

Monetary Economics (EPOS)

Lecture 1

The dawn of the Keynesian age



SAPIENZA
UNIVERSITÀ DI ROMA
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“If the Treasury were to fill old bottles with banknotes, bury them at suitable depths in disused coalmines which are then filled up to the surface with town rubbish, and leave it to private enterprise on well-tried principles of laissez-faire to dig the notes up again [...], there need be no more unemployment [...].”

J.M. Keynes “The General Theory” (Chapter 10)

In this lecture

- Classic Keynesian model, in the version developed by Hicks (1937)
- The Great Recession in 1929
- Economic policies adopted in the Second World War and its aftermath
- The Theory of Economic Policy (fixed target)
- Reference: ADH (Ch. 2)

People in this class

Jan Tinbergen - Facts

Jan Tinbergen

Born: 12 April 1903, the Hague, the Netherlands

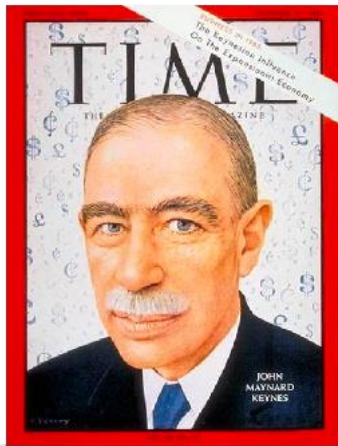
Died: 9 June 1994, the Hague, the Netherlands

Affiliation at the time of the award: The Netherlands School of Economics, Rotterdam, the Netherlands

Prize motivation: "for having developed and applied dynamic models for the analysis of economic processes"

Field: econometrics

Contribution: Pioneering work on econometric model building. Constructed theories for stabilization policy and long-term economic planning.



The Classic Keynesian model

- Assumptions
 - Three markets (money, securities, goods)
 - Fixed prices in the goods market (short-run)
- For the sake of brevity
 - We assume $p=1$; then, real = nominal
 - Initial stocks are zero; then, stocks = flows
 - Closed economy

Adjustments in the markets

- The market for (irredeemable) securities adjusts through changes in their prices (p_s) and hence rates of return ($i=1/p_s$)
- Money market adjusts through changes in the interest rate (opportunity cost of holding cash)
- The market for goods, production adjusts to the level of demand according to the principle of effective demand (fixed prices)

Aggregate demand

- Real interest rate
 - Investments/marginal efficiency of capital (Keynes)
 - Consumption/saving decision (Fischer)
- Public expenditure
 - Keynesian multiplier: The government should pay people to dig holes in the ground and then fill them up

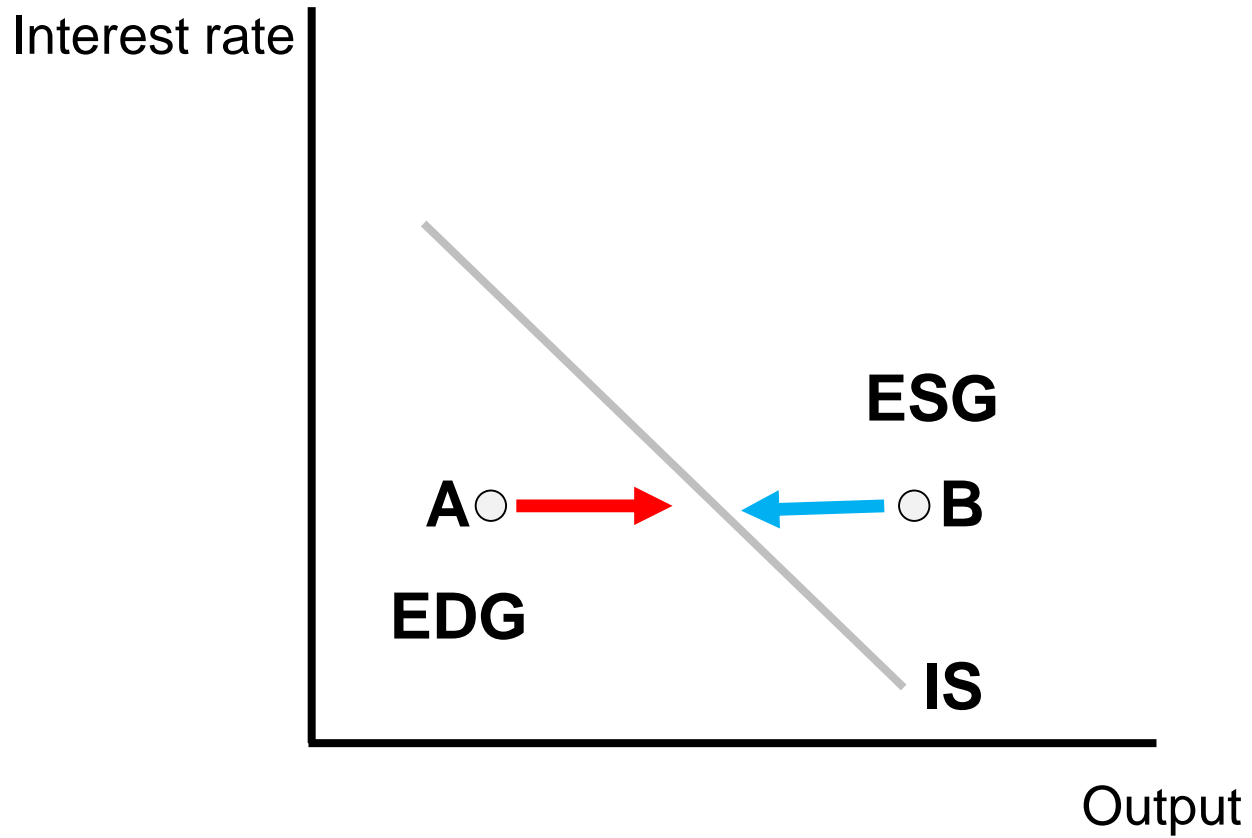
Equilibrium in the good market

- At the equilibrium: production equals the aggregate demand, i.e.,

$$\underbrace{y}_{\text{Production}} = \underbrace{-\sigma(i - \pi^e) + \alpha(g + A)}_{\text{Aggregate demand (C+I+G)}}$$

