Aggregate Expenditure or Keynesian Model

ECO 301: Money and Banking

Goals of this chapter

- Specific Goals:
  1. Understand how spending plans are determined when the price is fixed in the short run.
  2. Understand the expenditure multiplier.
  3. Understand how recessions and expansions begin.
- Learning Objectives:
  1. LO5: Analyze macroeconomic problems and prescribe appropriate monetary policy solutions.

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Keynesian model background

- Prices are assumed to be fixed → short run.
- Quantities firms sell only depend on aggregate demand.
- Aggregate demand determines real GDP.
- **Aggregate expenditure**: consumer spending + government spending + spending on investment + net exports
- **Real GDP**: equal to aggregate expenditure *in equilibrium*.
  - An increase in aggregate expenditure leads to an increase in real GDP.
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Consumption and savings

- Consumption is primarily determined by four components
  1. Real interest rate
  2. Disposable income
  3. Wealth
  4. Expected future income.
- Consumption function: shows how much people consume (y-axis) based on level of disposable income.
- What does the slope of the consumption function look like?

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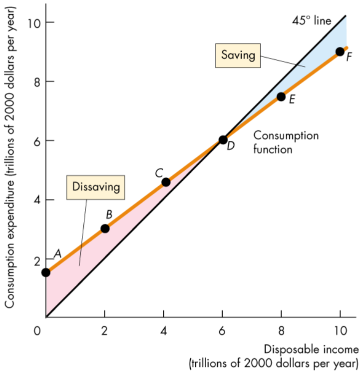
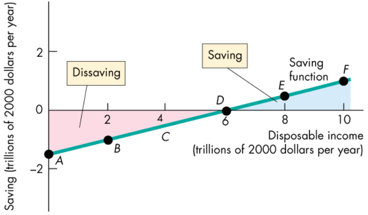
  Upward sloping, slope is less than one.

Consumption and savings functions



(a) Consumption function



(b) Saving function

Marginal propensity to consume

- **Marginal propensity to consume (MPC)**: fraction of an increase in disposable income that is consumed.

$$\text{MPC} = \frac{\Delta C}{\Delta Y_d}$$

- The slope of the consumption function = MPC.
- **Marginal propensity to save (MPS)**: fraction of an increase in disposable income that is saved.

$$\text{MPS} = 1 - \text{MPC}$$

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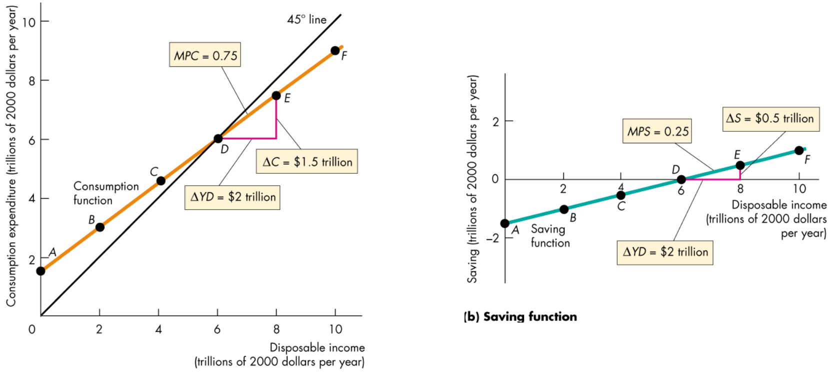
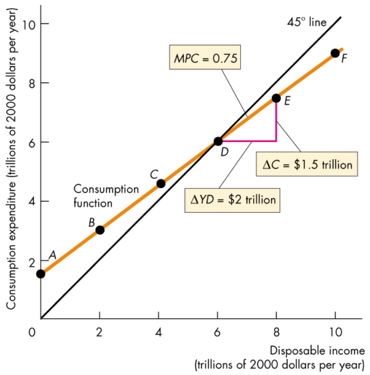


(a) Consumption function

(b) Saving function

- What does the straight line indicate?

MPC and MPS



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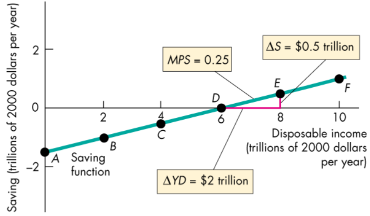


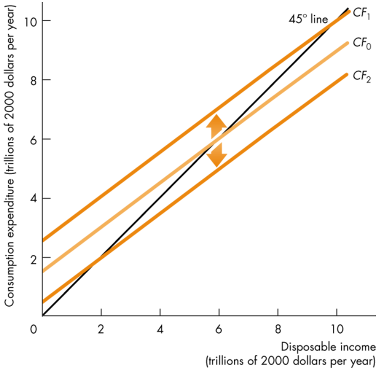
(b) Saving function

- What does the straight line indicate?
  MPC and MPS are both constant. Do not change as disposable income changes.

