Aggregate Expenditure or Keynesian Model

ECO 120: Global Macroeconomics

Goals of this chapter

Unit Goals

1. Describe how spending plans are determined when the price is fixed in the short run.
2. Explain the intuition behind the expenditure multiplier.
3. Use the expenditure multiplier to compute predicted changes for real GDP as a result of changes in expenditure plans.
4. Use the expenditure multiplier to explain how recessions and expansions begin.
5. Be able how to pronounce Keynes. It's like candy canes.

Learning Objectives

LO5: Use the model of aggregate demand and supply to evaluate the short-run and long-run impacts of fiscal and monetary policy on production, employment, and the price level.

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- Module 27 and 28
- **Canvas Quiz due Wednesday 11:59 PM**. Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts
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- All prices and wages are assumed to be fixed $\rightarrow$ *very* short run.
- Quantities firms sell only depend on aggregate demand $\rightarrow$ only aggregate demand matters for determining real GDP
- **Aggregate expenditure**: expenditure *plans* for 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.
  - An increase in real GDP is an increase in income, leading to an increase consumption and imports
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Marginal Propensity to Consume

Marginal propensity to consume (MPC)

The fraction of an increase in income that is consumed.

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

Marginal propensity to save (MPS)

The fraction of an increase in income that is saved.

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

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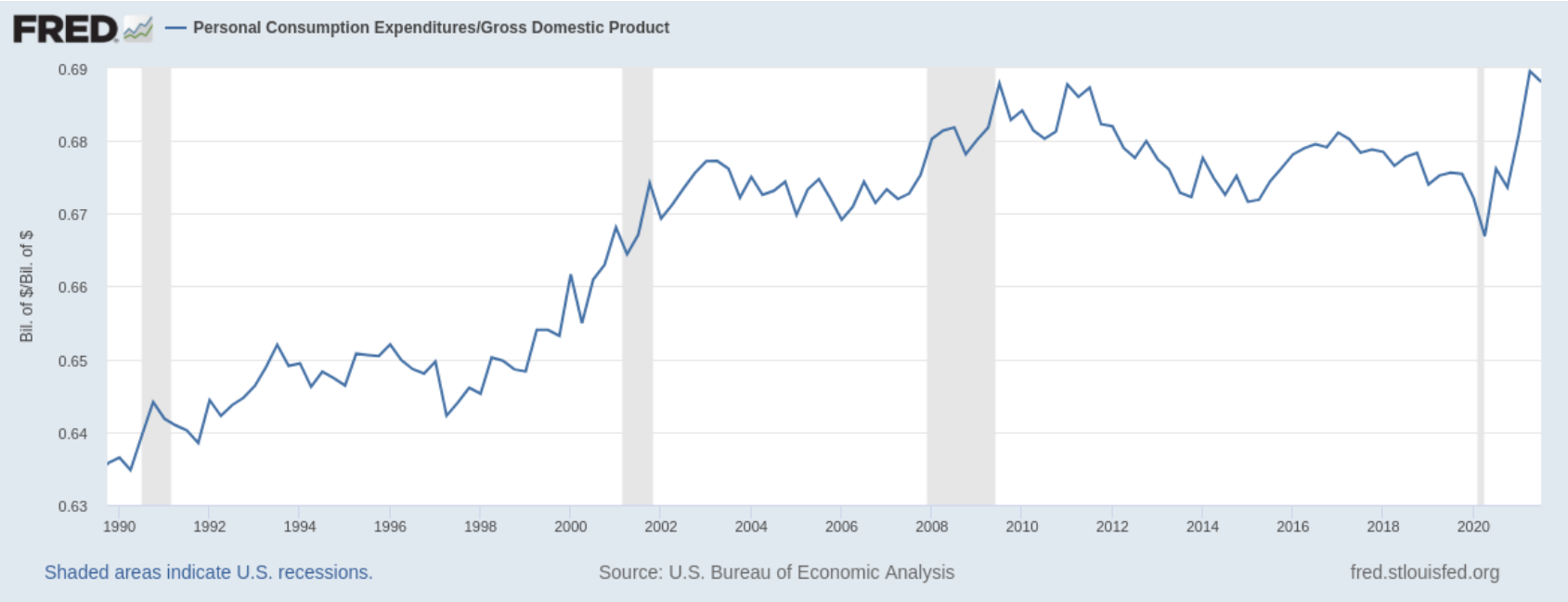
U.S. Consumption as a Fraction of Real GDP