- Effective demand principle (market adjustments)
 - Production rises when $AD > Y$
 - Production falls when $AD < Y$

Equilibrium



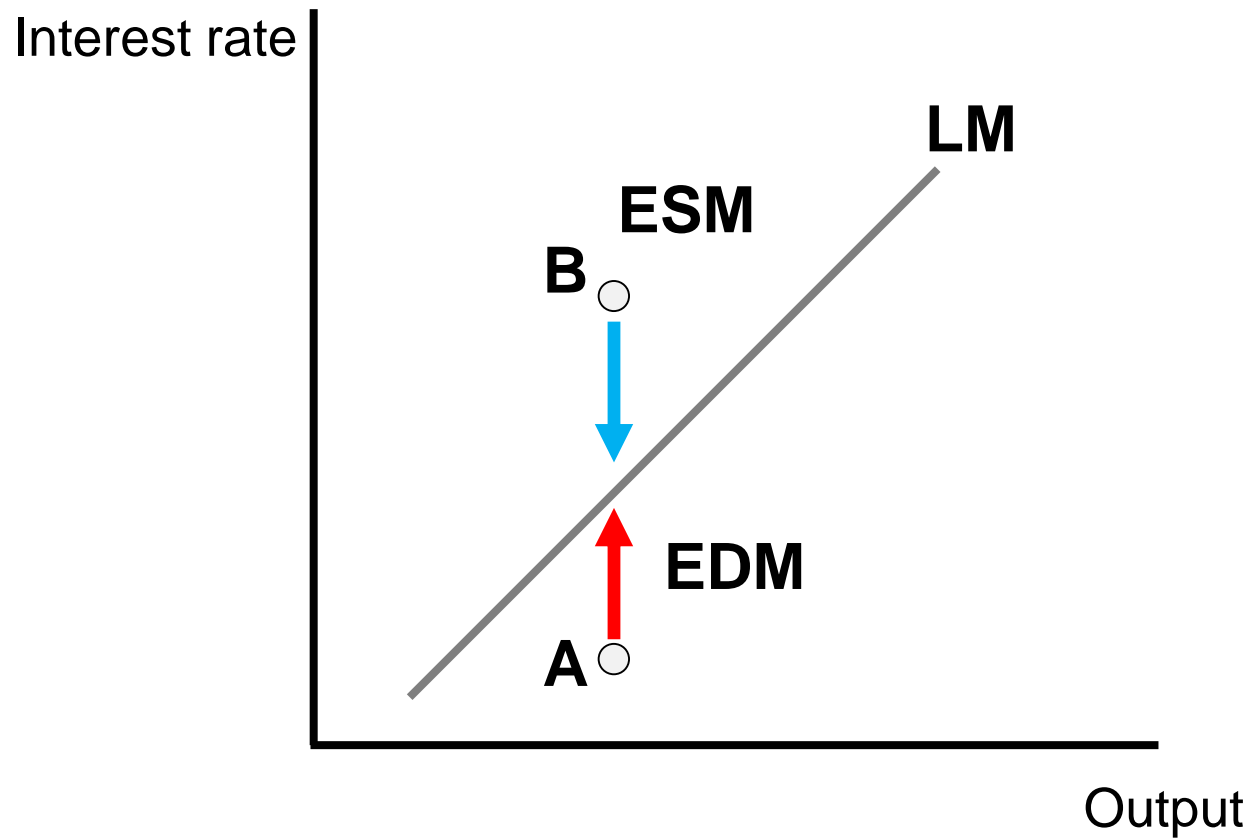
Equilibrium in the money market

- At the equilibrium: money supply equals money demand, i.e.,

$$\underbrace{m - p}_{\text{Supply}} = \underbrace{y - \beta i}_{\text{Demand}}$$

- Equilibrium, e.g.,
 - Assume that agents aim to hold more money (EDM), they then aim to change their portfolio, selling securities. The excess of supply of securities (ESS) pushes up their prices (and down their return). Lower interest rates restore the equilibrium (as agents demand less money)

