Real wages and technology in a BOP-constrained growth model

Gabriel Porcile (UFPR)
Marcus Dutra (UFPR)
Antonio Meirelles (UNICAMP)

GLOBELICS

Rio de Janeiro, 5 November 2003

Real wages and growth

- Kaleckian models suggest that in a closed economy higher real wages favor growth by increasing the utilization rate of capital and the investment rate (Dutt, 1984)
- In an open economy, Blecker (1989) shows a positive effect of higher real wages on growth if a) firms reduce their target mark-up, b) the income elasticity of imports is low and c) the price elasticities of imports and exports are high
- Blecker´s results require to remove PPP so that a lower mark-up raises price competitiveness

Real wages, growth and learning

- This model suggests another mechanism by which higher real wages could stimulate growth in an open economy
- To the extent that higher real wages stimulate learning and create a more favorable environment for economic, technological and institutional change, then they will favor non-price international competitiveness too.
- This in turn will lead to a higher rate of growth consistent with BOP equilibrium (Cimoli, 1988; Verspagen, 1993; McCombie and Thirwall, 1994)

Real wages and learning

- Bliss and Stern (1978) and Bassu (1984): productivity is a function of workers´ consumption (especially at low levels of development)
- Stiglitz and Shapiro (1989) and Ros (2000): effort at work is higher when real wages are higher (efficiency wages)
- Ranis and Stewart (2002): higher human development leads to more learning and higher productivity growth
- Fajnzylber (1990): a more egalitarian society offers less resistance to economic and institutional change

Demand equations: prices, income and the quality index

$$M = A\left(\frac{P^*}{P}E\right)^{\psi} Y^{\pi}$$

$$X = B\left(\frac{P}{P^* E}\right)^{\eta} Z^{\varepsilon} \Omega^{\lambda}$$

$$EP^* M = PX$$

Conventional demand functions, except for the quality index (Amable, 1994)

Rate of growth consistent with BOP equilibrium and the evolution of the quality index

$$y = \frac{1}{\pi}((\eta + \psi + 1)(p - p^* - e) + \varepsilon z + \lambda\omega)$$

$$\omega = S = \left(\frac{T_S}{T_N}\right)$$

Critical assumption: the rate of change of the quality index is a function of the technology gap (Verspagen, 1993)