Factors Affecting Consumption

Interest rate

- Suppose there is an increase in interest rates
- Higher incentive to save
- More expensive to borrow
- Demand for consumer spending decreases

Wealth

- Suppose an increase in stock market values lead to higher wealth for consumers
- Consumers can afford to withdraw savings, or save less
- Demand for consumer spending increases

Expected Future Income

- Suppose consumers expect higher incomes in the future
- Consumers expect to afford to withdraw savings, or save less, or borrow more
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- Suppose there is an increase in interest rates
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- Higher opportunity cost of using savings to finance capital purchases
- Demand for investment decreases

Business Economic Outlook

- Suppose businesses expect a decrease in profitability in the future
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Factors Affecting Export Demand

Exchange Rates

- Suppose the domestic currency appreciates relative to major trading partners
- Country's currency is more expensive for people in foreign countries
- Demand for exported goods and services decreases
- Leads to a *decrease* in aggregate expenditures

Foreign Income or Wealth

- Suppose income or wealth in foreign countries that are trading partners increases
- People in foreign countries have higher demand for goods and services produced in this country
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Import Demand

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1. Consumers import products: ↑ real GDP → ↑ imports
2. Producers import intermediate goods: ↑ real GDP → ↑ production → ↑ imports of intermediate goods
3. Imports increase as real GDP increases.

Marginal propensity to import (MPM)

- 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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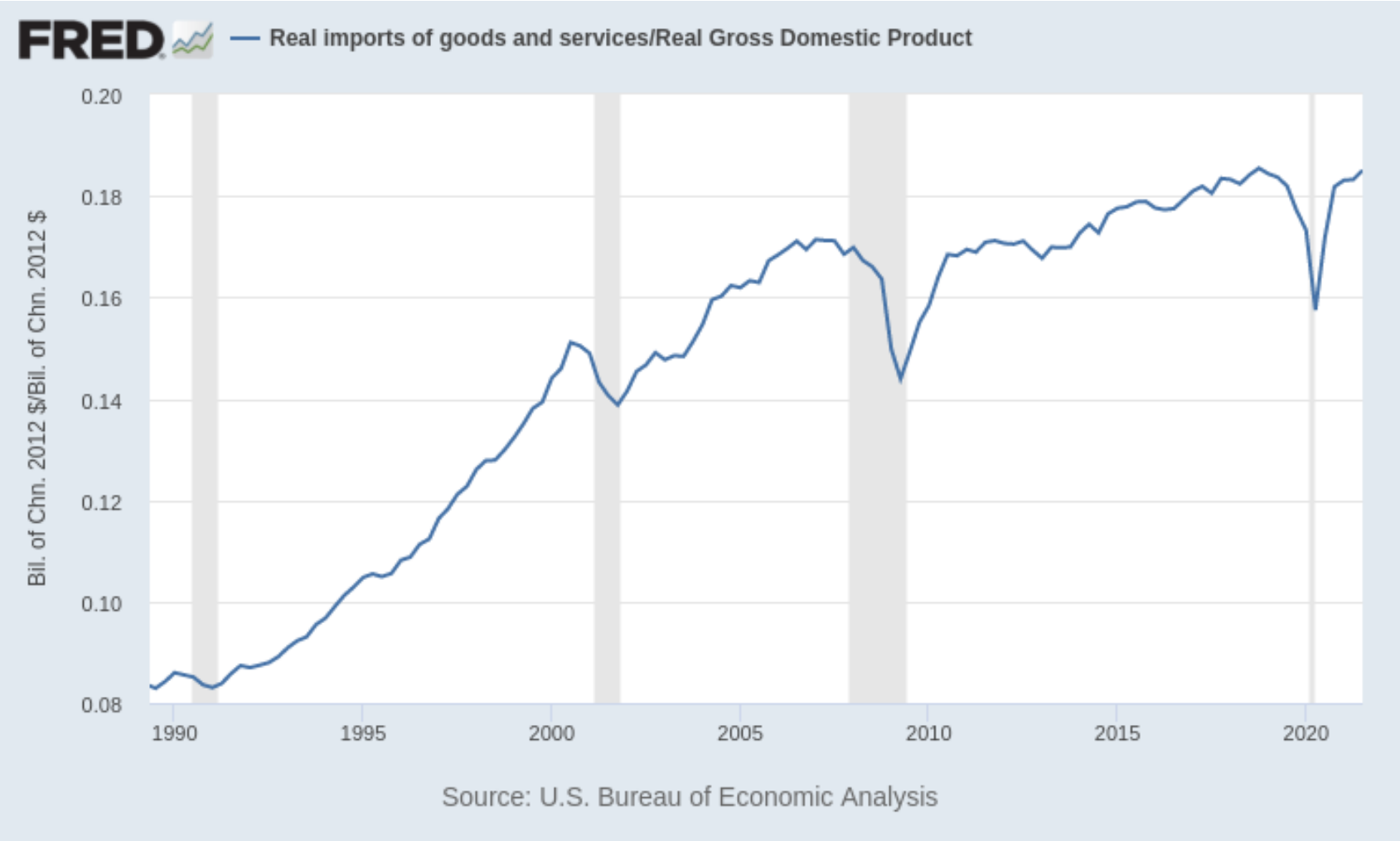