LM schedule



Securities

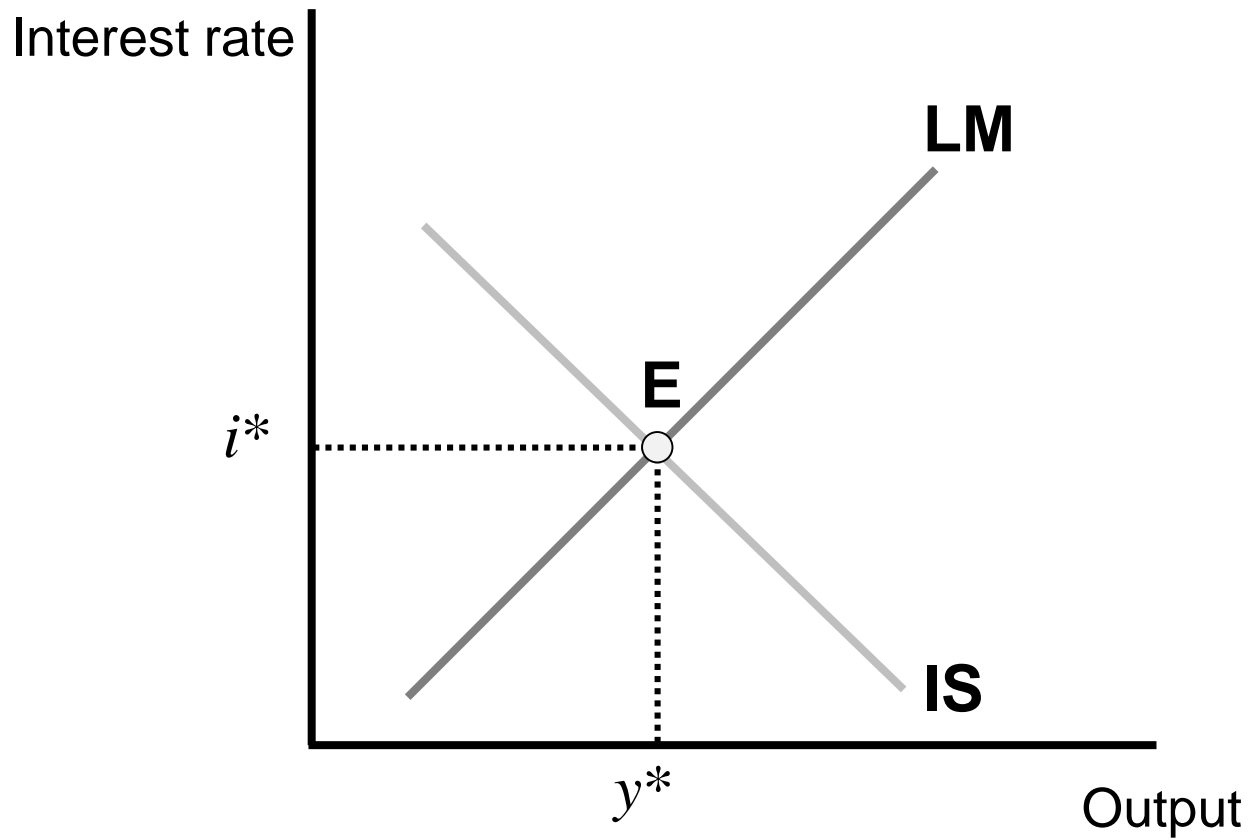
- The third market (securities) is not explicitly defined here since simultaneous equilibrium in the first two markets necessarily implies also the equality of supply and demand for securities by Walras's Law

IS/LM model

- The model can be expressed in logarithmic form as follows:

$$\begin{cases} y = -\sigma(i - \pi^e) + \alpha(g + A) \\ m - p = y - \beta i \end{cases}$$

