The supermultiplier as a Vertically Hyperintegrated Sector

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A big issue of Keynesian Macroecomics

- Keynes' principle of effective demand. Does it apply to the long run so that we can speak about demand-led growth?
- Harrod's warranted rate and the instability of the m-a model (The knife edge)

  $Y=C+I = cY+kgY \rightarrow \mathbf{g^*=(1-c)/k = s/k}$
- What happens if g(d) > g*?
  - Cambridge solution: changes in distribution: $\nabla w \rightarrow \nabla c$
  - Neokaleckian solution: changes in the actual rate of capacity utilization (inverse of actual *k*): $\Delta u \rightarrow \nabla k'$
  - NC don't see the problem. In any case changes in technology: ∇k

A Sraffian solution

- Serrano (1995), Bortis (1997), Dejuán (2005)
- $Y = C+I+Z = cY+kgY+Z \rightarrow$ **$g^* = (1-c-z) / k = i/k$**
- Changes in the structure of the economy: Δi, ∇z. The warranted rate adapts to the autonomous trend
  - $\Delta g(z) \rightarrow \Delta g(d) \rightarrow \Delta g^*$
    - sr: Δu
    - lr: Δi (I/Y)

Controversies

- Rejection of this solution by core Sraffians (Garegani) and posKeynesians (Lavoie)
- Something is changing: Cesaratto (2012), Allain-Lavoie (2013-14)
- Convenience to use I-O analysis.
  - It shows the structural change that is going on and the stability of such dynamics
  - It allows a proper use of multiplier and the m-a

A railway illustration

Autonomous demand

Induced consumption

Expansionary investment

Original IOT

CC				C	I	Z
W						
P						

SAM after endogeneizing a part of C and I

CC				C	I	Z
W'						
P'						
O						

$C \quad = c \cdot W \quad (1-t)$

$I \quad = \sigma \cdot R(1-t) \quad = \; K_{(t+1)} - KI_{(t)} = k \cdot g_{d(t)} \cdot D_t + KT_{(t)}$

KT = Shortages of capacity related to overutilization of capacity in the past (*u*>1)

And now let us put the system into motion

CC				C	I	Z
W'						
P'						
O						

Main features of the dynamic model

- Autonomous demand drives the system, locomotive
- Induced demand follows. Endogeneization of a part of induced consumption (the multiplier, μ) and expansionary investment (the accelerator). They may be combines in the supermultiplier (μ*=f(g))

- **Main system**. VHIS corresponding to Z = Supermultiplier. It causes a balanced growth at *g=g*=g(z).* When the autonomous trend rises it is requiered a process of adjustment (traverse) that can be visulaized adding a complementary system operating in iddle hours

- **Complementary system**.
  - Extratime during the night to attend the extra demand after an acceleration of growth. If u>1 endures for a time, firms expand capacity. If u>1 continues despite such investment, firms will revise upwards their growth expectations.
  - Extratime during the weekends. It attends transient demand. It stops after producing the goods requiered to reestructure capital among sectors. No acceleration effects on investment since this is a transient demand.

- Becareful with the treatment of capacity utilization and its impact on Investment
  - *u*>1 if expected g(d) (embedded in the SM) is lower than g(z). Expectations adapt
  - *u*>1 does not impact on expected *g.* It simply requieres higher I than the level suggested by the pure accelerator process. No more investment that the requiered to fill the shortages of capacity.
  - The higher Δu occurs in the capital sector (investment) so it expands faster. When *i* reaches its equilibrium level the economy resumes a new fully adjusted path at *g(y) = g(d) = g(z) = g*.*

Fully adjusted path of growth

We take as data the level of composition of Z at time (0) and its expected rate of growth *g(z) = g**

- $\boldsymbol{q}_{(1)} = [\boldsymbol{\mu}^*] \cdot \boldsymbol{Z}_{(0)} \, (1 + g^*)$
- $\boldsymbol{q}_{(2)} = [\boldsymbol{\mu}^*] \cdot \boldsymbol{Z}_{(0)} \, (1 + g^*)^2$
- …
- $\boldsymbol{q}_{(t)} = [\boldsymbol{\mu}^*] \cdot \boldsymbol{Z}_{(0)} \, (1 + g^*)^t$

The traverse (after a rise in the autonomous trend)

