

Measuring and Modelling the Economy

Gross Domestic Product

▪ **Gross domestic product** or **GDP** measures the total value of all *final goods and services* produced in the economy during a given year. It does not include the value of *intermediate goods*.

Calculating Gross Domestic Product

- * GDP can be calculated three ways:
- * Add up the **value added** of all producers
- * Add up all income paid to factors of production
- * Add up all spending on domestically-produced final goods and services. This results in the equation (where GDP is represented by Y):

$$Y = C + I + G + X - M$$

Component	What is it?	Example
C		
I		
G		
X		
M		

Real GDP

- * Without adjustment, increases in GDP reflect both economic growth and inflation
- * Nominal GDP is the total value of the output of an economy before the effect of price increases is removed
- * Real GDP is GDP adjusted for inflation
- * Canada uses the Chain Fisher Volume Index to adjust GDP

Drawbacks to GDP

- * Population size – to correct for changes in population size, divide GDP by population to find GDP per capita
- * Non-market production not measured
- * Underground economy
- * Types of good produced
- * Leisure
- * Environmental degradation
- * Distribution of Income

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The Unemployment Rate

- * Percentage of the labour force not working at any given time
 - * Stats Canada calculates once a month
 - * Population broken into categories
 - * Those under 15 and those institutionalized (not eligible to work)
 - * Those eligible to work but choose not to participate
 - * Those who are either employed or actively seeking employment
- $$\text{Unemployment Rate} = \frac{\text{Number unemployed}}{\text{Labour force}} \times 100$$

Criticisms

- * Includes those who are partially employed (working part-time when they wish to work full-time)
- * Doesn't include those who have 'given up' looking for work
- * Lead to an understating of the unemployment rate
- * Includes those who are underemployed (working at a job where their skills are not fully utilized)

Full Employment

- * In an active and free economy, structural and frictional unemployment will always exist
- * Frictional unemployment: results from people moving between jobs
- * Structural unemployment: occurs when skills or location of workers no longer matches demand in the economy
- * Full employment in Canada is 6% to 7% (natural rate of unemployment)

Other Types of Unemployment

- * Cyclical unemployment: results from an overall reduction in consumer spending. Demand for goods drop, fewer workers needed
- * Seasonal unemployment: caused by variation in climate over the course of the year (e.g. fishing, farming, camps, ski resorts, etc.)

Variations in the Unemployment Rate

- * Percentage unemployment varies significantly by education (highest – those without a high school diploma, lowest – those with graduate degrees)
- * Varies by provinces as well

Consumer Price Index

- * Inflation: persistent rise in the general level of prices
- * CPI tracks inflation
- * Uses a representative basket of goods and services
- * Monitors consumption of 600 good and services in cities across Canada
- * Uses households: urban, 4 people
- * Items put into one of eight categories then weighted according to importance

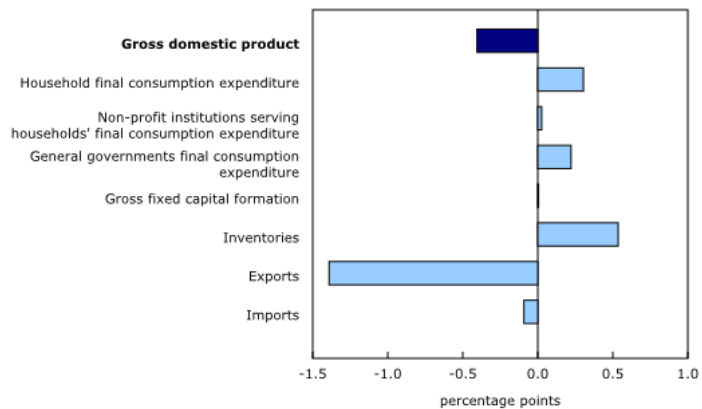
Calculating and Using the CPI

- * Indexing: An adjustment made to wages and pension payments to offset year-to-year price increases. (full or partial indexing)
- * Current inflation target in Canada is 2%

