Hochschule für
Wirtschaft und Recht Berlin
Berlin School of Economics and Law

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DISTRIBUTION AND GROWTH AFTER KEYNES

A Post-Keynesian Guide

(Edward Elgar 2014)

CHAPTER 7

'EXTENDING KALECKIAN MODELS I: SAVING OUT OF WAGES AND OPEN ECONOMY ISSUES'

Content

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7.2 SAVING OUT OF WAGES IN THE KALECKIAN DISTRIBUTION AND GROWTH MODELS

7.2.1 Saving out of wages in the Rowthorn-Dutt or neo-Kaleckian model

(7.1) $$r = h\frac{u}{v}$$

r: rate of profit, h: profit share, u: endogenous rate of capacity utilization, v: capital-potential output ratio

(7.2) $$h = 1 - \frac{1}{1+m}$$

m: mark-up

(7.3) $$\sigma = \frac{S_\Pi + S_W}{pK} = \frac{s_\Pi \Pi + s_W (Y - \Pi)}{pK} = \left[s_W(1-h) + s_\Pi h\right]\frac{u}{v}$$

$$= \left[s_W + (s_\Pi - s_W)h\right]\frac{u}{v}, \quad 0 \leq s_W < s_\Pi \leq 1,$$

σ: saving rate, S_Π: saving out of profits, S_W: saving out of wages, pK: nominal capital stock, s_Π: propensity to safe out of profits, Π: profits, s_W: propensity to safe out of wages, Y: output

(7.4) $$g = \frac{I}{K} = \alpha + \beta u, \qquad \alpha, \beta > 0$$

g: accumulation rate, α: animal spirits, u: rate of capacity utilization

(7.5) $$g = \sigma$$

(7.6) $$\frac{\partial \sigma}{\partial u} - \frac{\partial g}{\partial u} > 0 \quad \Rightarrow \quad \left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta > 0.$$

Equilibrium

(7.7) $$u^* = \frac{\alpha}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta}$$

(7.8) $$g^* = \sigma^* = \frac{\alpha\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v}}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta}$$

(7.9) $$r^* = \frac{\alpha\frac{h}{v}}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta}$$

The paradox of saving

(7.7a) $$\frac{\partial u^*}{\partial s_\Pi} = \frac{-\alpha \frac{h}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.8a) $$\frac{\partial g^*}{\partial s_\Pi} = \frac{-\alpha\beta \frac{h}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.9a) $$\frac{\partial r^*}{\partial s_\Pi} = \frac{-\alpha \left(\frac{h}{v}\right)^2}{\left\{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.7b) $$\frac{\partial u^*}{\partial s_W} = \frac{-\alpha \frac{1}{v}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.8b) $$\frac{\partial g^*}{\partial s_W} = \frac{-\alpha\beta \frac{1}{v}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.9b) $$\frac{\partial r^*}{\partial s_W} = \frac{-\alpha \frac{h}{v^2}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

The paradox of costs

(7.7c) $$\frac{\partial u^*}{\partial h} = \frac{-\alpha\left(s_\Pi - s_W\right)\frac{1}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.8c) $$\frac{\partial g^*}{\partial h} = \frac{-\alpha\beta\left(s_\Pi - s_W\right)\frac{1}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.9c) $$\frac{\partial r^*}{\partial h} = \frac{\alpha\left(s_W\frac{1}{v} - \beta\right)\frac{1}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta\right\}^2}$$

Replacing the simple investment function in equation (7.4) by the original investment function suggested by Rowthorn (1981) and Dutt (1984; 1987):

(7.10)
$$g = \frac{I}{K} = \alpha + \beta u + \chi r = \alpha + \beta u + \chi h \frac{u}{v}$$
$$= \alpha + \left(\beta + \chi \frac{h}{v} \right) u, \qquad \alpha, \beta, \chi > 0$$

(7.11)
$$\frac{\partial \sigma}{\partial u} - \frac{\partial g}{\partial u} > 0 \qquad \Rightarrow \qquad \left[s_W + \left(s_\Pi - s_W - \chi \right) h \right] \frac{1}{v} - \beta > 0.$$

Equilibrium values in the modified model

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(7.12) $$u^* = \frac{\alpha}{\left[s_W + \left(s_\Pi - s_W - \chi\right)h\right]\frac{1}{v} - \beta}$$

(7.13) $$g^* = \sigma^* = \frac{\alpha\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v}}{\left[s_W + \left(s_\Pi - s_W - \chi\right)h\right]\frac{1}{v} - \beta}$$

(7.14) $$r^* = \frac{\alpha\frac{h}{v}}{\left[s_W + \left(s_\Pi - s_W - \chi\right)h\right]\frac{1}{v} - \beta}$$

The paradox of costs?

