

Discussion of  
“Misallocation, Economic Growth,  
and Input-Output Economics”

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# 3 points

- (1) Productivity differences and misallocation
- (2) The intermediate input multiplier
- (3) More input-output economics

# (1) Productivity differences and misallocation

- Larger (inter-industry) differences in value added per worker relative to the US are seen as a sign of more misallocation.
- Could they also reflect faster technological progress?

# A Vintage Capital Model Following Arrow, REStud 1962

Set up:

- One unit of output produces one unit of capital.
- One unit of capital produced at time  $t$  requires  $\exp(-\lambda t)$  units of labor to produce one unit of output.
- Closed Ramsey economy in steady state.

# Interesting equilibrium result

- At every moment in time, capital goods of different vintages are used in production with a higher value added per worker for newer vintages. The Hsieh and Klenow, QJE 2009 framework would explain this by new vintages being subject to a higher tax (distortion) on labor than older vintages; this assumes of course that the vintage of the capital being employed by firms is not observed.
- Value added per worker of the newest vintage relative to the oldest vintage is increasing in the rate of technological progress  $\lambda$ .

## (2) The intermediate input multiplier

- Consider an economy/sector that uses a share  $\alpha$  of its output as intermediate input.
- What is the implied TFP multiplier?

# MODEL 1

$$y = c + x = Ax^{\alpha}l^{1-\alpha}$$

$$y = \alpha^{\alpha} A^{\frac{1}{1-\alpha}} l$$

→ TFP multiplier equal 2 when  $\alpha$  is equal to 0.5.

# MODEL 2 (2-stage production)

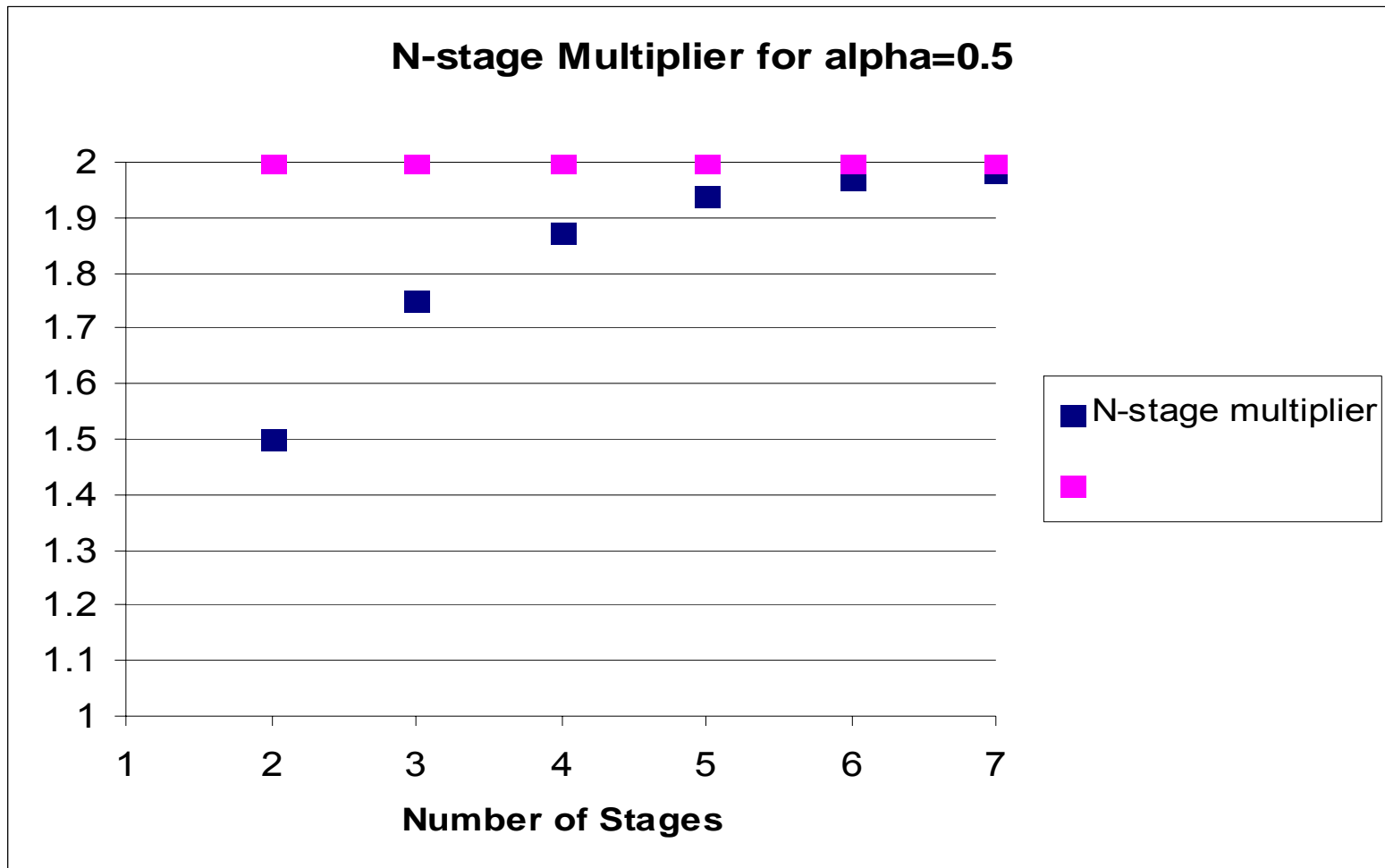
$$x = Al_x \quad y = Ax^\alpha l_y^{1-\alpha}$$

$$y = \alpha^\alpha (1-\alpha)^{1-\alpha} A^{1+\alpha} l$$

→ TFP multiplier equal 1.5 when  $\alpha$  is equal to 0.5.