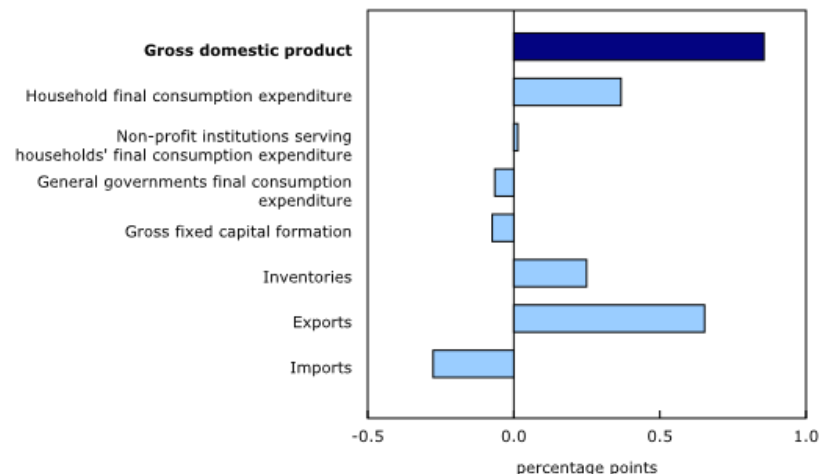
Limitations of CPI

- * Not every household's spending reflected in the index weights of CPI
- * Individual items in base basket may not reflect current spending patterns or consumer wants
- * Does not reflect cultural diversity