Motion equations: real wages

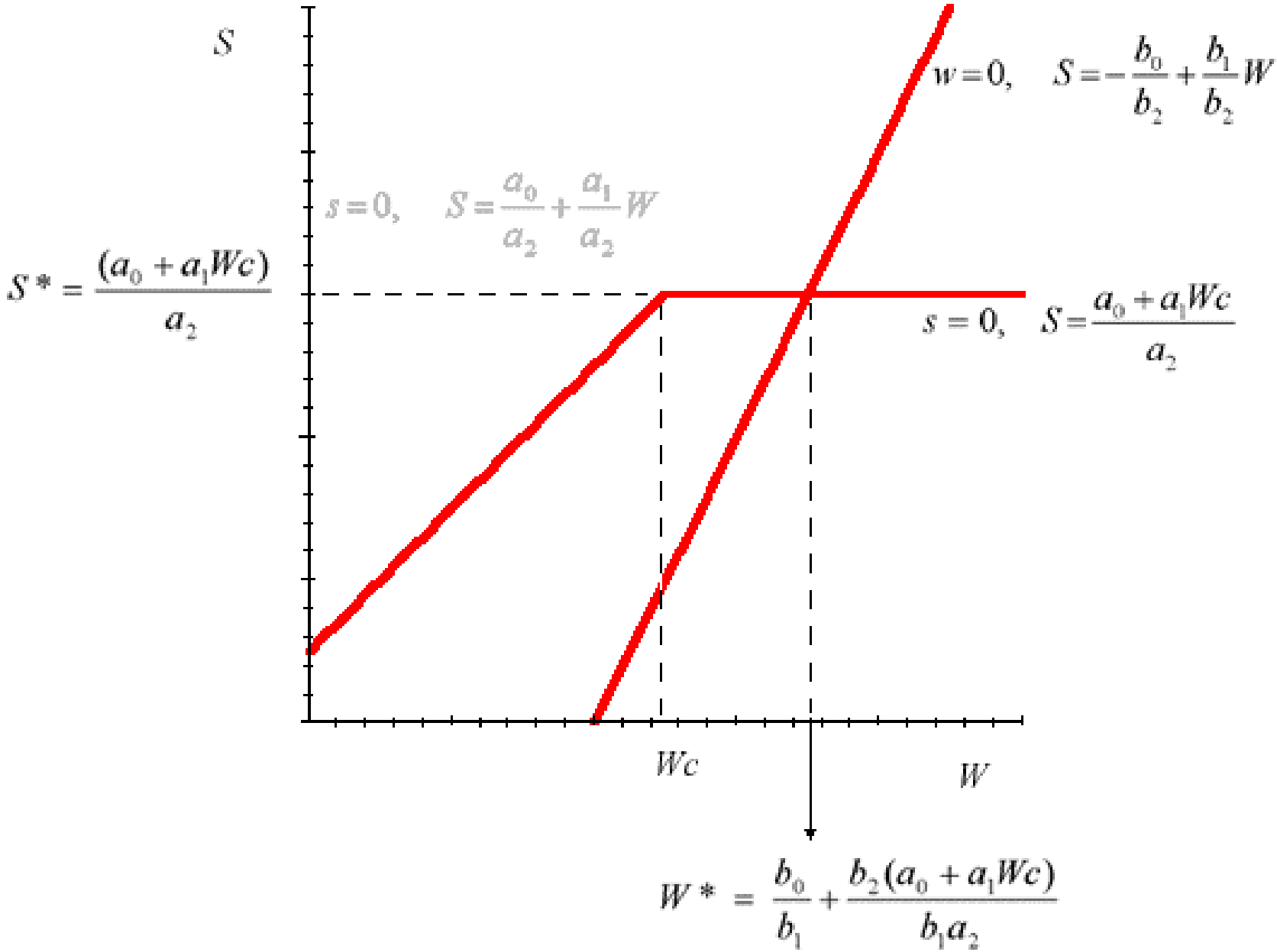
- The rate of growth of the real wage:
- 1) increases with the inverse of the technology gap (a higher rate of growth implies a higher rate of labor demand)
- 2) falls with the level of the real wage (increasing resistance of capitalists to give in to labor demands)

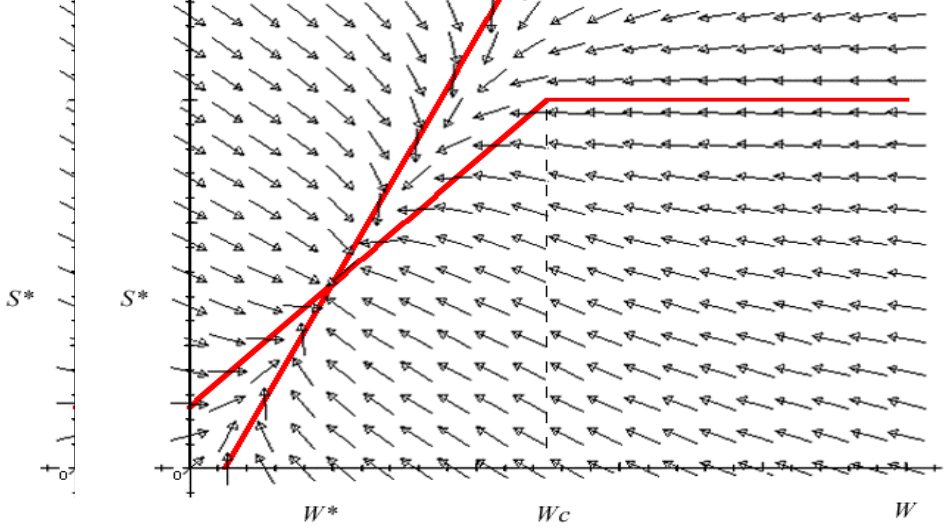
Motion equations: the inverse of the technology gap

