3.1 CIRCULAR FLOW OF INCOME

Households sell factor services to the business sector and earn income; with this income, they pay for the goods and services received from the business sector.
National income is the sum of incomes earned from economic transactions and the sum of all spending.

3.1 CIRCULAR FLOW OF INCOME

- National income is the sum of incomes earned from economic transactions and the sum of all spending.

Flow of income v. stock of money:
- Stock of money is the actual, physical existence of a common medium of exchange, while the flow of income refers to how earnings move throughout an economy.
- In 2001, Canada’s stock of money was $128 billion, while its flow of income was $1084 billion.

To reach its goals, an economy is characterized by the flows of income payments and purchases that connect resource and product markets.
- There are three injection flows: investment, government purchases, and exports.
- Injection: any spending flow that is not dependent on the current level of income.
- Corresponding to these injection flows are three outward flows (called withdrawals or leakages) that divert funds from the income spending stream: savings, taxes, and imports.
- Leakage: income received within the circular flow that does not flow directly back.
saving (leakage)

- Households don’t necessarily spend all of their income in the product market, they also save some of it—which makes saving a leakage.
- Savings (S): portion of income (Y) that is not spent on consumption (C).
  \[ S = Y - C \]
  Savings is a function of income, meaning the amount a household can save is determined by its income.
  \[ S = f(Y) \]

wealth: assets less liabilities.

- Current period savings are called flows.
- Accumulated savings from a prior period are called stocks.
- The portion of wealth that is available for loan through financial intermediaries are called loanable funds.
- Most, but not all, savings become loanable funds.

investment (injection)

- Spending on capital goods leads to increased potential profit in the future.
- In economics: investment is the increase in the economy’s capacity to produce goods and services.
- Financed using borrowed funds from the loanable pool created by savings.
- Households earn interest payments on these funds, which are an expense to a business.
Leakage/Injection 1: Saving and Investment

- Saving is a necessary but not a sufficient condition for investment.

3.1 CIRCULAR FLOW OF INCOME

Leakage/Injection 2: Imports and Exports

- Imports (leakage):
  - Households buy goods and services imported from outside the domestic economy.
  - Imports (IM): goods/services that are bought from other countries and constitute a leakage from the circular flow of income.

- Exports (injection):
  - Business sector receives payments for goods/services that it exports, in addition to the consumption of domestic households.
  - Exports (X): goods/services produced in one country and sold in another.
3.1 CIRCULAR FLOW OF INCOME

- Leakage/Injection 3: Taxes and Government Spending
  - Taxes (leakage)
    - Government taxes (T) both the household sector and business sector
  - Government Spending (injection)
    - Government sector purchases (G) goods and services from the business sector
    - Transfer payments (TP): one-way transactions in which payment is made, but no good or service flows back in return (e.g. Employment Insurance)

3.2 EQUILIBRIUM AND LEVEL OF NATIONAL INCOME

- National income equilibrium is when S + IM + T = I + X + G (in other words, when total leakages is equal to total injections)
- It is also when aggregate expenditures equal total income
3.2 EQUILIBRIUM AND LEVEL OF NATIONAL INCOME

- Value of production (total receipts of all producers) = business receipts = aggregate expenditures (total spending in the economy divided into 4 components: C, I, G, and [X-M])
- Since the receipts of a business are dependent on buyers purchasing their goods and services
- Value of production = cost of production = total income (since what a firm spends on production creates income for households)

3.3 MEASURING NATIONAL INCOME

- Gross domestic product (GDP): the total dollar value at current prices (market value) of all final goods and services produced in Canada in one year
  - Why only include the final goods? Doing so avoids multiple-counting (inflating the size of the GDP by adding to the GDP the same item at different stages in its production)
  - Final products: will not be processed further or resold
  - Intermediate products: will be processed further or resold
  - Value added: the extra worth of a product at each stage in its production

- National income (NI or Y): total earnings of all the factors of production in a given period
  - National income equilibrium is when S + IM + T = I + X + G (in other words, when total leakages is equal to total injections)
  - It is also when aggregate expenditures equal total income

