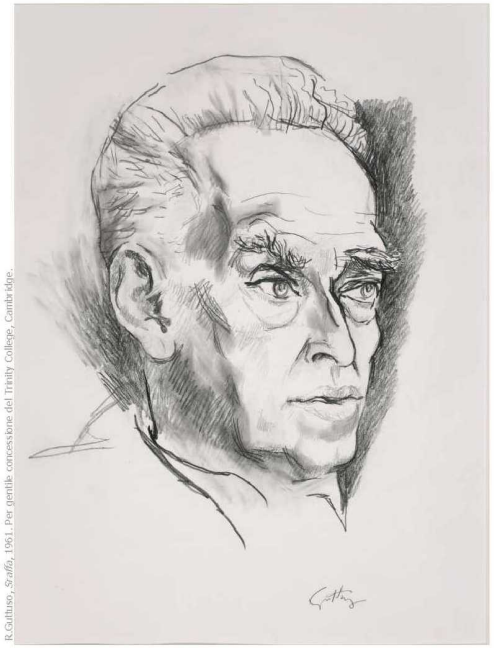
Lausanne – 4 December 2018



Sraffa and the theory of distribution

PART TWO

Saverio M. Fratini
Roma Tre University

7.1 The "economic trinity"

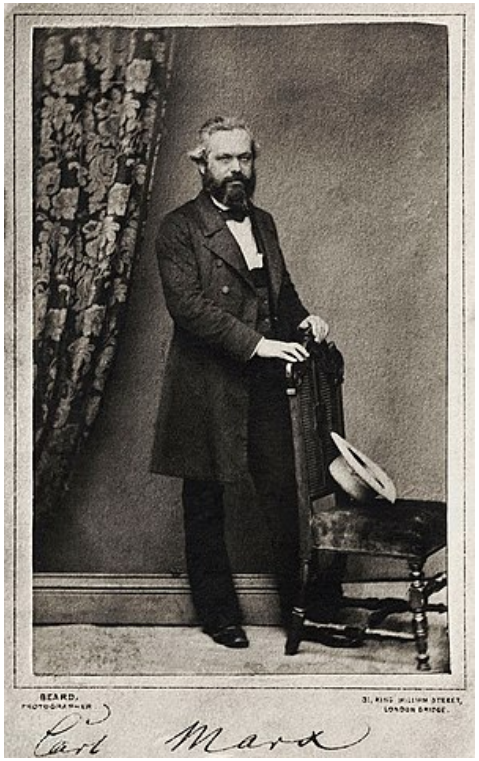
In the marginalist theory, the production process is seen as a **one-way avenue** from the factors of production to the final output.

But what are the factors of production?

LABOUR
CAPITAL
LAND

COMMODITIES

7.2 The “economic trinity”



In capital-profit, or still better capital-interest, land-rent, labour-wages, in this **economic trinity** represented as the connection between the component parts of value and wealth in general and its sources, we have **the complete mystification of the capitalist mode of production**, the conversion of social relations into things, the direct coalescence of the material production relations with their historical and social determination. It is an enchanted, perverted, topsy-turvy world, in which Monsieur le Capital and Madame la Terre do their ghost-walking as social characters and at the same time directly as mere things. (Marx, *Capital III*, p. 830)

7.3 The "economic trinity"

In the classical/Sraffian approach

There are 3 social classes: workers, capitalists and landowners

☞ hence there are 3 kinds of income: wage, profit and rent

In the neoclassical/marginalist approach

There are 3 kinds of income: wage, interest and rent

☞ hence there must be 3 factors of production: labour, capital and land

7.4 The "economic trinity"

In the marginalist theory of distribution:

- production processes employ factors of production. For a commodity m, with m = 1, 2, …, M, we have: $Y_m = F_m(L_m, K_m, N_m)$
- wage rate, interest rate and rent rate are the prices of the factors of production
- incomes from capital are not residual: they are determined by $r \cdot K_m$ and are part of the costs (costs = $w \cdot L_m + r \cdot K_m + \rho \cdot N_m$)
- social classes disappears and their place is taken by the **economic agents**: **households** and **firms**

