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MACROECONOMICS AFTER KALECKI AND KEYNES

Post-Keynesian Foundations

(Edward Elgar 2023)

Chapter 7
'FROM SHORT-RUN MACROECONOMICS TO LONG-RUN DISTRIBUTION AND GROWTH: A SYSTEMATIC COMPARISON OF DIFFERENT PARADIGMS AND APPROACHES'

Content

7.1 INTRODUCTION

- Recent books by Blecker and Setterfield (2019), Foley et al. (2019), Hein (2014a) and Lavoie (2014, Chapter 6) contain detailed and extensive presentations of orthodox and heterodox distribution and growth theories, and post-Keynesian approaches in particular.

- here: basic versions in a unified modelling framework making use of the method of model closures in order to distinguish between different approaches

- Sen (1963) introduced this concept, comparing neoclassical and neo-Keynesian approaches – the latter are today rather termed post-Keynesian models in the tradition of Kaldor and Robinson (Hein 2014a, Chapter 4).

- Marglin (1984a, 1984b): compares neoclassical, neo-Marxian and neo-Keynesian, i.e. post-Keynesian, models.

- Amadeo (1986): compare a Marxian, a post-Keynesian Kaldor-Robinson and a Kaleckian case

- Dutt (1990): comparison of neoclassical, neo-Marxian, post-Keynesian Kaldor-Robinson (what he calls neo-Keynesian) and Kalecki-Steindl approaches, the neo-Kaleckian model (Hein 2014, Chapter 6).

- The post-Kaleckian approach based on Bhaduri and Marglin (1990) and Kurz (1990) has then be included by Hein (2017b) in such an exercise.

- Here we also add the Sraffian Supermultiplier growth model.

- Model closures as a means of comparison of different theories

- General basic model equations describing the economy (technology, social structure + behaviour)

- Closure:
  - ➢ Specific behavioural equations
  - ➢ Specific equilbrium conditions and adjusting variables

- Benefit: systematic comparison & differences of assumptions, causalities, interdependences

- Costs: Details/specific features may be lost

7.2 THE DISTINGUISHING FEATURES OF ORTHODOX AND HETERODOX THEORIES OF DISTRIBUTION AND GROWTH

<table>
<tr><th colspan="7">Table 7.1: Distribution and growth theories</th></tr>
<tr><th colspan="2">Orthodox</th><th colspan="5">Heterodox</th></tr>
<tr><td rowspan="3">Old neoclassical (Solow, Swan)</td><td rowspan="3">New neoclassical (Romer, Lucas)</td><td rowspan="3">Classical/ Marxian</td><td colspan="4">Post-Keynesian</td></tr>
<tr><td rowspan="2">Kaldor-Robinson</td><td colspan="2">Kalecki-Steindl</td><td rowspan="2">Sraffian Super-Multiplier (Serrano)</td></tr>
<tr><td>Neo-Kaleckian (Dutt, Rowthorn)</td><td>Post-Kaleckian (Bhaduri/ Marglin, Kurz)</td></tr>
</table>

Neoclassical theory

First principles:

- Given technology/production function and utility function
- Given initial endowments
- Maximizing behaviour in competitive markets

Determine:

- Income distribution (technology + initial endowments)
- Growth (exogenous growth of labour force and exogenous productivity growth) at full employment

➢ Capital stock growth is determined by saving and has no effect on equilibrium growth rate ('natural growth rate') but only on the growth path (Solow, Swan).

New neoclassical growth theory

- Productivity growth and hence full employment growth path is endogenised
- Technical progress is determined by technology and preferences
- Saving determining broad investment has a permanent effect on equilibrium growth rate (natural growth rate)

➢ Thriftiness is beneficial with respect to growth rate (Romer, Lucas, …)

Critique

- New growth theory needs specific parameters to generate stable growth (Solow)
- What about money and effective demand?
- What about aggregate output, capital (and also human capital, …)?

➢ ‚Cambridge controversies' in the theory of capital

Classical, Marx's and Post-Keynesian approaches

- No a-historical first principles
- Distribution and capital accumulation/ growth are interdependent
- Explicit theories of distribution (‚degree of freedom' to be closed by socio-institutional factors

Classical and orthodox Marxian approach

- Distribution is determined by socio-institutional factors: subsistence wage and/or class struggle
- With a given technology this determines the rate of profit
- Rate of profit determines the rate of capital accumulation because capitalist class as whole can only accumulate out of profits (Classical version of Say‘s Law: S → I)
- Rate of capital accumulation determines the rate of growth
- Unemployment is a persistent feature, though fluctuating
- Capital accumulation feeds back negatively on the rate of profit in the long run

➢ tendency of the rate of profit to fall

➢ deep crisis (Marx) or stationary state (Ricardo)

Post-Keynesian approach

- Capital accumulation is independent of saving,
  I → S, *no Say's law* (➔ Robinson 1962, pp. 82-83)
- Harrod, Domar: Explore conditions for balanced growth, Harrod detects instability of ‚warranted rate of growth'
- Kaldor, Pasinetti, Robinson: Capital accumulation determines the rate of profit and thus income distribution in the long run (Kaldor: full employment; Robinson: no full employment)
- Kalecki, Steindl: Capital accumulation determines the growth and the degree of utilisation of productive capacities also in the long run, as well as the rate of profit; distribution is determined mainly by mark-up pricing in incompletely competitive markets.

➢ Endogenous growth models driven by effective demand, i.e. productivity growth is also demand determined

Post-Keynesian approach

"The Keynesian models (including our own) are designed to project into the long period the central thesis of the *General Theory*, that firms are free, within wide limits, to accumulate as they please, and that the rate of saving of the economy as a whole accommodates itself to the rate of investment that they decree." (Robinson 1962, pp. 82-83)

Post-Keynesian approach

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Kalecki-Steindl approach:

- Neo-Kaleckian model for closed economy (Dutt 1984, Rowthorn 1981): only wage-led results, paradox of costs generally valid, because of strong accelerator effect in the investment function
- Post-Kaleckian model for closed economy (Bhaduri and Marglin 1990, Kurz 1990): wage- or profit-led demand and growth possible, because of direct profit share effect in the investment function.
- treatment of the rate of capacity utilisation as a long-run endogenous variable in Kaleckian models has been criticized by Marxian and Harrodian authors, validity of long-run paradox of saving and paradox of costs has been questioned. See Hein et al. (2011, 2012a), Hein (2014a, Chapter 11) and Lavoie (2014, Chapter 6.5)

Post-Keynesian approach

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- Starting with Allain (2015) and Lavoie (2016a), several Kaleckian authors have accepted an exogenous normal or target rate of capacity utilisation for the long-run growth equilibrium and have turned towards introducing a ***Sraffian supermultiplier*** (Serrano 1995a, 1995b) in order to defend the Kaleckian approach against the Harrodian and Marxian critique.
- Autonomous growth rate of a non-capacity creating component of aggregate demand, i.e. autonomous consumption, residential investment, exports or government expenditures, determines long-run growth
- If Harrodian instability in the investment function is not too strong, the models generate a stable adjustment towards the normal rate of capacity utilisation in the long run
- The paradox of saving and the possibility of a paradox of costs from the short run thus disappear with respect to the long-run growth rate, but they remain valid with respect to the long-run growth path

7.3 THE BASIC MODEL FOR A SYSTEMATIC COMPARISON OF DISTRIBUTION AND GROWTH THEORIES BY MEANS OF MODEL CLOSURES

Model comparison

- closed one good economy without a government
- two classes: workers and capitalists
- workers receive wages and don't save
- capitalists own MoP and receive profits which are partly consumed partly saved
- no depreciations
- no overhead labour

Rate of profit:

(7.1) $$r = \frac{\Pi}{pK} = \frac{\Pi}{pY}\frac{Y}{Y^p}\frac{Y^p}{K} = hu\frac{1}{v}$$

r: rate of profit, Π: profits, p: price, K: capital stock, Y: output,
Y^p: potential output, h: profit share, u: rate of capacity utilisation,
v: capital-potential output ration

Saving rate:

(7.2) $$\sigma = \frac{S}{pK} = \frac{s_\Pi \Pi}{pK} = s_\Pi r = s_\Pi hu\frac{1}{v}, \qquad 0 < s_\Pi \leq 1$$

σ: saving rate, S: saving, s_Π: propensity to save out of profits

7.4 THE OLD NEOCLASSICAL GROWTH MODEL

Old neoclassical closure

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(7.3n) $$u = u_n$$

u_n: normal or full utilisation of productive capacities

(7.4n) $$h = \overline{h}$$

$\overline{h}$: given by technology (output elasticity of capital in CD function)

