ECON 222A
Macroeconomic Theory I

THE MEASUREMENT AND STRUCTURE OF THE CANADIAN ECONOMY

Lecture 3

Today's Lecture

- How is economic activity measured?
- What is GDP and what are its main components?
- How does GDP differ from GNP?

National Income Accounting

- Current economic activity is measured by the amount of Goods and Services (G&S) produced in a given period of time.
- National Income Accounts: accounting framework used in measuring current economic activity.
- There are multiple ways to measure this: they all give the exact same measurement (based on the circular flow of income).
- Three measurement approaches:
  - Product approach
  - Income approach
  - Expenditure approach

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- Sums up the value added at each step.

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- Measures economic activity by adding all income received, including wages, taxes, and after tax profits.
- It is the sum of individuals' income, government income, and producers' income.

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Expenditure Approach

- The expenditure approach: Measures economic activity by adding the amount spent by the ultimate purchasers of output.

Example: Two-Sector Economy

	Apple Inc	Juice Inc
Revenues from sales:	**35,000**	**40,000**
- Households	10,000	40,000
- Firms	25,000 (Juice Inc.)	-
Costs:	**15,000**	**35,000**
- Wages to employees	15,000	10,000
- Intermediate Goods	-	25,000
Taxes	**5,000**	**2,000**
Profits	**15,000**	**3,000**

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- Any output produced (*Production*) is purchased by someone (*Expenditure*) and results in someone's income (*Income*).
- First think about Production and Expenditure.
- Market value of what is produced is defined by what individuals spend on them.
- The market value of a good (Product) and the spending on a good (Expenditure) are always the same. (*P* and *E* are the same)

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Why are they the same? (Cont.)

- Think about sellers and buyers
- Sellers earn what consumers spend
- Seller's receipts have to equal total income – incomes paid out to workers, taxes, and their profits
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- Fundamental identity of national income accounting:

$$\text{Total Production} = \text{Total Income} = \text{Total Expenditure}$$

Gross Domestic Product (GDP)

- Best known and most used indicator of economic activity.
- *E, I, P* approaches all measure it, but look at it differently.
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GDP - The Product Approach

- A nation's GDP is the market value of final goods and services newly produced within a nation during a fixed period of time.
- Using market values (i.e. prices) allows adding the production of different goods and services.
- Problems with the market values:
  - Some goods are not sold in markets.
  - The underground economy – illegal activities and legal activities hidden from the government.
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GDP - The P-Approach (Cont.)

- GDP includes only goods and services newly produced within the current period. It is a sum of value added – value of an output minus value of its inputs.
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GDP - The P-Approach (Remarks)

- Excludes sales of old G&S from previous years.
- Old goods' value counted in old GDP.
- If a real-estate agent sells and old house, the value of the sale is not included, but the service fee of the agent is.
- Final G&S; not Intermediate G&S (subtle).
- Example: flour (Int) and bread (Final), if both are produced in the same period.
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GDP versus GNP

- Where goods and services are produced and by which nation they are owned matters.
- Gross national product (GNP) is the market value of final goods newly produced by domestic factors of production (capital, labor) during the current period.
- Canadian capital and labor used abroad produce output and income. They are included into Canadian GNP, not GDP.
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GDP versus GNP (Cont.)

- Difference: GDP is all within a Country, GNP can have stuff from outside (but owned by a Country)
- Net factor payments from abroad (NFP) is:
  - income paid to domestic factors of production from the rest of the world;
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$$GDP + NFP = GNP$$

GDP - The Expenditure Approach

- GDP = Total spending on final G&S produced within a nation during a specified period of time.

- *Y* = GDP
- *C* = Consumption
- *I* = Investment
- *G* = Government purchases of goods and services
- *NX* = Net exports of goods and services (exports minus imports)
- Income-Expenditure identity (Inc. LHS, Exp. RHS).

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TABLE 2.1

Expenditure Approach to Measuring GDP in Canada, 2003

	Billions of dollars	Percent of GDP
Personal consumption expenditures	**688.707**	**56.5**
durable goods	93.180	7.6
semi-durable goods	58.295	4.8
nondurable goods	168.256	13.8
services	368.976	30.3
Business fixed investment	**205.875**	**16.9**
residential construction	73.757	6.1
nonresidential construction	51.155	4.2
machinery and equipment	80.963	6.6
Business inventory investment	**7.662**	**0.6**
Government investment	**31.516**	**2.6**
fixed capital	31.501	2.6
inventories	0.015	0.0
Government purchases of goods and services*	**237.711**	**19.5**
Net exports	**47.985**	**3.9**
exports	461.596	37.9
imports	413.611	33.9
Statistical discrepancy†	**–0.684**	**0.1**
Total (equals GDP)	**1218.772**	**100.0**

Source: Adapted from the Statistics Canada CANSIM database <http://cansim2.statcan.ca>, Table 380-0017.