(7.12a) $$\frac{\partial u^*}{\partial h} = \frac{-\alpha\left(s_\Pi - s_W - \chi\right)\frac{1}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W - \chi\right)h\right]\frac{1}{v} - \beta\right\}^2}$$

(7.13a) $$\frac{\partial g^*}{\partial h} = \frac{\alpha\left[\chi s_W \frac{1}{v} - \beta\left(s_\Pi - s_W\right)\right]\frac{1}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W - \chi\right)h\right]\frac{1}{v} - \beta\right\}^2}$$

(7.14a) $$\frac{\partial r^*}{\partial h} = \frac{\alpha\left(s_W \frac{1}{v} - \beta\right)\frac{1}{v}}{\left\{\left[s_W + \left(s_\Pi - s_W - \chi\right)h\right]\frac{1}{v} - \beta\right\}^2}$$

Figure 7.1 Increasing the wage share/lowering the profit share in the neo-Kaleckian distribution and growth model with positive saving out of wages and the rate of profit in the accumulation function: the wage-led regime (wage-led demand and wage-led accumulation/growth)

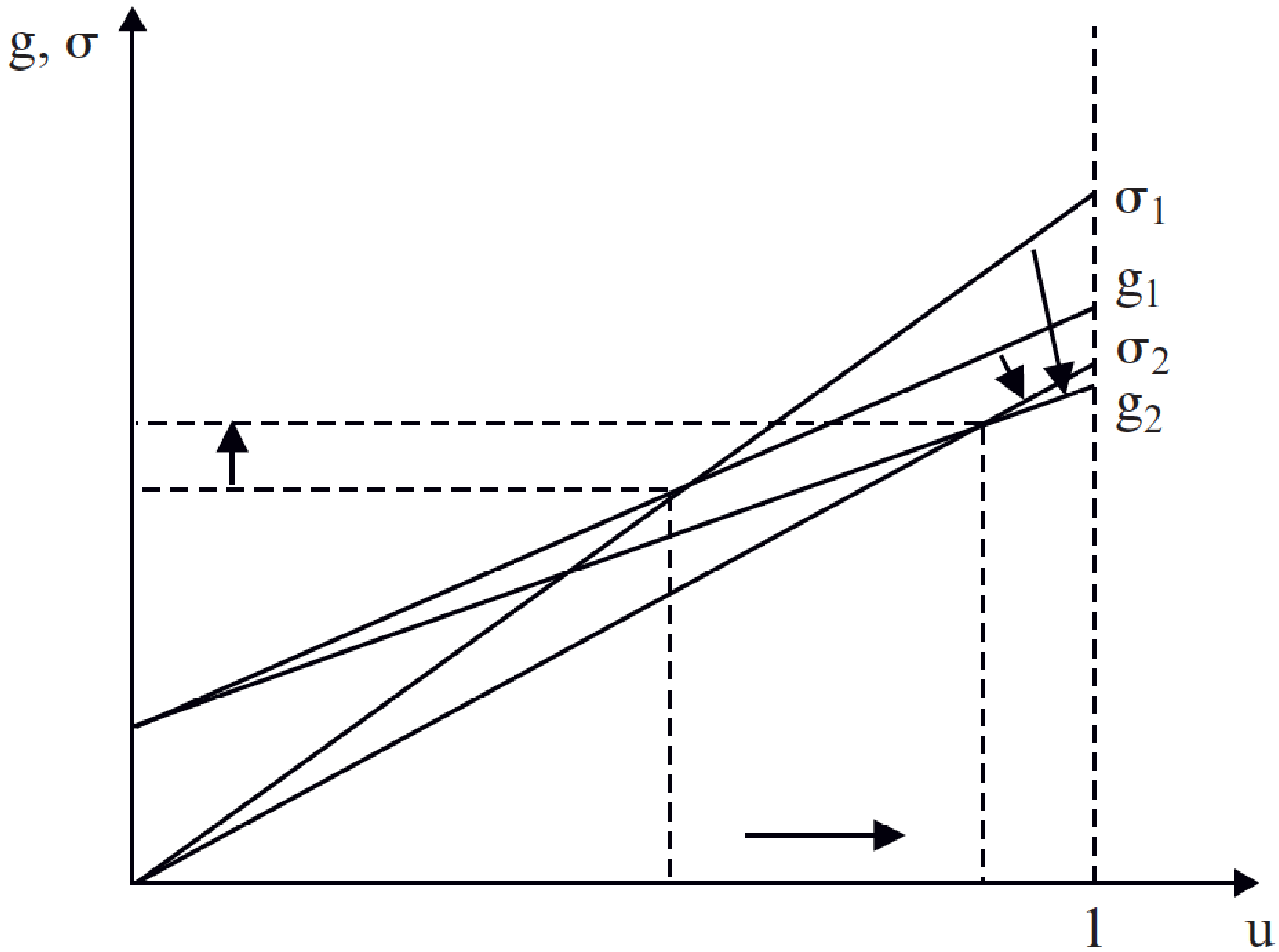


Figure 7.2 Increasing the wage share/lowering the profit share in the neo-Kaleckian distribution and growth model with positive saving out of wages and the rate of profit in the accumulation function: the intermediate regime (wage-led demand and profit-led accumulation/growth)