(7.5n) $$g = g_n$$

g_n: natural rate of growth

(7.6n) $$\sigma = \frac{S}{pK} \equiv g = \frac{pI}{pK}$$

endogenous variables: r*, v*

Figure 7.1: The old neoclassical growth theory

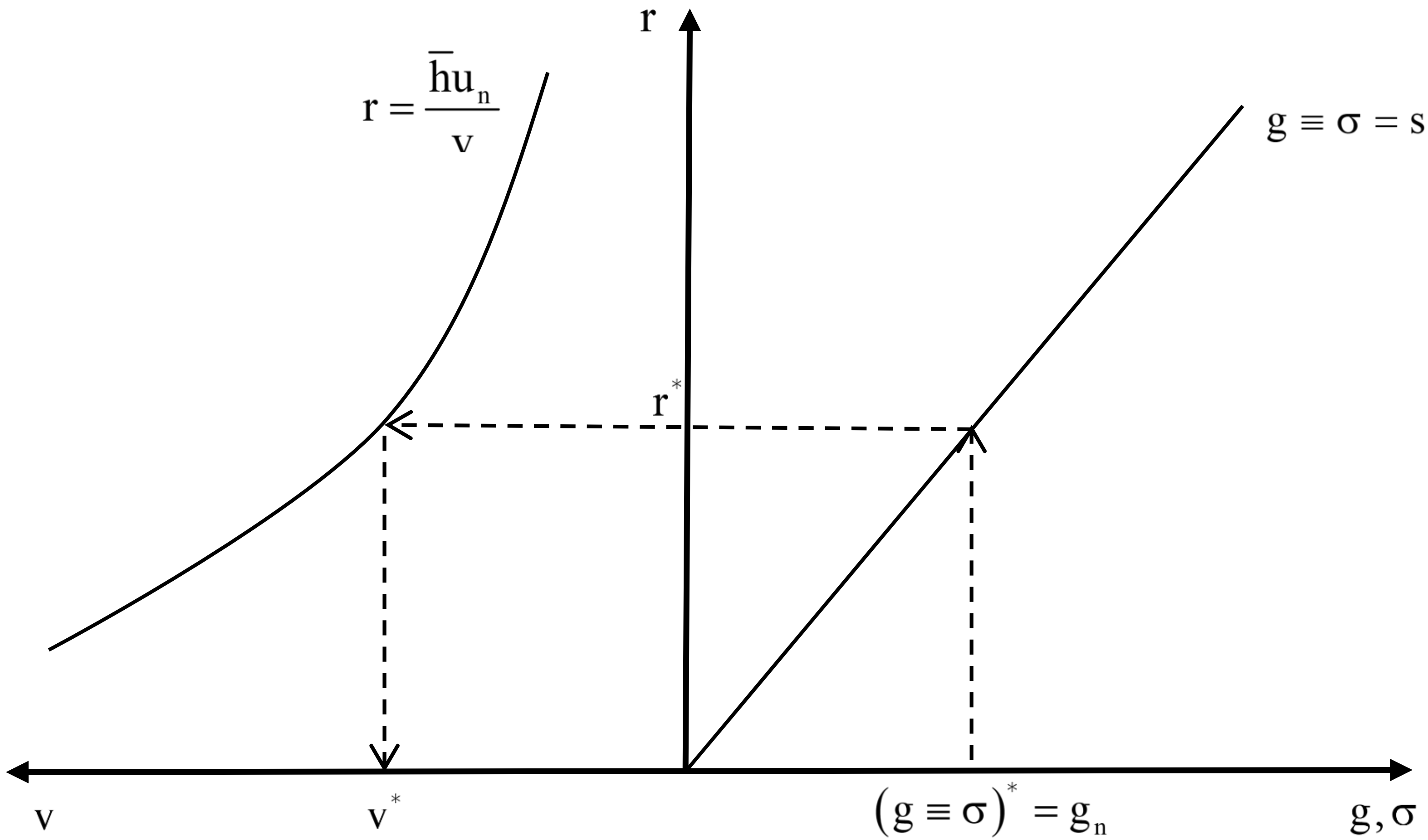

Table 7.2: Effects of changes in exogenous variables on endogenous variables in the old neoclassical growth model			
Exogenous variables	***Endogenous variables***		
	$(\sigma \equiv g)^*$	r^*	v^*
g_n	+	+	–
h	0	0	+
u_n	0	0	+
s_Π	0	–	+

7.5 THE NEW NEOCLASSICAL GROWTH MODEL

New growth theory closure

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(7.3ng) $$u = u_n$$

u_n: normal or full utilisation of productive capacities

(7.4ng) $$h = \bar{h}$$

$\bar{h}$: given by technology

(7.5ng) $$v = \frac{1}{A}$$

A: constant productivity of capital (AK model: Y = AK)

(7.6ng) $$\sigma = \frac{S}{pK} \equiv g = \frac{pI}{pK}$$

endogenous variables: r*, g*

Figure 7.2: The new neoclassical growth theory

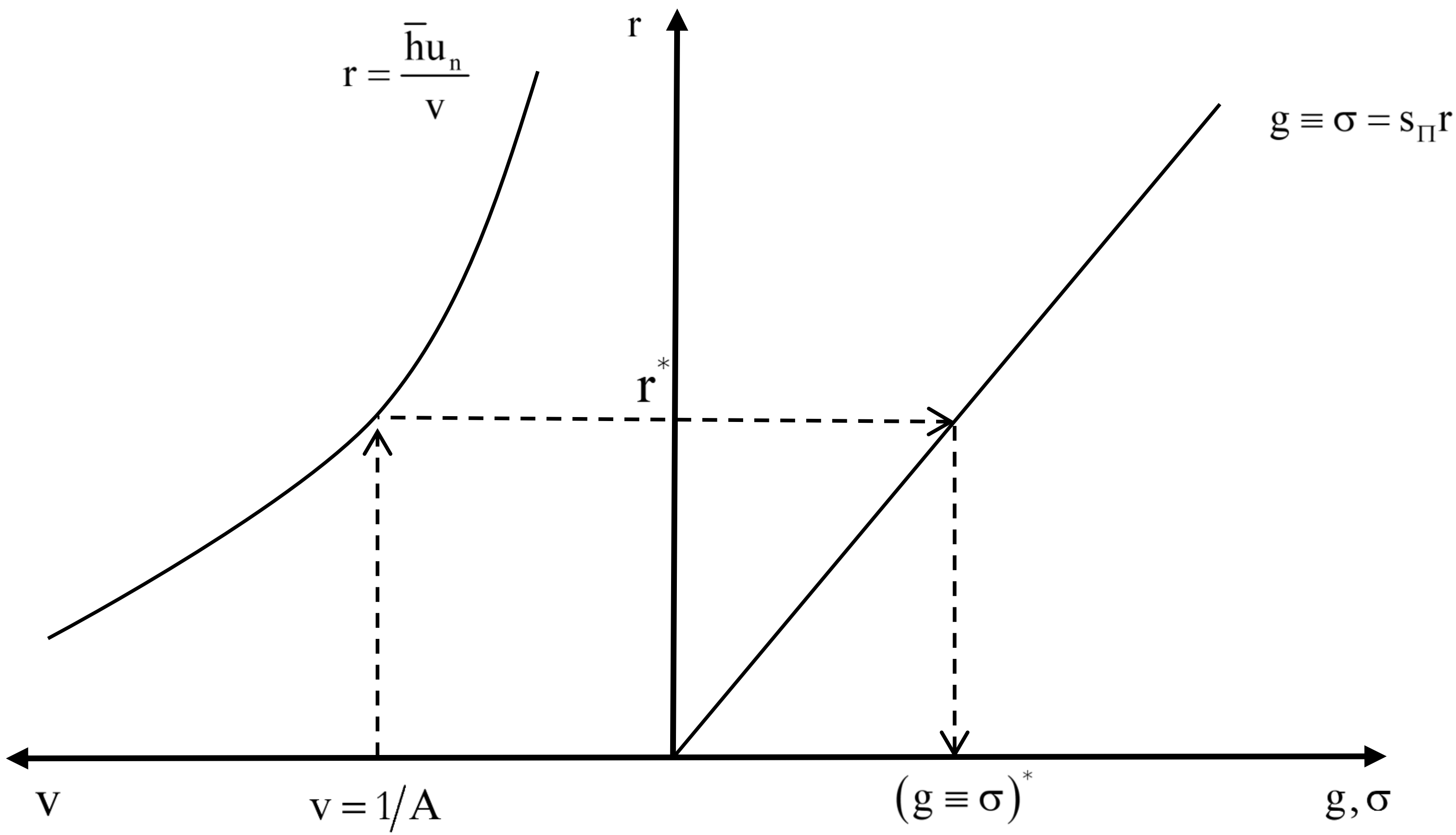

Table 7.3: Effects of changes in exogenous variables on endogenous variables in the new neoclassical growth theory		
Exogenous variables	***Endogenous variables***	
	$(\sigma \equiv g)^*$	r^*
v	–	–
h	+	+
u_n	+	+
s_Π	+	0