Factors Affecting Import Demand

Wealth and Expected Future Income

- Impact on demand for imports is the same as demand for consumption
- Suppose wealth or expected future income increases
- Consumers expect to afford to withdraw savings, or save less, or borrow more
- Demand for imported goods and services increases

Exchange Rates

- Suppose the domestic currency appreciates relative to major trading partners
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Mathematical Example: Government Spending

- Suppose there is an increase in government spending.
- Y = C + I + G + X - M
- An increase in G will increase Y
- An increase in Y will increase C (consumption plans) and M (import plans)
- The ↑ real GDP equals ↑ G + ↑ C - ↑ M.

$$\Delta Y = \Delta C + \Delta G - \Delta M$$
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Expenditure Multiplier

General Expenditure Multiplier

$$m = \frac{1}{MPS+MPM}$$

$$\Delta Y = m\ \Delta AE$$

$$= \left(\frac{1}{MPS+MPM}\right) \Delta AE$$

Where ΔAE = any of these:
ΔC, ΔI, ΔG, ΔX, or -ΔM

Example

Let MPS = 0.15, MPM = 0.25, and suppose an increase of consumer spending plans equal to \$75 billion

$$m = \frac{1}{MPS+MPM}$$

$$m = \frac{1}{0.15+0.25} = \frac{1}{0.4} = 2.5$$

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Multiplier Intuition

- 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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     Workers at those businesses in turn consume more...

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Expenditure Implications

- The expenditure multiplier is given by, $m = 1/(\text{MPS}+\text{MPM})$
- MPS + MPM = fraction of income *not spent* in the United States (saved or spent abroad).
- If economy does not trade, or if *change in* imports do not depend on change in income, then $MPM = 0$.
- Can think of $1 - (MPS + MPM)$ as fraction of an increase in income that is spent domestically.
- The larger the fraction of an additional dollar of income is spent domestically, the larger will be the multiplier.
- Local or regional multipliers (eg: Big event like concert, professional sporting event, Oktoberfest, Wisconsin state high school track meet)

$$m_{\text{local}} = \frac{1}{1 - (\text{Fraction of additional income spent locally})}$$

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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.
- Recession: when real GDP is below potential GDP.
- **Recessionary gap**: amount by which expenditures fall short those required to achieve full employment GDP.
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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:
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  6. Decrease in real GDP reduces consumption...

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...

Recession Example

Example

- Suppose businesses have a pessimistic outlook for future profitability.
- As a result, investment decreases by \$100 billion
- Suppose *past evidence* revealed that when consumers received a \$600 tax rebate, on average they increased their spending by \$500 and increased import spending by \$50.

Computing Change in Real GDP

$$MPC = \frac{\$500}{\$600} = 0.8333$$

$$MPS = 1 - 0.8333 = 0.1667$$

$$MPM = \frac{\$50}{\$600} = 0.0833$$

$$m = \frac{1}{0.1667 + 0.0833} = 4.0$$

$$\Delta Y = m \times (\Delta I) = 4.0 \times (-\$100\ bn)$$

$$= -\$400\ billion$$

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Compute Change in G

$$MPC = \frac{\$600}{\$800} = 0.75$$

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$$m = \frac{1}{0.25 + 0.125} = 2.667$$

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- Any change in any component of aggregate expenditure has amplified effects:

$$\Delta Y = \left(\frac{1}{MPS + MPM} \right) \Delta AE$$

- Decrease in marginal propensity to save:
  - Denominator gets smaller $\rightarrow$ multiplier gets larger
  - Larger changes in real GDP (positive or negative) $\rightarrow$ less stable economy
  - Larger multiplier $\rightarrow$ larger is the amplification and effectiveness of government policy
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