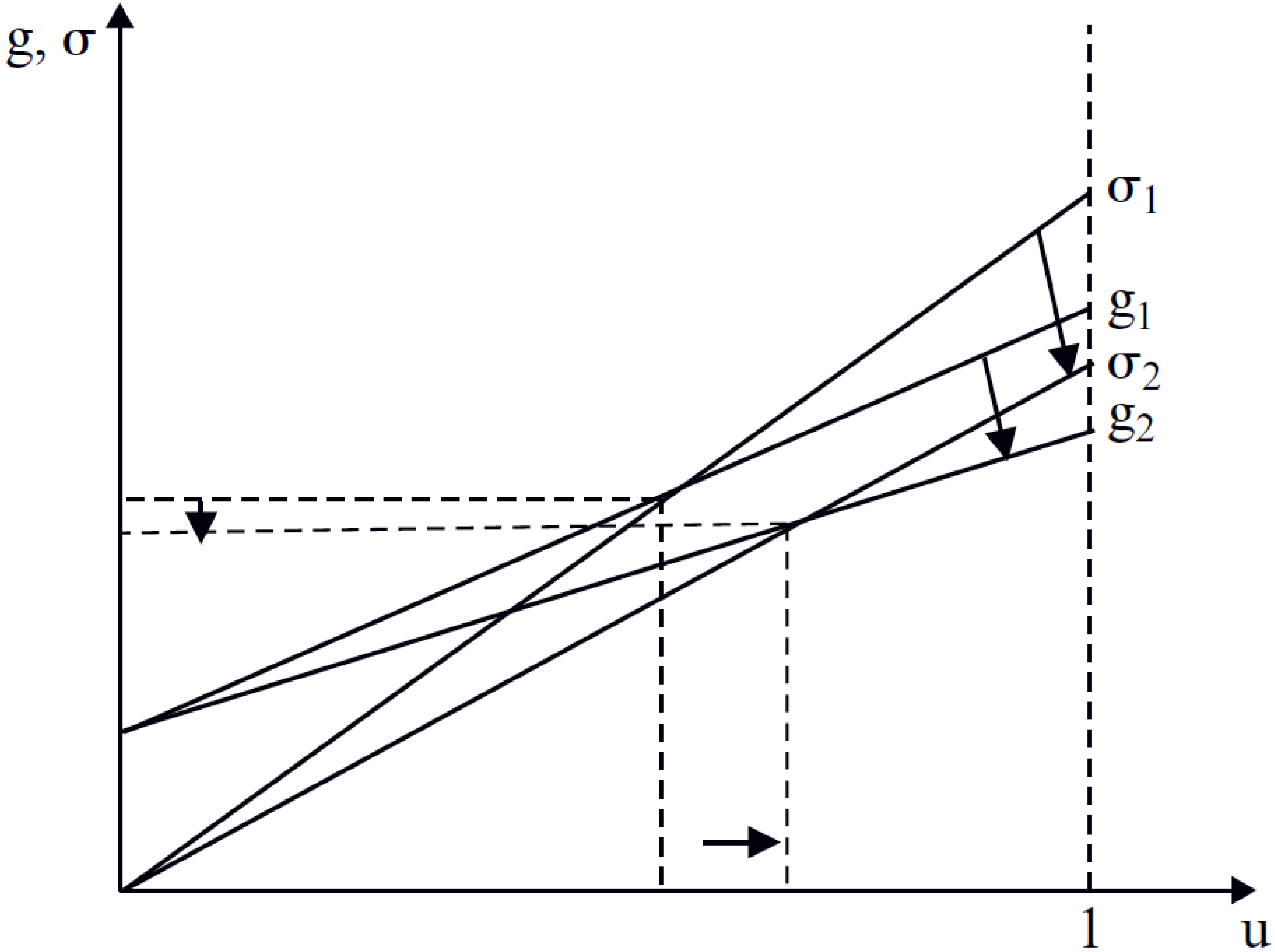
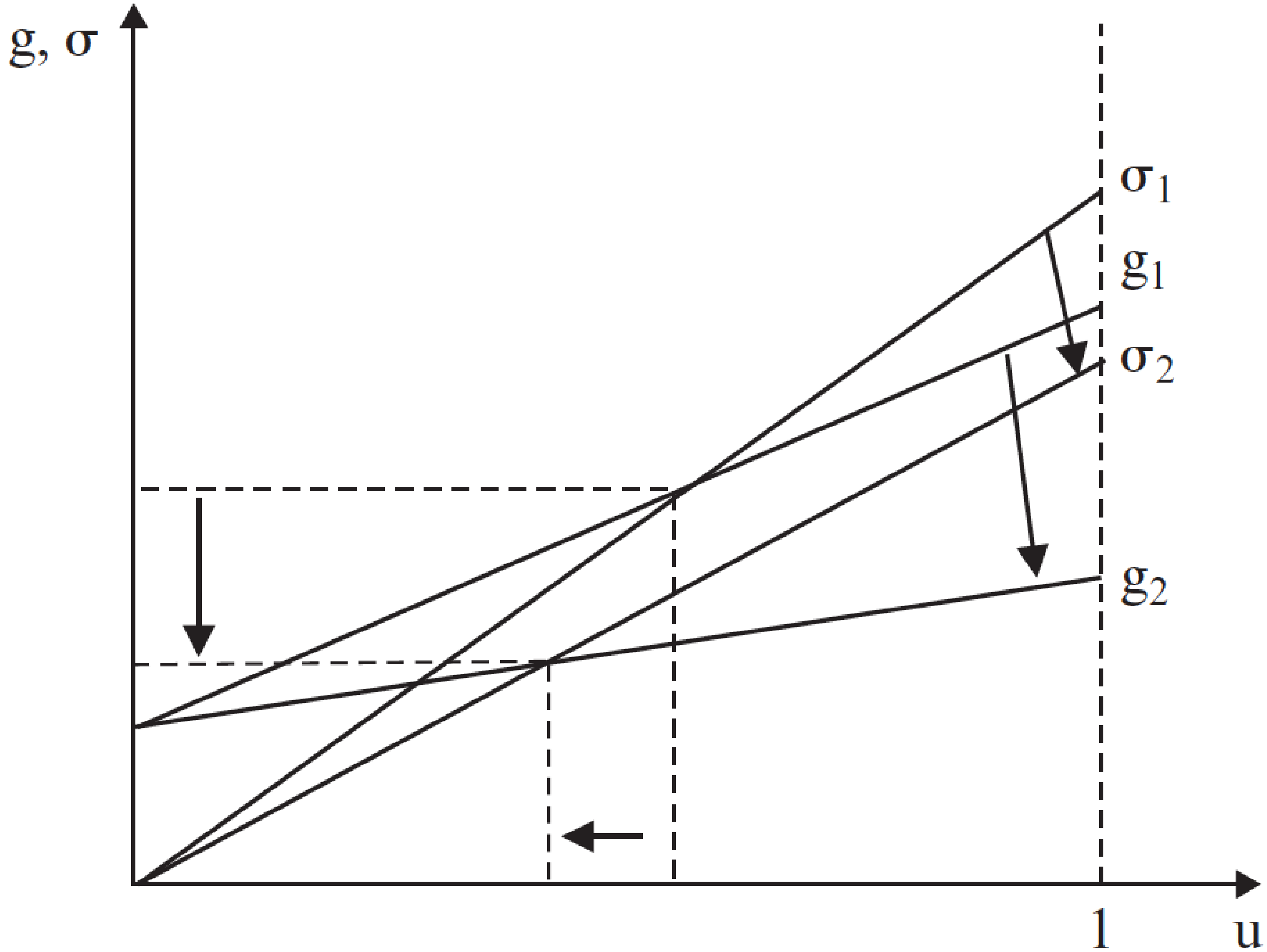