7.6 THE CLASSICAL AND ORTHODOX MARXIAN DISTRIBUTION AND GROWTH MODELS

Classical and orthodox Marxian closure

(7.3cm) $$u = u_n$$

(7.4cm) $$h = \frac{pY - wN}{pY} = 1 - w_r^s l_o$$

w: nominal wage rate, w^r: real wage, $w^s{}_r$: conventional/subsistence real wage rate, L: labour, l_0: labour-output ratio

(7.5cm) $$v = \overline{v}$$

(7.6cm) $$\sigma = \frac{S}{pK} \equiv g = \frac{pI}{pK}$$

Endogenous variables: r*, g*

Figure 7.3: The classical/orthodox Marxian distribution and growth theory

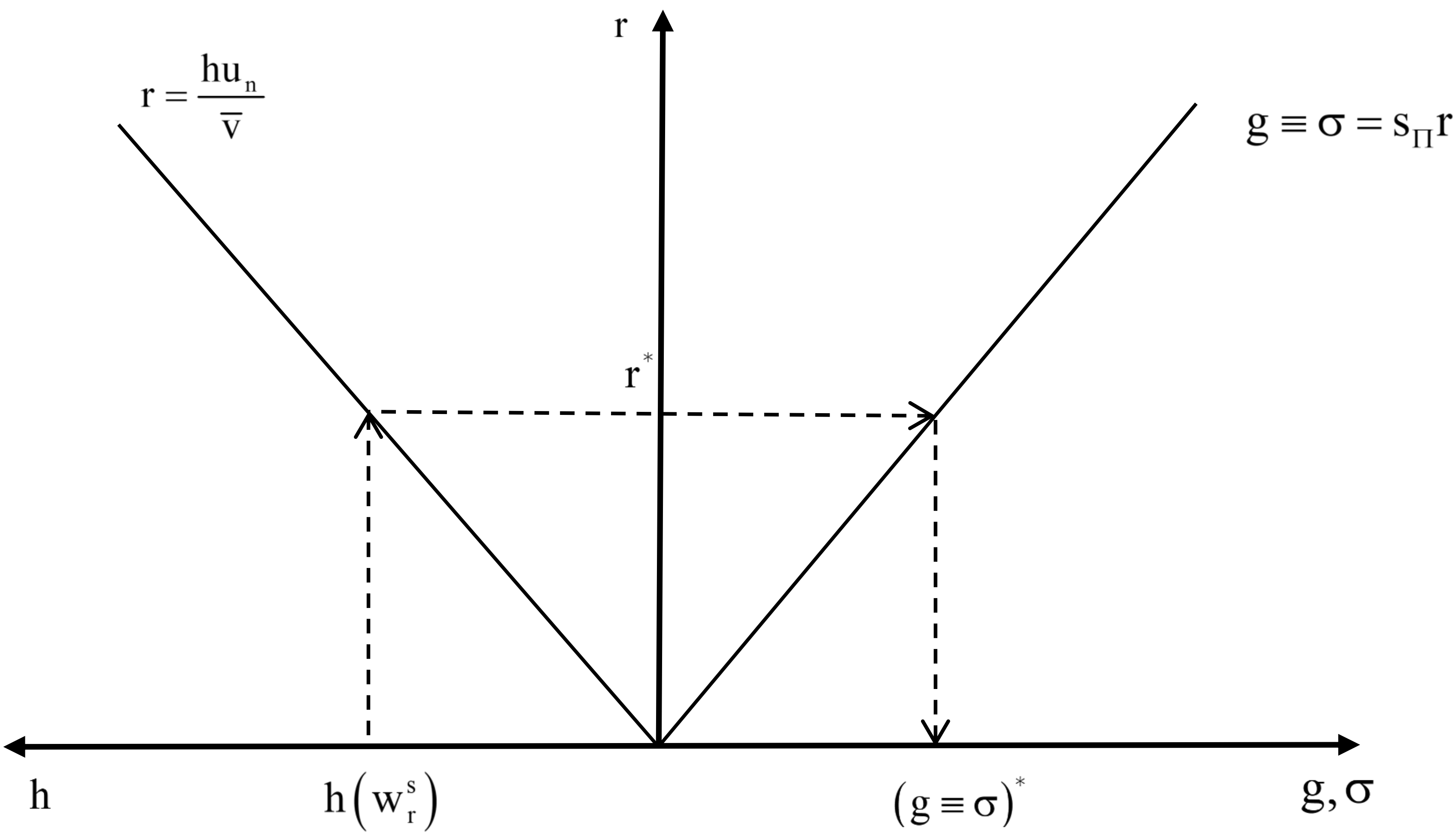

Table 7.4: Effects of changes in exogenous variables on endogenous variables in the classical/orthodox Marxian distribution and growth theory		
Exogenous variables	***Endogenous variables***	
	$(\sigma \equiv g)^*$	r^*
v	–	–
h	+	+
u_n	+	+
s_Π	+	0

7.7 THE POST-KEYNESIAN KALDOR-ROBINSON MODEL

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Post-Keynesian Kaldor/Robinson closure

(7.3kr) $$u = u_n$$

(7.4kr) $$v = \overline{v}$$

(7.5kr) $$g = g(\alpha, r), \qquad \frac{\partial g}{\partial \alpha} > 0, \frac{\partial g}{\partial r} > 0$$

