

ECONOMICS II

MACROECONOMICS

BMEGT30A101

BMEGT30A103

Monday: 8.15–9.45 (QA240)

ECONOMIC FLUCTUATIONS

CH 10–11–12

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QA215

Consulting hours: Tuesday 12–14



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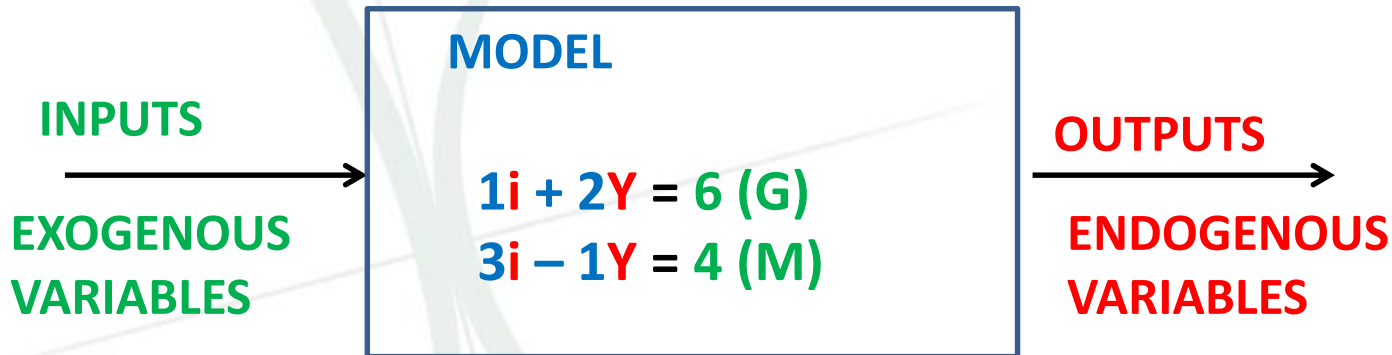
1. Introduction
2. **Short-run** vs **Long-run** macroeconomics in a closed economy
3. Models of aggregate demand AD and supply AS
4. Shocks and stabilization policies – in the IS-LM model
5. Conclusion

1. INTRODUCTION



STATIC MODEL

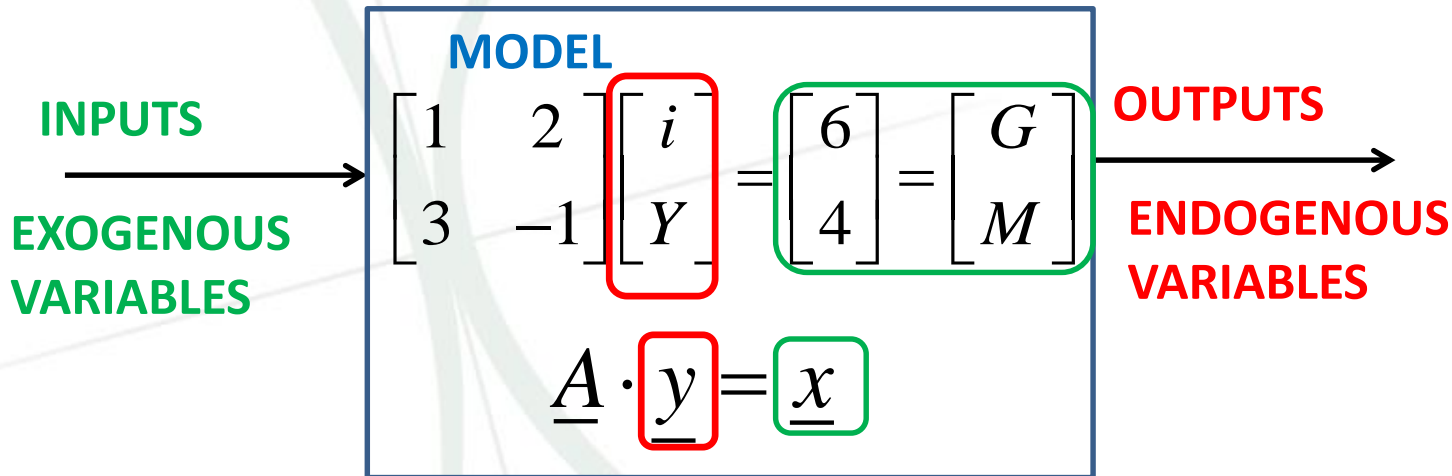
- Assumptions — Milton Friedman's theory of prediction: „as if”