Figure 7.3 Increasing the wage share/lowering the profit share in the neo-Kaleckian distribution and growth model with positive saving out of wages and the rate of profit in the accumulation function: the profit-led regime (profit-led demand and profit-led accumulation/growth)



7.2.2 Saving out of wages in the Bhaduri/Marglin or post-Kaleckian model

(7.1) $$r = h\frac{u}{v}$$

(7.2) $$h = 1 - \frac{1}{1+m}$$

(7.3) $$\sigma = \frac{S_\Pi + S_W}{pK} = \frac{s_\Pi \Pi + s_W (Y - \Pi)}{pK} = \left[s_W(1-h) + s_\Pi h\right]\frac{u}{v}$$
$$= \left[s_W + (s_\Pi - s_W)h\right]\frac{u}{v}, \quad 0 \le s_W < s_\Pi \le 1,$$

(7.15) $$g = \frac{I}{K} = \alpha + \beta u + \tau h, \qquad \beta, \tau > 0$$

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(7.5) $$g = \sigma$$

(7.6) $$\frac{\partial\sigma}{\partial u} - \frac{\partial g}{\partial u} > 0 \quad \Rightarrow \quad \left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta > 0.$$

Equilibrium

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(7.16) $$u^* = \frac{\alpha + \tau h}{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta}$$

(7.17) $$g^* = \sigma^* = \frac{\left(\alpha + \tau h\right)\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v}}{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta}$$

(7.18) $$r^* = \frac{\left(\alpha + \tau h\right)\frac{h}{v}}{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta}$$

The paradox of saving

(7.16a) $$\frac{\partial u^*}{\partial s_\Pi} = \frac{-(\alpha + \tau h)\frac{h}{v}}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.17a) $$\frac{\partial g^*}{\partial s_\Pi} = \frac{-(\alpha + \tau h)\beta\frac{h}{v}}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.18a) $$\frac{\partial r^*}{\partial s_\Pi} = \frac{-(\alpha + \tau h)\left(\frac{h}{v}\right)^2}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.16b) $$\frac{\partial u^*}{\partial s_W} = \frac{-(\alpha + \tau h)\frac{1}{v}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.17b) $$\frac{\partial g^*}{\partial s_W} = \frac{-(\alpha + \tau h)\beta\frac{1}{v}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

(7.18b) $$\frac{\partial r^*}{\partial s_W} = \frac{-(\alpha + \tau h)\frac{h}{v^2}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\}^2} < 0$$

The paradox of costs?

(7.16c) $$\frac{\partial u^*}{\partial h} = \frac{\tau - (s_\Pi - s_W)\frac{u}{v}}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta}$$

(7.17c) $$\frac{\partial g^*}{\partial h} = \frac{\frac{1}{v}\left[\tau s_W + (s_\Pi - s_W)(\tau h - \beta u)\right]}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta}$$

(7.18c) $$\frac{\partial r^*}{\partial h} = \frac{\frac{1}{v}\left[\alpha + 2\tau h - (s_\Pi - s_W)h\frac{u}{v}\right]}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta}$$

(7.16c') $$\frac{\partial u^*}{\partial h} > 0, \qquad \text{if}: \qquad \tau - (s_\Pi - s_W)\frac{u}{v} > 0$$

(7.17c') $$\frac{\partial g^*}{\partial h} > 0, \qquad \text{if}: \qquad \tau\left[\frac{s_W + (s_\Pi - s_W)h}{v\beta}\right] - (s_\Pi - s_W)\frac{u}{v} > 0$$

Table 7.1 Demand and accumulation/growth regimes in the post-Kaleckian distribution and growth model with positive saving out of wages