α: animal spirits

(7.6kr) $$g^* = \frac{pI}{pK} = \sigma^* = \frac{S}{pK}$$

Endogenous variables: h*, r*, g*

Figure 7.4: The post-Keynesian Kaldor-Robinson distribution and growth theory

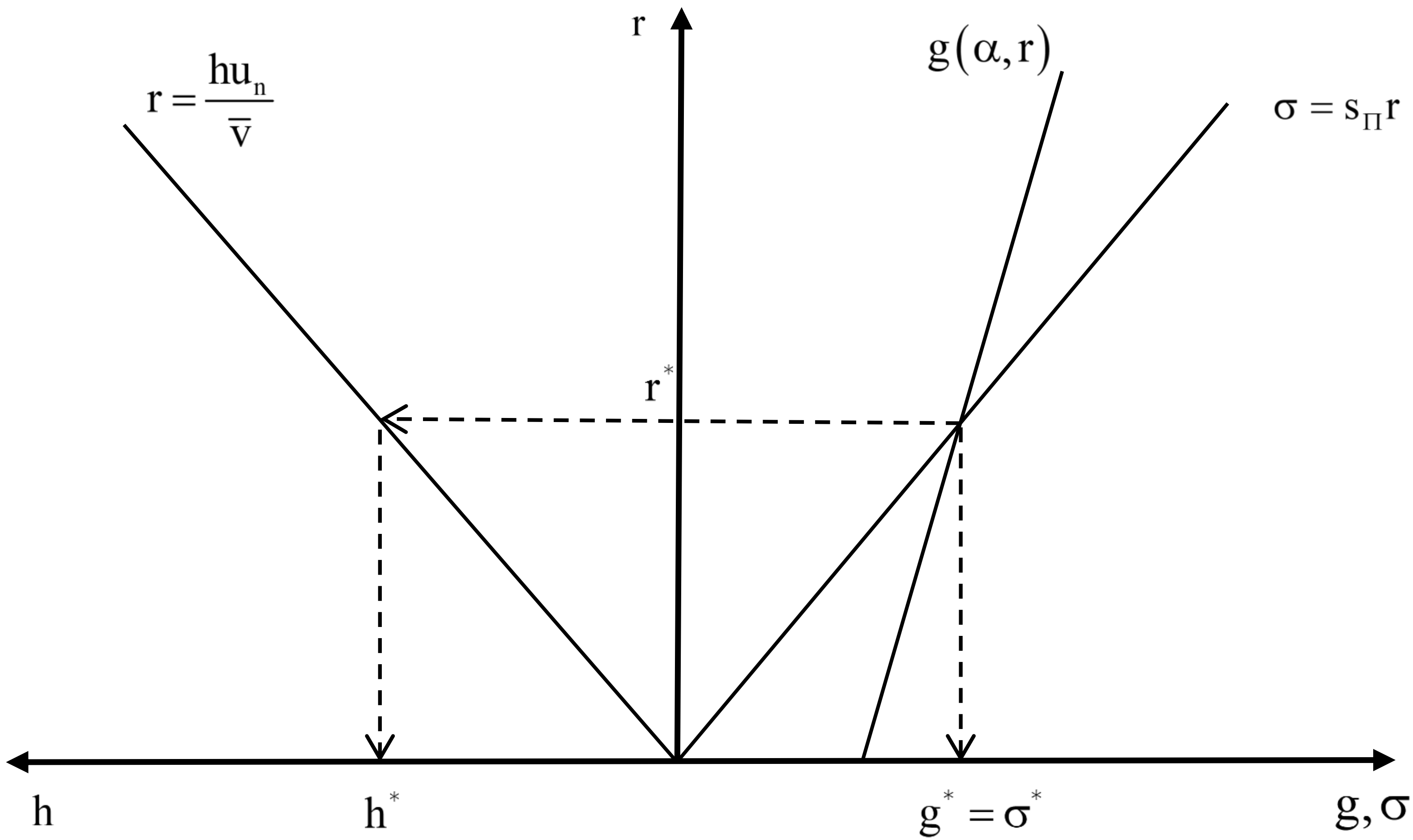

Table 7.5: Effects of changes in exogenous variables on endogenous variables in the post-Keynesian Kaldor-Robinson distribution and growth model			
Exogenous variables	***Endogenous variables***		
	$\sigma^* = g^*$	r^*	h^*
v	0	0	+
u_n	0	0	–
α	+	+	+
$\partial g / \partial r$	+	+	+
s_Π	–	–	–

7.8 THE POST-KEYNESIAN KALECKI-STEINDL DISTRIBUTION AND GROWTH MODELS

Post-Keynesian Kalecki/Steindl closure

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(7.3ks) $$h = h(\bar{m}), \qquad \frac{\partial h}{\partial m} > 0$$

m: mark-up

(7.4ks) $$v = \bar{v}$$

(7.5ks) $$g = g(\alpha, h, u, v), \quad \frac{\partial g}{\partial \alpha} > 0, \frac{\partial g}{\partial h} \geq 0, \frac{\partial g}{\partial u} > 0, \frac{\partial g}{\partial v} = 0$$

(7.6ks) $$g^* = \frac{pI}{pK} = \sigma^* = \frac{S}{pK}$$

Endogenous variables: u*, r*, g*

Figure 7.5: The post-Keynesian Kalecki-Steindl distribution and growth theory

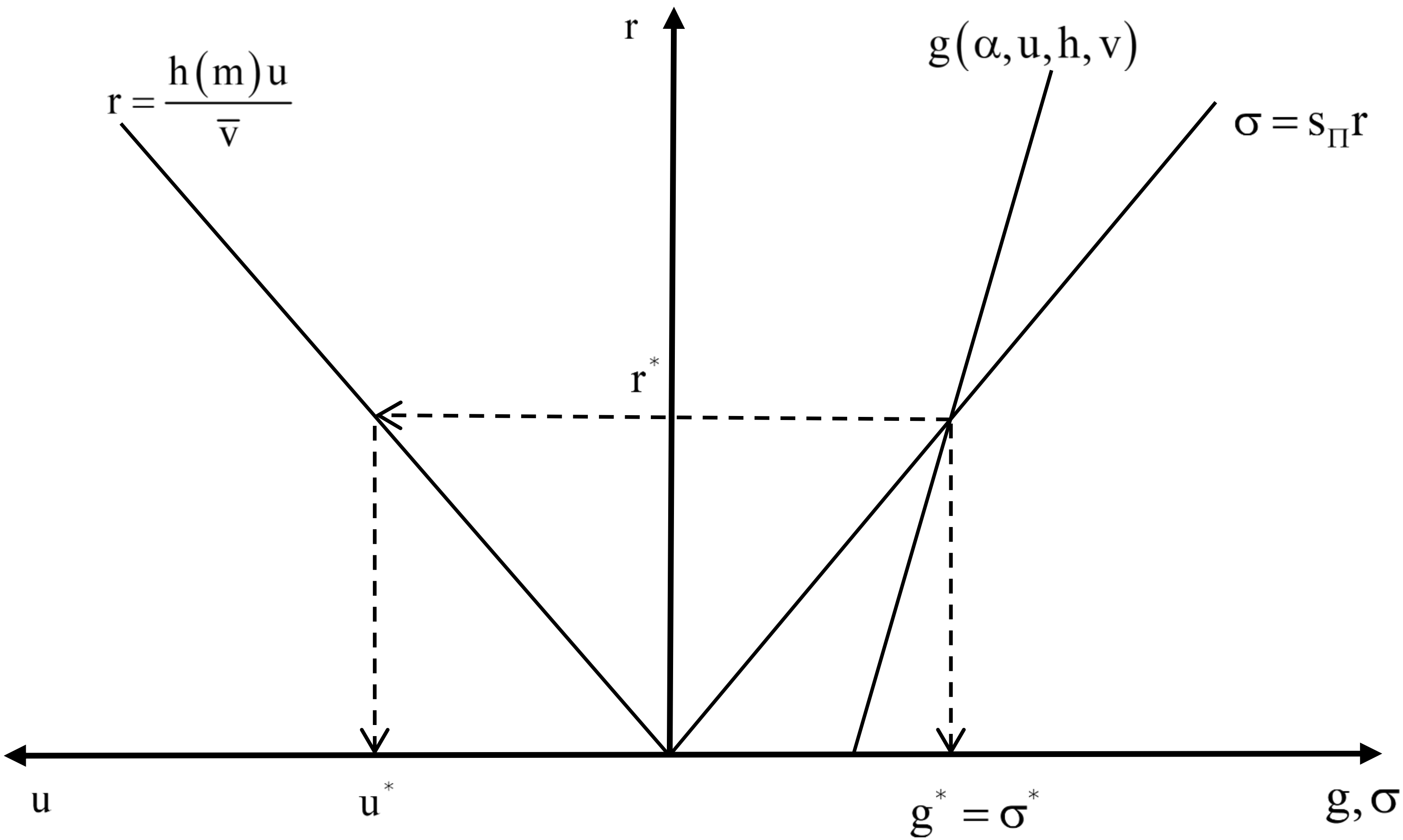


Table 7.6: Effects of changes in exogenous variables on endogenous variables in the Kalecki-Steindl growth theory			
Exogenous variables	***Endogenous variables***		
	$\sigma^* = g^*$	r^*	u^*
v	0	0	+
h	−/+	−/+	−/+
α	+	+	+
$\partial g/\partial u$	+	+	+
$\partial g/\partial h$	+	+	+
s_Π	−	−	−

Figure 7.6: A reduction in the profit share in the Kalecki-Steindl growth theory: the neo-Kaleckian model and the wage-led demand/wage-led growth regime of the post-Kaleckian model