- Efficient Market Hypothesis, EMH

COMPARATIVE STATICS

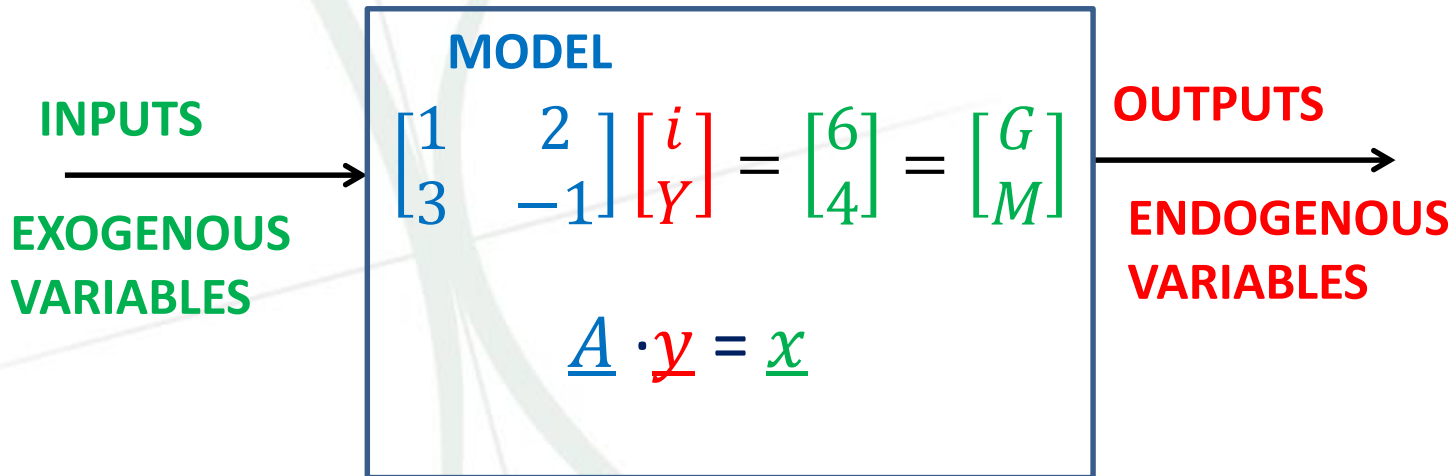
- Linearization



- Multiplier – partial analysis: $\frac{\Delta y_j}{\Delta x_k} = \frac{dy_j}{dx_k}; \frac{dY}{dG} = ? \frac{dY}{dM} = ?$