	$\frac{\partial u^*}{\partial h}$	$\frac{\partial g^*}{\partial h}$
Wage-led regime		
Wage-led (stagnationist) demand and wage-led accumulation/growth: $\tau - (s_\Pi - s_W)\frac{u}{v} < \tau\left[\frac{s_W + (s_\Pi - s_W)h}{v\beta}\right] - (s_\Pi - s_W)\frac{u}{v} < 0$	–	–
Intermediate regime		
Wage-led (stagnationist) demand and profit-led accumulation/growth: $\tau - (s_\Pi - s_W)\frac{u}{v} < 0 < \tau\left[\frac{s_W + (s_\Pi - s_W)h}{v\beta}\right] - (s_\Pi - s_W)\frac{u}{v}$	–	+
Profit-led regime		
Profit-led (exhilarationist) demand and profit-led accumulation/growth: $0 < \tau - (s_\Pi - s_W)\frac{u}{v} < \tau\left[\frac{s_W + (s_\Pi - s_W)h}{v\beta}\right] - (s_\Pi - s_W)\frac{u}{v}$	+	+

7.3 OPEN ECONOMY ISSUES IN THE POST-KALECKIAN MODEL WITH SAVING OUT OF WAGES

Assumptions

- Open economy without government
- Imported raw materials
- Output competes in international markets
- Prices of imported inputs and competing foreign output are given
- Nominal exchange rate is given, determined monetary policies and financial markets
- Foreign economic activity is given

7.3.1 Prices, distribution and international competitiveness

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(7.19) $$p = (1 + m)(wa + p_f e\mu),\ m > 0$$

p: domestic prices, m: mark-up, w: nominal wage rate, a: labour-output ratio, p_f: prices of imported foreign goods in foreign currency , e: nominal exchange rate, μ: raw material-output ratio

The relationship between unit material costs and unit labour costs (z) becomes:

(7.20) $$z = \frac{p_f e\mu}{wa}$$

Therefore the price equation can also be written as

(7.21) $$p = (1 + m)wa\left(1 + \frac{p_f e\mu}{wa}\right) = (1 + m)wa(1 + z)$$

- The profit share (h) in domestic value added, consisting of domestic profits (Π) and wages (W), is given by:

$$(7.22)\quad h=\frac{\Pi}{\Pi+W}=\frac{(1+z)m}{1+(1+z)m}=\frac{1}{\frac{1}{(1+z)m}+1}$$

- The real exchange rate (e^r) as indicator for international competitiveness:

$$(7.23)\quad e^r=\frac{ep_f}{p}$$

$$(7.24)\quad \hat{e}^r=\hat{e}+\hat{p}_f-\hat{p}$$

Change in the mark-up:

(7.23a) $$\frac{\partial e^r}{\partial m} = \frac{-ep_f\left(wa + p_f e\mu\right)}{p^2} < 0$$

Change in the nominal wage rate:

(7.23b) $$\frac{\partial e^r}{\partial w} = \frac{-ep_f(1+m)a}{p^2} < 0$$

Change in the nominal exchange rate:

(7.23c) $$\frac{\partial e^r}{\partial e} = \frac{p_f p - ep_f(1+m)p_f\mu}{p^2} = \frac{p-(1+m)\mu ep_f}{\frac{p^2}{p_f}} > 0$$

(7.25) $$e^r = e^r(h), \qquad \frac{\partial e^r}{\partial h} > 0, \text{ if } dz > 0 \text{ and } dm = 0,$$
$$\frac{\partial e^r}{\partial h} < 0, \text{ if } dz = 0 \text{ and } dm > 0.$$

7.3.2 Distribution and growth

(7.26) $$S = pI + pX - ep_f M = I + NX$$

S: planned saving, pI: planned nominal investment, NX: nominal net exports, pX: nominal exports, epfM: nominal imports

(7.27) $$\sigma = g + b$$

σ: saving rate, g: accumulation rate, b: net export rate

(7.28) $$\sigma = \frac{S_\Pi + S_W}{pK} = \frac{s_\Pi \Pi + s_W (Y - \Pi)}{pK}$$

$$= \left[s_W + (s_\Pi - s_W)h\right]\frac{u}{v}, \quad 0 \leq s_W < s_\Pi \leq 1.$$

(7.29) $g = \alpha + \beta u + \tau h, \qquad \beta, \tau > 0$

(7.30) $b = \psi e^{r}(h) - \phi u + \zeta u_{f}, \qquad \psi, \phi, \zeta > 0$

u_f: foreign utilisation

(7.31) $\frac{\partial \sigma}{\partial u} - \frac{\partial g}{\partial u} - \frac{\partial b}{\partial u} > 0 \qquad \Rightarrow \qquad [s_W + (s_\Pi - s_W)h]\frac{1}{v} - \beta + \phi > 0.$

Equilibrium

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(7.32) $$u^* = \frac{\alpha + \tau h + \psi e^r(h) + \zeta u_f}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi}$$

(7.33) $$g^* = \frac{(\alpha + \tau h)\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} + \phi\right\} + \beta\left[\psi e^r(h) + \zeta u_f\right]}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi}$$

(7.34) $$r^* = \frac{\frac{h}{v}\left[\alpha + \tau h + \psi e^r(h) + \zeta u_f\right]}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi}$$

(7.35) $$b^* = \frac{\left[\psi e^r(h) + \zeta u_f\right]\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\} - \phi(\alpha + \tau h)}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi}$$

The paradox of saving

(7.32a) $$\frac{\partial u^*}{\partial s_\Pi} = \frac{-\left[\alpha + \tau h + \psi e^r(h) + \zeta u_f\right]\frac{h}{v}}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi\right\}^2} < 0$$