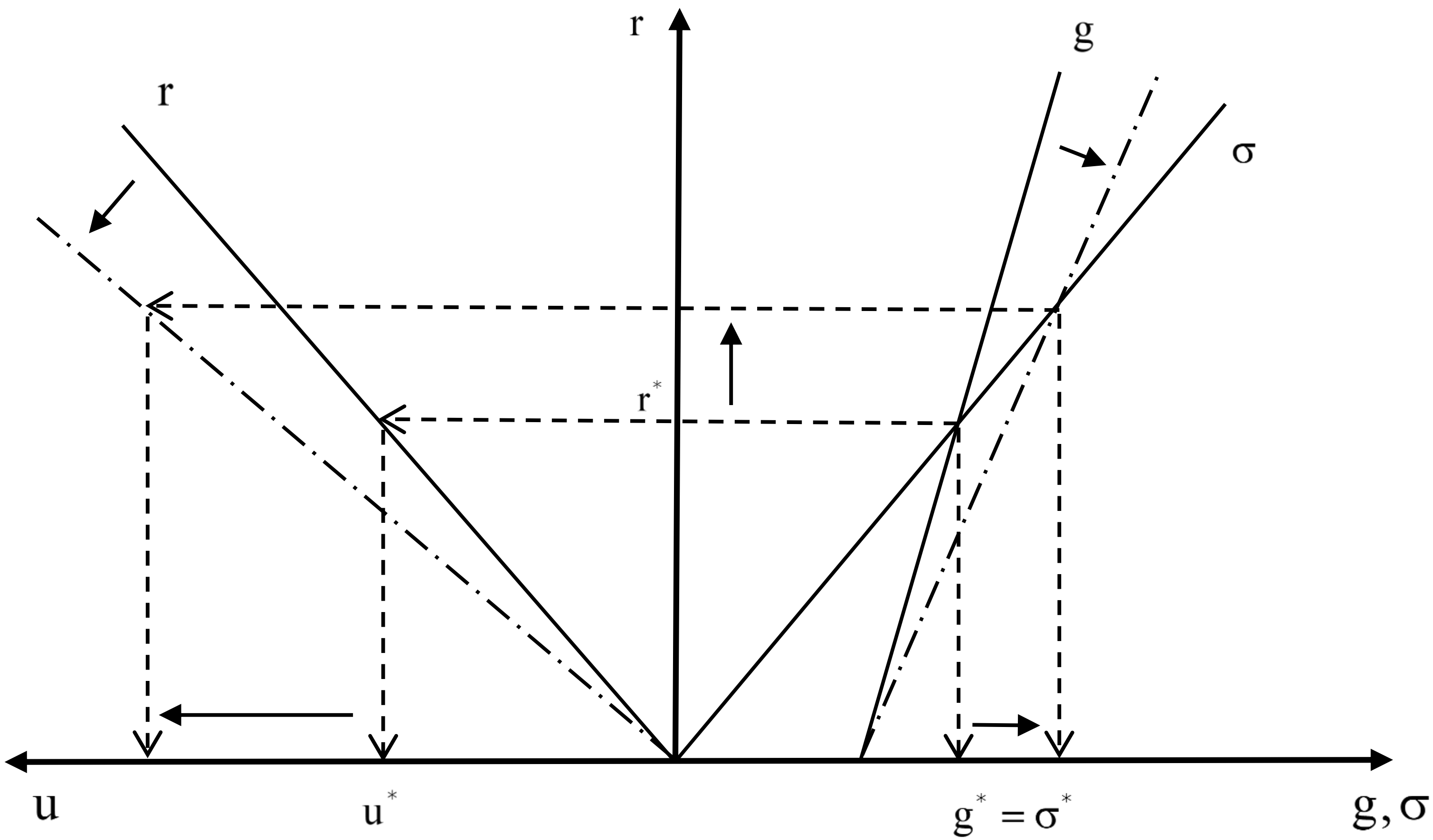


Figure 7.7: A reduction in the profit share in the Kalecki-Steindl growth theory: the intermediate case with wage-led demand and profit-led growth in the post-Kaleckian model

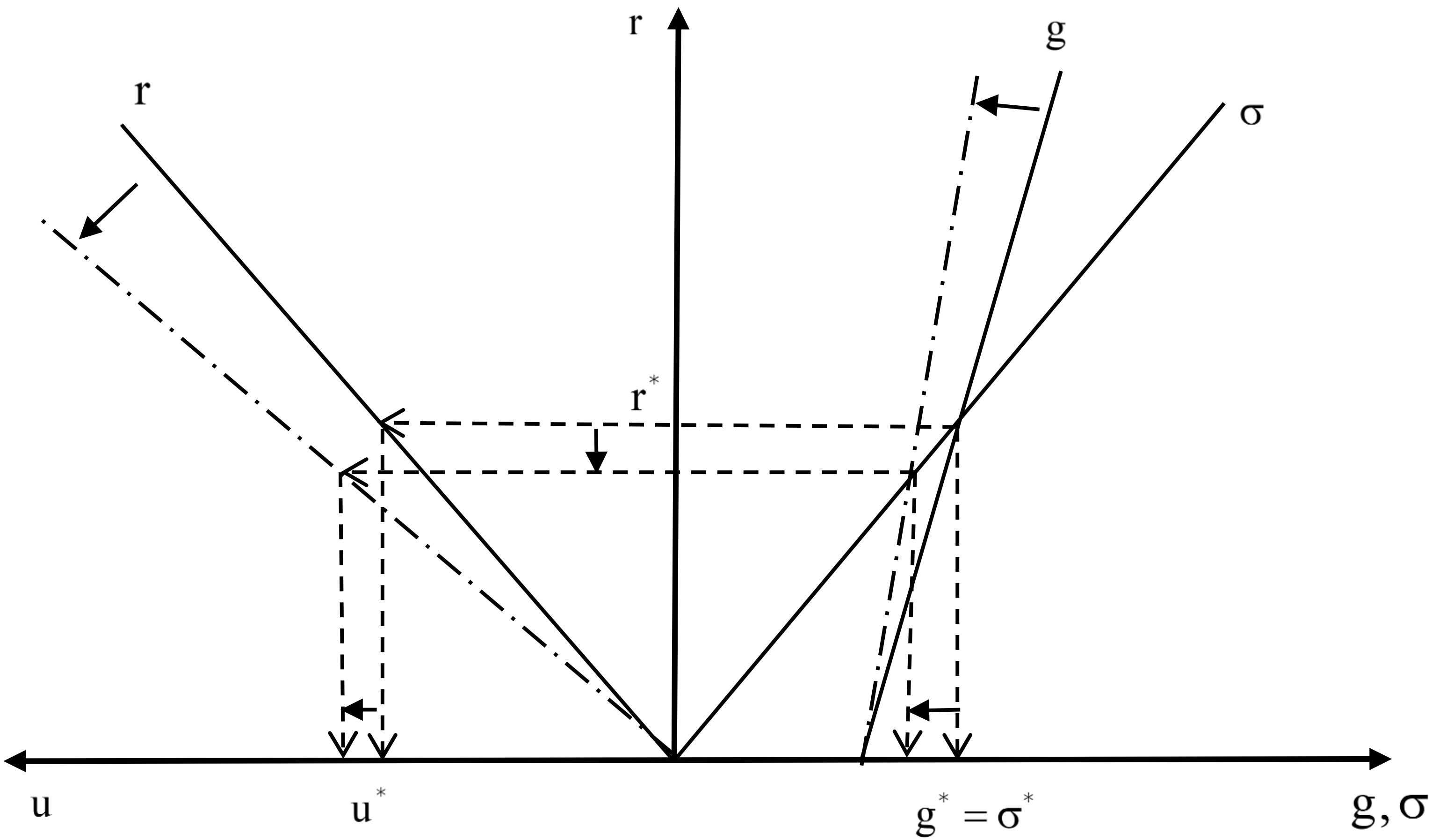
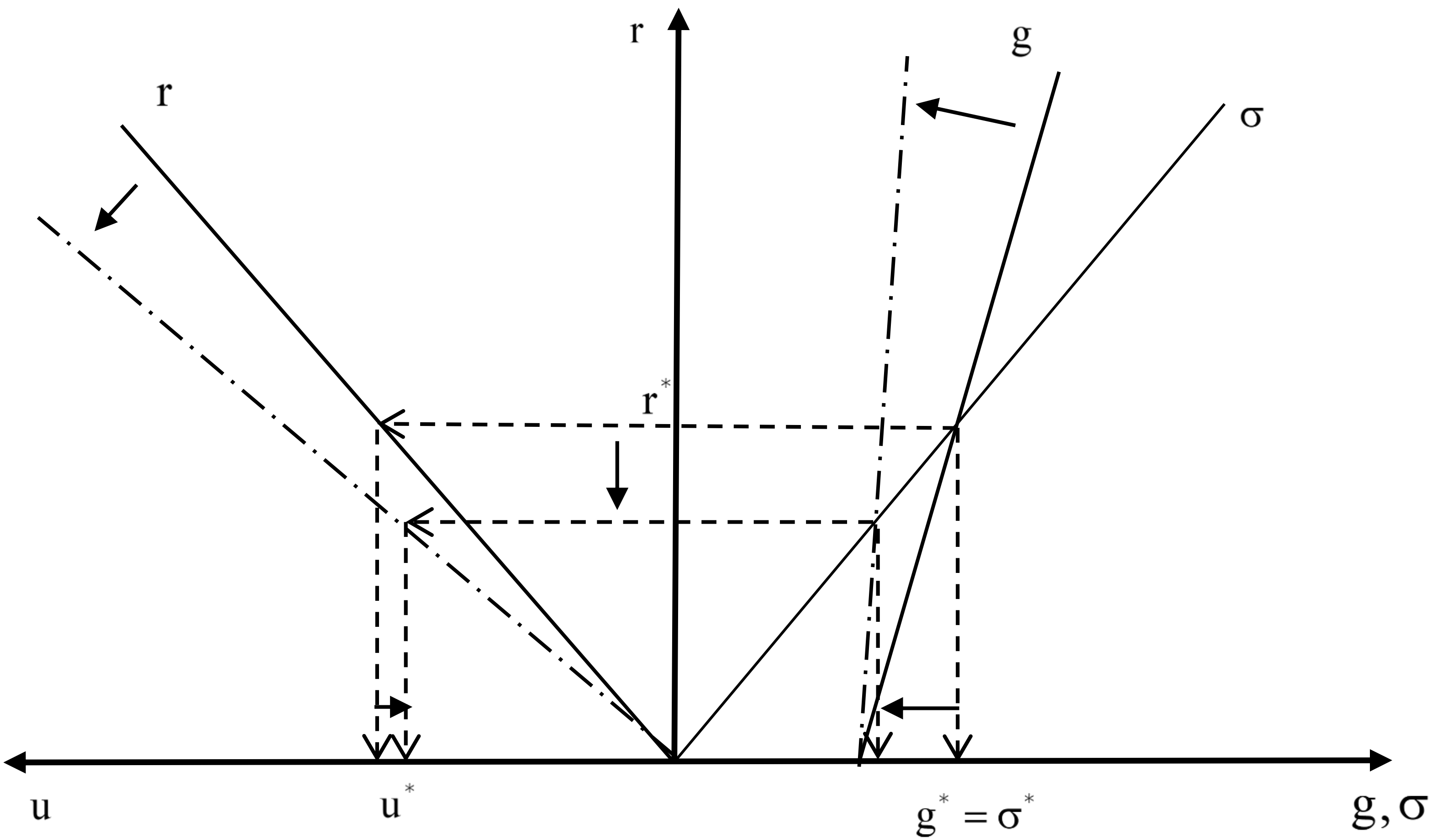