GDP – Quarter 2

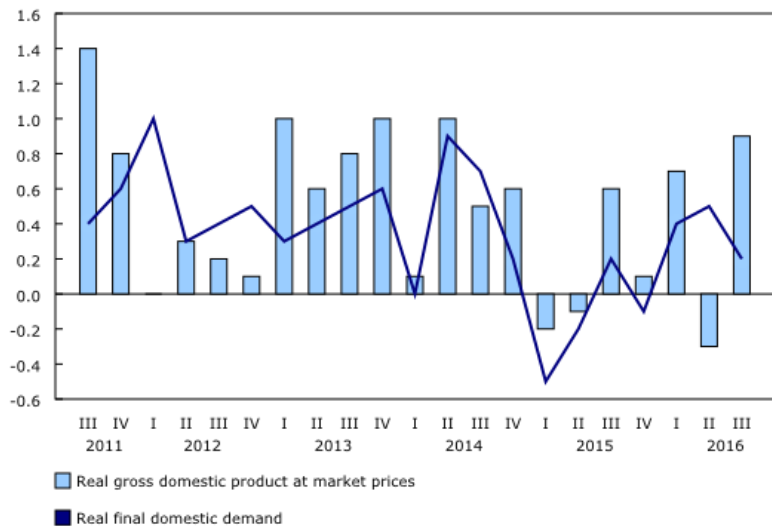


GDP – Quarter 3



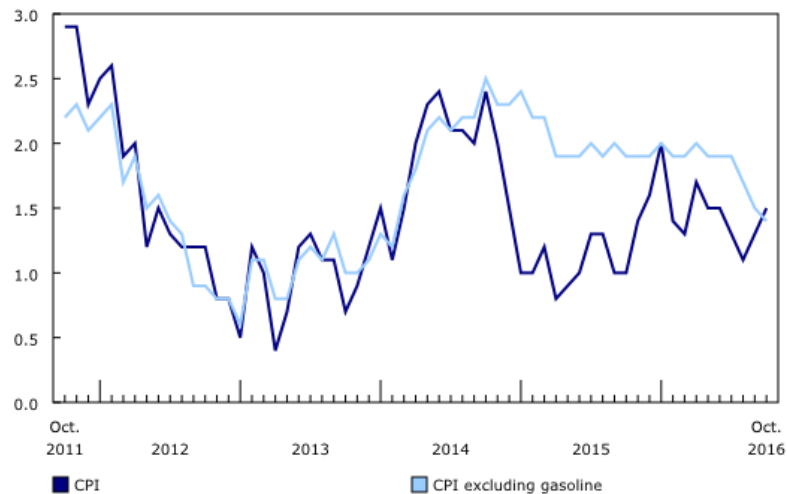
GDP – as of February 2016

quarterly % change, chained (2007) dollars



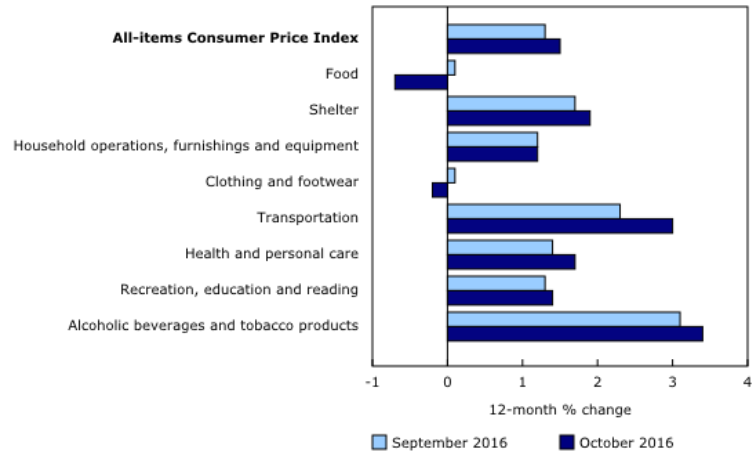
Inflation with and without gasoline

12-month % change

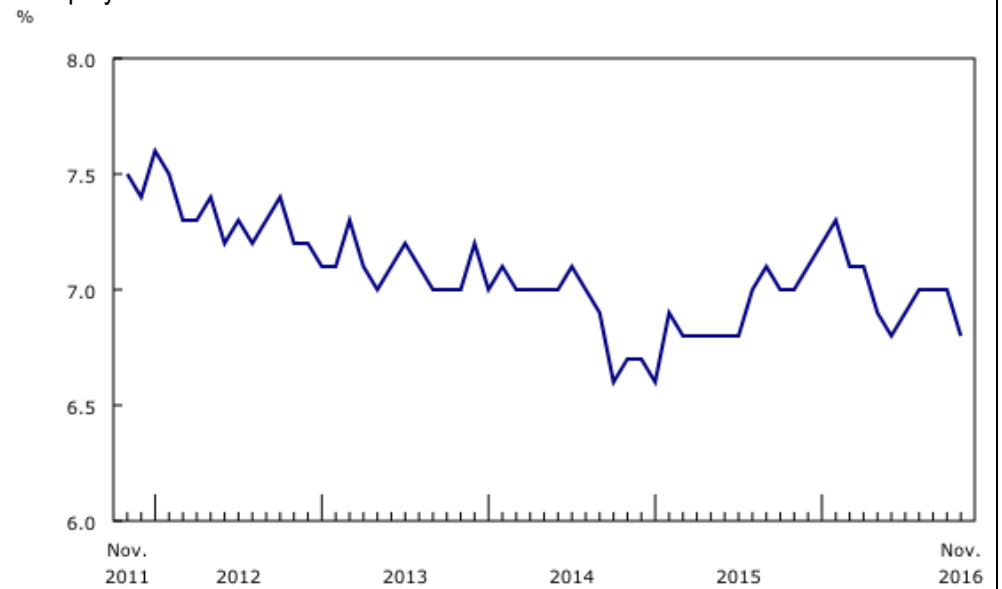


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Components of CPI

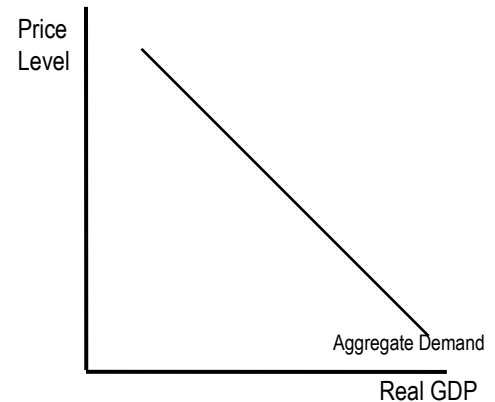


Unemployment rate



Aggregate Demand

- * The total demand for all goods and services produced in an economy.
- * As price levels rise, total real output (or aggregate quantity demanded) falls
- * Aggregate demand at each price level is equivalent to the GDP that would occur at that price level
- * For real economic growth to occur, aggregate quantity demanded at each price must increase
- * It is downward-sloping for three reasons:
 - o The first is the **wealth effect of a change in the aggregate price level**—a higher aggregate price level reduces the purchasing power of households' wealth and reduces consumer spending.
 - o The second is the **interest rate effect of a change in aggregate the price level**—a higher aggregate price level reduces the purchasing power of households' money holdings, leading to a rise in interest rates and a fall in investment spending and consumer spending.
 - o The third is the **exchange rate effect of a change in the aggregate price level** – a higher aggregate price level increases the costs of goods and services that are exported, reducing the demand for Canadian exports.