8.1 The household-firm model

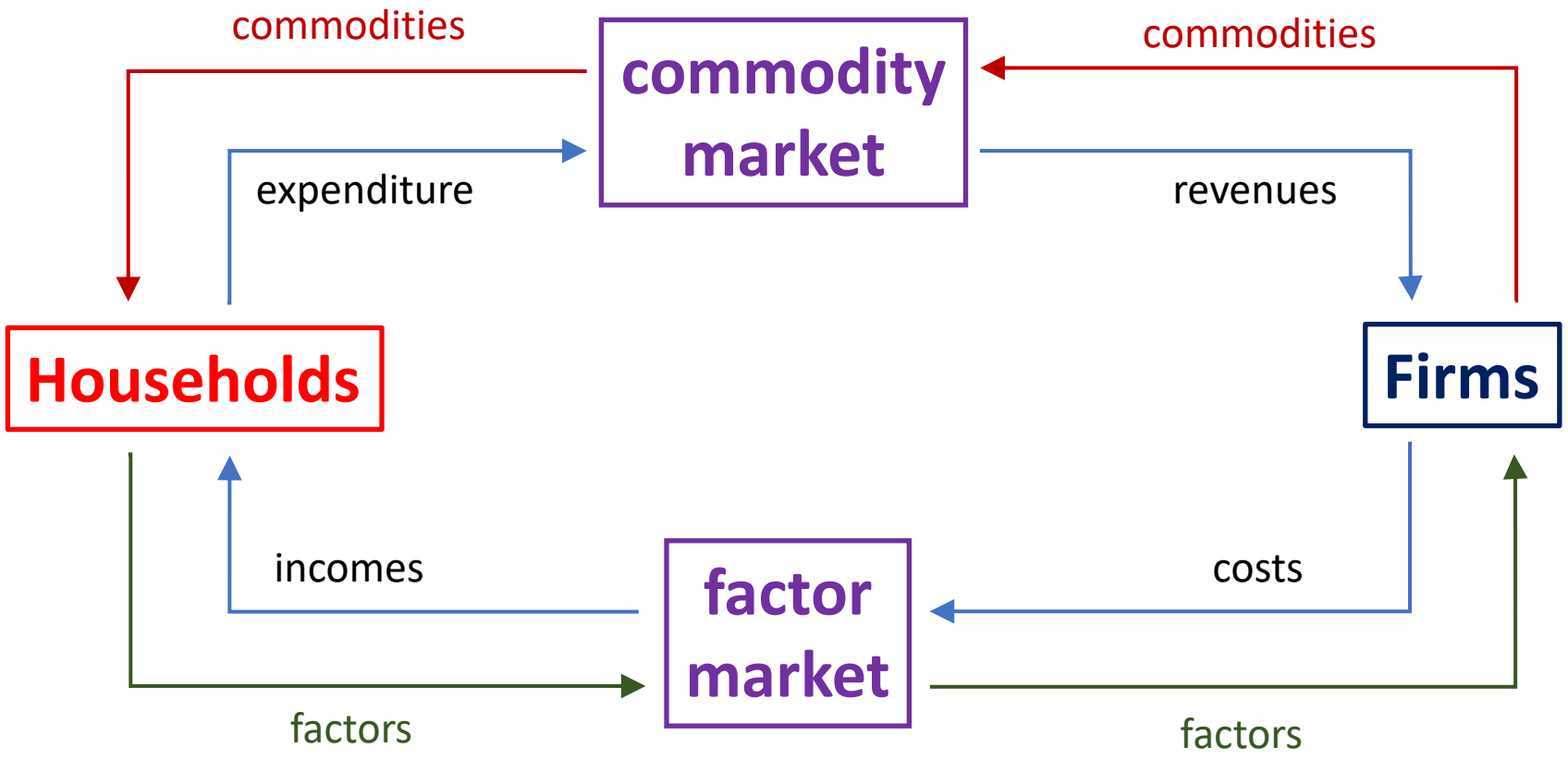
Households:

- decide the consumption plans by utility maximization
- are the owners of the factors of production (endowments)
- sell the use of the factors to the firms (income)
- buy consumption goods from the firms (expenditure)

Firms:

- decide the production plans by profit maximization
- hire the production factors from the households (costs)
- sell the consumption goods to the households (revenues)

8.2 The household-firm model



8.3 The household-firm model

Let us consider a firm that produces a quantity Y_m of commodity m, employing L_m, K_m and N_m amounts of factors.