COMPARATIVE STATICS

- Linearization

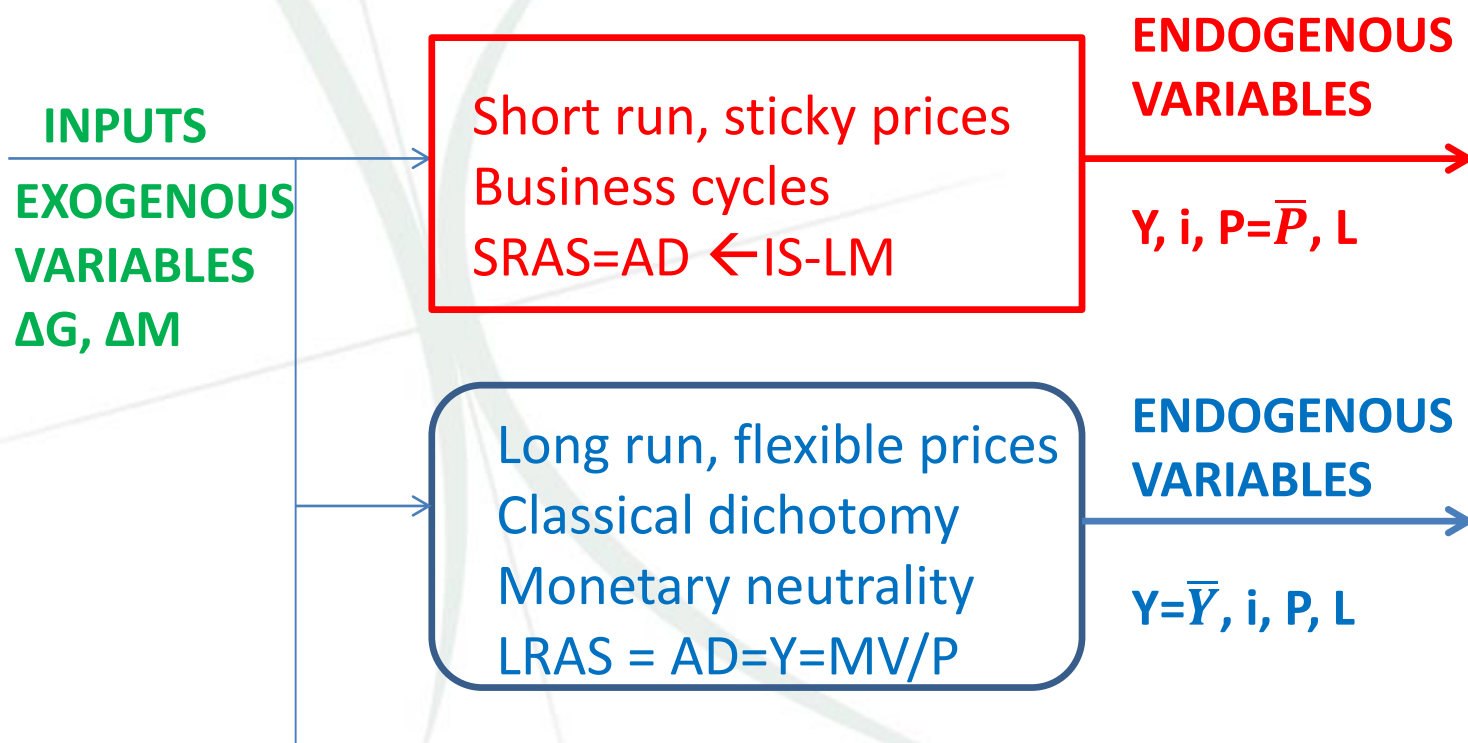


- Multiplier – partial analysis: $\frac{\Delta y_j}{\Delta x_k} = \frac{dy_j}{dx_k}; \frac{dY}{dG} = ? \frac{dY}{dM} = ?$

2. Short-run vs Long-run macroeconomics in a closed economy

Schools of economic thoughts

- **Inability of firms to coordinate price changes plays a key role in explaining price stickiness (Mankiw 2015, 292)**