Figure 7.8: A reduction in the profit share in the Kalecki-Steindl growth theory: the profit-led demand and profit-led growth regime in the post-Kaleckian model



Empirical debates

- Kaleckian 'one-directional structural approach': estimation of the effects of changes in wage/profit shares on components of aggregate demand (Bowles/Boyer 1995, …, Onaran/Obst 2016, ...)
- ➢ Domestic demand is usually wage led, small open economies and emerging capitalist economies may turn profit led in isolation
- Goodwinian 'bi-directional (or system) aggregative approach': direct estimation of effects of distribution on economic activity, and vice versa (Barbosa-Filho/Taylor 2006, Flaschel/Proano 2007, Kiefer/Rada 2015, ...).
- ➢ Total demand is profit led
- Main difference: time horizon (Blecker 2016, Bridji/Charpe 2016), Kaleckians are interested in medium-/long-run effects of distribution on demand, Goodwinians are interested in short-run interaction
- Is the short run profit led?
- ➢ Empirical doubts (Stockhammer/Stehrer 2011) and theoretical doubts, i.e. overheads (Lavoie 2014) or credit/debt (Stockhammer/Michell 2016, Stockhammer 2017)

7.9 THE SCRAFFIAN SUPERMULTIPLIER GROWTH MODEL

The Sraffian supermultiplier growth model

(7.3sm) $$u = u_n$$

(7.4sm) $$h = \overline{h}.$$

Classical/orthodox Marxian argument: $h = h\left(w_r^s\right)$

Kaleckian argument: $h = h(m)$

(7.5sm) $$v = \overline{v}.$$

(7.5sm) $$g = g\left[\gamma, (u - u_n)\right], \qquad \frac{\partial g}{\partial \gamma} = 1, \frac{\partial g}{\partial (u - u_n)} > 0.$$

(7.6sm) $$g^* = \frac{pI}{pK} = \sigma^* = \frac{S}{pK}.$$

Long-run adjustment of saving and investment with a given normal rate of profit ($r_n = \bar{h} u_n / \bar{v}$) and thus a normal rate of capacity utilisation, autonomous consumption growth is included in the saving function.

(7.2sm) $\sigma = s_\Pi r - c_a, \qquad 0 < s_\Pi \leq 1.$

The autonomous consumption-capital rate:

(7.7sm) $c_a = \frac{pC_{a0}e^{\gamma t}}{pK},$

C_{a0}: autonomous consumption in period $t = 0$

γ: growth rate of autonomous consumption

(7.7sma) $\hat{c}_a > 0, \text{ if}: \gamma > g.$

Endogenous variable: c_a^*

Figure 7.9: A Sraffian supermultiplier growth model

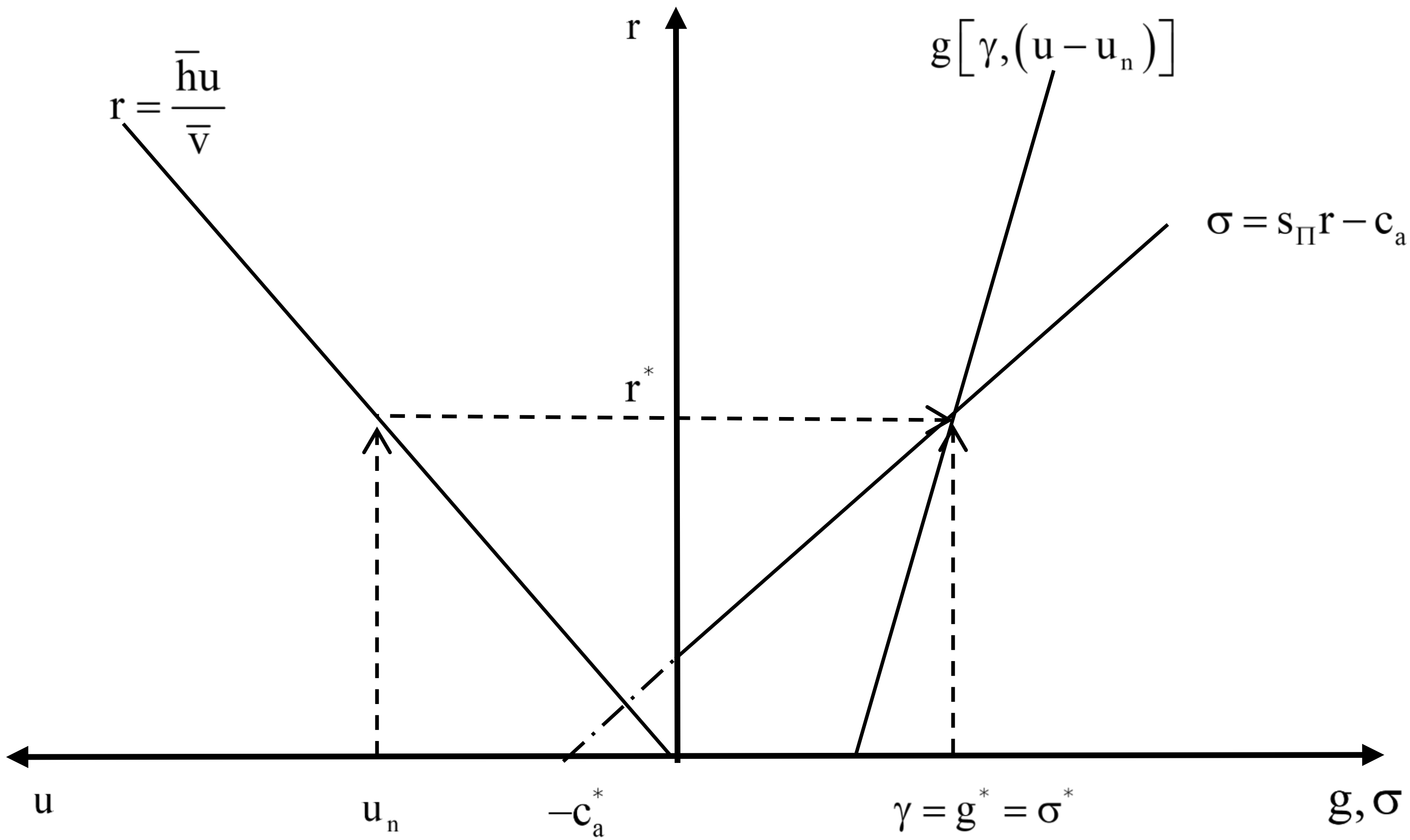


Table 7.7: Effects of changes in exogenous variables on endogenous variables in the Sraffian supermultiplier growth theory			
Exogenous variables	***Endogenous variables***		
	$\sigma^* = g^*$	r^*	c_a^*
v	0	–	–
h	0	+	+
u_n	0	+	+
γ	+	0	–
$\partial g / \partial (u - u_n)$	0	0	0
s_Π	0	0	+

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Figure 7.10: An increase in the autonomous growth rate in a Sraffian supermultiplier growth model