Revenues : $p_m \cdot Y_m$
Costs : $w \cdot L_m + r \cdot K_m + \rho \cdot N_m$
Profit : $p_m \cdot Y_m - (w \cdot L_m + r \cdot K_m + \rho \cdot N_m)$

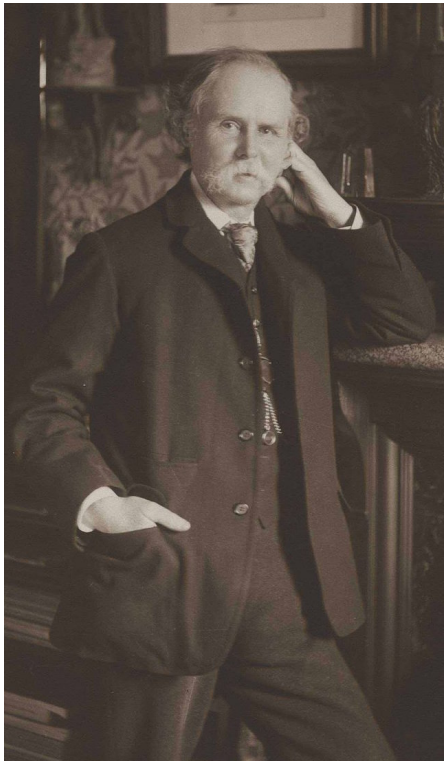
<u>On the one hand</u>:

- the amount of profit is not proportional to the employment of capital
- profit is not an income from capital

<u>On the other hand:</u>

- interest on capital is part of the costs
- incomes from capital are not a residual, but the result of a price×quantity multiplication

9.1 Capital supply and demand



Equilibrium rate of interest: "interest, being the price paid for the use of capital in any market, tends towards an equilibrium level such that the aggregate demand for capital in that market, at that rate of interest, is equal to the aggregate stock forthcoming there at that rate" (Marshall 1920, p. 534).

9.2 Capital supply and demand

Supply of capital: stock of capital the households are endowed with.

According to Marshall (1920, p. 534), "it is only slowly and gradually that the rise in the rate of interest will increase the total stock of capital", so that, for the purposes of the theory of value and distribution, capital accumulation could be neglected.

The supply of capital is a given magnitude: $K^S = \overline{K}$.

9.3 Capital supply and demand

According to **Wicksell** (1851-1926):

The real theoretical difficulty is […] to explain how, under stationary conditions, the possession of capital can remain a permanent source of income. The application to non-stationary conditions offers no difficulty in principle.

[…] Both logically and for purposes of exposition it would seem right to begin by examining the effects of a given supply of capital already accumulated, and then to inquire the causes which influence, and eventually alter, this supply. (*Lectures*, vol. I, pp. 154-5.)

9.4 Capital supply and demand

Demand for capital: value of the capital goods employed.

The demand for capital is typically understood as a function of the price system, which includes the rate of interest: $K^D = K^D(\dots, r)$.