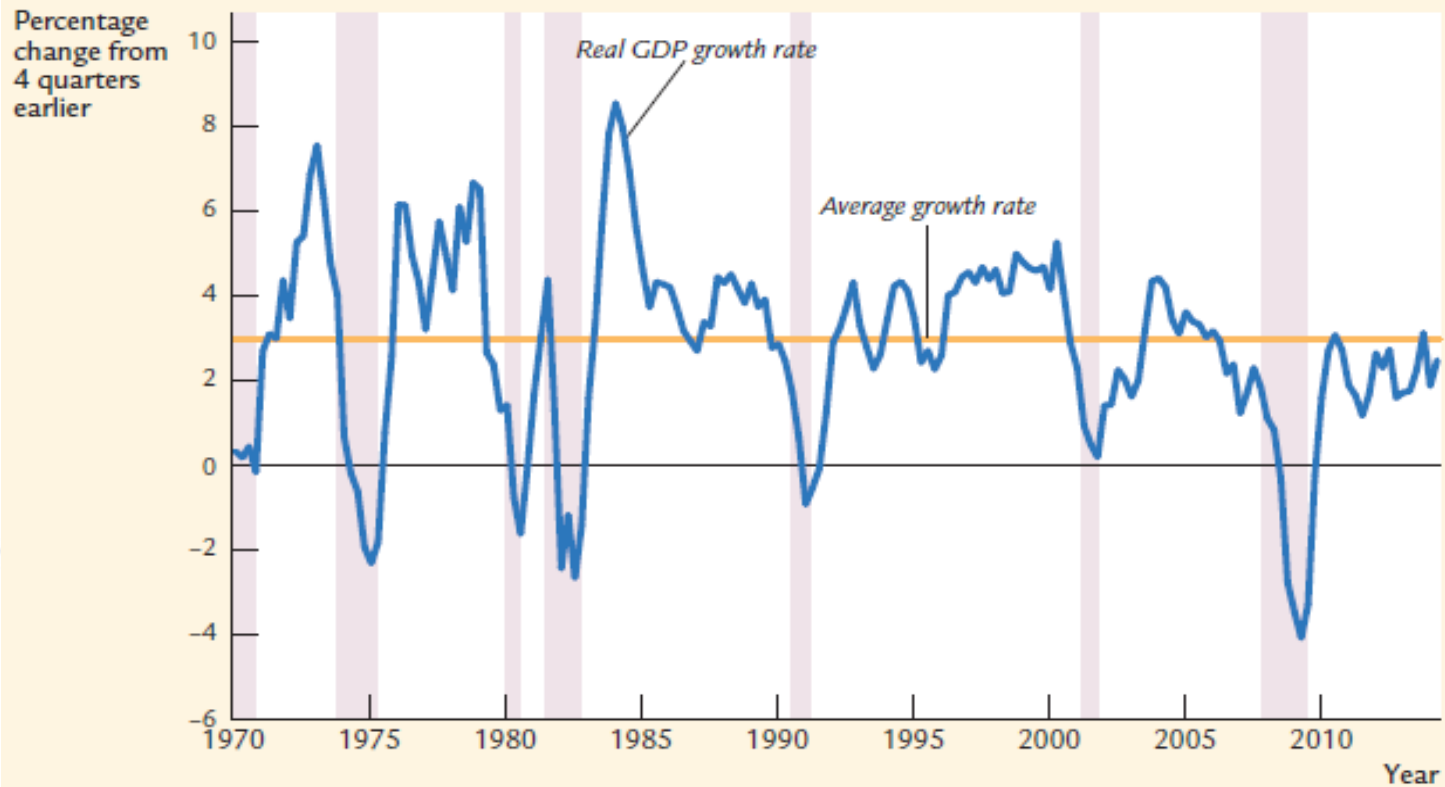


What are economic fluctuations, business cycles?

- **Recession: falling output ($Y=GDP$) and rising unemployment (u)**
 - At least two consecutive quarters of declining real GDP
 - Okun's Law: $\Delta Y/Y = 3\% - 2(u_t - u_{t-1})$
- **Short-run fluctuations are regular but not predictable**
 - Business cycle peak
 - Business cycle trough
- **What causes business cycles?**
- **Can policymakers avoid recession?**