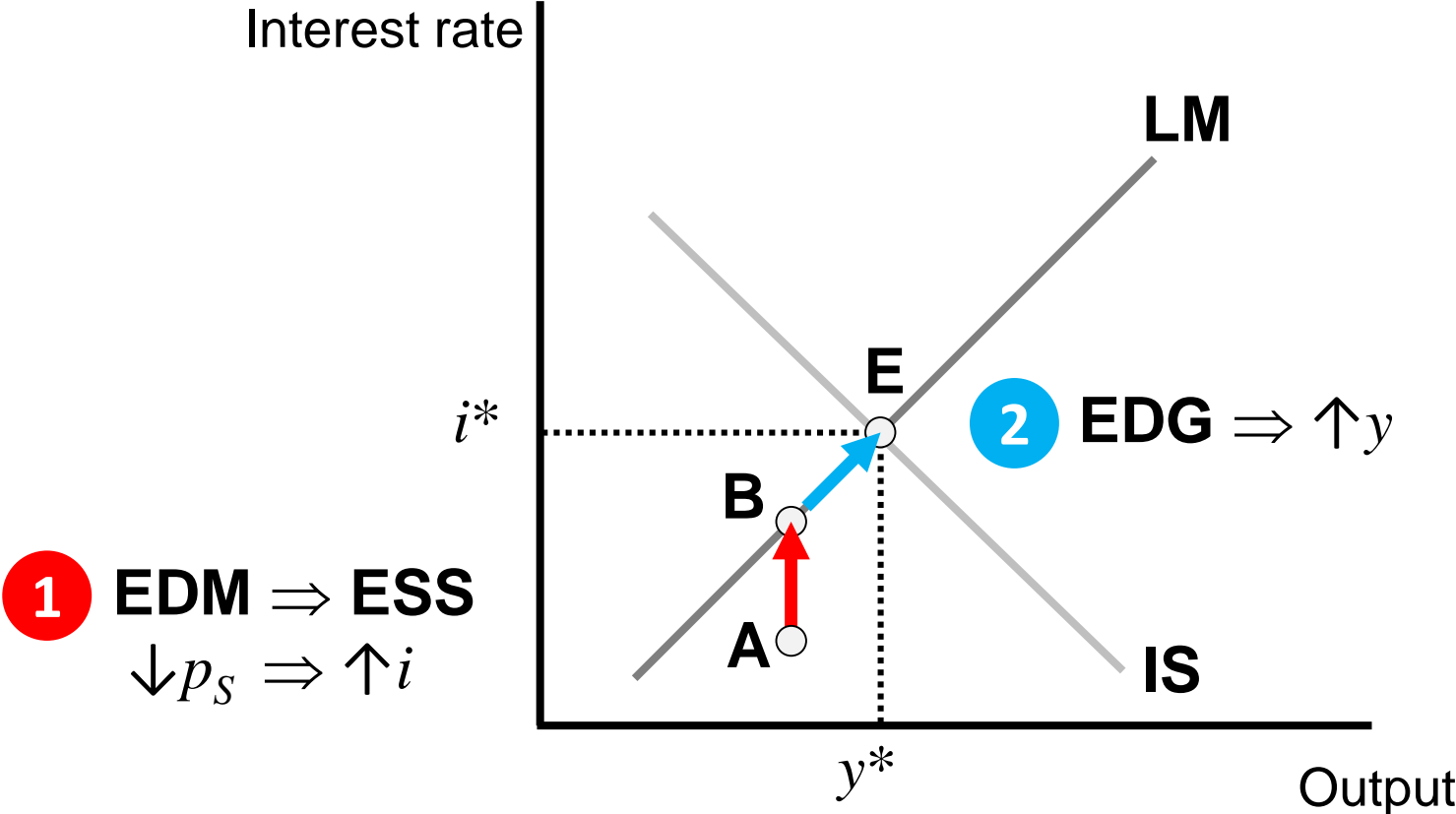
Equilibrium



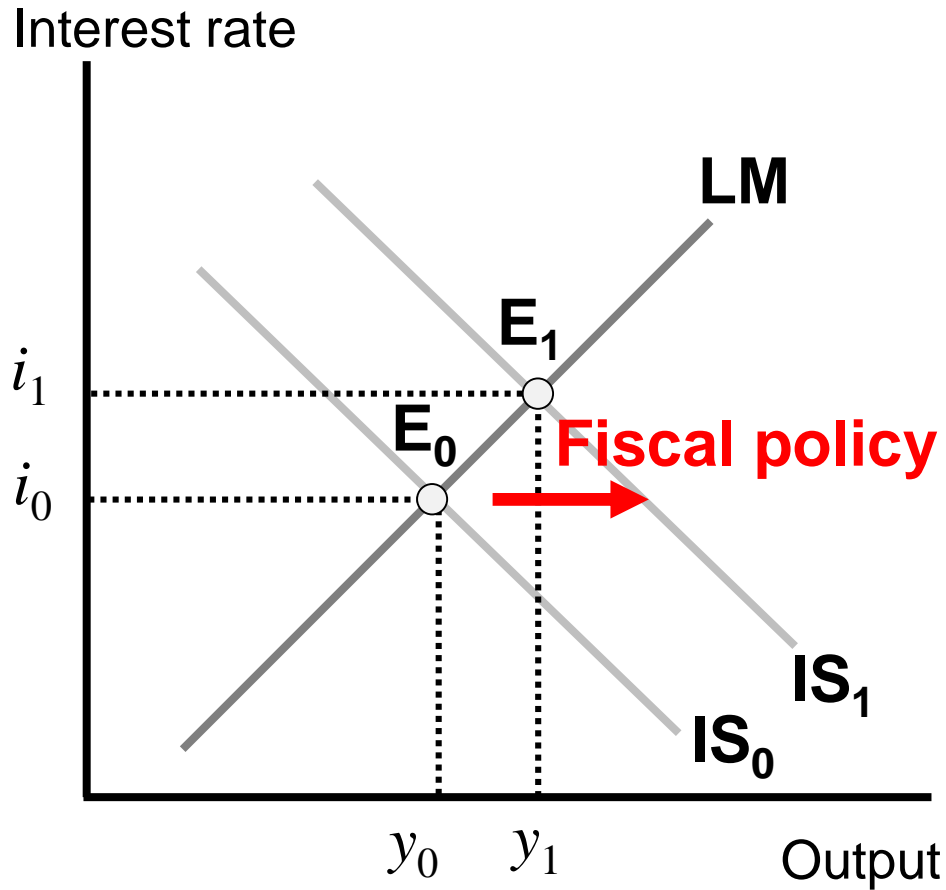
Dynamics

- The IS/LM naturally tends to equilibrium through a simple adjustment mechanism that can be explained by assuming that the money market adjusts faster than the goods market since no actual production is involved – it deals just with assets in a series of nominal transactions
- We might even assume that the former adjusts almost instantaneously

