	10.7%
<b>NPV of real pre-tax cash flow, unleveraged (\$K)</b>	<b>88,761</b>	<b>26,952</b>	<b>26,952</b>	<b>26,952</b>	<b>158,579</b>	<b>20,414</b>	<b>26,952</b>
<i>NPV of real pre-tax financial income (\$K)</i>	126,929	65,391	65,391	45,662	197,174	58,853	66,015
<b>Financial and economic data</b>							
<i>Currency unit</i>	Can \$	Can \$	Can \$	Can \$	Can \$	Can \$	Can \$
<i>Copper price, (US\$/lb)</i>	1.01	1.01	1.01	1.01	1.01	1.01	1.01
<i>Gold price, (US\$/troy ounce)</i>	n.a.	n.a.	n.a.	n.a.	300	n.a.	n.a.
<i>Exchange rate, currency unit/US\$</i>	1.40	1.40	1.40	1.40	1.40	1.40	1.40
<b>1<sup>st</sup> loan: debt as % of total capital</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>85%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>
<i>1<sup>st</sup> loan: debt withdrawal period, years</i>	10	10	10	10	10	10	10
<i>1<sup>st</sup> loan: Interest rate, real</i>	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.0%
<i>1<sup>st</sup> loan: Interest rate, nominal</i>	8.00%	10.16%	10.16%	10.16%	10.16%	10.16%	13.40%
<b>2<sup>nd</sup> loan: debt as % of capital</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>	<b>85%</b>	<b>60%</b>	<b>60%</b>	<b>60%</b>
<i>2<sup>nd</sup> loan: debt withdrawal period, years</i>	10	10	10	10	10	10	10
<i>2<sup>nd</sup> loan: Interest rate, real</i>	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
<i>2<sup>nd</sup> loan: Interest rate, nominal</i>	8.00%	10.16%	10.16%	10.16%	10.16%	10.16%	13.40%
<b>Inflation rate for revenues</b>	<b>0.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>2.00%</b>	<b>5.00%</b>
<i>Inflation rate for costs</i>	0.00%	2.00%	2.00%	2.00%	2.00%	2.00%	5.00%
<i>Financial treatment of pre-prod. interest</i>	Capitalized	Capitalized	Capitalized	Capitalized	Capitalized	Capitalized	Capitalized
<i>Discount rate</i>	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%



## Appendix B: M1-series Tax Calculation Results





Figure 13 – AETRs Calculated for the M1-Series

Project	Tax Regime	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	Atlantic Provinces	Northwest Territories	Yukon	Nunavut
M1-PWC	Current	14.8%	14.6%	14.5%	11.6%	11.8%	11.6%	14.6%	14.6%	14.4%	
	Proposed	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%	
M1-1	Current	14.2%	13.5%	13.3%	5.7%	6.2%	5.8%	13.7%	13.6%	13.1%	
	Proposed	18.3%	18.3%	18.3%	18.3%	18.3%	18.3%	18.3%	18.3%	18.3%	
M1-2	Current	10.2%	9.5%	9.3%	-0.2%	0.4%	-0.1%	9.8%	9.6%	9.0%	
	Proposed	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	17.1%	
M1-3	Current	12.2%	11.4%	11.2%	3.3%	3.3%	3.3%	11.7%	11.5%	10.9%	
	Proposed	19.6%	19.6%	19.6%	19.6%	19.6%	19.6%	19.6%	19.6%	19.6%	
M1-4	Current	17.5%	17.3%	17.2%	14.5%	14.7%	14.5%	17.3%	17.3%	17.1%	
	Proposed	14.9%	14.9%	14.9%	14.9%	14.9%	14.9%	14.9%	14.9%	14.9%	
M1-5	Current	8.8%	8.2%	8.0%	2.6%	2.5%	2.6%	8.4%	8.3%	7.8%	
	Proposed	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	16.9%	
M1-6	Current	18.0%	17.5%	17.3%	10.4%	10.9%	10.5%	17.6%	17.6%	17.1%	
	Proposed	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	

