Keynes vs. The Classical Model

Javier Tasso

Introduction

- Late 19th / early 20th century: dominance of classical economics: self-adjusting markets and full employment.
- The Great Depression in the 1930s was a turning point: persistent unemployment challenges the classical view.
- Keynes' General Theory of Employment, Interest and Money (1936).
- From a supply-centered macroeconomics ("classics") towards a demand-centered macroeconomics (Keynes).

The Classical Model

Key Ingredients of the Classical Model

- Ex post construct to organize pre Keynes ideas.
- Main assumptions:
  1. Agents are rational and maximize their profits or utility. No money illusion.
  2. Markets are perfectly competitive. Flexible prices.
  3. Trade only takes place when market-clearing prices have been established.
- There's a clear distinction between real and nominal variables.

The Classical Model

- Exogenous variables.
  - Technology, encoded in the production function.
  - Consumers' preferences on consumption and leisure, encoded in the utility function.
- Endogenous variables.
  - Real output Y.
  - Price level P.
  - Nominal wage W and real wage $w = W/P$.
  - Real interest rate r.

The Production Function

$$Y = A \cdot f(K, L)$$

- Y: Real output per period.
- K: Capital inputs used per period, fixed in the short run.
- L: Labor inputs used per period.
- A: Total factor productivity.

The Production Function in the Short Run

$$Y = A \cdot f(\bar{K}, L)$$

1. K is fixed.
2. Increases with labor: MP_L is positive.
3. Exhibits diminishing returns: MP_L is positive, but decreases.
4. Shifts up if capital increases or if total factor productivity increases.

Profit Maximization: Labor Demand

$$\text{MP}_\text{L} = \frac{W}{P}$$

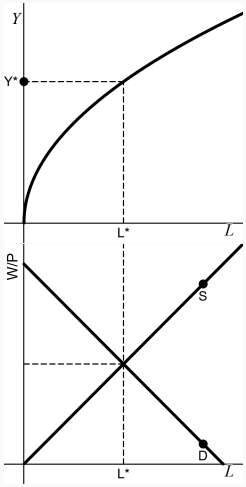
- Optimal choice for the firm. A restatement of the condition MR = MC.
- Consider cases when $\text{MP}_\text{L} \neq \frac{W}{P}$.
- Total factor productivity or capital shift the demand for labor.

The Consumption Leisure Decision: Labor Supply

$$\max U(C, L) \quad \Longrightarrow \quad \text{MRS}_{\text{L, C}} = \frac{W}{P}$$

- Consumer choice between leisure and consumption.
- Assume the substitution effect dominates, so higher wage induces more work.
- Derive the supply for labor.

Output & Employment Determination



- The labor market clears and determines:
  - The (full) employment level.
  - The equilibrium real wage.
- The employment level determines the full employment level of output through the short run production function.
- Effect of K or A?

Comments

- No involuntary unemployment.
- This is known as a full employment equilibrium where aggregate demand is just sufficient to absorb the level of output produced.
- Classical economists argued there's no obstacle to full employment by appealing to Say's Law.

Say's Law

A product is no sooner created, than it, from that instant, affords a market for other products to the full extent of its own value [...] the mere circumstance of the creation of one product immediately opens a vent for other products

Jean-Baptiste Say

- Because the act of production simultaneously creates income and purchasing power, there could be no impediment to full employment.
- Supply creates demand for output in general.
- The real interest rate plays a crucial role in this mechanism.

Real Interest Rate

Interest Rate: Real reward for abstinence or thrift.

- No money in this world.
- Interest in terms of goods: I can forego consumption today, invest the goods, and consume more in the future.
- Or: I can forego consumption today, lend it to another person for him to invest, and consume more in the future.

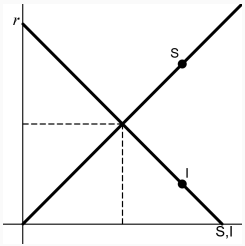
Saving & Investment

$$E = C(r) + I(r) = Y$$

- Y: the full employment level of output.
- E: expenditure.
- Consumption and investment depend on the interest rate.
- Rearrange:

$$S(r) = I(r)$$

Equilibrium



- The forces of productivity and thrift determine the real interest rate.
- Variations in the interest rate are an equilibrating force that ensures that aggregate demand or expenditure is never deficient.
- What if consumption falls?

