AKM Model

2025-05-24

1 The Model

From a standard human capital wage regression like

$$\ln w_{it} = \beta x_{it} + \epsilon_i t$$

explains about 30% of wage variation.

In a series of papers, AKM introduce

$$y_{it} = \alpha_i + \psi_{j(i,t)} + x_{it}\beta + \epsilon_{it} \tag{1}$$

where $j(i,t)$ is a random variable that takes a value in $\{1, 2, \ldots, J_t\}$ with probability p_{jt} and p_{jt} is a function of α_i and ψ_j.

In AKM's setting, y_{it} is the outcome of person i and observable, x_{it} the observable characteristics of person i at time t, α_i the unobservable characteristics of person i, ψ_j the unobservable characteristics of firm j, and ϵ_{it} the idiosyncratic shock.

In our model, we preset the unobservable in order to get the characteristics of the workers and firms. The output: G is the transition matrix of workers. H is the joint distribution of workers and firms. They calculate the transition probability matrix G by

$$\psi - c_{net}\psi_j - c_{sort}\alpha_i$$

where c_{net} is the network effect and c_{sort} is the sorting effect.