- The **rate of change** of the inverse of the technology gap:
- Increases with the real wage, up to a certain critical real wage level, Wc
- Falls with the inverse of the technology gap (decreasing technological spill-over from the North) (Fagerberg, 1988)

Real wages and the technology gap: motion equations

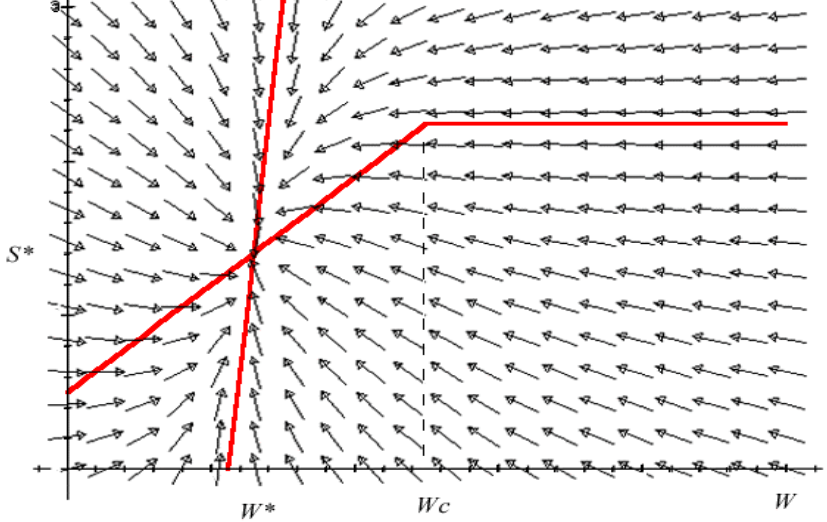
$$\begin{cases} w = b_0 - b_1 W + b_2 S \\ \begin{cases} s = a_0 + a_1 W - a_2 S & para\, W \le Wc \\ s = a_0 + a_1 Wc - a_2 S & para\, W > Wc \end{cases} \end{cases}$$


S
w = 0, S = − b0/b2 + b1/b2 W
s = 0, S = a0/a2 + a1/a2 W
S* = (a0 + a1Wc)/a2
s = 0, S = (a0 + a1Wc)/a2
Wc
W
W* = b0/b1 + b2(a0 + a1Wc)/(b1a2)