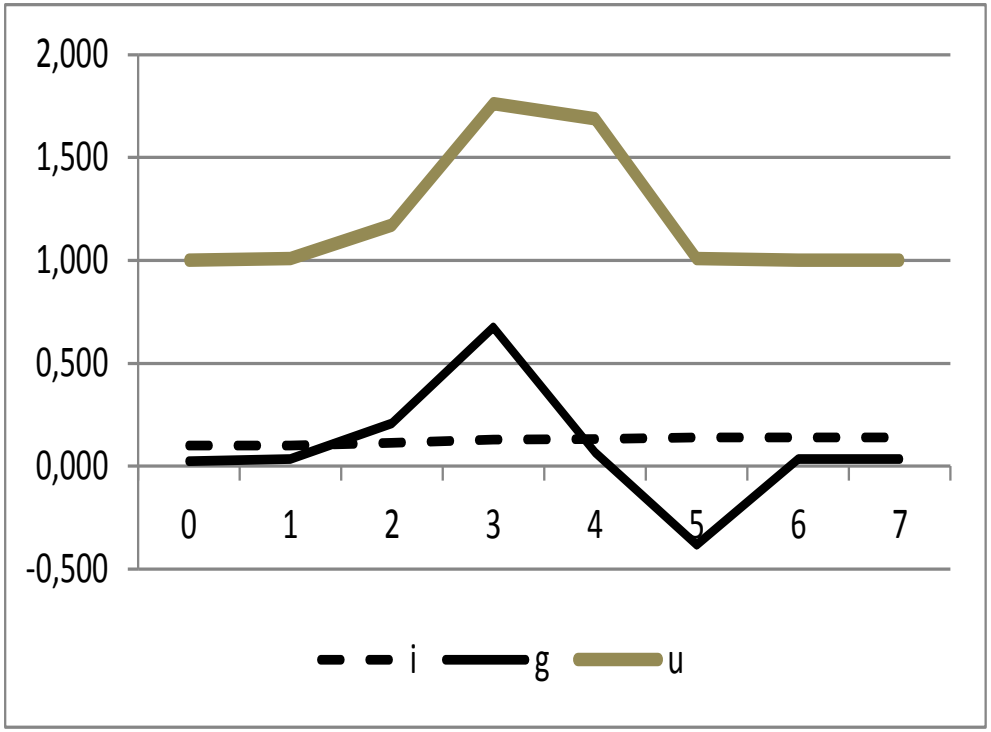
Different versions according to whether there is perfect foresight or not. Here we suppose that in year 1 changes the autonomous trend but firms do not foresee it. This causes shortages of capacity (*KT*) that are supposed to be filled up in period 2. Then the new *g'* is incorporated into the supermultiplier

- $\boldsymbol{q}_{(1)} = [\boldsymbol{\mu}^{*}] \cdot \boldsymbol{Z}_{(\mathbf{0})} \, (1 + g')$
- $\boldsymbol{q}_{(2)} = \left[\boldsymbol{\mu}^{*'}\right] \cdot \boldsymbol{Z}_{(\mathbf{0})} \, (1 + g')^{2} + [\boldsymbol{\mu}] \cdot \left(b \cdot \boldsymbol{KT}_{(1)}\right)$

Illustration

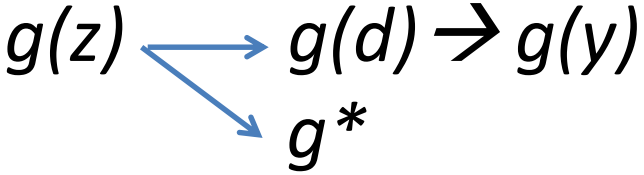
$g(z) = 0{,}025 \rightarrow g'(z) = 0{,}035$

	z	q	i	u	g(y)
0	30,0	100,0	0,10	1,00	0,025
1	31,1	103,5	0,10	1,01	0,035
2	32,1	125,0	0,11	1,17	0,207
3	33,3	209,4	0,13	1,76	0,676
4	34,4	223,5	0,13	1,69	0,067
5	35,6	138,1	0,14	1,01	-0,382
6	36,9	143,0	0,14	1,00	0,035
7	38,2	148,0	0,14	1,00	0,035



Conclusions

- Demand led growth. It reinforces Keynes principle of effective demand extrapoling it to the lr
- Autonomous trend: the engine of the system; it "rules the roost"



- Stable dynamics provided … The instability of capitalism is not due to m-a but to g(z)
- Convenience of disaggregated studies (IO), even for theoretical economics.

CC				C	I	Z
W'						
P'						
O						

Thank’s for your attention
and have a good journey in the IO railway!