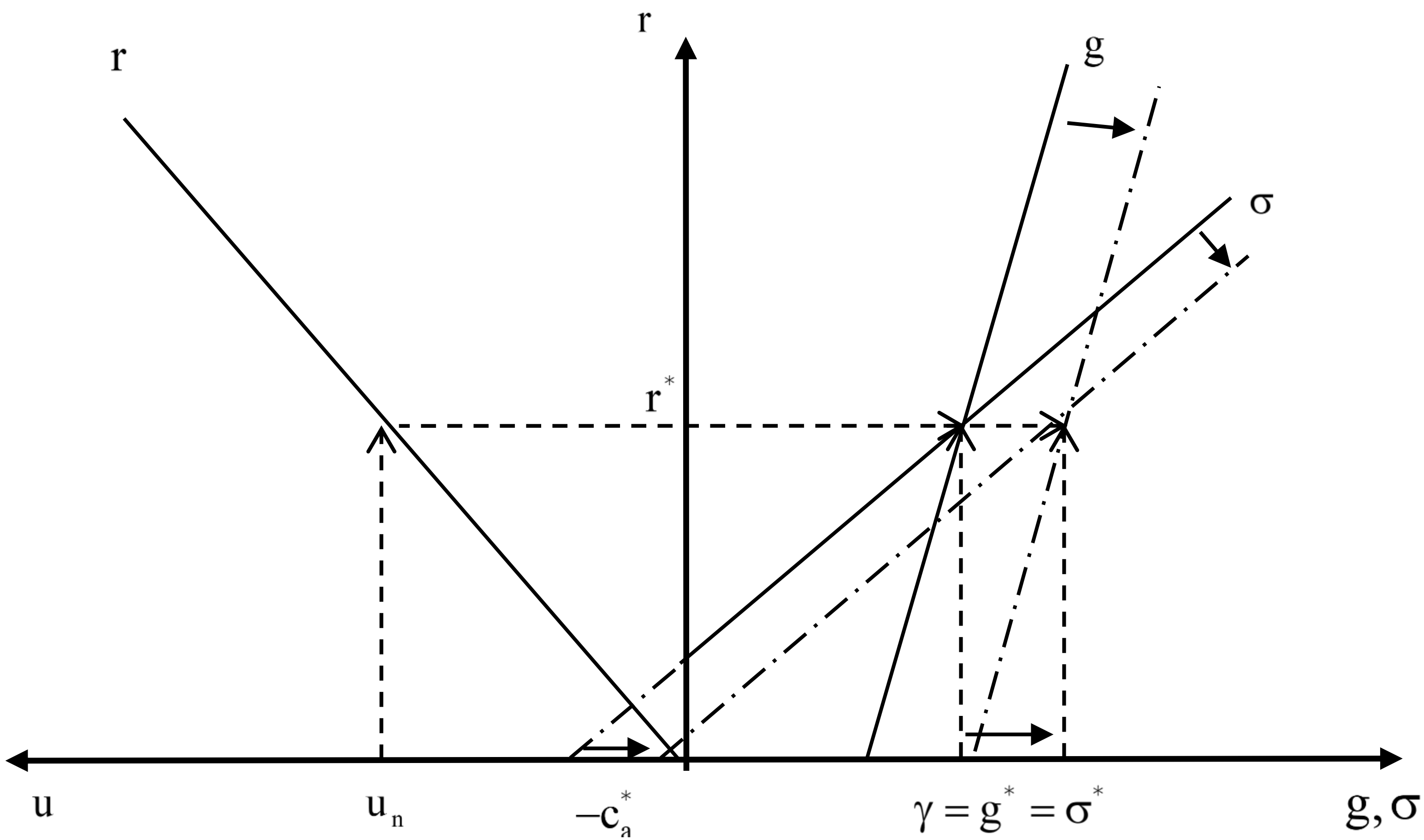


Figure 7.11: An increase in the propensity to save out of profits in a Sraffian supermultiplier growth model

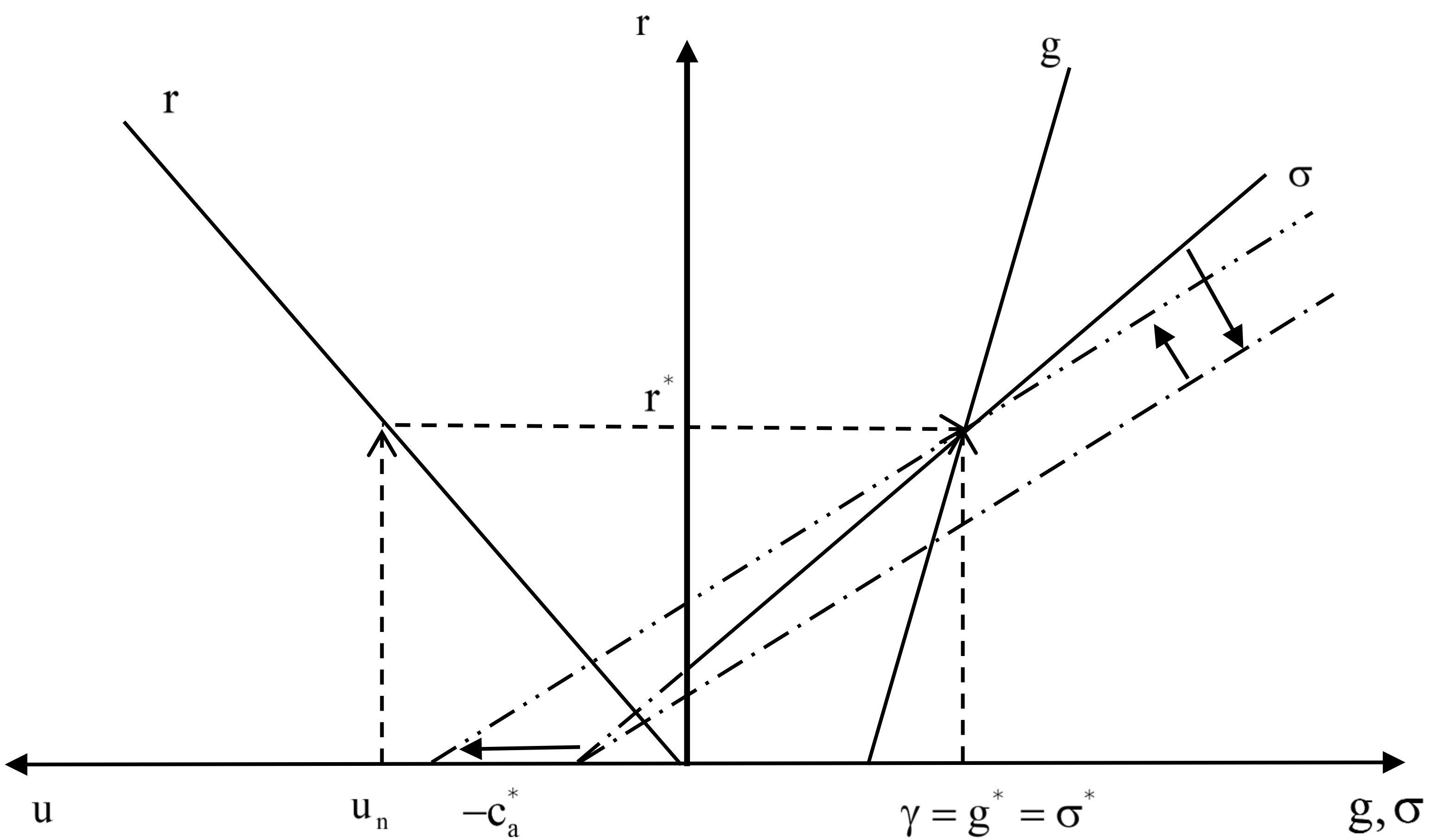
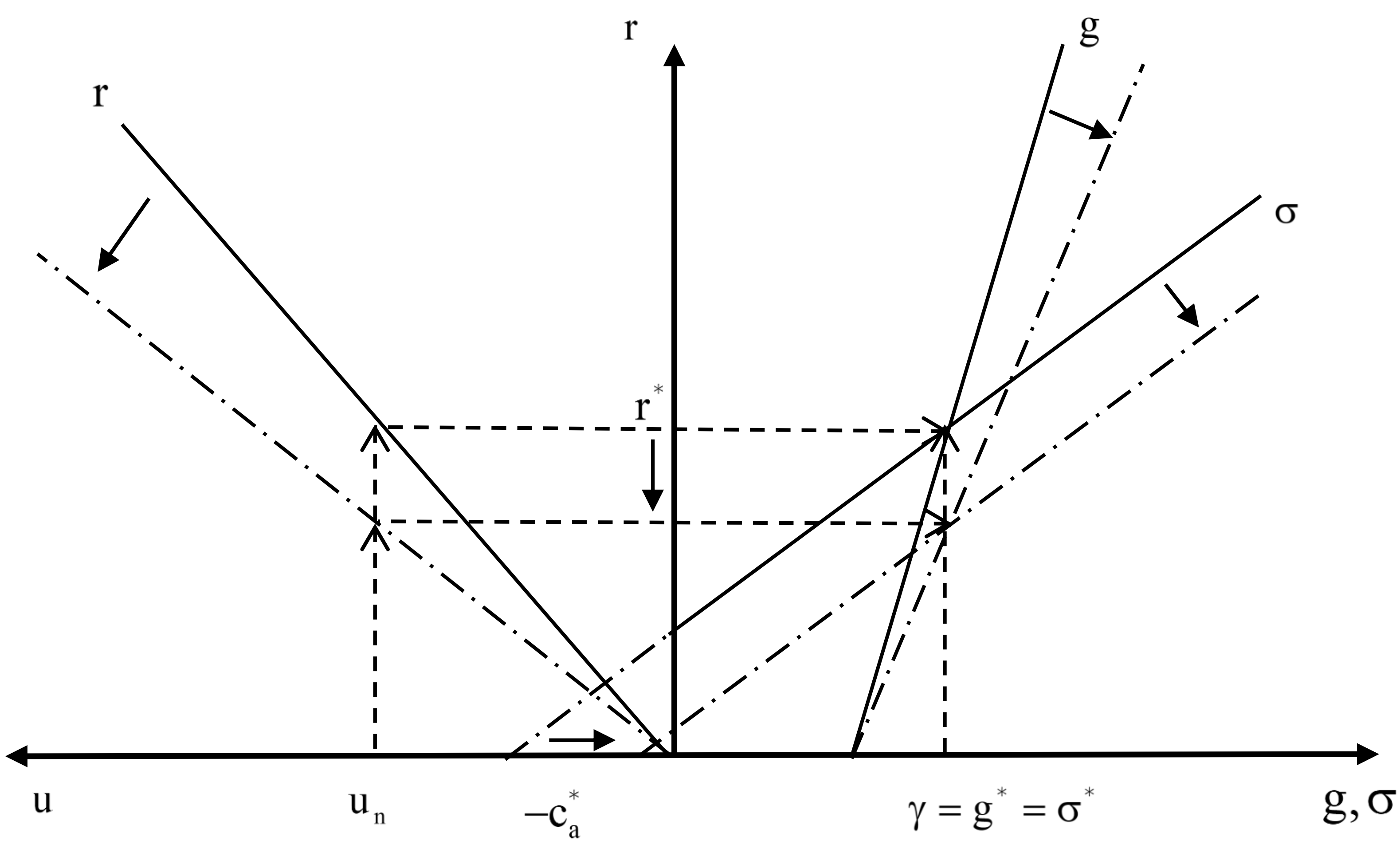