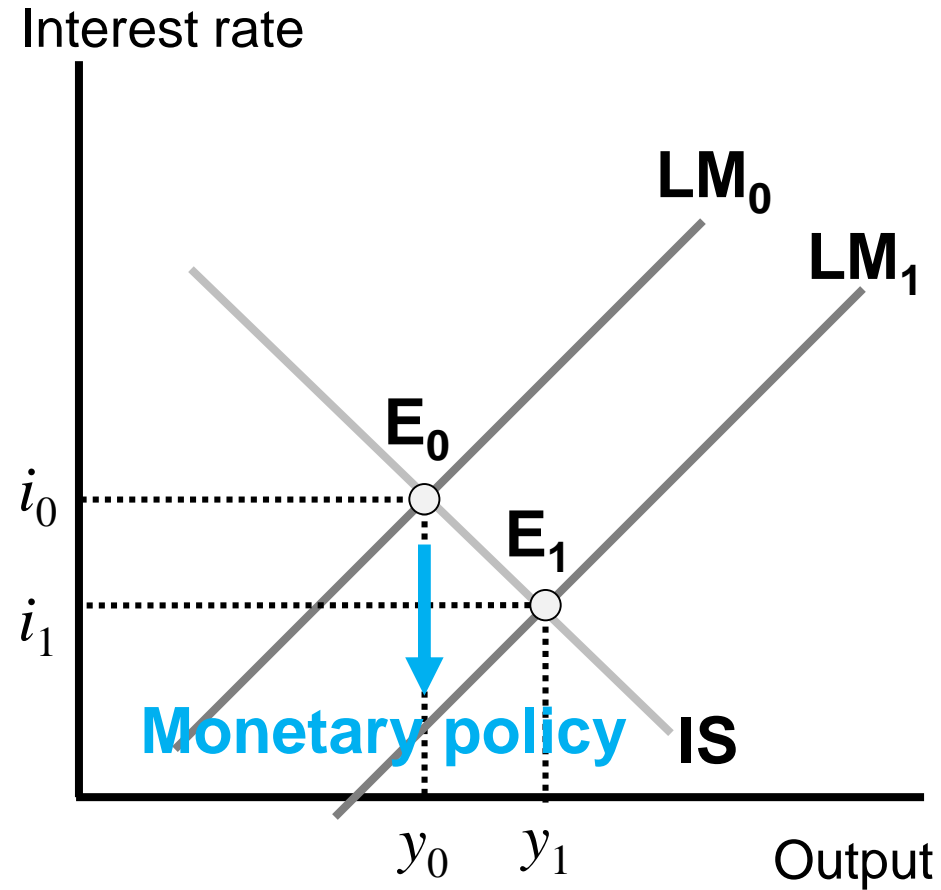
Dynamics



Policies in the IS-LM model



(a)



(b)

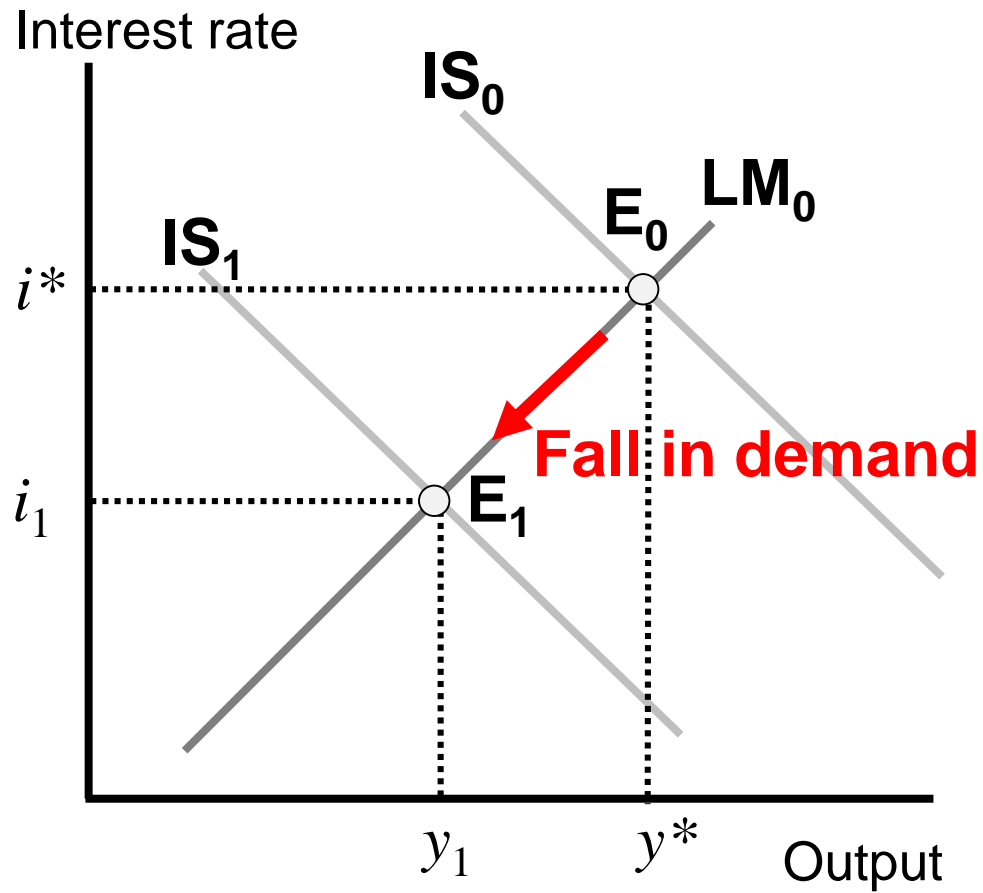
The Great Depression

- The 1929 crisis was a dramatic economic crisis that shook the global economy, with serious repercussions during the early years of the following decade
 - Unemployment in the US rose from 5% in 1929 to 25% in 1932–1933, and remained high (15%) until 1939
 - In Germany, the consequences were worse
- However, in the United States, the 1929 crisis also represented a great opportunity to reconsider the model of society, and rebuild the economic, financial and political system without restricting individual rights or expanding social ones.

