

*National Research University Higher School of Economics*

*Centre for the History and Methodology of Economic Science*

**History of Economic Theory and Policy of the 20<sup>th</sup>  
century (Online course)**

After Keynes: the neoclassical synthesis  
in the post Second World War

Lecture #3, 16 November 2020

**Andrés Lazzarini**

**Goldsmiths, University of London**

**[A.Lazzarini@gold.ac.uk](mailto:A.Lazzarini@gold.ac.uk)**

## Overview

1. Keynes' main contributions and challenges to orthodoxy
2. Neoclassical synthesis (origins)
3. IS-LM model
  - Hicks/Modigliani/Samuelson/Patinkin/Phillips
  - Critiques from within the neoclassical approach (Friedman and RATEX)
  - Impact on economic policy and academia
4. Parallel theoretical and empirical developments in the 1950s: economic growth studies
  - Solow-Swan (against Harrod-Domar): an elegant *long-run* synthesis of neoclassical value theory and production theory.
5. Neoclassical synthesis and neoclassical growth models mainstream in the discipline.

# 1. Keynes' major contributions

- Effective demand: engine of market system
- Under-employment as persistent feature of monetary economies
- Money not only for transactions purposes: Liquidity preference
- Challenge to orthodox thinking in the 1930s: supply and demand forces cannot drive the economy to full-employment situation.
- Public intervention is needed for the sake of social peace.

## 2. Neoclassical synthesis

- Compromise between neoclassical theory and Keynesian ideas on under-employment and lack of aggregate demand.
- The IS-LM model is the milestone of this reconciliation
- Keynesian insights deemed true only in short-run.
- Origins: Hicks (1937), Harrod (1937), Meade (1937).
- Later developments: Samuelson (1941), Modigliani (1944), Patinkin (1956).
- Impact on the discipline and economic policy in the world.
- It is still today the dominant approach to teaching macro.

### 3. The IS-LM model

- Mismatch between aggregate demand (AD) and aggregate supply (AS): reasons some prices not adjusting
- Ad-hoc assumptions into the neoclassical model: sticky prices, especially wages.
- Labour market: trade unions, government regulations and other institutions determine wage rigidities.
- (But Keynes' views on "wage rigidities" were distinct in nature. They were intended to lend support for social peace in times of economic turmoil)

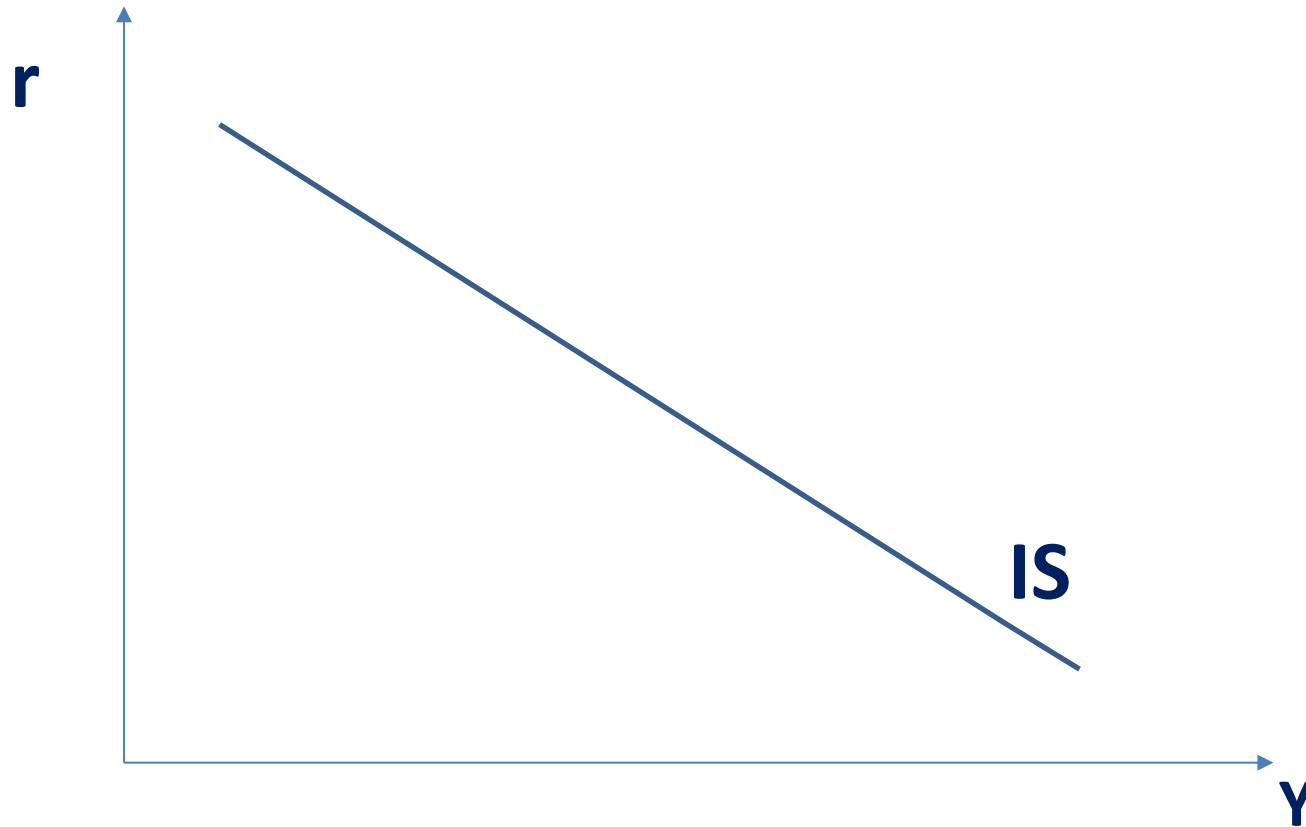
### 3. The IS-LM model (here: hybrid of Hicks, Lange, Modigliani and Patinkin)