Shifts in the consumption function

Changes in other things *besides disposable income* that affect consumption *shift* the consumption function.

1. A change in the interest rate.
2. A change in wealth.
3. A change in expected future income.



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Import function

- Imports come from two sources:
  1. Consumers import products → imports depend on disposable income.
  2. Producers import factors of production, intermediate goods → imports depend on real GDP.
- Imports increase as real GDP increases.
- **Marginal propensity to import (MPM)**: the fraction of an increase in real GDP that is spent on imports.
- MPM increases as the global economy becomes more integrated.

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Aggregate expenditure curve

- Consumption depends on disposable income, and therefore real GDP.
- Investment demand does not depend on *current* real GDP (only expectations of future final goods demand).
- Government spending is exogenous.
- Export demand does not depend on *domestic* real GDP (depends on demand from foreign countries).
- Recall: imports depend on disposable income, and therefore real GDP.
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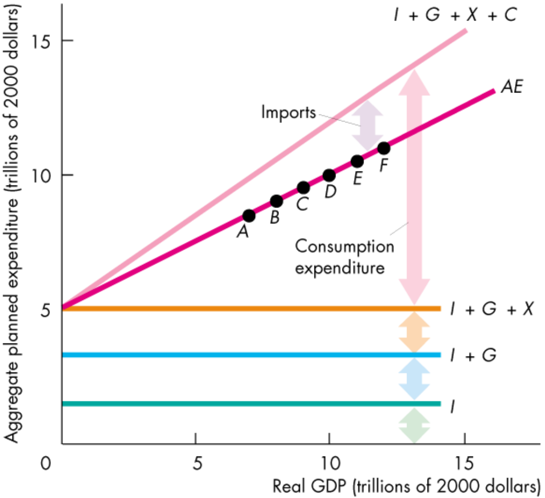
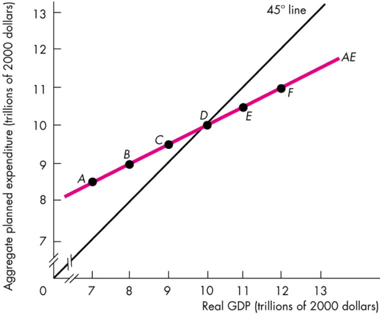


Equilibrium

- Real GDP is determined in equilibrium.
- Equilibrium occurs where aggregate expenditure is equal to real GDP.



(a) Equilibrium expenditure

Expenditure multiplier

- An exogenous increase in AE leads to an increase in real GDP *greater than* the initial increase in AE.
- Two ways to think about it:
  1. $\uparrow$ AE $\rightarrow$ $\uparrow$ real GDP $\rightarrow$ $\uparrow$ C $\rightarrow$ $\uparrow$ AE $\rightarrow$ $\uparrow$ real GDP ...
  2. Suppose government buys more bombs. $\rightarrow$
     Defense contractors sales go up. $\rightarrow$
     Salaries and profits for defense contractor workers increases. $\rightarrow$
     They spend higher salaries and profits on consumption. $\rightarrow$
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Expenditure Multiplier

- Suppose there is an increase in government spending.
- GDP will increase by the $\uparrow G$ plus the $\uparrow C$ minus the $\uparrow M$.

$$\Delta Y = \Delta C + \Delta G - \Delta M$$
$$\Delta C = \text{MPC } \Delta Y$$
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- Solve for the change in real GDP (ΔY):

$$\text{(1-MPC+MPM)}\Delta Y = \Delta G$$

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- The expenditure multiplier is given by,

$$m_e = \frac{1}{\text{MPS+MPM}}$$

- MPS + MPM = fraction of income *not spent* in the United States (saved or spent abroad).
- If economy is closed, or imports do not depend on income, then $MPM = 0$.
- Let ΔAE denote any single change in aggregate expenditure
- The impact on real GDP is,

$$\Delta Y = m_e \Delta AE$$

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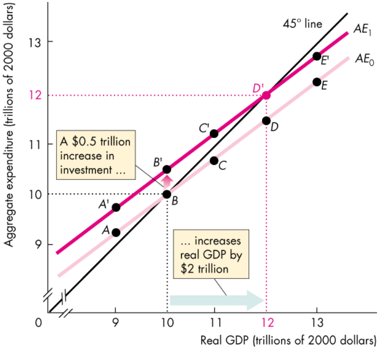
Graphical interpretation

- Increase in investment shifts AE upward.
- Real GDP increases by more than the increase in investment.