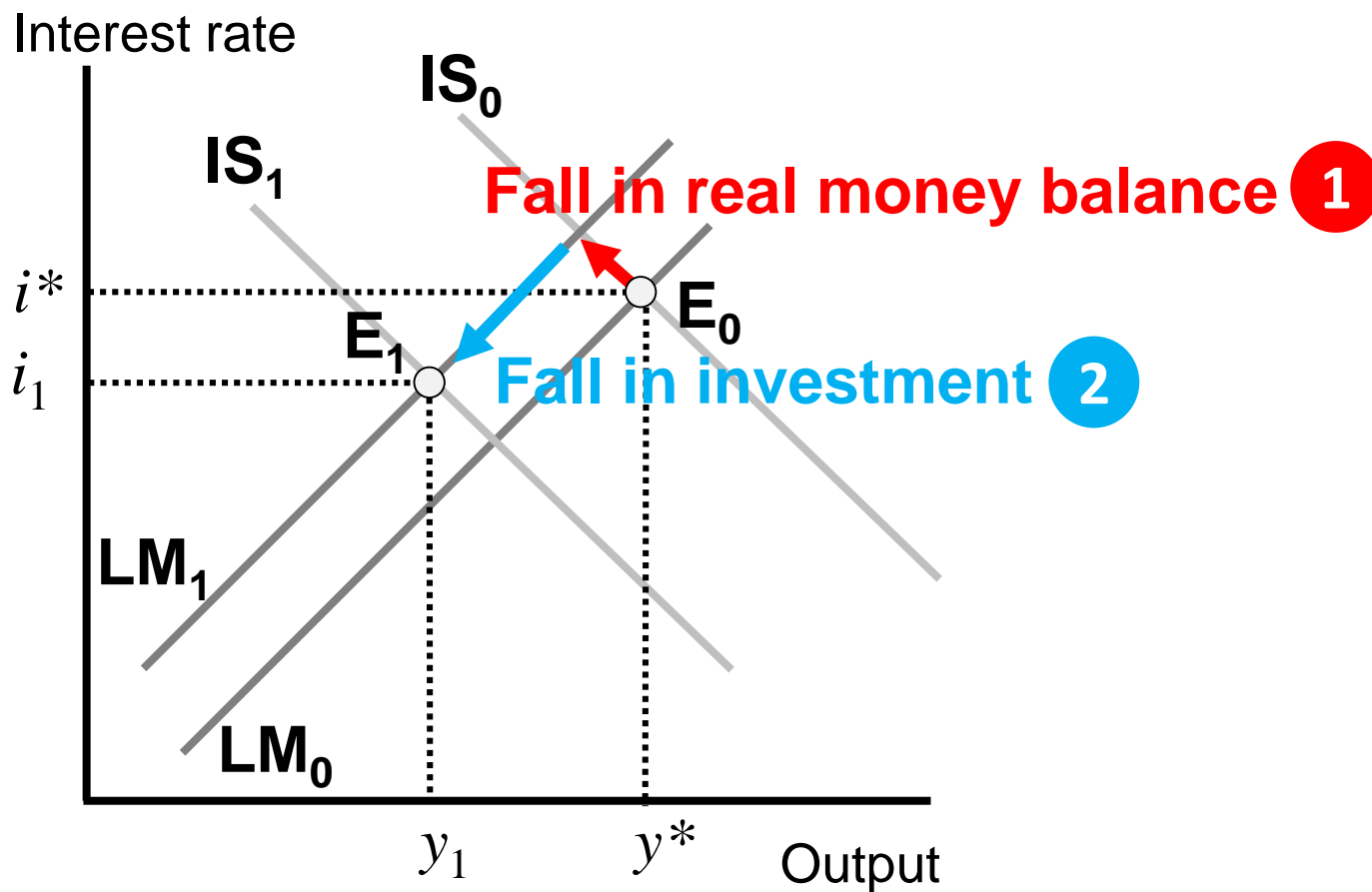
The Great Depression

- Explanations (real or monetary roots)
 - The hypothesis of an underemployment equilibrium due to lack of demand;
 - The credit crunch;
 - The monetary policy hypothesis;
 - A spiral of expected inflation and deflation.