- Starting with Hicks (1937), the model is a simplified, one-commodity general equilibrium model with three markets: one-for-all commodity market, the money market and the bonds market.
- Due to Walras's law: bonds market equilibrium is implicitly achieved when the other two markets clear.
- Investment-Savings (IS):  $AS=AD$  whenever  $I=S$  at all (positive) possible values for interest rate and output.

$$I=I(r), I'(r)<0$$

$$S=S(Y), S'(Y)>0$$

### 3. The IS-LM model



**$I=S$  on every point on the IS curve**

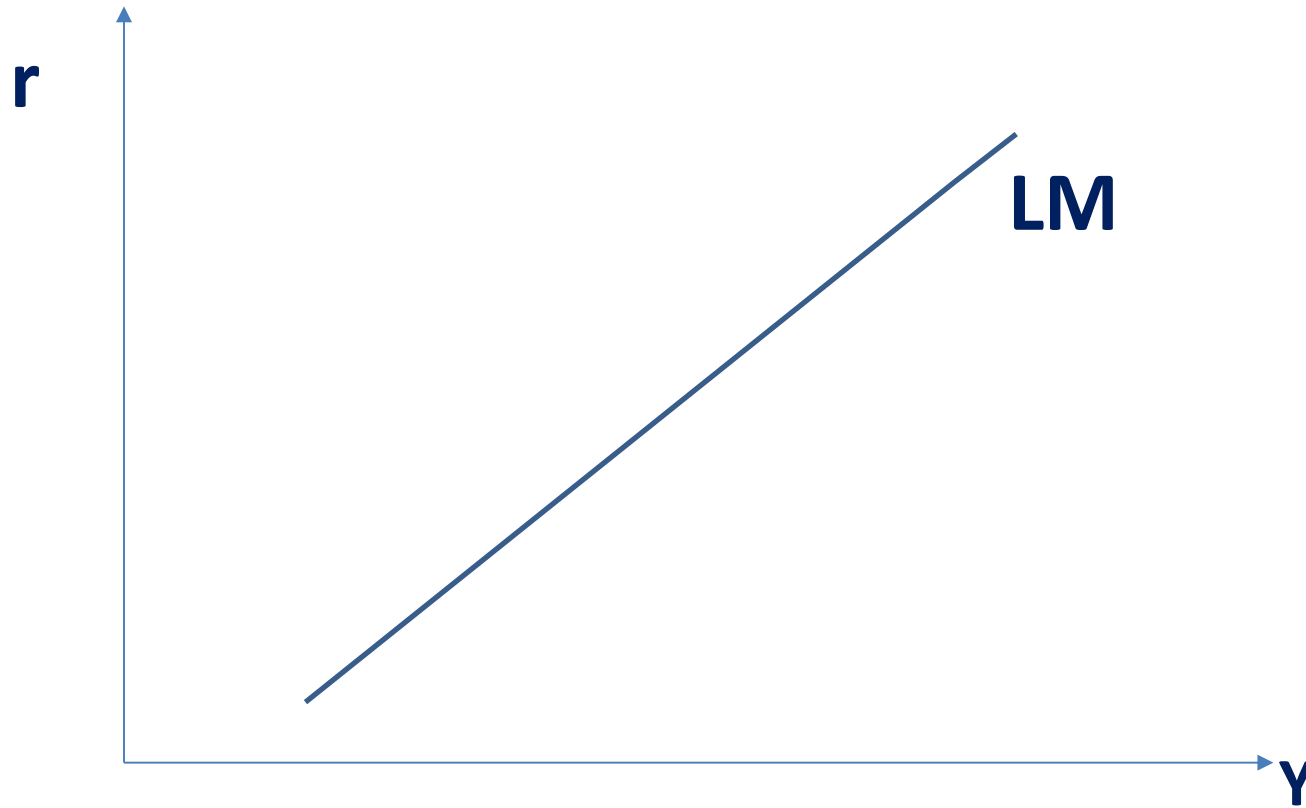
### 3. The IS-LM model

- Liquidity Preference (LM): Exogenous money is assumed throughout the analysis.