$(tr\,J)^2 > 4\,|J|$

nó estável

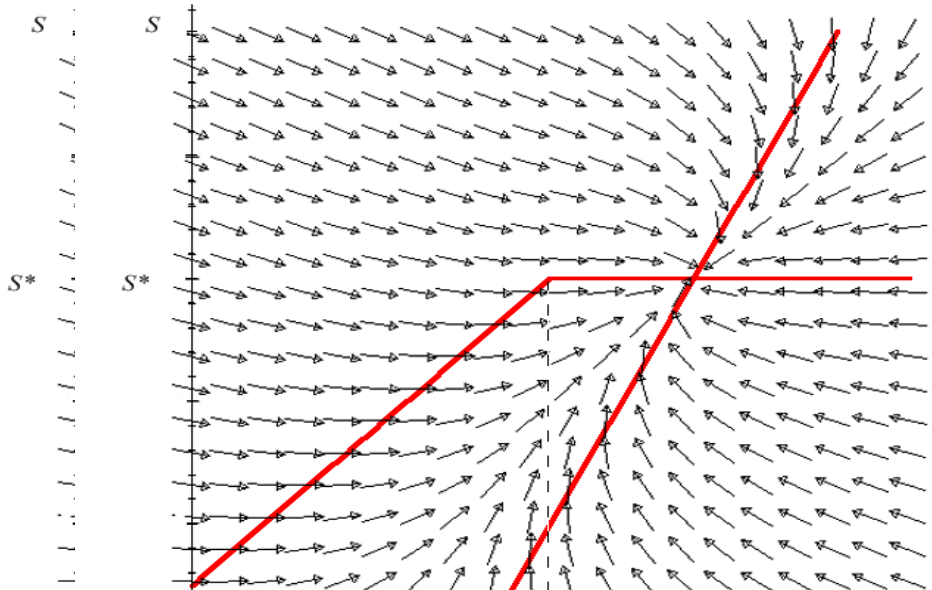


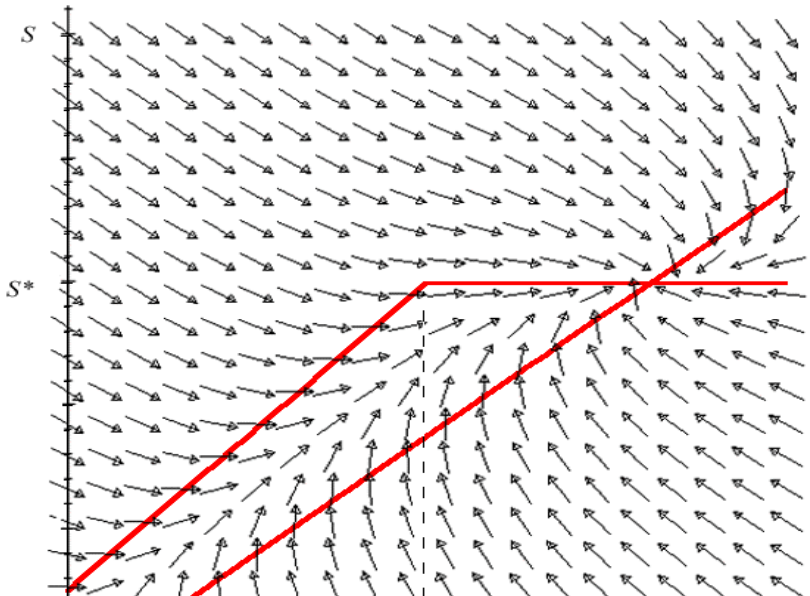
$(tr\,J)^2 < 4\,|J|$

foco estável

2o. caso: $W^* > Wc$

$tr\,J < 0\,,\ |J| > 0$





Complementary growth and real wages

- There are two possible equilibria
- The first one ($W < Wc$) is inefficient as it implies both a lower rate of growth and lower real wages
- This equilibrium does not fully exploit the scope for a positive feed-back between (complementary) growth and real wages

Growth and real wages no longer complementary

- Te second equilibrium (W > Wc) implies that a policy aimed at improving income distribution will no longer foster learning
- Policies aimed at increasing the rate of imitation (lowering the coefficient *a2*) will lead to higher real wages in equilibrium
- Policies aimed at increasing the rate of learning by workers (higher b2) will lead to higher real wages in equilibrium
- The higher Wc, the higher will be the rate of growth and the real wages of the Southern economy

Wc: a moving target

- When Wc is high there will be more room for a virtuous circle between growth and real wages
- Wc is a moving target: as the economy achieves a higher degree of diversification and technological complexity, there will be more opportunities for learning when the real wages increase.

Conclusions

- 1. Higher real wages encourage learning up to a certain critical real wage Wc
- 2. An economy will be trapped in a inefficient equilibrium if W* < Wc. In this case, policies aimed at increasing real wages and labor welfare will foster growth as well
- 4. If W* > Wc, policies aimed at encouraging technological diffusion and workers´ capabilities will lead to higher growth and real wages
- A higher Wc implies higher growth and higher real wages in equilibrium
- 5. Wc is a moving target that increases as the economy diversifies