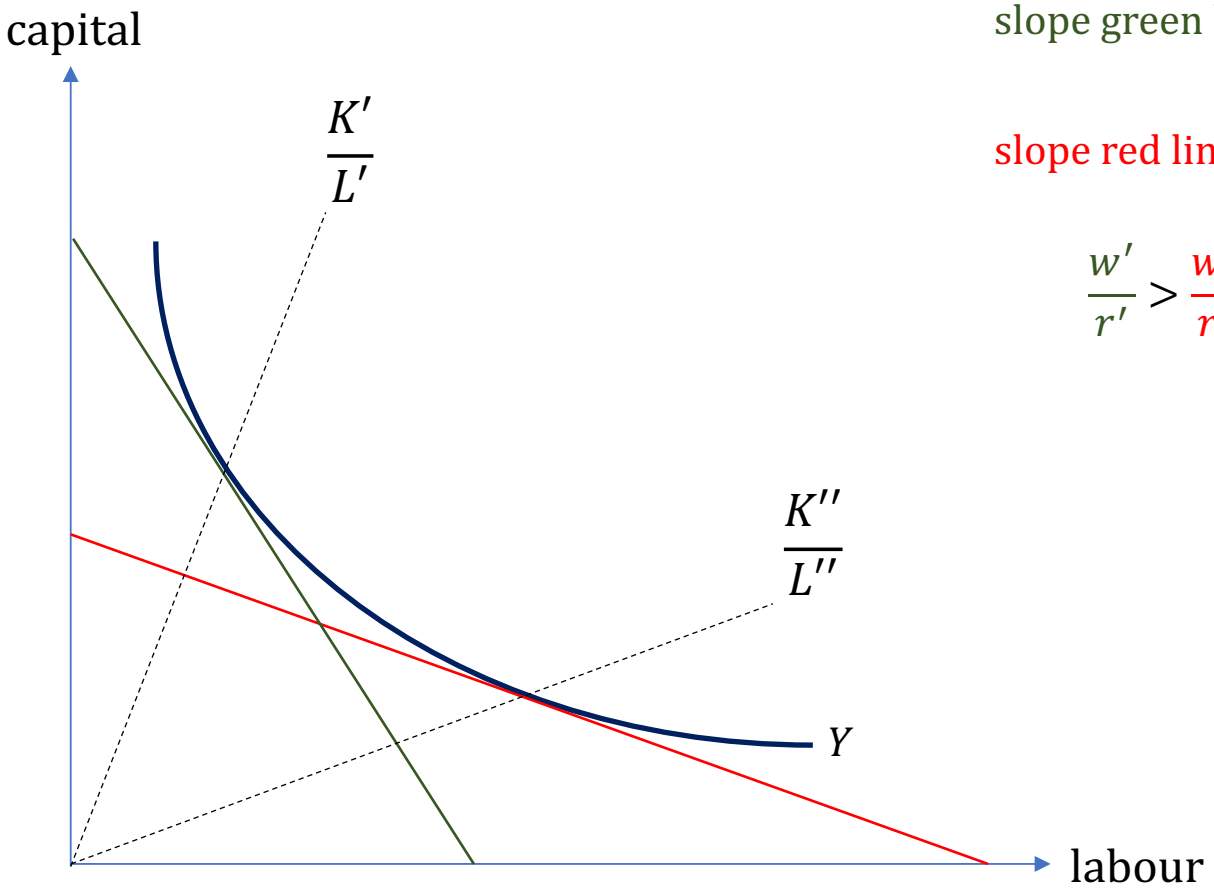
Being a demand function, higher is the rate of interest, lower is the demand for capital. In other words, higher rates of interest bring about the use of less "**capital-intensive**" methods of production.

9.5 Capital supply and demand

Substitutability between labour and capital: once capital and labour are placed on the same footing, they can be substituted for each other. One may think that there are different production methods for the same commodity that employ capital and labour in different proportions.

If the rate of interest increases in relation to the wage rate, firms are pushed to adopt methods that employ less capital and more labour.