- Demand for transactions purposes ( $L'(Y) > 0$ ) and for speculative motives ( $L'(r) < 0$ ).

$$M^s = M^d = L(r, Y)$$



### 3. The IS-LM model

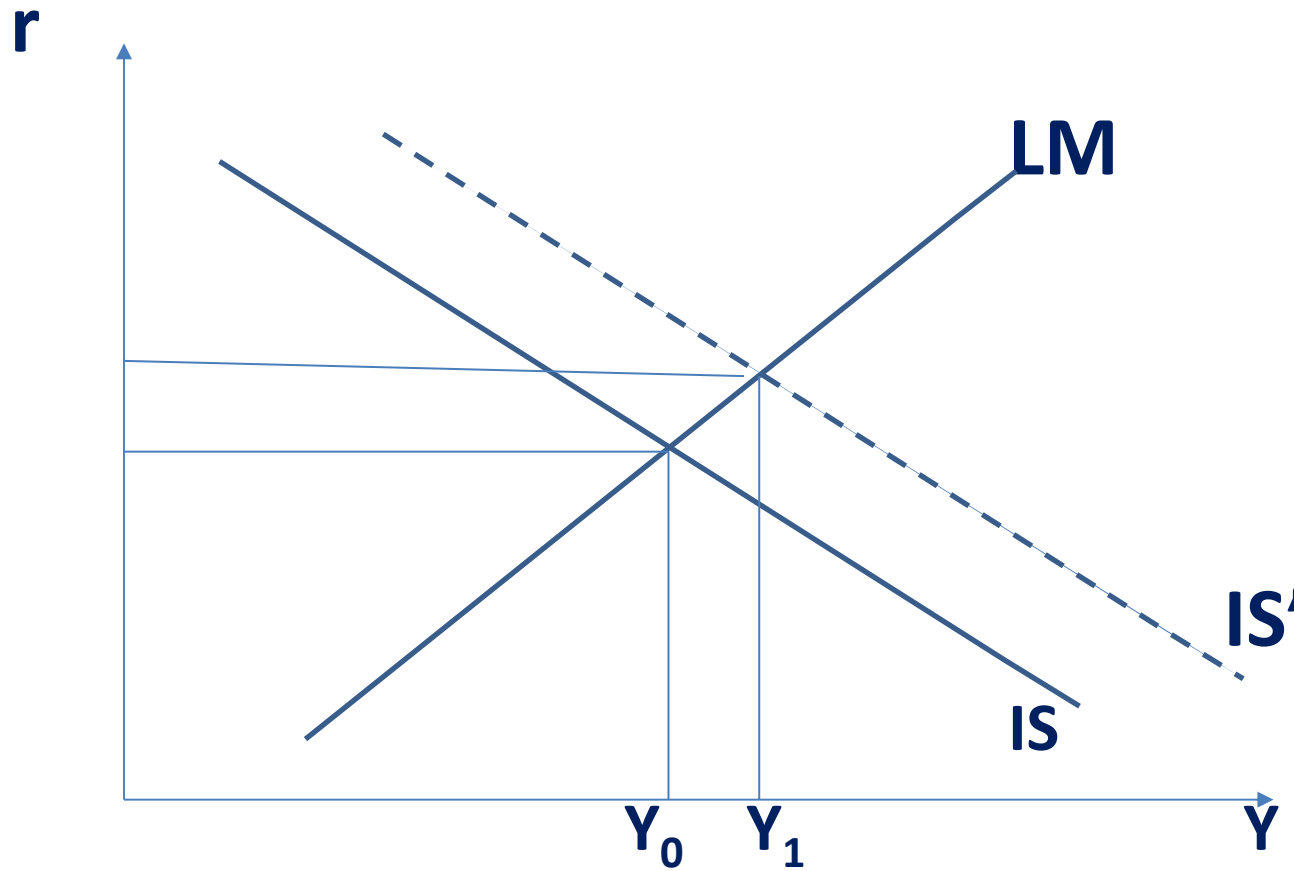


$M^s = M^d$  on every point on the LM curve

### 3. The IS-LM model

- So if income (output) is in a position of persistent unemployment, then expansionary fiscal policies will be preferable.
- To make this result compatible with the neoclassical theory, authors (e.g. Modigliani 1944) introduced some non-competitive behaviour in the labour market.
- Trade unions -> sticky wages