- At equilibrium:
  - GDP = AE = Y
3.3 MEASURING NATIONAL INCOME

Two ways to measure income:
- The expenditures approach:
  - Adds 4 forms of expenditures: C, I, G, X (minus IM)
  - Net exports: total exports minus total imports, which can be written as (X-IM) or X_N
  - Thus: AE = C + I + G + X_N

Agg. Exp. = C + I + G + X_N = National Income

3.3 MEASURING NATIONAL INCOME

Two ways to measure income (continued):
- The incomes approach:
  - Add 4 types of incomes: w, i, r and π
  - NI = w + i + r + π

NI = wages, interest, rent, profit

Both methods lead to the same result, thus:

Agg. Exp. = C + I + G + X_N = National Income = w + i + r + π

Using the expenditures approach:
- Must distinguish between categories of products (i.e. final v. intermediate) on the basis of how they are used
  - Flour bought by a household for baking is a(n) final product
  - Flour bought by a bakery to make bread to be sold is a(n) Intermediate product
Using the expenditures approach (continued):

- Excluded purchases (because they are not related to current production):
  - Financial exchanges: gifts of money, bank deposits, and purchases of stocks are not included because they simply shift purchasing power from one party to another; however, payments for financial services are included.
  - Second-hand purchases: used goods have already been counted at their first sale to a consumer.

- Included purchases:
  - Personal consumption (C): household spending on goods and services
    - Make up about 55% of GDP
    - Durable goods: consumed over time
    - Non-durable goods: consumed only once

- Gross investment: purchases of assets intended to produce revenue
  - Between 15%-25% of GDP
  - Include machinery and equipment (most important spending in this category), inventories (a rise in inventories is seen as positive investment spending since inventories are income-producing assets), and construction of all buildings (owner-occupied housing is considered an investment, not consumption, because the house could be rented out for income)
Using the expenditures approach (continued):

- Included purchases (continued):
- Gross investment (continued):
  - Related to a country’s capital stock, which is the total value of productive assets that provide a flow of revenue
  - Capital assets depreciate over time, so to find the net investment, you must subtract the annual depreciation of an economy’s capital assets from new gross investment

3.3 MEASURING NATIONAL INCOME

Example: An economy has $200 billion of capital stock at the beginning of a year and depreciation of $40 billion during the year.

- If gross investment over the same period is $100 billion, what is net investment?
  - $100 billion - $40 billion = $60 billion (the amount by which capital stock expands that year)

- What is the value of the economy’s capital stock?
  - $200 billion + $60 billion = $260 billion

3.3 MEASURING NATIONAL INCOME

[Diagram: Net Investment and Capital Stock]

As growing economy, the factor in the economy’s capital stock during a year due to depreciation ($40 billion) is supplemented by gross investment ($100 billion) over the same period. The net result is $60 billion is greater than the capital stock at the start of the year ($200 billion) by the amount that gross investment exceeds depreciation ($100 billion - $40 billion). This $60 billion increase shows by the dark rectangle represents the economy’s net investment during the year.
3.3 MEASURING NATIONAL INCOME

- Using the expenditures approach (continued):
  - Included purchases (continued):
    - Government purchases (G): spending by all levels of government on goods and services
    - Make up about 20% of GDP
    - Transfer payments and government subsidiaries to businesses are not included in calculations of GDP since they are a redistribution of purchasing power
    - Expenditures by government-owned agencies on income-producing assets (e.g., post offices built by Canada Post) are also excluded since these are part of gross investment

- Net exports: exports (product shipped out a country) minus imports (product shipped into a country)
  - Exports (X) contribute to GDP while imports (IM) are subtracted from it
  - When represented as net exports, these purchases represent a small fraction of GDP; however, when viewed separately, imports and exports each accounts for over 30% of GDP