Economic fluctuations

FIGURE 10-1

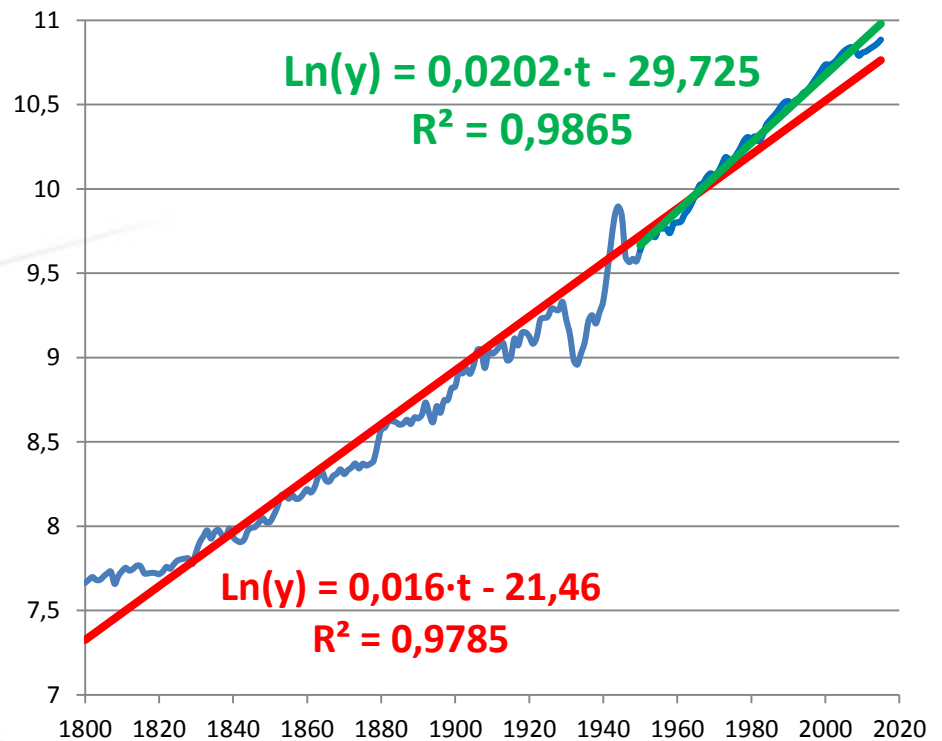
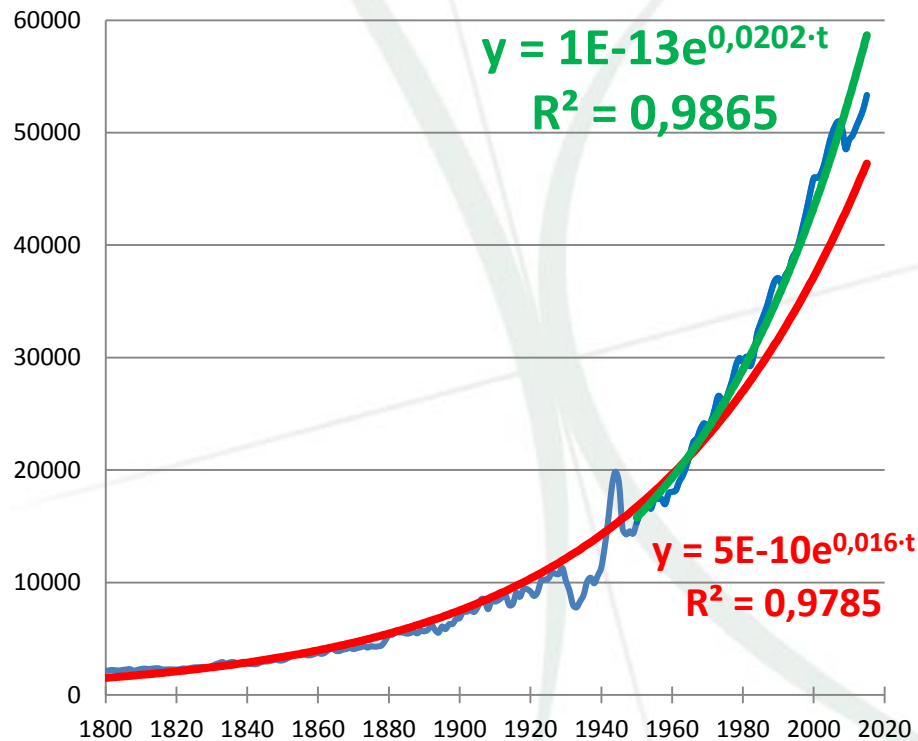


Real GDP Growth in the United States Growth in real GDP averages about 3 percent per year, but there are substantial fluctuations around this average. The shaded areas represent periods of recession.

Data from: U.S. Department of Commerce, National Bureau of Economic Research

Comparative dynamics

USA ($y = \text{GDP}/\text{CAP}$) trend



3. Models of aggregate demand AD and supply AS

1. Quantity theory (Long run)

- $MV = PY \rightarrow AD(P) = Y(P) = MV/P$
- LRAS: $\bar{Y} = F(\bar{K}, \bar{L})$ – full employment or natural level of output

2. IS-LM model

(Short run)

(Keynes (1936): The General Theory of Employment, Interest, and Money.
– formalized by Hicks (1937))

- Keynes: the problem is inadequate spending – underutilized resources
- **IS** curve (**I**nvestment = **S**aving) ← Keynesian cross
 - The slope of IS
 - Shifts of the IS
- **LM** curve (**L**iquidity = **M**oney) ← real money balances ($E\{\pi\} \doteq \pi^e = 0$) → $i=r$
 - The slope of LM
 - Shifts of the LM

