Economic Growth
Chapter 3 : The Post-Keynesian solution: Distribution of income as a stabilizing force

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Kaldor (1966)

- Nicolas Kaldor explores the determination and stability of the BGP through a differentiated saving behavior
- Kaldor, Nicholas. 1955. Alternative Theories of Distribution. *The Review of Economic Studies*, 23(2), 83.
- Kaldor considers two classes: workers and capitalists.
- The saving behavior of the latter determines the global saving rate, and conditions the ability of the economy to attain the BGP.

- This is a Keynesian model that stresses again the multiplier.
- It takes into account a strong autonomy of the investment (mainly determined by the general expectations of the capitalists).
- and eliminates the explicit modeling of the production process, by this autonomous investment.
- The economy is composed of two classes: the workers and the capitalists.
- The following assumptions characterize this economy

Distribution of income

Assumption 1

Workers only receive wage income, and the capitalists, only the profits.

Saving behavior

Assumption 2

Differentiated saving behavior between these two classes, with corresponding marginal saving rates on wages, s_w, and profits, s_c, with $0 < s_w < s_c$.

Autonomy of investment

Assumption 3

The income share of the investment demand is determined by external forces (expectations, animal sprits), and it verifies the following condition:

$$s_w \leq \frac{I_t}{Y_t} \leq s_c \tag{1}$$

Investment share and natural growth rate

- Given that the investment share is exogenous, on the BGP, its compatibility with the demographic growth would be necessary.
- Given that the coefficient of capital is again noted by μ, we must have on the BGP:

$$\dot{\left(\frac{K}{N}\right)} = 0 \Rightarrow \frac{\dot{K}}{K} = \frac{\dot{N}}{N} = n$$

$$\Rightarrow I_t = \dot{K}_t = nK_t.$$

$$\Rightarrow \frac{I_t}{Y_t} = \frac{\dot{K}_t}{Y_t} = n \cdot \frac{K_t}{Y_t} = n \cdot \mu. \quad (2)$$

where N is the workers population, and n, its growth rate.

Investment share, saving and warranted growth

- Can the economy finance such an investment share?
- That would depend of course on the saving behavior of the economy
- Let W represent the total wage income, and P, total profits.
- Total income is hence distributed as:

$$Y_t = W_t + P_t \tag{3}$$

Saving

- Let $S = S_w + S_c$ represent the total savings of the economy, workers and capitalists
- We must have (Assumptions 1,2, and equation 3):

$$\begin{aligned} S_t &= S_{wt} + S_{ct} \\ &= s_w \cdot W_t + s_c \cdot P_t \qquad (4) \\ &= s_w \left(Y_t - P_t\right) + s_c \cdot P_t \\ S_t &= s_w Y_t + \left(s_c - s_w\right) P_t \qquad (5) \end{aligned}$$

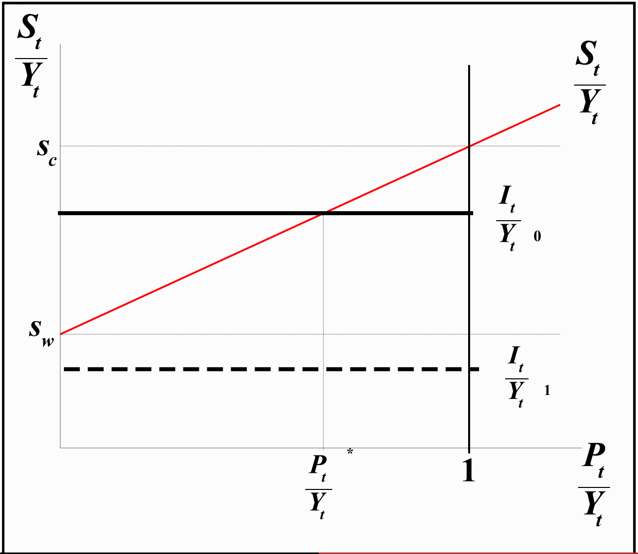
Financing the investment

- This saving should finance the investment on the BGP (good market equilibrium):

$$\frac{S_t}{Y_t} = \frac{I_t}{Y_t}$$
$$\frac{S_t}{Y_t} = (s_c - s_w)\frac{P_t}{Y_t} + s_w = \frac{I_t}{Y_t} \quad (6)$$

- In the short term, under Assumption 4, we can always find a distribution of income that would warrant the equilibrium on the good market.
- In the long term, full employment is only possible on the BGP if the distribution of income is compatible with equation (2).