9.6 Capital supply and demand

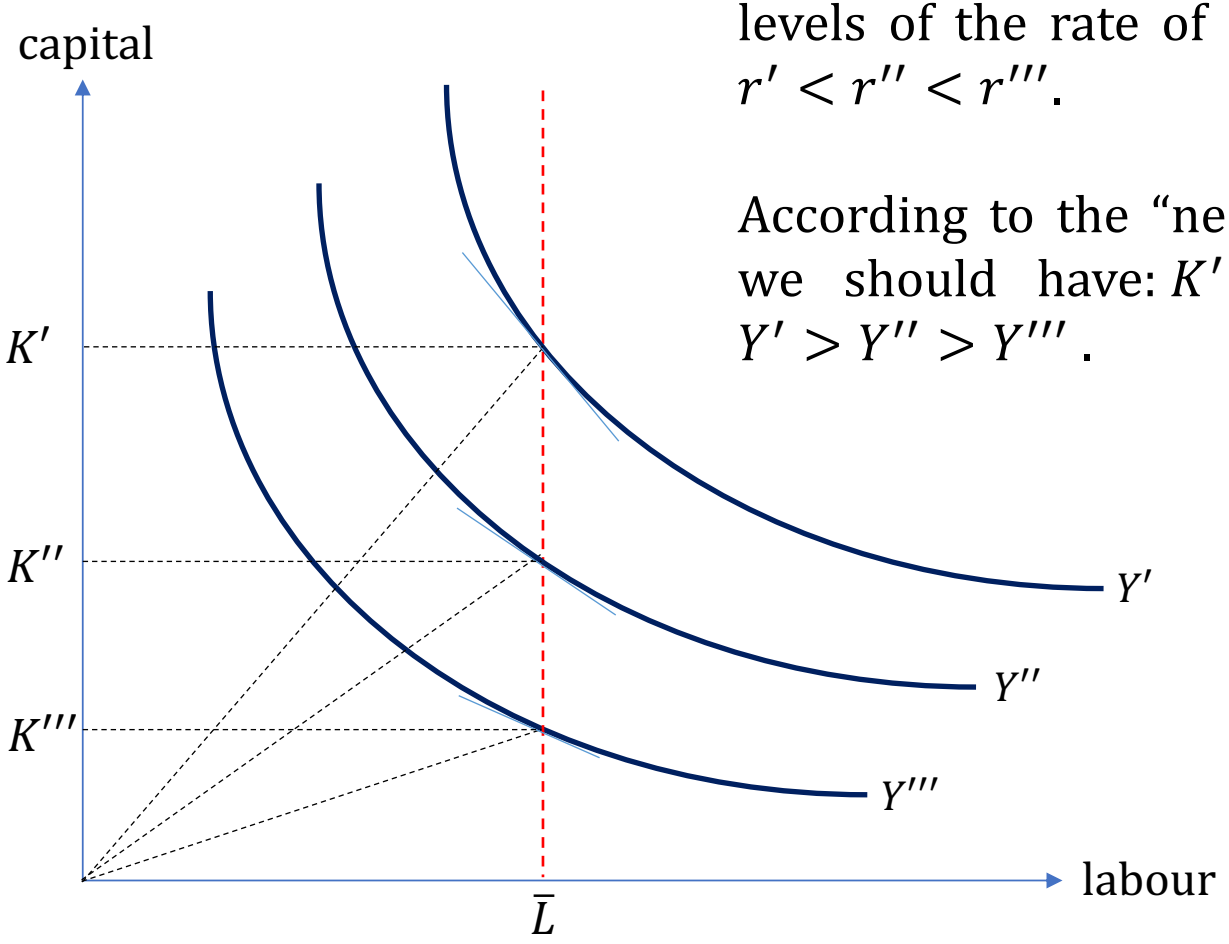


slope green line: $\frac{w'}{r'}$

slope red line: $\frac{w''}{r''}$

$\frac{w'}{r'} > \frac{w''}{r''}$

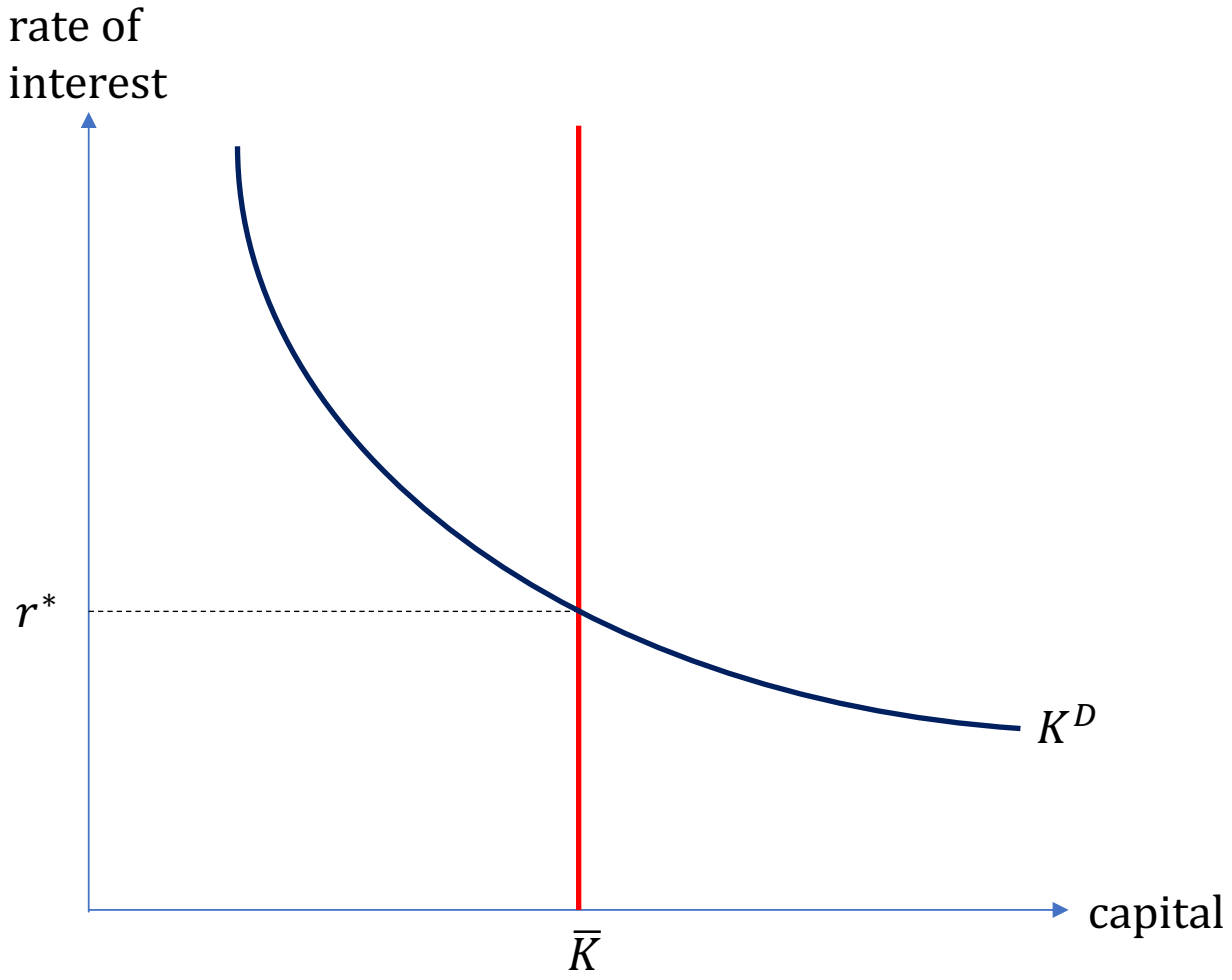
9.7 Capital supply and demand



Let us assume $L = \bar{L}$ and take 3 different levels of the rate of interest such that: $r' < r'' < r'''$.

According to the "neoclassical parable" we should have: $K' > K'' > K'''$ and $Y' > Y'' > Y'''$.

9.8 Capital supply and demand



10.1 Criticism of the neoclassical parable

First proposition: Before a level of the rate interest is determined, it is not possible to say that one method of production is more capital-intensive than another (cf. Sraffa 1960, p. 38).

Let us assume there are 2 methods of production of the same commodity. Let k_I and k_{II} be the values of the capital goods employed (per unit of labour) with methods *I* and *II* respectively. The ratio k_I/k_{II} varies with the rate of interest and:

- $k_I/k_{II} > 1$ if $r \in S$
- $k_I/k_{II} \leq 1$ if $r \in S'$

10.2 Criticism of the neoclassical parable

Second proposition: if an increase of the rate of interest entails a change of the method of production in use, then the incoming method is not necessarily more capital-intensive then the outgoing and does not necessarily give a smaller output per unit of labour (Sraffa 1960, ch. XII).

Re-switching is possible. Let us consider two methods *I* and *II*, with $y_{II} > y_I$. Let us imagine increasing the interest rate between 0 and *R*. For *r* close to 0, method *II* is in use. After a certain level $r' > 0$, method *I* becomes the mothed in use, but after $r'' > r'$ method *II* can be in use again.