(7.33a) $$\frac{\partial g^*}{\partial s_\Pi} = \frac{-\left[\alpha + \tau h + \psi e^r(h) + \zeta u_f\right]\beta\frac{h}{v}}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi\right\}^2} < 0$$

(7.34a) $$\frac{\partial r^*}{\partial s_\Pi} = \frac{-\left[\alpha + \tau h + \psi e^r(h) + \zeta u_f\right]\left(\frac{h}{v}\right)^2}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi\right\}^2} < 0$$

(7.32b) $$\frac{\partial u^*}{\partial s_W} = \frac{-\left[\alpha + \tau h + \psi e^r(h) + \zeta u_f\right]\frac{1}{v}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi\right\}^2} < 0$$

(7.33b) $$\frac{\partial g^*}{\partial s_W} = \frac{-\left[\alpha + \tau h + \psi e^r(h) + \zeta u_f\right]\beta\frac{1}{v}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi\right\}^2} < 0$$

(7.34b) $$\frac{\partial r^*}{\partial s_W} = \frac{-\left[\alpha + \tau h + \psi e^r(h) + \zeta u_f\right]\frac{h}{v^2}(1-h)}{\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi\right\}^2} < 0$$

- Since an increase in the propensity to save out of profits or out of wages is dampening domestic economic activity and thus imports, net exports will be positively affected by higher propensities to save:

(7.35a) $$\frac{\partial b^*}{\partial s_\Pi} = \frac{\phi \frac{h}{v}}{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta + \phi} > 0$$

(7.35b) $$\frac{\partial b^*}{\partial s_W} = \frac{\phi\left(1 - h\right)\frac{1}{v}}{\left[s_W + \left(s_\Pi - s_W\right)h\right]\frac{1}{v} - \beta + \phi} > 0$$

Effects of re-distribution

(7.32c) $$\frac{\partial u^*}{\partial h} = \frac{\tau - (s_\Pi - s_W)\frac{u}{v} + \psi \frac{\partial e^r}{\partial h}}{[s_W + (s_\Pi - s_W)h]\frac{1}{v} - \beta + \phi}$$

(7.33c) $$\frac{\partial g^*}{\partial h} = \frac{\tau\left\{[s_W + (s_\Pi - s_W)h]\frac{1}{v} + \phi\right\} - \beta(s_\Pi - s_W)\frac{u}{v} + \beta\psi \frac{\partial e^r}{\partial h}}{[s_W + (s_\Pi - s_W)h]\frac{1}{v} - \beta + \phi}$$

(7.32c') $$\frac{\partial u^*}{\partial h} > 0, \qquad \text{if}: \qquad \tau - (s_\Pi - s_W)\frac{u}{v} + \psi \frac{\partial e^r}{\partial h} > 0$$

(7.33c') $$\frac{\partial g^*}{\partial h} > 0, \qquad \text{if}: \qquad \tau\left\{\frac{[s_W + (s_\Pi - s_W)h]\frac{1}{v} + \phi}{\beta}\right\} - (s_\Pi - s_W)\frac{u}{v} + \psi \frac{\partial e^r}{\partial h} > 0$$

Table 7.2 Demand and accumulation/growth regimes in an open economy post-Kaleckian distribution and growth model with positive saving out of wages

	$\frac{\partial u^*}{\partial h}$	$\frac{\partial g^*}{\partial h}$
Wage-led regime Wage-led (stagnationist) demand and wage-led accumulation/growth: $\tau - (s_\Pi - s_W)\frac{u}{v} + \psi\frac{\partial e^r}{\partial h} < \tau\left\{\frac{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} + \phi}{\beta}\right\} - (s_\Pi - s_W)\frac{u}{v} + \psi\frac{\partial e^r}{\partial h} < 0$	–	–
Intermediate regime Wage-led (stagnationist) demand and profit-led accumulation/growth: $\tau - (s_\Pi - s_W)\frac{u}{v} + \psi\frac{\partial e^r}{\partial h} < 0 < \tau\left\{\frac{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} + \phi}{\beta}\right\} - (s_\Pi - s_W)\frac{u}{v} + \psi\frac{\partial e^r}{\partial h}$	–	+
Profi-led regime Profit-led (exhilarationist) demand and profit-led accumulation/growth: $0 < \tau - (s_\Pi - s_W)\frac{u}{v} + \psi\frac{\partial e^r}{\partial h} < \tau\left\{\frac{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} + \phi}{\beta}\right\} - (s_\Pi - s_W)\frac{u}{v} + \psi\frac{\partial e^r}{\partial h}$	+	+

- A profit-led demand regime implies that the effect of a higher profit share on the equilibrium rate of profit in equation (34c) is positive, too:

$$\text{(7.34c)}\quad \frac{\partial r^*}{\partial h} = \frac{\frac{1}{v}\left\{\alpha + 2\tau h - (s_\Pi - s_W)h\frac{u}{v} + \psi\left[e_r(h) + h\frac{\partial e^r}{\partial h}\right] + \zeta u_f\right\}}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi}$$

- If the condition (7.32c') holds, the numerator in equation (7.34c) will also be positive. However, in a wage-led demand regime, a lower profit share may be associated with a higher or a lower profit rate, as can be easily checked by comparing equations (7.32c) and (7.34c): $\partial u^*/\partial h < 0$ does not necessarily imply that $\partial r^*/\partial h < 0$.