Recessions and expansions

- Recessions and expansions occur because of the expenditure multiplier.
- Small negative shocks to autonomous expenditure cause larger decreases to real GDP.
- Recession process:
  1. Negative shock to AE.
  2. Real GDP exceeds planned expenditure.
  3. Business inventories increase due to lower sales volume.
  4. Businesses cut production (lay off workers) to reduce inventories.
  5. Real GDP decreases.
  6. Decrease in real GDP reduces consumption...

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Full employment GDP

- **Full employment GDP** or **Potential GDP**: Level of GDP when all factors of production are used efficiently.
    - Implies cyclical unemployment is equal to zero. Frictional and structural unemployment will still be positive.
- **Recessionary gap**: when real GDP is below potential GDP.
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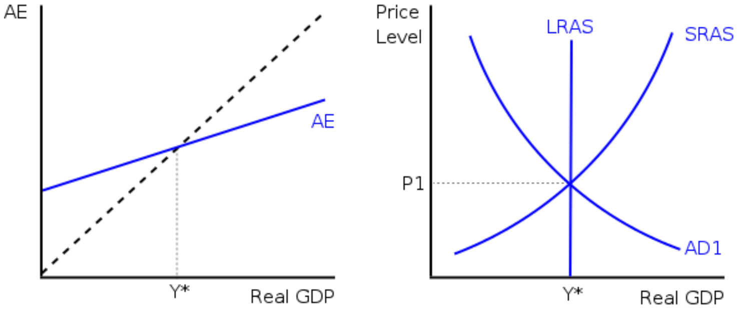
AE and AS/AD



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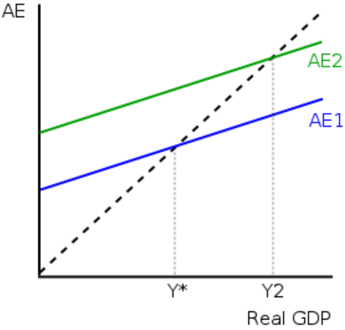
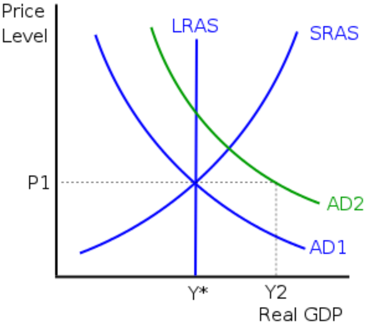
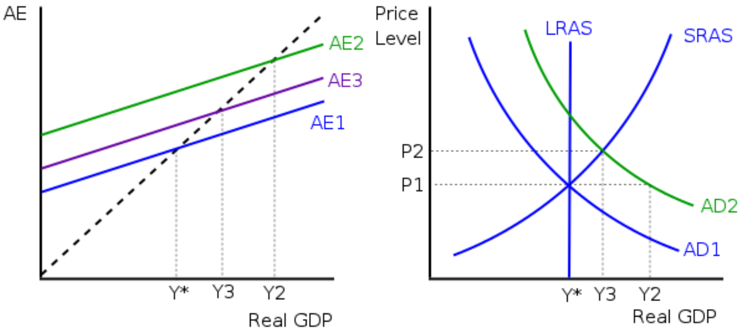

AE
AE2
AE1
Y*
Y2
Real GDP


Price Level
LRAS
SRAS
P1
AD2
AD1
Y*
Y2
Real GDP

AE and AS/AD


AE
AE2
AE3
AE1
Y*
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Real GDP
Price Level
LRAS
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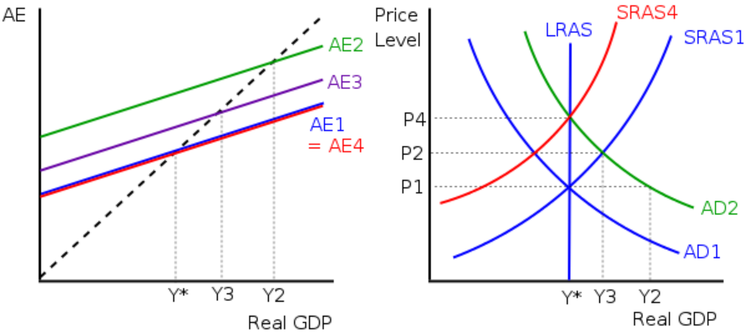
AE
AE2
AE3
AE1
= AE4
Y*
Y3
Y2
Real GDP
Price Level
LRAS
SRAS4
SRAS1
P4
P2
P1
AD2
AD1
Y*
Y3
Y2
Real GDP