The role of effective demand

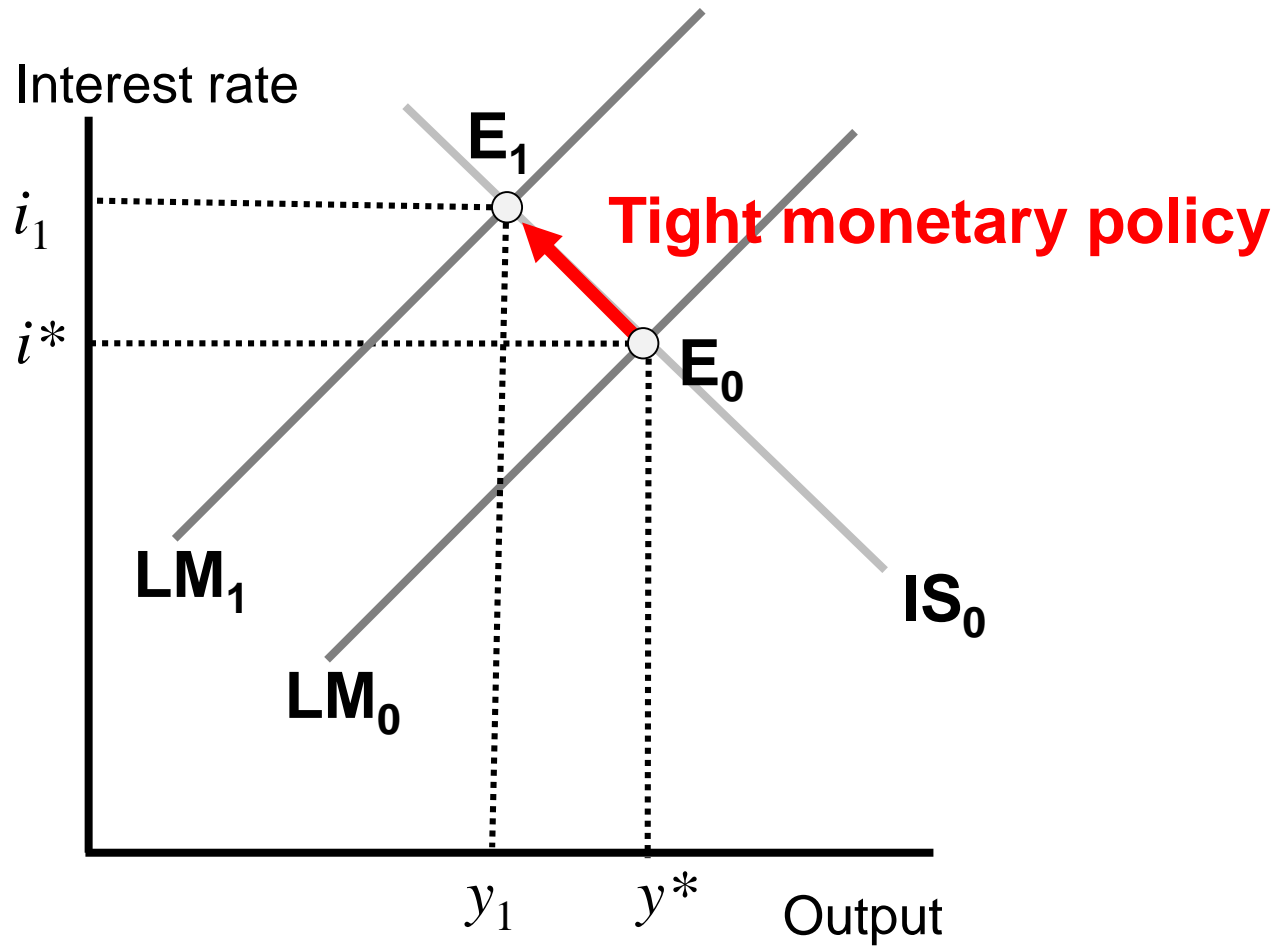


Credit crunch



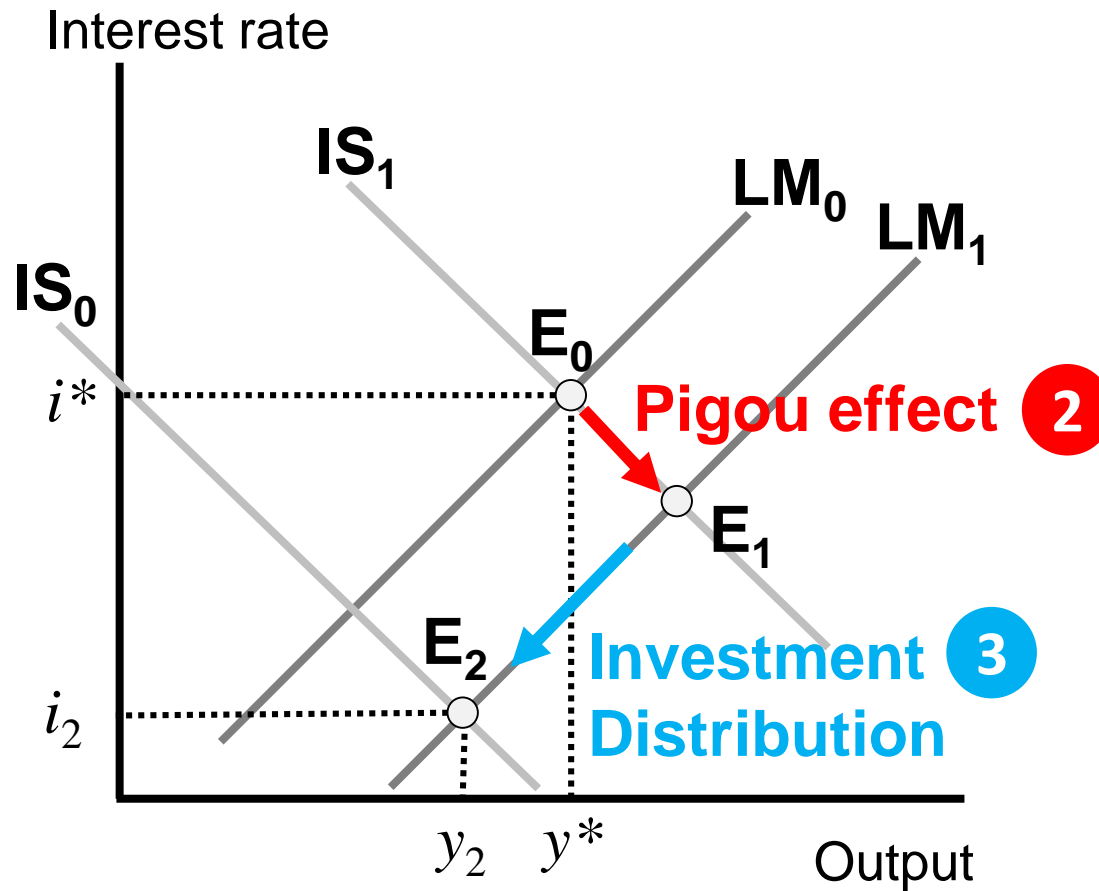
Prices $p=p^*$

The monetary policy hypothesis



Prices $p=p^*$

Deflation



Prices fall $p < p^*$ **Deflation** 1

The Theory of Economic Policy

- Tinbergen, economic variables can be
 - Target variables (Y)
 - Instrument variables (X)
 - Others [given] (Z)
- Economy representations
 - Structural form: $A Y + B X + C Z = 0$
 - Reduced form: $Y = A^{-1}B X + A^{-1}C Z$
 - Inverse reduced form: $X = B^{-1}A Y + B^{-1}C Z$

The Golden Rule of economic policy

- Assuming the policymaker aims to achieve exact values (fixed–target values) for some target variables, managing some instruments
- The policymakers must have a number of (independent) instruments at least equal to the number of objectives