- The effect of a change in the profit share on the equilibrium net export-capital rate is ambiguous:

(7.35c) $$\frac{\partial b^*}{\partial h} = \frac{\psi \frac{\partial e^r}{\partial h}\left\{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta\right\} + \phi\left[(s_\Pi - s_W)\frac{u}{v} - \tau\right]}{\left[s_W + (s_\Pi - s_W)h\right]\frac{1}{v} - \beta + \phi}$$

- If domestic demand is wage-led, the second term in the numerator of equation (7.35c) will be positive. And if a higher profit share is based on nominal wage moderation or nominal depreciation and hence associated with improved price competitiveness, and the effect of capacity utilization on investment is only moderate, as in the intermediate regime, the first term in the numerator will be positive, too.

In this constellation a higher profit share will cause a higher equilibrium net export-capital rate. However, if domestic demand is profit-led, the second term in the numerator will become negative. And if redistribution in favour of profits only means a modest improvement in price competitiveness, or is even accompanied by weakened price competitiveness, or is associated with a strong accelerator effect on capital accumulation, then the first term in the numerator may be positive, but too small, or even negative. In this constellation, the equilibrium net export-capital rate will decline in the face of a higher profit share.

Implications for wage and exchange rate policies

- Aggressive wage policies will be successful in raising the wage share, even with a constant mark-up. In a wage-led economy this will have expansionary effects on domestic demand. However, net exports are affected in the negative, so that the overall effects even in a domestically wage-led economy must not be positive. In a profit-led domestic economy, overall negative effects will emerge for sure.
- Nominal wage moderation or nominal depreciation will be expansionary in a domestic profit-led regime. But if the domestic regime is wage-led, the overall effects are uncertain: wage moderation or nominal depreciation will stimulate net exports, but the associated redistribution in favour of profits will have depressing effects on domestic demand in a wage-led economy. The overall effects may hence be negative.
- Generally: An overall wage-led regime becomes less likely in an open economy setting.

7.4 EMPIRICAL RESULTS FOR THE OPEN ECONOMY POST-KALEKIAN MODEL

Empirical method: single equation estimation approaches

- (Bowles/Boyer 1995)

Limitations:

- Interactions between components of aggregate demand are not considered (but see Hein/Vogel 2009).
- No feedback from accumulation to distribution
- Money and finance are not included (but see Hein/Schoder 2011)
- State is not included

- partial model of a private open real economy

(7.36) $Y^* = C(Y,h) + I(Y,h,Z_I) + NX^r(Y,h,Z_{NX}) + G^r$

Y: aggregate demand, C: consumption, I: investment, NX^r: net exports, G^r: government expenditure

Total differentiation of equation (7.36) yields:

(7.37) $$dY^* = \frac{\partial C}{\partial Y}dY + \frac{\partial C}{\partial h}dh + \frac{\partial I}{\partial Y}dY + \frac{\partial I}{\partial h}dh + \frac{\partial NX^r}{\partial Y}dY + \frac{\partial NX^r}{\partial h}dh$$

Rearranging and collecting terms gives:

(7.38) $$\frac{dY^*}{dh} = \frac{\frac{\partial C}{\partial h} + \frac{\partial I}{\partial h} + \frac{\partial NX^r}{\partial h}}{1 - \frac{\partial C}{\partial Y} - \frac{\partial I}{\partial Y} - \frac{\partial NX^r}{\partial Y}} = \frac{1}{1-x}\left[\frac{\partial C}{\partial h} + \frac{\partial I}{\partial h} + \frac{\partial NX^r}{\partial h}\right]$$

with $x = \partial C/\partial Y + \partial I/\partial Y + \partial NX^r/\partial Y$.

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- If the feedbacks of changes in the level of aggregate demand and income on consumption, investment and net exports, and hence the multiplier [1/(1-x)], are ignored, equation (7.38) simplifies to:

(7.39) $$\frac{dY}{dh} = \frac{\partial C}{\partial h} + \frac{\partial I}{\partial h} + \frac{\partial NX^r}{\partial h}$$

- Dividing by Y gives the percentage change of aggregate demand caused by a one percentage point change in the profit share:

(7.40) $$\frac{\frac{dY}{Y}}{dh} = \frac{\frac{\partial C}{Y}}{\partial h} + \frac{\frac{\partial I}{Y}}{\partial h} + \frac{\frac{\partial NX^r}{Y}}{\partial h}$$

$$\left[\left(\partial C/Y\right)/\partial h\right]+\left[\left(\partial I/Y\right)/\partial h\right]>0$$ → domestic demand is profit led

$$\left[\left(\partial C/Y\right)/\partial h\right]+\left[\left(\partial I/Y\right)/\partial h\right]<0$$ → domestic demand is wage led

$$\left[\left(dY/Y\right)/dh\right]>0$$ → total demand is profit led

$$\left[\left(dY/Y\right)/dh\right]<0$$ → total demand is wage led

- Other authors have chosen a stepwise estimation of the effects of redistribution on net exports, starting with the relationship between distribution and domestic prices relevant for international competitiveness, and then estimating the export (X^r) and import (M^r) functions controlling for changes in domestic and foreign incomes (Ederer 2008; Onaran/Stockhammer/Grafl 2011; Onaran/Galanis 2012; Stockhammer/Ederer 2008; Stockhammer/Onaran/Ederer 2009):

(7.41) $$\frac{dNX^r}{dh} = \frac{\partial X^r}{\partial p}\frac{\partial p}{\partial h} - \frac{\partial M^r}{\partial p}\frac{\partial p}{\partial h}$$