### 3. Adjustment mechanisms in the IS-LM model



Fiscal public expenditure  $\rightarrow$  Increase  $G$ , Increase  $I$ , Increase  $Y$ , increase  $r$  (short-run).

### 3. The IS-LM model: variants and criticisms

- Patinkin (1956): micro-founded in Walrasian terms. Introduced explicitly budget constraints.
- Real balance effects (or Pigou effects): if wages are sticky this means both nominal wages and prices will fall, and then this will increase the real value of wealth which may lead to increase consumption and then AD and income.
- Liquidity trap: differing views on it (e.g. Modigliani, 1944 vis-à-vis Patinkin, 1956)
- In sum, this is the way Keynesian theory is incorporated into the neoclassical paradigm.

### 3. The IS-LM model: variants and criticisms

- Economic policy options can be attempted to increase output.
- But this can lead to increase in nominal wages, and this may bring about inflation.
- Phillips curve (1958): trade-off between unemployment and inflation.
- Friedman (1968, Phelps, 1967): Phillips curve only in short-run. Long run: vertical Phillips curve.
- Based on: change in quantity of money have effect on prices only in the long run.
- Fiscal policies: uncertain outcomes due to lags and errors in evaluation.

### 3. The IS-LM model: another extreme criticism

- Rational expectations (Lucas, 1972): forecasts made by the relevant economic theory.
- Downward sloping Phillips curve does not exist even in the short-run. It is always vertical.
- Markets are in a continuous position of equilibrium. If agents hold the relevant economic theory, they anticipate the impacts of government economic policies.
- All expansionary policies will bring about inflation.
- All this presupposes very strong methodological and epistemological assumptions: for one, all agents do hold the same model and it belongs to the 'relevant theory'.

### 3. Discussion

Was there a truly Keynesian revolution after the Second World War or was it an IS-LM revolution?

Samuelson (1946) wrote:

*“ (...)until the appearance of the mathematical models of Meade, Lange, Hicks, and Harrod, there is reason to believe that Keynes himself did not truly understand his own analysis.”*

## **4. Parallel developments in neoclassical theory**

### **Economic growth studies**

- 1. Context: provide an alternative for European reconstruction in new context of cold war.**
- 2. Alternative to Harrod-Domar (which has strong Keynesian elements in its background, though there is an inherent problem of instability impinging on its results).**
- 3. Solow (1956, 1957), Swan (1956): main contributions: turned out to be the mainstream for economic growth analysis even until today and despite many problems.**



## 4. Solow (1956) model

- Constant returns to scale;
- Aggregate production function;
- Factor substitution;
- Population growth constant;
- No technological progress.

$$Y = F(K, N)$$

$$\frac{Y}{N} = F\left(\frac{K}{N}, 1\right)$$

## 4. Solow (1956) model

Output per capita

$$\frac{Y_t}{N} = f\left(\frac{K_t}{N}\right)$$

Output and investment (capital accumulation)

$$\frac{K_{t+1}}{N} - \frac{K_t}{N} = s \frac{Y_t}{N} - \delta \frac{K_t}{N}$$

## 4. Solow (1956) model

$$\frac{K_{t+1}}{N} - \frac{K_t}{N} = sf\left(\frac{K_t}{N}\right) - \delta \frac{K_t}{N}$$