Figure 7.12: An fall in the profit share in a Sraffian supermultiplier growth model



7.10 ENDOGENISING PRODUCTIVITY GROWTH: A KALECKI-STEINDL-KALDOR-MARX MODEL

- Rowthorn (1981), Dutt (1990, Chapter 5), Taylor (1991, Chapter 10) and Lavoie (1992, Chapter 6), etc. have introduced endogenous technological change and labour productivity growth into Kaleckian distribution and growth models (Hein 2014a, Chapter 8).

- Kaldor’s (1957) technical progress function: labour productivity growth is positively affected by capital stock growth due to capital-embodied technological change.

- Kaldor’s (1966) ‘Verdoorn’s Law’: output growth positively affects labour productivity growth

- Marx (1867, Chapter 25): a higher real wage rate or a higher wage share induces capitalists to speed up the implementation of labour-augmenting technological progress in order to protect the profit share

(7.8) $\hat{y} = \hat{y}\left(g^{*}, h, k_{i}\right)$, $\frac{\partial \hat{y}}{\partial g^{*}} > 0, \frac{\partial \hat{y}}{\partial h} < 0, \frac{\partial \hat{y}}{\partial k_{i}} > 0$.

$\hat{y}$: productivity growth, k_i : set of further institutional factors that determine productivity growth, like government technology policies and R&D expenditures, the education system, learning by doing, etc.

(7.9) $g^{*} = g^{*}\left(\alpha, h, s_{\Pi}, \hat{y}\right)$, $\frac{\partial g^{*}}{\partial \alpha} > 0, \frac{\partial g^{*}}{\partial h} < 0, \frac{\partial g^{*}}{\partial s_{\Pi}} < 0, \frac{\partial g^{*}}{\partial \hat{y}} > 0$.

Neo-Kaleckian or wage-led equilibrium growth

➔ demand driven endogenous growth model

Figure 7.13: A Kalecki-Steindl-Kaldor-Marx endogenous growth model

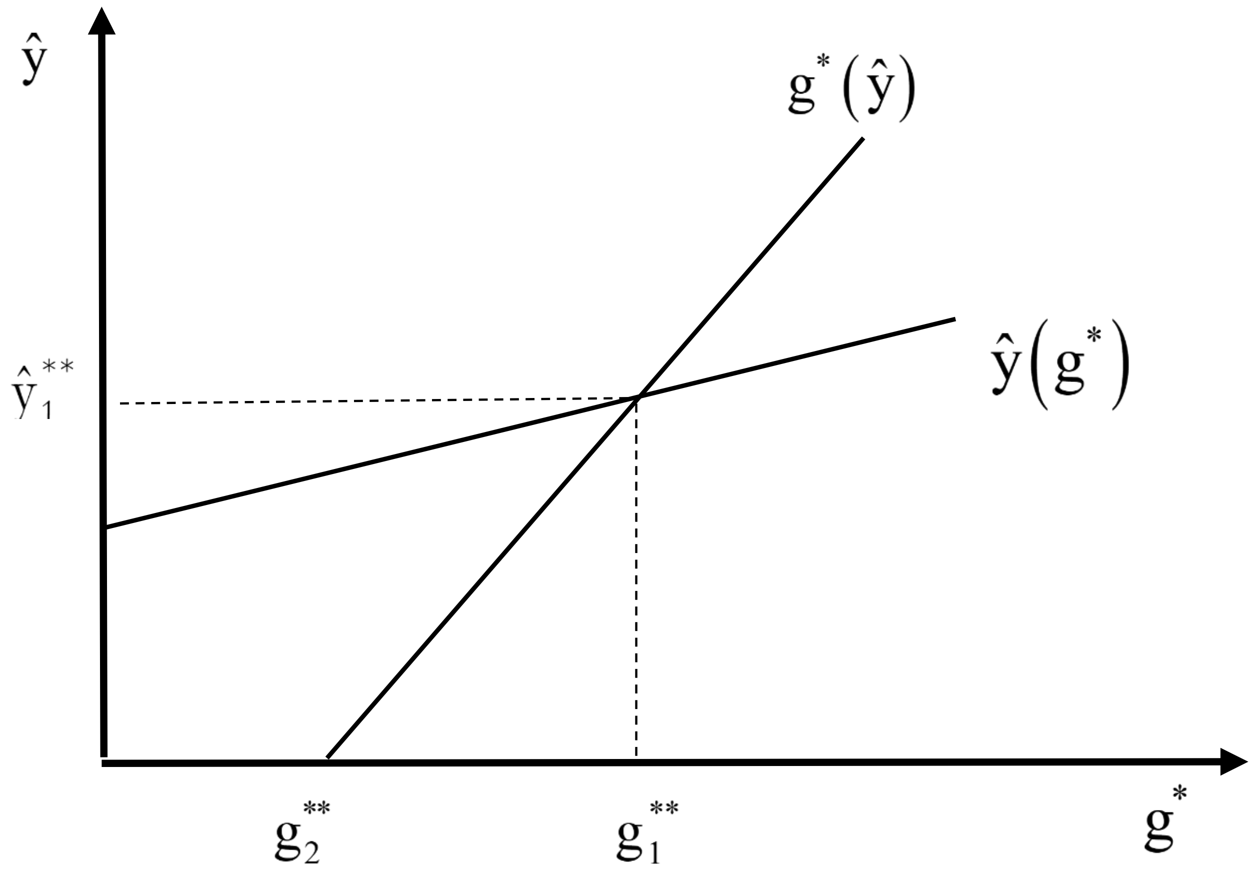


Figure 7.14: A rise in the profit share in the Kalecki-Steindl-Kaldor-Marx endogenous growth model