Possibility of an equilibrium



Equilibrium profit shares

- When the BGP exists, the corresponding distribution results from a multiplier mechanism (from (6)):

$$\left(\frac{P_t}{Y_t}\right)^* = \frac{1}{s_c - s_w}\frac{I_t}{Y_t} - \frac{s_w}{s_c - s_w} \qquad (7)$$

- where $\frac{1}{s_c - s_w}$ plays the role of the multiplier $(1 > s_c - s_w > 0)$.
- When the investment share can increase without fragilizing the equilibrium, the share of the profits at equilibrium also increases.

Equilibrium profit rate

- Starting from the good market equilibrium condition (6), we can observe that

$$I = S = s_w Y + (s_c - s_w) P$$

$$\frac{I}{K} = s_w \frac{Y}{K} + (s_c - s_w) \frac{P}{K}$$

$$\frac{P}{K} = \frac{1}{(s_c - s_w)} \left(\frac{\dot{K}}{K} - s_w \frac{Y}{K} \right)$$

$$\pi \equiv \frac{P}{K} = \frac{1}{(s_c - s_w)} \left(\gamma - \frac{s_w}{\mu} \right) \tag{8}$$

where $\gamma = \dot{K}/K \ (\approx \gamma_w)$, and π is the profit rate.

Conditions for the BGP

- If we now take into account the population dynamics, the BGP would only correspond to full employment iff $\gamma = \gamma_w = n = \gamma_n$ (as in Harrod)
- The equation (8) gives in this case the only profit rate compatible with the BGP:

$$\pi = \frac{1}{(s_c - s_w)} \left(n - \frac{s_w}{\mu} \right) \tag{9}$$

- We can hence derive an equilibrium condition similar to the one in the Harrod's case.
- To start, we can reformulate the profit share as the following (including (8))

$$\frac{P}{Y} = \frac{P}{K}\frac{K}{Y} = \pi \cdot \mu \tag{10}$$

- and take into account the fact that $0 \leq P/Y \leq 1$.

Conditions for the BGP

$$\frac{P}{Y} = \frac{\mu}{(s_c - s_w)} \left(n - \frac{s_w}{\mu} \right)$$

$$\frac{P}{Y} \geq 0 \Rightarrow \frac{s_w}{\mu} \leq n,$$
$$\frac{P}{Y} \leq 1 \Rightarrow n - \frac{s_w}{\mu} \leq \frac{(s_c - s_w)}{\mu} \Leftrightarrow \frac{s_c}{\mu} \geq n$$

And Harrod's condition $n = s/\mu$, becomes here:

$$\frac{s_w}{\mu} \leq n \leq \frac{s_c}{\mu} \tag{11}$$

the more contrasted the saving behaviors, the easier the existence of the BGP.

Summing up

- Capitalists saving behavior is the determining force in this economy (assuming that workers have a lower degree of freedom).
- A (too) simple model with many shortcomings, and *ad hoc* dimensions.
- Workers do not obtain any share of profits even if they save.
- Pasinetti (1962) include this possibility, and shows that the capitalists saving rate becomes the sole determining factor in this case.
- Kaldor & Mirrlees (1962) includes a more complete accelerator mechanism, capital accumulation, and technical progress (but neglects the question of distribution of income).
- In Kaldor's framework, the stabilizing force is this distribution.
- Solow will attack the question of fragility from another angle.