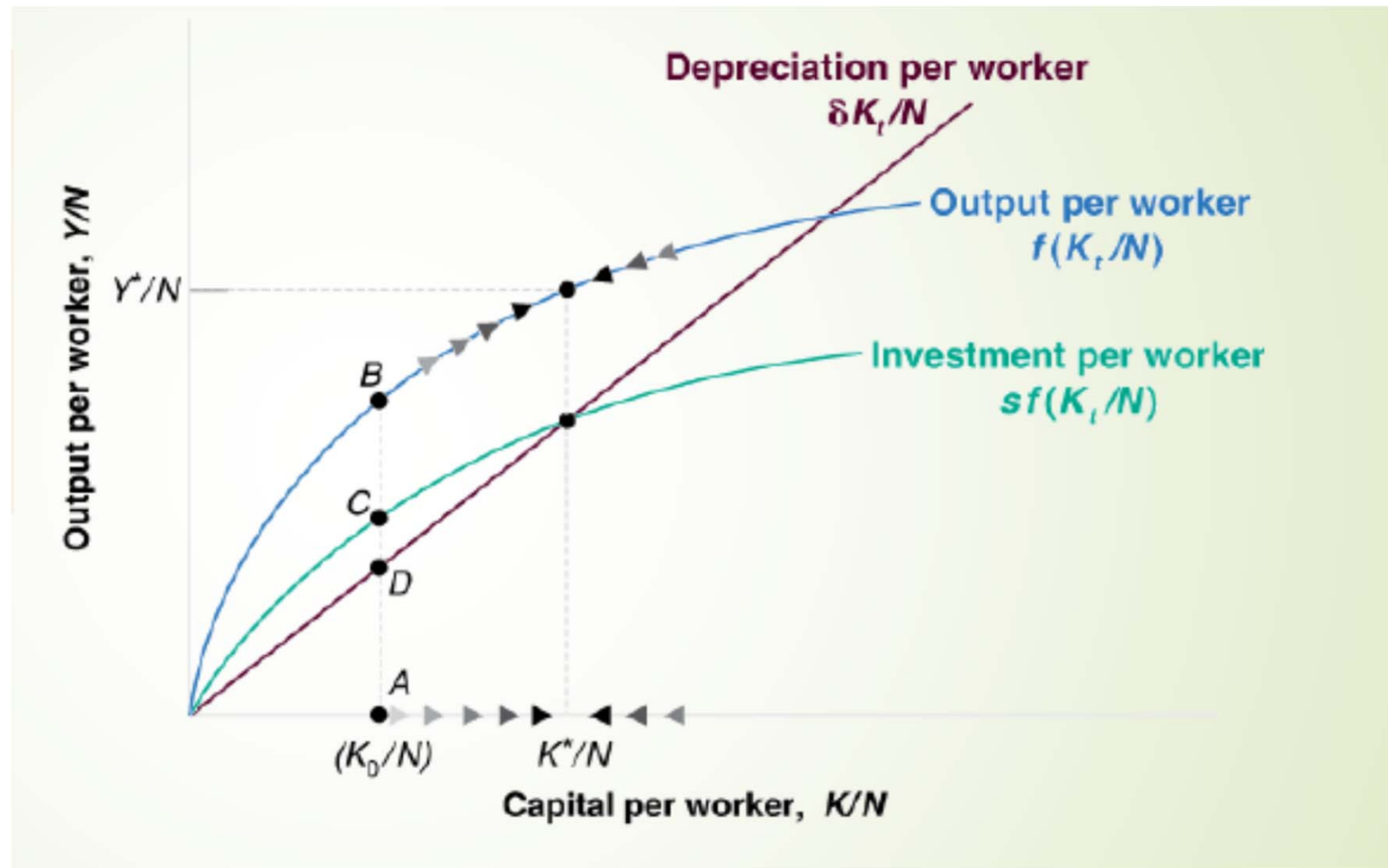
Change in capital from year  $t$  to year  $t + 1$  = Investment during year  $t$  - Depreciation during year  $t$

The change in capital per worker from this year to next year depends on the difference between two terms:

- If investment per worker exceeds depreciation per worker, the change in capital per worker is positive: **Capital per worker increases.**
- If investment per worker is less than depreciation per worker, the change in capital per worker is negative: **Capital per worker decreases.**

## 4. Solow (1956) model

### Dynamics of $K$ and Output



## 4. Solow (1956) model

- a) When  $K$  and  $Y$  are low, Investment exceeds Depreciation and so  $K$  will increase by employing *more capital intensive* methods of production (as the interest rate was relatively *low* in the first place)
- b) When  $K$  and  $Y$  are high, Investment is less Depreciation and so  $K$  will decrease by employing *less capital intensive* methods of production (as the interest rate was relatively *high* in the first place)

CONCLUSION: steady-state capital and output per capita. Only divergence between countries are the level, but not the direction of the changes. This led to the CONVERGENCE hyp.

## 5. Provisional conclusions

- By late 1940s and mid-1950s prevalence of *neoclassical synthesis* in Macroeconomics.
- Successful in terms of how Keynes was absorbed by the marginalist theory.
- Neoclassical growth theory after Solow (1956): became the mainstream in growth studies.
- Key reference for debates both in economic reconstruction issues and development (even after the criticisms raised both by heterodox approaches and within the neoclassical theory).

**Thank you!**