Changes in Aggregate Demand

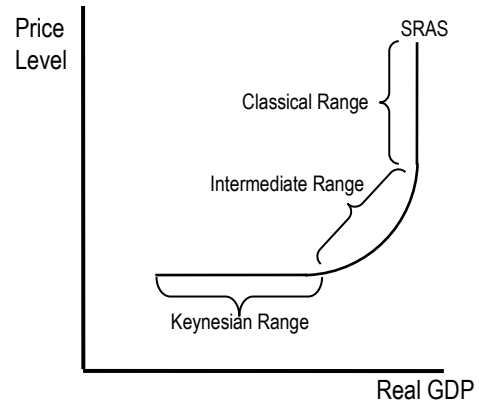
- * Changes in consumption
- * Consumer income can be divided into four uses (consumption, taxes, savings, spending on imports)
 - o Consumption is whatever is left after the other three uses are considered
 - o AD increases when consumption increases – curve shifts to the right
 - o Consumption increases through higher incomes, decreases in savings, taxes or spending on imports
- * Changes in investment
 - o Overall level of investment related to expectation of future profits
 - o If business profits expected to increase, investment will increase, AD curve shifts to the right
 - o If business profits expected to decrease, investments decrease, AD curve shifts to the left
 - o Movements closely tied to interest rate – investments normally require borrowing funds, if interest rates increase, cost of investment increases (profits decrease), decrease in investment
 - o Opposite true for decreasing interest rate
- * Changes in government spending
 - o Increases in spending or transfer payments shift AD curve to the right
 - o Decreases shift curve to the left
- * Changes in export demand (foreign trade)
 - o Four factors influence demand
 - Demand for Canadian-produced exports → increased demand shifts curve right
 - Domestic rate of inflation → makes Canadian goods more expensive, reducing demand for exports, shifts curve left
 - Relative levels of income in other countries → increase in income, increase in demand for Canadian exports, shifts curve right
 - Value of Canadian dollar → increase in value of dollar makes Canadian goods more expensive, reduced demand shifts curve left, decrease in value of currency has opposite effect

Aggregate Supply

• Total supply of all goods and services produced in a society.

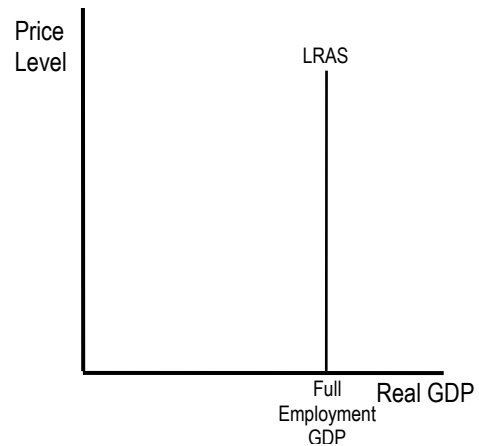
Short Run Aggregate Supply

- * Curve displays the total amount of goods and services that would be supplied at each price level.
- * Very elastic at low output levels.
 - Most resources sitting idle
 - Price levels stay low even as output increases
- * At higher output levels prices tend to rise more rapidly
- * Keynesian Range:
 - Reserves of resources mean average costs can remain constant as output is increased
- * Intermediate Range:
 - Average costs will rise as more firms bid for scarce resources.
- * Classical Range:
 - Resources are fully utilized, even price increases can not increase productivity.



The Long-Run Aggregate-Supply Curve

- * In the long run, an economy's production of goods and services depends on its supplies of labor, capital, and natural resources and on the available technology used to turn these factors of production into goods and services.
- * The price level does not affect these variables in the long run.
- * The long-run aggregate-supply curve is vertical at the natural rate of output.
- * This level of production is also referred to as potential output or full-employment output.

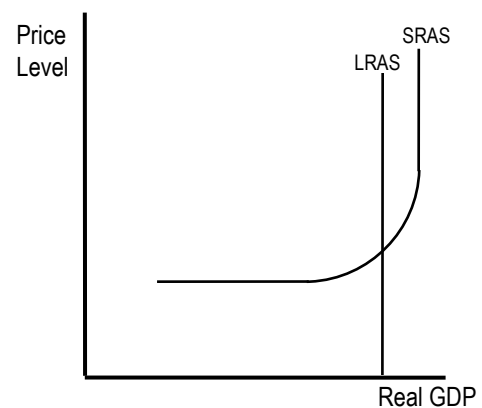


Why the Long-Run Aggregate-Supply Curve Might Shift

- * Shifts arising from changes in:
 - Labor
 - Capital
 - Natural Resources
 - Technological Knowledge

Intersection of The SRAS and LRAS

- * The short-run aggregate supply curve and the long-run aggregate supply curve intersect at the full employment point.
- * At this point, most resources in the economy are fully-employed
 - In Canada this means an unemployment rate between 6% to 7%.
 - Inflation is low and stable



Measuring and Modelling the Economy

Equilibrium Output and Price Level

- * Full employment equilibrium – the two curves intersect at a point on the AS curve where prices start to increase more rapidly but the curve is not fully vertical. It is the intersection of AD, SRAS and LRAS.
- * Recessionary Gap – AD intersects to the left of the full employment output
 - High unemployment
 - Low inflation
 - Low GDP growth
- * Inflationary Gap – AD intersects to the right of the full employment output
 - Low unemployment
 - High inflation
 - High GDP growth
- * Stagflation
 - Adverse shifts in aggregate supply cause *stagflation*—a period of recession and inflation.
 - Output falls and prices rise.
 - Policymakers who can influence aggregate demand cannot offset both of these adverse effects simultaneously.