Part II

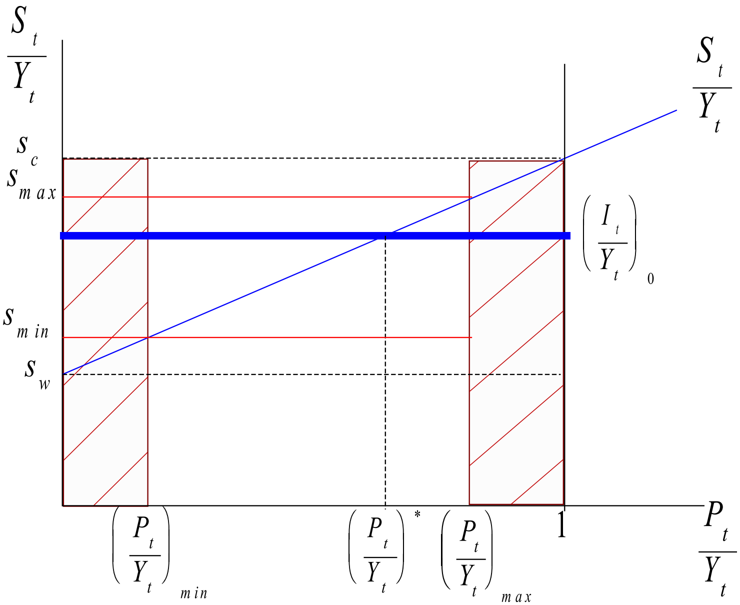
Neoclassical solution: Growth, equilibrium and convergence in the Solow Model

Social consensus

- A social consensus could exclude extreme distributive situations:

$$\left(\frac{P}{Y}\right)_{\min} \leq \frac{P}{Y} \leq \left(\frac{P}{Y}\right)_{max} \tag{12}$$

- What would its impact on the existence of equilibrium?


$\frac{S_t}{Y_t}$
s_c
s_{max}
s_{min}
s_w
$\frac{S_t}{Y_t}$
$\left(\frac{I_t}{Y_t}\right)_0$
$\left(\frac{P_t}{Y_t}\right)_{min}$
$\left(\frac{P_t}{Y_t}\right)^*$
$\left(\frac{P_t}{Y_t}\right)_{max}$
1
$\frac{P_t}{Y_t}$

- Equilibrium exists only if

$$s_w \leq s_{\min} \leq \frac{I_t}{Y_t} \leq s_{\max} \leq s_c.$$

- so, under more restrictive conditions.

Widow's cruse

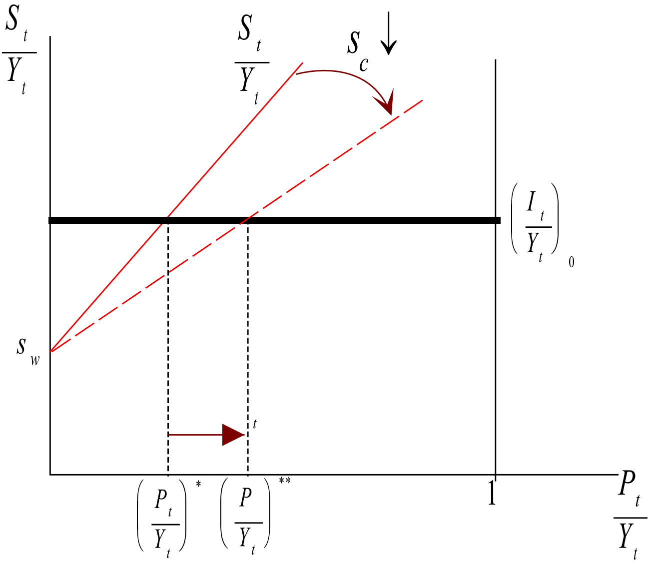
"If entrepreneurs choose to spend a portion of their profits on consumption (. . .) the effect is to increase the profit on the sale of liquid consumption goods by an amount exactly equal to the amount of profits which have been thus expended ... Thus however much of their profits entrepreneurs spend on consumption, the increment of wealth belonging to entrepreneurs remain the same as before." (Treatise on Money, Vol. I, p. 139)

Saving behavior and profit rate: "Widow's cruse"

- If workers do not save at all ($s_w = 0$), we have

$$\pi = \frac{\gamma}{s_c} \tag{13}$$

- For a given γ, the more the capitalist consume, the higher their profits rate: "Workers spend all they gain, and capitalists gain all they spend" (Passinetti)
- $\rightarrow$ "Widow's cruse"
- Which becomes a "Danaid jar" if the capitalists try to recoup their losses by reducing their consumption.
- Entrepreneurial expenses resulting from capitalists expenditure decisions, rather than the inverse (Keynes).


$\frac{S_t}{Y_t}$
$\frac{S_t}{Y_t}$
s_c
$\left(\frac{I_t}{Y_t}\right)_0$
s_w
t
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$\left(\frac{P}{Y_t}\right)^{**}$
1
$\frac{P_t}{Y_t}$