Quantity Theory of Money

$$MV = PY$$

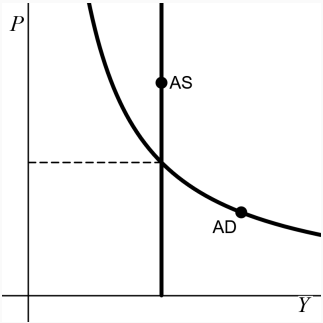
- Assumptions:
  1. Velocity is constant.
  2. Output is fixed at the full employment level.
  3. The causality goes from money supply to prices.
- Result:
  - Prices are proportional to money supply.

Aggregate Demand

$$P = \frac{MV}{Y}$$

- Inverse relationship between output and the price level.
- The aggregate demand shifts up if M increases.

The Classical Model



- The real part of the economy determines the (full employment) level of output. The aggregate supply.
- The inverse relationship between prices and output derived from the quantity equation. The aggregate demand.

The Classical Model: Change in Money Supply

Suppose $\uparrow M$:

- AD shifts right.
- Price level and nominal wages increase proportionally.
- Real wages stay constant.
- No effect on output or employment.
- No effect on real interest rate.
- Changing M has no real consequences.

The Classical Model: Change in Total Factor Productivity

Suppose $\uparrow A$:

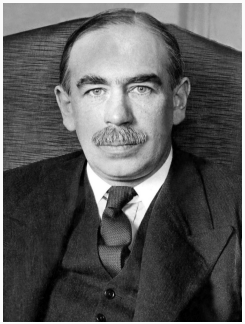
- Labor demand shifts right.
- Real wage increases. Employment & output increase.
- AS shifts right.
- P falls.
- The adjustment in the labor market drives all the changes.

Keynes Main Propositions

Comments

- In the Classical approach the market mechanism guarantees the full employment level of output.
  - Output comes before expenditure.
  - FE output $\rightarrow$ Say's Law $\rightarrow$ Real interest rate adjusts to $E = Y$.
- In his general theory, Keynes argues that this FE level of output is one of many possible outcomes.
  - Rejects Say's Law.
  - Rejects perfect labor market.
  - Planned expenditure determines output.
  - Expenditure comes before output.

The General Theory



John Maynard Keynes

I have called this book the General Theory of Employment, Interest and Money, placing the emphasis on the prefix general. [...] I shall argue that the postulates of the classical theory are applicable to a special case only and not to the general case, the situation which it assumes being a limiting point of the possible positions of equilibrium. Moreover, the characteristics of the special case assumed by the classical theory happen not to be those of the economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience.[a]

[a] From Keynes' General Theory of Employment, Interest and Money.

Differences with Classical Approach

- Rigidity of nominal wages. Labor market won't always clear.
- Rejection of Say's law.
- Neutrality of money is not guaranteed when output is below its full employment level.

The Principle of Effective Demand

$$E = C + I$$

- In a closed economy with spare capacity the level of output is determined by aggregate planned expenditure, which consists on consumption and investment.
- Consumption is endogenous, depending on income rather than the interest rate.

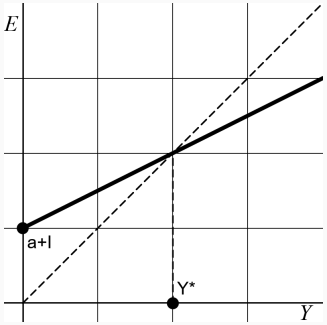
Consumption & Investment

$$C(Y) = a + cY \qquad \text{and} \qquad I$$

- Autonomous consumption and the marginal propensity to consume.
- Investment is exogenous. It depends on its expected profitability (a very unstable object) and the interest rate.
- Microfoundations?

Output Determination

$$Y = E \quad \Longrightarrow \quad Y = C(Y) + I \quad \Longrightarrow \quad Y^* = \frac{1}{1-c} \cdot (a + I)$$



- Equilibrium condition: expenditure equals output.
- Or equivalently: savings equal investment.
- Spending multiplier.
- The effect of an increase in autonomous spending.

Incentives to Liquidity

$$L(Y, r)$$

1. Transactionary motive.
2. Precautionary motive.
3. Speculative motive.

Money Demand: Quantity Equation and Keynes

- The Quantity Equation implies money demand depends on output and velocity:

$$\frac{M}{P} = \frac{Y}{V}$$

- Keynes' Liquidity Preference theory says it depends on output and the interest rate.

$$\frac{M}{P} = L(Y, r)$$