10.3 Criticism of the neoclassical parable

Sraffa 1960, p. 81

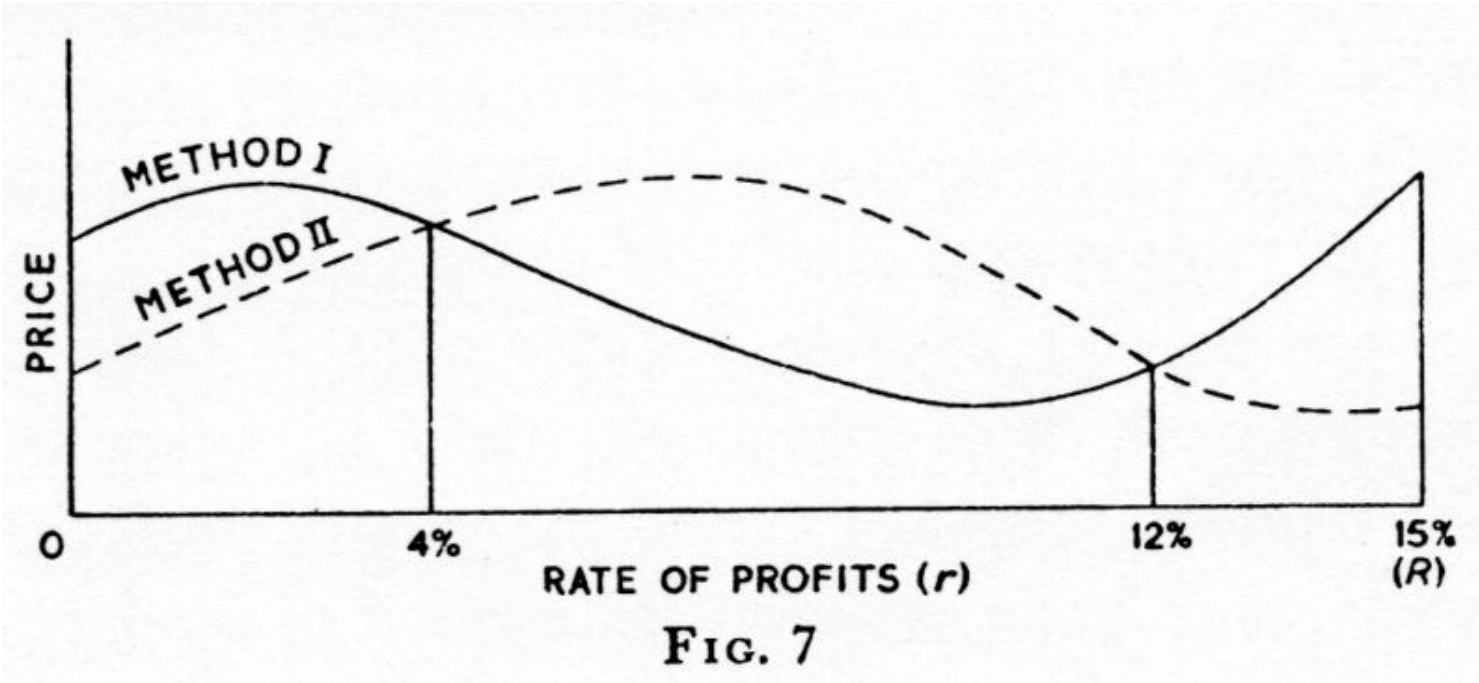


FIG. 7

11.1 Conclusion

1. Capital is not a factor of production. It is not on the same footing as labour. In general, we cannot say that a method is more capital-intensive than another. This is not a technical property.

There often turns out to be no unambiguous way of characterizing different processes as more 'capital-intensive,' more 'mechanized,' more 'roundabout,' except in the *ex post* tautological sense of being adopted at a lower interest rate (Samuelson, 1966, p. 582)

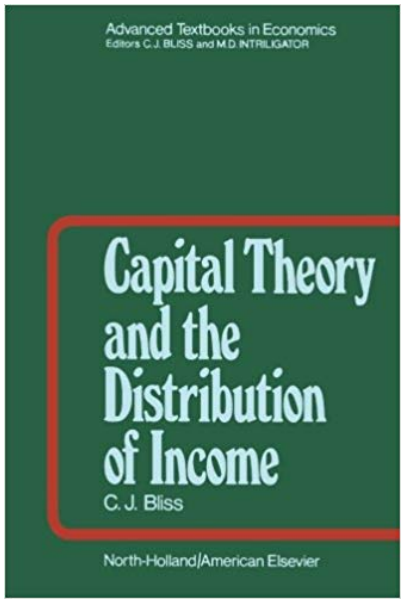
11.2 Conclusion

2. The neoclassical parable does not work. A fall in the rate of interest does not lead necessarily to an increase in the employment of capital per unit of labour and in the output per unit of labour.

The simple tale told by Jevons, Böhm-Bawerk, Wicksell, and other neoclassical writers—alleging that, as the interest rate falls in consequence of abstention from present consumption in favor of future, technology must become in some sense more 'roundabout,' more 'mechanized,' and 'more productive'—cannot be universally valid. (Samuelson, 1966, p. 582)

11.3 Conclusion

3. The rate of interest in not the price for the use of capital.



The value which accrues from a sale is the product of price and quantity sold. Hence if the rate of interest is the price of capital, the quantity of capital must be the wealth on which an interest yield is calculated. It will be shown shortly why this view is incorrect, but to cut a long story short, the conclusion may be announced at once. The rate of interest is not the price of capital. (Bliss 1975, pp. 6-7)

Thank you!

Before the existence of the Nobel Memorial Prize in Economic Sciences, an equivalent status was afforded to the Söderström medal, awarded by the Royal Swedish Academy of Sciences. This medal was awarded in 1961 to Piero Sraffa.