<table>
<thead>
<tr>
<th>Component</th>
<th>Real GDP ($b)</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Consumption Expenditures (C)</td>
<td>566.2</td>
<td>56.1</td>
</tr>
<tr>
<td>Durable goods</td>
<td>81.9</td>
<td>8.1</td>
</tr>
<tr>
<td>Semi-durable goods</td>
<td>50.5</td>
<td>5.0</td>
</tr>
<tr>
<td>Non-durable goods</td>
<td>130.3</td>
<td>12.9</td>
</tr>
<tr>
<td>Services</td>
<td>303.7</td>
<td>30.1</td>
</tr>
<tr>
<td>Gross Private Investment (I)</td>
<td>190.0</td>
<td>18.8</td>
</tr>
<tr>
<td>Fixed capital formation</td>
<td>180.9</td>
<td>17.9</td>
</tr>
<tr>
<td>Inventory change</td>
<td>9.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Government Purchases (G)</td>
<td>207.6</td>
<td>20.6</td>
</tr>
<tr>
<td>Net exports (X-IM)</td>
<td>45.7</td>
<td>4.5</td>
</tr>
<tr>
<td>TOTAL GDP</td>
<td>1009.2</td>
<td>100.0</td>
</tr>
</tbody>
</table>
3.3 MEASURING NATIONAL INCOME

Using the income approach:
1. Since all spending on final consumer products ends up as some form of household income, annual income equals annual spending.

Using the income approach (continued):
- 7 categories:
  1. Wages and Salaries
  2. Corporate Profits
  3. Interest Income
  4. Proprietors’ Incomes and Rents
  5. These form the basis of GDP calculated using the income approach

Using the income approach (continued):
- 7 categories (continued):
  6. Indirect Taxes
  7. Depreciation
  8. Statistical Discrepancy
  9. These are added on by Statistics Canada in order to balance GDP calculated by the income approach with GDP calculated by the expenditure approach
3.3 MEASURING NATIONAL INCOME

- Using the income approach (continued):
  - Wages and salaries:
    - Largest income category representing about 50% of GDP
    - Includes direct payments to workers in both businesses and government as well as employee benefits such as contributions to employee pension funds

- Corporate profits:
  - Includes all of the profits declared to the government by corporate businesses such as the profits paid as corporate income tax, the profits paid out to corporate shareholders as dividends and retained earnings
  - Retained Earnings: profits kept by businesses for new investment

- Interest income:
  - Includes interest paid on business loans and bonds and income such as royalty payments (the latter occurring less frequently)
  - Includes adjustments to the value of businesses’ unsold products
  - Does not include interest payments made by consumers and government because these are viewed as transfers of purchasing power
3.3 MEASURING NATIONAL INCOME

- Using the income approach (continued):
  - Proprietors' incomes and rents:
    - Includes the earnings made by sole proprietorships, partnerships, self-employed professionals, farmers as well as the income to landlords from renting property.
    - Recall that incomes are received by owners of proprietorships for supplying various types of resources to their business.

- Using the income approach (continued):
  - Indirect taxes:
    - Taxes that are charged on products rather than be applied to households or businesses (i.e.: HST).
    - Not included in the GDP with the income approach, but rather with the expenditure approach.
    - To balance the results from the 2 approaches, taxes -- subsidies that businesses receive are added to income-based GDP.

- Using the income approach (continued):
  - Depreciation:
    - Like indirect taxes, must also be added to the income approach.
    - Includes durable assets such as buildings, equipment and tools that eventually wear out and need to be replaced.
    - Considered a cost of business and shows up in the expenditure approach.
3.3 MEASURING NATIONAL INCOME

Using the income approach (continued):
- Statistical discrepancy:
  - GDP figures are actually estimates due to businesses/persons records being faulty or missing
  - The discrepancy between the two approaches is known as the statistical discrepancy
  - To balance the two figures, Statistics Canada divides the difference between the two approaches

E.g., in 2007, there was a discrepancy of $1.4 billion, so half the amount was added to the lower estimate of GDP and half was subtracted from the higher estimate.