The Theory of Economic Policy: Fixed targets

- Given economy

$$A Y + B X + C Z = 0$$

- Policymakers' goals, Y^* , can be achieved by

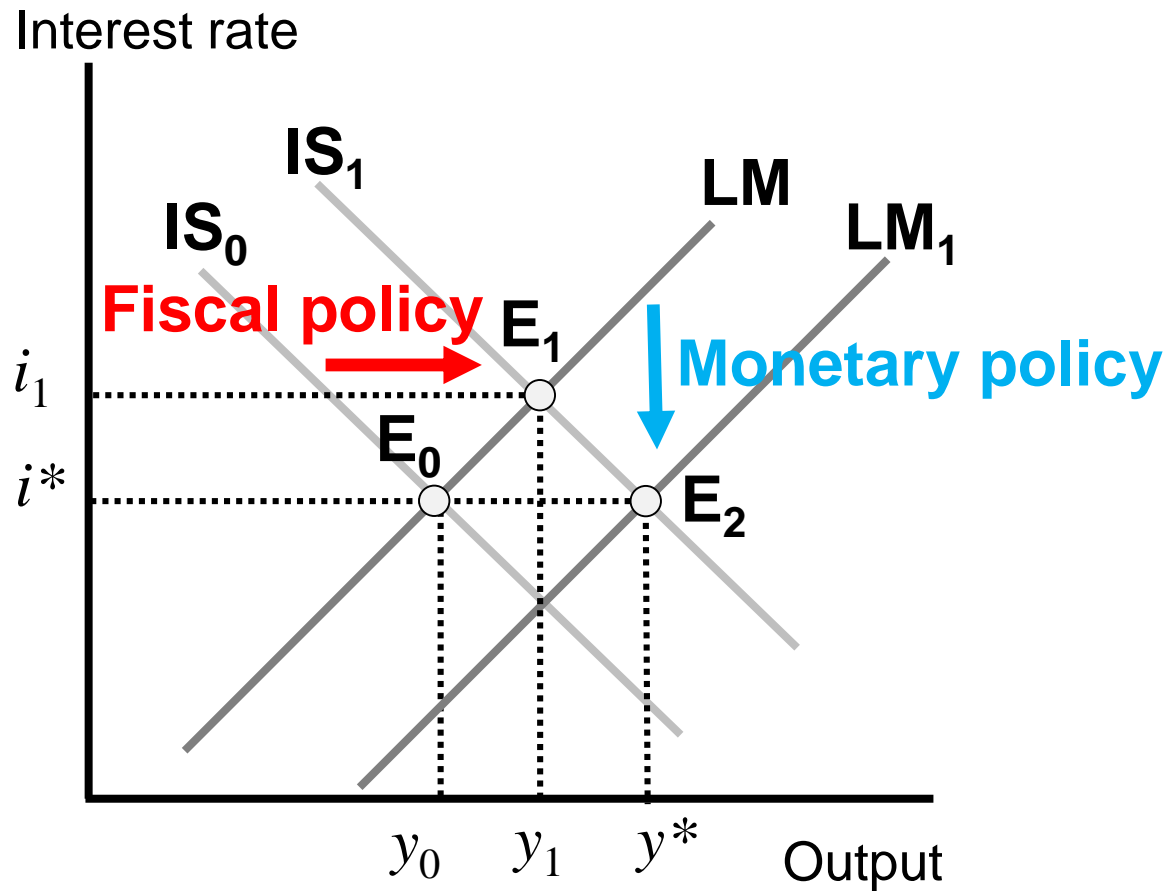
$$X = B^{-1}A Y^* + B^{-1}C Z$$

- The equation system has a unique solution if $B^{-1}A$ is a full rank square matrix (Golden Rule holds)
- If $X > Y$, transform some X in Z
- If, instead, $Y > X$? Next class!

Goals & policies during WWII and its aftermath

- Policies adopted in the Second World War can be summarized as follows:
 - High levels of public spending (g), funded by public debt to finance war expenditures and production
 - High values of money supply (m) to ensure a low level of interest rate and keep government expenditures low
 - Direct control of the general price level, p , set at the desired level p^*

3 goals – 3 instruments



Prices $p=p^*$ **Price controls**

The policymaker's problem in formal terms

- Structural form:

$$\begin{cases} y = -\sigma(i - \pi^e) + \alpha(g + A) \\ m - p = y - \beta i \\ p = p_c \end{cases}$$

- Then
$$\begin{cases} Y = \{y, i, p\} \\ X = \{m, g, p_c\} \\ Z = \{\pi^e, A\} \end{cases}$$

In matrix terms

$$\begin{cases} y = -\sigma(i - \pi^e) + \alpha(g + A) \\ m - p = y - \beta i \\ p = p_c \end{cases} \quad \begin{cases} Y = \{y, i, p\} \\ X = \{m, g, p_c\} \\ Z = \{\pi^e, A\} \end{cases}$$

- The economy: $A Y + B X + C Z = 0$

$$\begin{bmatrix} 1 & \sigma & 0 \\ 1 & -\beta & 1 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} y \\ i \\ p \end{bmatrix} = \begin{bmatrix} 0 & \alpha & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} m \\ g \\ p_c \end{bmatrix} + \begin{bmatrix} \pi^e + \alpha A \\ 0 \\ 0 \end{bmatrix}$$

It follows

- The policymaker's problem is to achieve:

$$Y^* = \{y^*, i^*, p^*\}$$

- Now, find the reduced and the inverse reduced forms of the model
- The solution should be (comment it)

$$\begin{cases} g = y^* / \alpha + \sigma(i^* - \pi^e) / \alpha - A \\ m = p^* + y^* - \beta i^* \\ p_c = p^* \end{cases}$$