Elements of IS curve 1

Consumption (C, G)

$$C(Y^{DI}) = C_0 + \hat{c}(Y - T + TR)$$

- $MPC \doteq \hat{c} = \frac{dC(Y^{DI})}{dY^{DI}}$ marginal propensity to consume
- C_0 = autonomous consumption
- T = tax; TR = transfer
- Y^{DI} = disposable income
- G = government-purchases

Elements of IS curve 2

Investment (I)

- $I(r, \eta) = I_0 - ar$, ($a > 0$), r = real interest rate = $i - \pi^e$
($E\{\pi\} = \pi^e = 0$) $\rightarrow i = r$
- η : profit optimism and pessimism

Market equilibrium

– Keynesian cross –

$$\underbrace{F(K,L) = Y}_{\text{SUPPLY}} = \underbrace{E = C_0 + \hat{c}(Y - T + TR) + I_0 - a \cdot i + G}_{\text{DEMAND}}$$

$$Y = \frac{1}{1 - \hat{c}} [C_0 + I_0 + G_0 - \hat{c}T_0 + \hat{c}TR - ai]$$

IS curve

- **(Investment=Saving)**: Each point on the IS curve represents equilibrium in the goods market

- The **slope** of IS: $\frac{di}{dY} = \frac{1 - \hat{c}}{-a} < 0$

LM curve

- (**L**iquidity=**M**oney) Each point on the LM curve represents equilibrium in the money market ← real money balances
- $\frac{M^S}{P} = M^D(Y, i, \pi^e) = L(Y, i, \pi^e) = mY - ki$
- The **slope** of LM: $\frac{di}{dY} = \frac{m}{k} > 0$
- Theory of Liquidity Preference
 - Transaction
 - Safety
 - Speculation
- Monetary transmission mechanism (Mankiw 2015, 341)

The multipliers

- INVESTMENT, CONSUMPTION
- FISCAL
 - Government-purchases multiplier
 - Tax multiplier
- MONETARY
 - Money multiplier

Simple (goods-market's) multipliers

(interest rate is constant)

- **Government-purchases:** $\frac{dY}{dG_0} = \frac{1}{1-\hat{c}} > 0$
- **Consumption:** $\frac{dY}{dC_0} = \frac{1}{1-\hat{c}} > 0$
- **Tax/Transfer:** $\frac{dY}{dT_0} = \frac{-\hat{c}}{1-\hat{c}} < 0$ $\frac{dY}{dTR_0} = \frac{\hat{c}}{1-\hat{c}} > 0$
- **Investment:** $\frac{dY}{dI_0} = \frac{1}{1-\hat{c}} > 0$

Special cases

- Liquidity trap – LM horizontal
- Investment trap – IS vertical

IS-LM and AD=Y(P)

- $AD(P)=Y(P)$ ← IS-LM system's equilibrium

- IS:
$$Y = \frac{1}{1-\hat{c}} [C_0 + I_0 + G_0 - \hat{c}T_0 + \hat{c}TR - ai]$$

- LM:
$$i = \frac{m}{k} Y - \frac{1}{k} \frac{M^S}{P}$$

4. Shocks and Stabilization policies

- **Stabilization policy** refer to policy actions aimed at reducing the severity of short-run economic fluctuations, keeping output and employment as close to their natural levels as possible
- Government is acting as the demander of last resort

The potential effects of falling prices

- **Keynesian Effect:** $P \downarrow \rightarrow M/P \uparrow \rightarrow Y \uparrow$
- **Pigou effect:** $P \downarrow \rightarrow C(Y^{DI}, A/P) \uparrow \rightarrow Y \uparrow$
- **Debt-deflation theory:** unexpected $P \downarrow \rightarrow Y \downarrow$
 - Redistribute wealth
 - Debtors have higher propensities to spend than creditors: $MPC^{Debtors} > MPC^{Creditors}$
- **Expected deflation:** $P \downarrow = \pi^e > 0 \rightarrow I(i - \pi^e) \rightarrow Y \downarrow$

5. CONCLUSION

- IS-LM → AD are the main functions of economic policies
- Short-run (if P is sticky) AD determines Y