# MODEL 3 (N-stage production)

TFP multiplier equal  $1 + \alpha + \dots + \alpha^{N-1}$ .



## (3) More I-O Economics

- Additional implications of I-O framework?
- Allocation of entrepreneurial talent:
  - specialization in a sector
  - integrate vertically to ensure quality inputs

# Sectoral Specialization Versus Vertical Integration

- 4 identical workers
- 2 entrepreneurs with ability H and L respectively, each of which can manage at most 2 workers

$$x = A_m l_x \qquad y = A_m x^\alpha l_y^{1-\alpha}$$

# Feasible Allocations

- Specialization

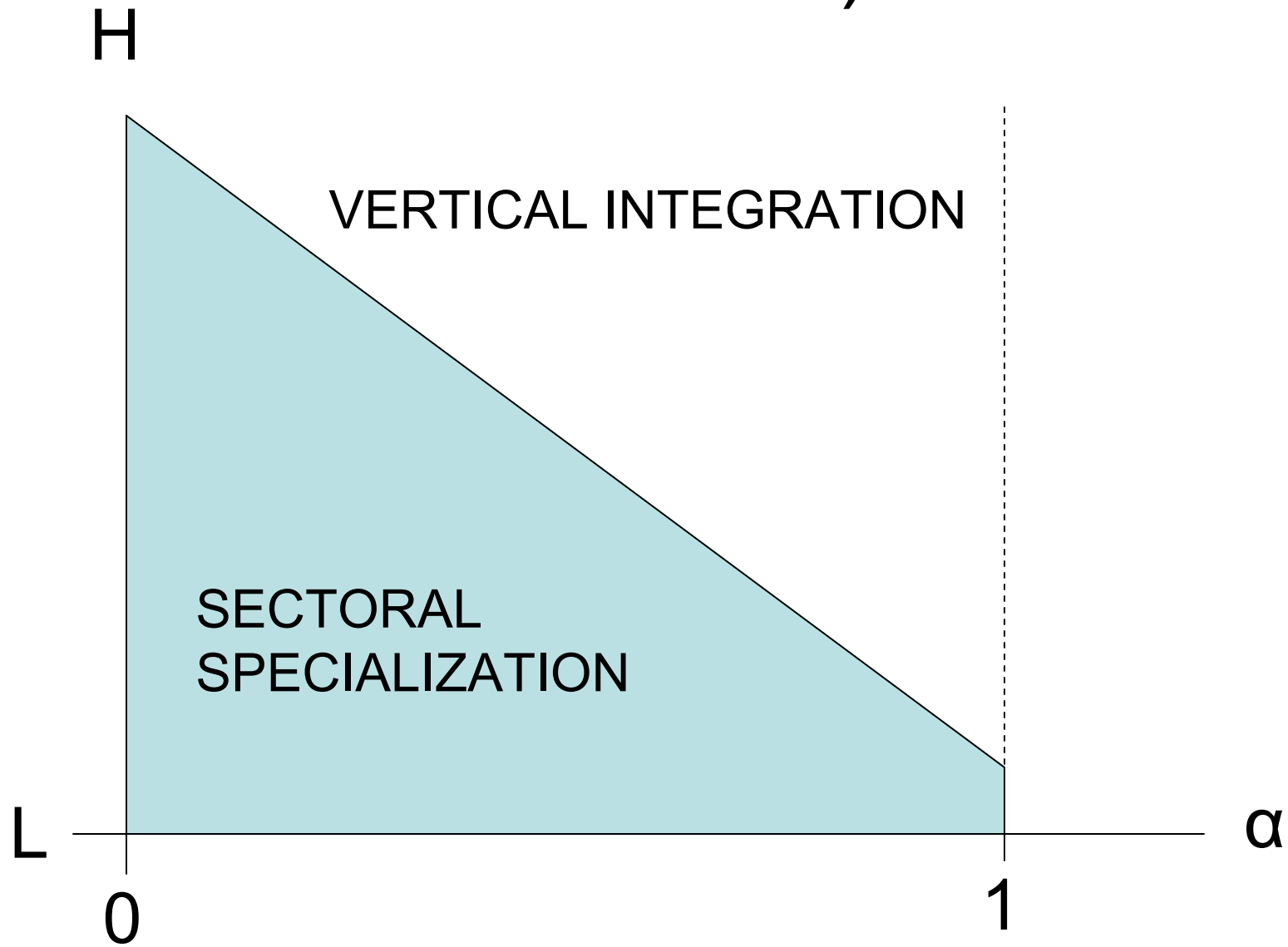
$$x = L2 \quad y = H(2L)^\alpha 2^{1-\alpha}$$

- Vertical Integration ( $\beta > 0$  captures diseconomies of scope, which makes derivations easier; but everything goes through for  $\beta = 0$ )

$$y_H = H(H)^\alpha 1^{1-\alpha} - 0.5\beta$$

$$y_L = L(L)^\alpha 1^{1-\alpha} - 0.5\beta$$

# Efficient Allocation (holding L constant)



**Thanks!**