Discussion of

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

by Charles Jones

Antonio Ciccone (UPF-ICREA)
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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 in 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

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

\[ y = \alpha^\alpha A^{1-\alpha} l \]

→ TFP multiplier equal 2 when \( \alpha \) is equal to 0.5.
MODEL 2 (2-stage production)

\[ x = Al_l \quad y = Ax^\alpha l_y^{1-\alpha} \]

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

→ TFP multiplier equal 1.5 when \( \alpha \) is equal to 0.5.
MODEL 3 (N-stage production)

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

\[ x = A_m l_x \]
\[ y = A_m x^\alpha l_y^{1-\alpha} \]
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)

VERBAL INTEGRATION

SECTORAL SPECIALIZATION
Thanks!