Figure 14 – M2 Series: Tax Point Differentials Resulting from the TCBT Changes

Project	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	Atlantic Provinces	Northwest Territories	Yukon	Nunavut
M1-PWC	-1.8%	-1.5%	-1.4%	1.5%	1.2%	1.4%	-1.6%	-1.5%	-1.3%	
M1-1	4.1%	4.7%	5.0%	12.6%	12.1%	12.5%	4.5%	4.7%	5.2%	
M1-2	6.9%	7.5%	7.8%	17.3%	16.7%	17.2%	7.3%	7.4%	8.1%	
M1-3	7.4%	8.1%	8.4%	16.3%	16.3%	16.3%	7.9%	8.0%	8.7%	
M1-4	-2.6%	-2.4%	-2.3%	0.4%	0.2%	0.4%	-2.5%	-2.4%	-2.2%	
M1-5	8.1%	8.6%	8.8%	14.3%	14.3%	14.3%	8.5%	8.6%	9.1%	
M1-6	2.4%	3.0%	3.2%	10.0%	9.6%	9.9%	2.8%	2.9%	3.4%	





## Appendix C: M2-series Tax Calculation Results





Figure 15 – AETRs Calculated for the M2-Series

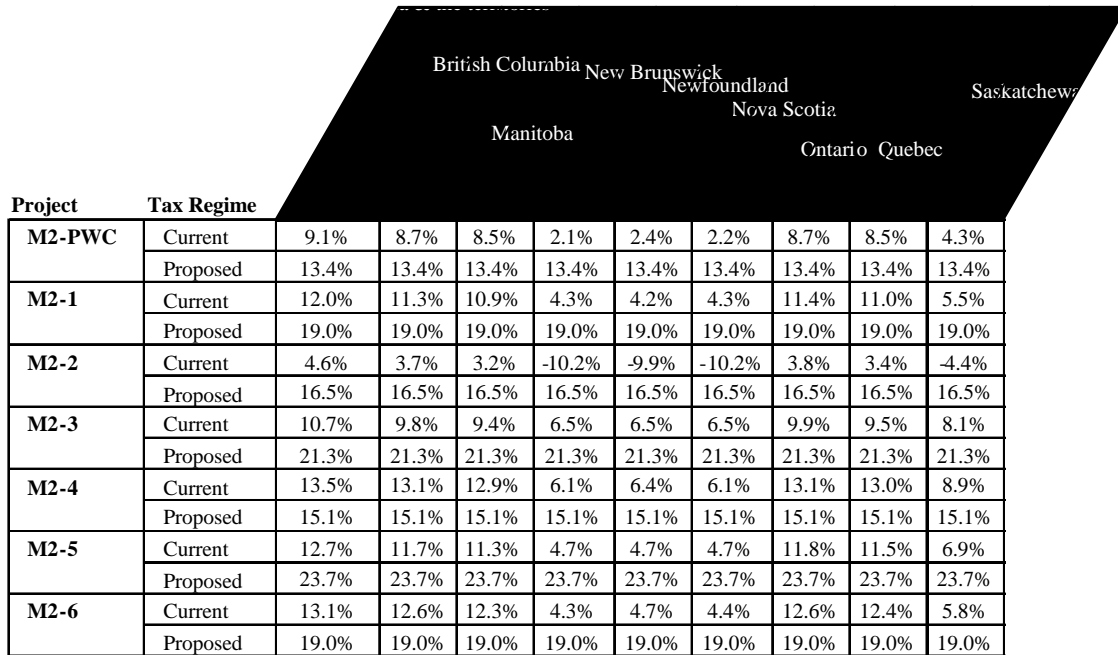


Figure 16 – M2 Series: Tax Point Differentials Resulting from the TCBT Changes