* Government *purchases of* goods and services are also referred to as government *expenditure on* goods and services.

† See Table 2.2 for a definition of the statistical discrepancy.

GDP - E-Approach: Consumption

- 1) Consumption (56.5% of GDP)
- Includes 4 categories
  - Consumer durables: >3 yrs (cars, TVs, not houses)
  - Semi-durable goods: 1-3 yrs (clothing)
  - Non-durable goods (food, utilities, fuel)
  - Services (rent, health care)

GDP - E-Approach: Investment

- 2) Investment (20.1% of GDP):
- Includes 3 categories:
  - Fixed Investment
    - Residential construction (homes)
    - Non-residential investment (factories)
    - Machinery and equipment investment (machines)
  - Inventory Investment (unsold production), when unsold, the firm 'purchases' the good
  - Government Investment

GDP - E-Approach: Gov't Purchases

- 3) Government purchases (19.5 % of GDP):
- Government expenditure (all levels) on goods or services, other than capital goods.
- Excludes transfers (UI, Welfare, Insurance).
- Excludes interest payments on the National debt.

GDP - E-Approach: Net Exports

- 4) Net Exports (3.9 %):
- *NX* = Exports– Imports
- Exports produced locally, purchased abroad.
- Imports produced abroad, purchased locally.

GDP – The Income-Approach

- Net National Income
  a) Labor income
  b) Corporate profits
  c) Interest and investment income
  d) Unincorporated business income
- Indirect taxes - subsidies
- Depreciation

GDP – The Income-Approach

- Net National Income

  a) Labor income

  – wages, salaries, employee benefits (income of employees);

  – employer contributions to the EI and the CPP.

GDP – The Income-Approach

- Net National Income

  a) Labor income

  b) Corporate profits

  – taxes levied on corporations;

  – dividends to shareholders;

  – retained earnings.

GDP – The Income-Approach

- Net National Income
  a) Labor income
  b) Corporate profits
  c) Interest and investment income
     – interest earned by individuals from business and foreign sources;
     – minus interest paid by individuals.

GDP – The Income-Approach

- Net National Income
  a) Labor income
  b) Corporate profits
  c) Interest and investment income
  d) Unincorporated business income
     – income of self-employed, which includes both labor and capital income.

GDP – The Income-Approach

- Net National Income
- Indirect taxes less subsidies
  - Provincial Sales Tax (PST);
  - Goods and Services Tax (GST);
  - minus Subsidies.
- Depreciation

GDP – The Income-Approach

- Net National Income
- Indirect taxes less subsidies
- Depreciation
  - the value of capital that wears out during the measured period. Capital goods have a long life span, so you want to impute the ‘physical decay’ attributable to the production occurred in that period of time and subtract it from GDP.

TABLE 2.2

Income Approach to Measuring GDP in Canada, 2003

	Billions of dollars	Percent of GDP
Labour income	613.718	50.4
Corporate profits*	162.853	13.4
Interest and investment income†	56.384	4.6
Unincorporated business income**	78.076	6.4
Total (equals Net National Income) at factor cost	911.031	74.7
Plus Indirect taxes less subsidies	142.653	11.7
Total (equals Net Domestic Product) at market prices	1053.684	86.5
Plus Capital consumption allowances	164.403	13.5
Plus Statistical discrepancy††	0.685	0.1
Equals Gross Domestic Product (GDP)	1218.772	100.0
Plus Net factor payments	–23.670	1.9
Equals Gross National Product (GNP)	1195.102	98.1

Source: Adapted from the Statistics Canada CANSIM database <http://cansim2.statcan.ca>, Tables 380-0015 and 380-0016.

* Includes government enterprise profits.
† Includes inventory valuation adjustment.
** Includes net farm income.
†† Statistical discrepancy reflects the difference between Statistics Canada's estimates of GDP from the expenditure approach and its estimates from the income approach. The discrepancy is an adjustment that is made so that the two estimates coincide.

Private Sector and Government Sector Income

- Private disposable income (PDI) is the amount of income the private sector has available to spend.

$$PDI = Y + NFP + TR + INT - T$$

- *TR*: transfers received from the government
- *INT*: interest payments on the government's debt
- *T*: taxes

$$NGI = T - TR - INT$$

- *NGI*: net government income