- In their study on Germany, Stockhammer/Hein/Grafl (2011) have also taken into account that higher exports may generate higher imports via the technologically determined import content of exports:

(7.42) $$\frac{dNX^r}{dh} = \frac{\partial X^r}{\partial p}\frac{\partial p}{\partial h} - \frac{\partial M^r}{\partial p}\frac{\partial p}{\partial h} - \frac{\partial M^r}{\partial X^r}\frac{\partial X^r}{\partial p}\frac{\partial p}{\partial h}$$

$$= \left(\frac{\partial X^r}{\partial p} - \frac{\partial M^r}{\partial p} - \frac{\partial M^r}{\partial X^r}\frac{\partial X^r}{\partial p}\right)\frac{\partial p}{\partial h}$$

Table 7.3 Demand regimes according to single equation estimation approaches of the Bhaduri and Marglin (1990) model

	Period	Austria		Germany		Netherlands		France		Italy		Spain		Euro area		Switzerland		UK		US		Japan	
		DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD
Bowles/ Boyer (1995)	1953/ 61–87			W	P			W	P									W	W	W	W	W	P
Naastepad (2006)	1960–2000					W	W																
Naastepad/ Storm (2007)	1960–2000			W	W	W	W	W	W	W	W	W	W					W	W	P	P	P	P
Ederer/ Stockhammer (2007)	1960–2004							W	P														
Stockhammer/ Ederer (2008)	1960–2005	W	P																				
Ederer (2008)	1960–2005					W	W																
Hein/Vogel (2008)	1960–2005	W	P	W	W	P	P	W	W									W	W	W	W		
Hein/Vogel (2009)	1960–2005			W	W			W	W														
Stockhammer et al. (2009)	1960–2005													W	W								
Onaran et al. (2011)	1962–2007																			W	W		
Stockhammer et al. (2011)	1970–2005			W	W																		
Onaran/ Galanis (2012)	1960s–2007			W	W			W	W	W	W			W	W			W	W	W	W	W	W
Hartwig (2013)	1950–2010															W	P						

		Argentina		Australia		Canada		China		India		Mexico		South Africa		South Korea		Turkey	
		DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD	DD	TD
Onaran/ Galanis (2012)	Early 1970s/ 1980s–2007	W	P	W	P	W	P	W	P	W	P	W	P	W	P	W	W	W	W

Notes: DD: domestic demand; TD: total demand; W: wage-led; P: profit-led

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Table 7.4 Effect of a one percentage point increase in the profit share on private excess demand and its components

	$\frac{\partial C / Y}{\partial h}$	$\frac{\partial I / Y}{\partial h}$	$\frac{\partial NX^r / Y}{\partial h}$	$\frac{dY / Y}{dh}$
	A	**B**	**C**	**A+B+C = D**
Euro area-12	-0.439	0.299	0.057	-0.084
Germany	-0.501	0.376	0.096	-0.029
France	-0.305	0.088	0.198	-0.020
Italy	-0.356	0.130	0.126	-0.100
United Kingdom	-0.303	0.120	0.158	-0.025
United States	-0.426	0.000	0.037	-0.388
Japan	-0.353	0.284	0.055	-0.014
Canada	-0.326	0.182	0.266	0.122
Australia	-0.256	0.174	0.272	0.190
Turkey	-0.491	0.000	0.283	-0.208
Mexico	-0.438	0.153	0.381	0.096
Korea	-0.422	0.000	0.359	-0.063
Argentina	-0.153	0.015	0.192	0.054
China	-0.412	0.000	1.986	1.574
India	-0.291	0.000	0.310	0.018
South Africa	-0.145	0.129	0.506	0.490

Source: Onaran and Galanis (2012, Table 11).

Table 7.5 Summary of the multiplier effects at the national and global level

	The effect of a 1 percentage-point increase in the profit share in only one country on private excess demand	The effect of a 1 percentage-point increase in the profit share in only one country on percentage change in equilibrium aggregate demand	The effect of a simultaneous percentage-point increase on percentage change in equilibrium aggregate demand
	D	**E**	**F**
Euro area-12	-0.084	-0.133	-0.245
United Kingdom	-0.025	-0.030	-0.214
United States	-0.388	-0.808	-0.921
Japan	-0.014	-0.034	-0.179
Canada	0.122	0.148	-0.269
Australia	0.190	0.268	0.172
Turkey	-0.208	-0.459	-0.717
Mexico	0.096	0.106	-0.111
Korea	-0.063	-0.115	-0.864
Argentina	0.054	0.075	-0.103
China	1.574	1.932	1.115
India	0.018	0.040	-0.027
South Africa	0.490	0.729	0.390

Source: Onaran and Galanis (2012, Table 13).

7.5 CONCLUSIONS

- Pursuing a strategy of profit-led growth via the net export channel by relying on a kind of 'beggar thy neighbour' policy, may be a successful way for small open economies (f. e. Austria, Netherlands) in isolation.

- However, it cannot work for medium-sized and large open economies because it will reduce aggregate demand in these economies already in the short run, and in the medium to long run it will also harm the countries' trading partners (see: Germany in the EMU!) and, thus finally, the world economy as a whole. This will feed back on net exports of profit-led economies.

- For medium-sized and large open economies, as Germany, economic policy strategies have to take into account wage-led nature of aggregate demand. Same is true for the world as a whole.

- Effects of re-distribution on aggregated demand are small

➢ Re-distribution policies should be embedded into expansionary monetary and fiscal policies (Global Keynesian New Deal)