

Note on O-ring Theory of Production

Production is done with a sequence of N tasks by N different workers. Each task must be completed for there to be output. The dollar value of the equipment used is M and the interest rate is r .

$$T_i = \begin{cases} 1 & \text{if the task is completed} \\ 0 & \text{otherwise} \end{cases}$$

$$Q = \prod_{i=1}^N T_i$$

$$\text{Profits} = pQ - rM - wN$$

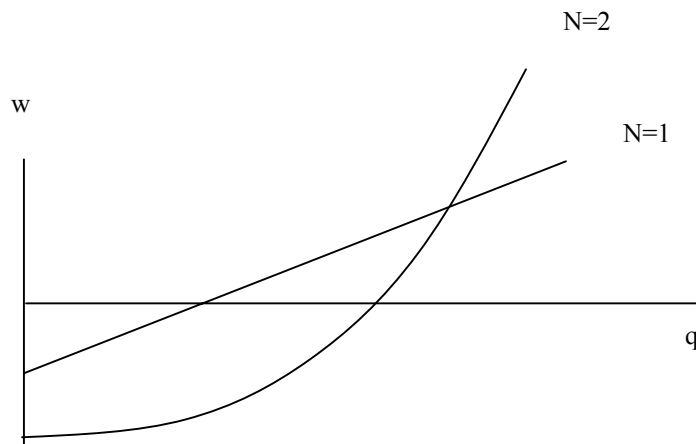
Let the probability of completing a task be q . Then the expected profit for operations using all q workers is

$$E(\text{Profits}) = pq^N - rM - w(q)N$$

and the wage that can be offered to purchase q type workers is

$$w(q) = (pq^N - rM) / N = q^N \frac{p}{N} - r \frac{M}{N}$$

where M/N is the capital intensity and N is the complexity.



Issues:

Matching

Supply of q

Inessential tasks: $\prod (\alpha + T_i)$

