

# Lesson 17-1 – Introduction to Taxes

# Chapter 12 Learning Objectives

- Understand different types of taxes
- Shows how to calculate income taxes.
- Discusses incremental income taxes.
- Determines income tax rates.
- Calculates after-tax cash flows.
- Determines after-tax performance measures.
- Evaluates projects on an after-tax basis with acquisition & disposal of assets.

# Taxes Introduction

- In Canada, the federal and provincial governments levy taxes on both individuals and corporations.
- Taxes can have a significant impact on the economic viability of a project
- This chapter provides an introduction to the tax environment in Canada and shows how it can affect engineering decisions.

# Types of Taxes

- Income
  - Sales
  - Property/Wealth
  - Tariffs
  - Other taxes
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- Personal vs. Corporate

# What Taxes are Used For

- Taxes fund your governments! For example...
- Federal government
  - National Defence
  - Indigenous Affairs
  - Fisheries and Oceans
- Provincial government
  - Education
  - Health Care
  - Social Assistance
- Municipal Governments
  - Roads and transit
  - Police and Fire
  - Municipal Waste

# Income Tax

- The most significant kind of tax for economic comparisons is income tax.
- Income taxes provide governments a portion of net income received by an individual or corporation.
- Income taxes are the main source of revenue for federal and provincial governments and pay for social services, health services, infrastructure such as highways and dams, the military and other government services.

# Sales Tax

- Sales taxes in some cases affect the economics of a project, in other cases they do not.
- For ongoing expenses, HST is charged on any inputs you purchase, and on any sales you make.
- You then remit to the government the difference between the taxes you collected and the taxes you paid.
  - GST/HST is thus a 'value added tax' – you only pay tax on the amount of value added at your stage

## Sales Tax (cont'd)

- In BC, PST is handled differently – it is not ‘value added.’
- Therefore, PST would be a cost that you need to include with your ongoing expenses.
- Not so for GST/HST – the tax you collect on your sale pays for the tax you paid to your suppliers and the remittance you owe – nets out to zero impact on cashflows
- For capital costs, sales tax is added to the Cost Basis, and is thus depreciated along with the other costs associated with the asset.



# Property Taxes

- Levied on the value of land and attached property
- Generally used by municipal governments in Canada
- Typically passed on from land owners to renters in commercial leases
- Becomes a fixed cost of doing business (taxes do not change regardless of how much you produce)

# Tariffs, or TRADE WARS ARE GOOD AND EASY TO WIN!

- A tax on specified imports
- Recent spat of tariffs added between Canada and the US
  - Maple syrup
  - Steel products
  - Roasted coffee (!)
  - Liquorish (!!!!)
- Paid by the importer

# Income taxes

- Taxes have an effect on cash flows and on the investment decisions managers make.
- Integrating tax considerations into economic analysis requires a thorough understanding of two issues:
  - how taxes are imposed
  - how taxes affect economic analysis techniques

# Personal vs Corporate Taxes

- Personal Income taxes:
  - Based on income
  - Tax rates are progressive (i.e. the rate increases with income level)
  - tax credits (tuition, RRSP) reduce the tax payable
- Corporate Income taxes:
  - based on income minus expenses
  - Tax rates flat and depend on the size of firm
    - Small business deductions can reduce tax rate

# Taxable Income of Individuals

- Average Tax Rate  
= total taxes payable/taxable income
- Marginal Tax Rate ( $t$ )  
= the tax rate that applies to the next taxable dollar
- Marginal taxes refer to the different rates depending on income level.
- Provinces have their own tax rates.

# BC Personal Income Tax Rates

## Personal Income Tax Brackets and Rates - 2018 Tax Year

Taxable Income - 2018 Brackets	Tax Rate
\$0 to \$39,676	5.06%
\$39,676.01 to \$79,353	7.70%
\$79,353.01 to \$91,107	10.50%
\$91,107.01 to \$110,630	12.29%
\$110,630.01 to \$150,000	14.70%
Over \$150,000	16.80%

- Note: Federal government has income tax rates as well (generally higher than provincial)
- Source: <https://www2.gov.bc.ca/gov/content/taxes/income-taxes/personal/tax-rates>

# Accountants vs Engineering Economists

- Accountants:
  - Try to measure what *has* happened
  - Allocate funds/attach fund to units or products (classify, organise and track)
- Engineering Economists:
  - Look forward and try to predict what *may* happen
  - Are primarily concerned with *when* the cash flows occur