

Technical Change, Inequality, and the Labor Market  
§ 5 Acceleration in Skill Bias  
-A Puzzle: The Decline in Wages of Low-Skill Workers-

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- This sub-section deals with why the wage for the unskilled is relatively decreasing, leading to wage-premium expansion.
  - ▶ According to the theory mentioned in 3rd section, the increasing supply of educated workers raises the productivity of high-skill workers,  $A_h$ , leading to the wages up as a whole.
  - ▶ The former papers discuss the faster technology progress lower the skill premium, since the technology seems to work as making the productivity gap,  $\frac{A_h}{A_l}$ , smaller.
  - ▶ This technology revolution in these past decades, however, works in the verse way, boosting the relative productivity,  $\frac{A_h}{A_l}$ .
    - ⇒  $\ln \omega = \frac{\sigma-1}{\sigma} \ln\left(\frac{A_h}{A_l}\right) - \frac{1}{\sigma} \ln\left(\frac{H}{L}\right)$ , which results in higher,

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     $\implies \ln \omega = \frac{\sigma-1}{\sigma} \ln\left(\frac{A_h}{A_l}\right) - \frac{1}{\sigma} \ln\left(\frac{H}{L}\right)$ , which results in higher, "erosion effect".

Repost

$$A_I = \phi_I(g)a$$

$$\phi'_I < 0$$

$$A_h = \phi_h a$$

- The wage for unskilled workers is re-written as

$$w_L = \phi_I(g)a[1 + \phi_h^\rho \left(\frac{H}{L}\right)^\rho]^{\frac{1-\rho}{\rho}}$$

- ⇒ The growth of wage for the lower skilled is;  $\frac{\dot{w}_L}{w_L} = g(1 + \epsilon_\phi)$   
 $\epsilon$ : the elasticity of the function,  $\phi_I$ , and  $\phi'_I < 0$ .
  - ⇒ If the value of  $\epsilon$  is less than -1 ( $\epsilon < -1$ ), the wage for low-educated worker is absolutely decreasing.
- Firm's positive actions to technology cause the capital-labor ratio for the low-educated, with the wage for the less-skilled falling.
  - ⇒ Because the equilibrium rate of return to capital increases. (by Cassel)
  - ⇒ Because the firms devotes more resources to opening specialized jobs for the high-skilled. (in this paper)

- The production function is defined as following;

$$Y_h = K_h^{1-\alpha} (A_h H)^\alpha$$

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- At equilibrium point, the  $MP_I$  in each type of labor is balanced;

$$\frac{K_I}{A_I L} = \frac{K_h}{A_h H} = \frac{K - K_I}{A_h H}$$

- This is rewritten as following;

$$\frac{\bar{K}}{K_I} - 1 = \frac{A_h}{A_I} \frac{H}{L}$$

- The wage for the low-skilled is written under the condition of perfectly competitive labor market,

$$w_L = MP_L = (1 - \alpha) A_I^\alpha K_I^{1-\alpha} L^{\alpha-1}$$

and this is falling.

- Potential problems in this analysis are
  - ▶ This theory is based on the assumption of the increase of price of capital
  - ▶ Financial Policy raises intentionally the interests rate.
    - ⇒ Future studies will clarify that the causal relation between higher interests rate and lower wage for the uneducated.
- The next section explains that the effect of technical change on the organization of the labor market both amplifies the effect of technology on wage inequality, and provides a possible explanation for this decline.