DERIVING $MP_h(r)$ WITH HUMAN CAPITAL PER WORKER AT ANY SKILL LEVEL:

- P-N F.N: $y = A k^{\alpha} h^{\gamma}$ (1)

  $MP_h = r = ?$ (HOW DOES IT DEPEND ON h? y? A?)

- MARGINAL PRODUCT OF k: $\frac{\partial y}{\partial k} = \alpha A k^{\alpha-1} h^{\gamma} = r$ (2)

- FROM (1) get $k(y)$ AND PLUG IN (2): FROM (1) $k^{\alpha} = \frac{y}{A h^{\gamma}}$, $k = \frac{y^{\frac{1}{\alpha}}}{A^{\frac{1}{\alpha}} h^{\gamma/\alpha}}$ PLUG IN (2)

$$r = \alpha A \left(\frac{y^{\frac{1}{\alpha}}}{A^{\frac{1}{\alpha}} h^{\gamma/\alpha}} \right)^{\alpha-1} h^{\gamma}$$

$$r = \alpha A^{\frac{\alpha}{\alpha}} A^{-\frac{\alpha-1}{\alpha}} y^{\frac{\alpha-1}{\alpha}} h^{-\frac{\gamma(\alpha-1)}{\alpha}} h^{\gamma \cdot \frac{\alpha}{\alpha}}$$

$$r = \alpha A^{\frac{\alpha-\alpha+1}{\alpha}} y^{\frac{\alpha-1}{\alpha}} h^{\frac{-\gamma\alpha+\gamma+\gamma\alpha}{\alpha}}$$

$$r = \alpha A^{\frac{1}{\alpha}} y^{\frac{\alpha-1}{\alpha}} h^{\frac{\gamma}{\alpha}}$$

$$\boxed{r = \frac{\alpha A^{\frac{1}{\alpha}} h^{\frac{\gamma}{\alpha}}}{y^{\frac{1-\alpha}{\alpha}}}}$$

when $y \uparrow$, $r \downarrow$ (MARGINAL PRODUCT OF CAPITAL)

when $h \uparrow$, $r \uparrow$

when $A \uparrow$, $r \uparrow$

when $\alpha \uparrow$, $r \uparrow$