Vacancy-Seeker Mismatch in Japan

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2021-04-30

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Method

- Apply the mismatch index proposed by

- The mismatch index, M_t, is defined as

$$M_t = \frac{h_t^* - h_t}{h_t},$$

where h_t and h_t^* are actual and counter-factual numbers of new employment, respectively.

- The counter-factural numbers is a solution of planner problem. The planner problem is to maxmize the number of new employment, given the maching function $\mu_{jt}(u_{jt}, v_{jt})$, the numebr of vacancy v_{jt}, and the total number of job seeker u_t.

- Formally,

$$h_t^* = \max_{u_{jt}} \sum_j h_{jt},$$

subject to

$$h_{jt} = \mu_{jt}(u_{jt}, v_{jt}), \quad (matching\ function)$$

and

$$\sum_j u_{jt} = u_t. \quad (Resource\ constrint)$$

- The estiamtion process is follows

1. Suppose a parametric specification on the matching function as $\mu_{jt}(u_{jt}, v_{jt}) = A_{jt}u_{jt}^{1-\beta}v_{jt}^{\beta}$, where $A_{jt} = exp(f_t, f_j, \epsilon_{jt})$, f_t and f_j are time and sector fixed-effects, respectively. The parametric assumption obtains the closed solution of the planner problem;

$$h_t^* = \max_{u_{jt}} \sum_j exp(f_t, f_j, \epsilon_{jt}) \times v_{jt}^{\beta} \times (u_{jt}^*)^{1-\beta},$$

where
$$u_{jt}^* = \frac{A_{jt}^{1/\beta} v_{jt}}{\sum_{j'} A_{j't}^{1/\beta} v_{j't}} u_t. \quad (optimal\ allocation)$$

2. Estimate the log-transfer matching function

$$\log(h_{jt}/u_{jt}) = f_j + f_t + \beta \times \log(v_{jt}/u_{jt}) + \epsilon_{jt}.$$

3. Calculate the mismatch index with estimated parameters in Step 2.