

# Vacancy-Seeker Mismatch in Japan

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```
library(knitr)
```



# Chapter 1

## Summary

This page reports the mismatch index (Şahin et al., 2014) in Japanese job-search market. We use the Referentials and Placements by Prefecture, Employment Referral Statistics, which reports monthly numbers of vacancy, job seekers, and new employment.



## Chapter 2

### 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-factual numbers is a solution of planner problem. The planner problem is to maximize the number of new employment, given the matching function  $\mu_{jt}(u_{jt}, v_{jt})$ , the number 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

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

and

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

- The estimation 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

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

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.

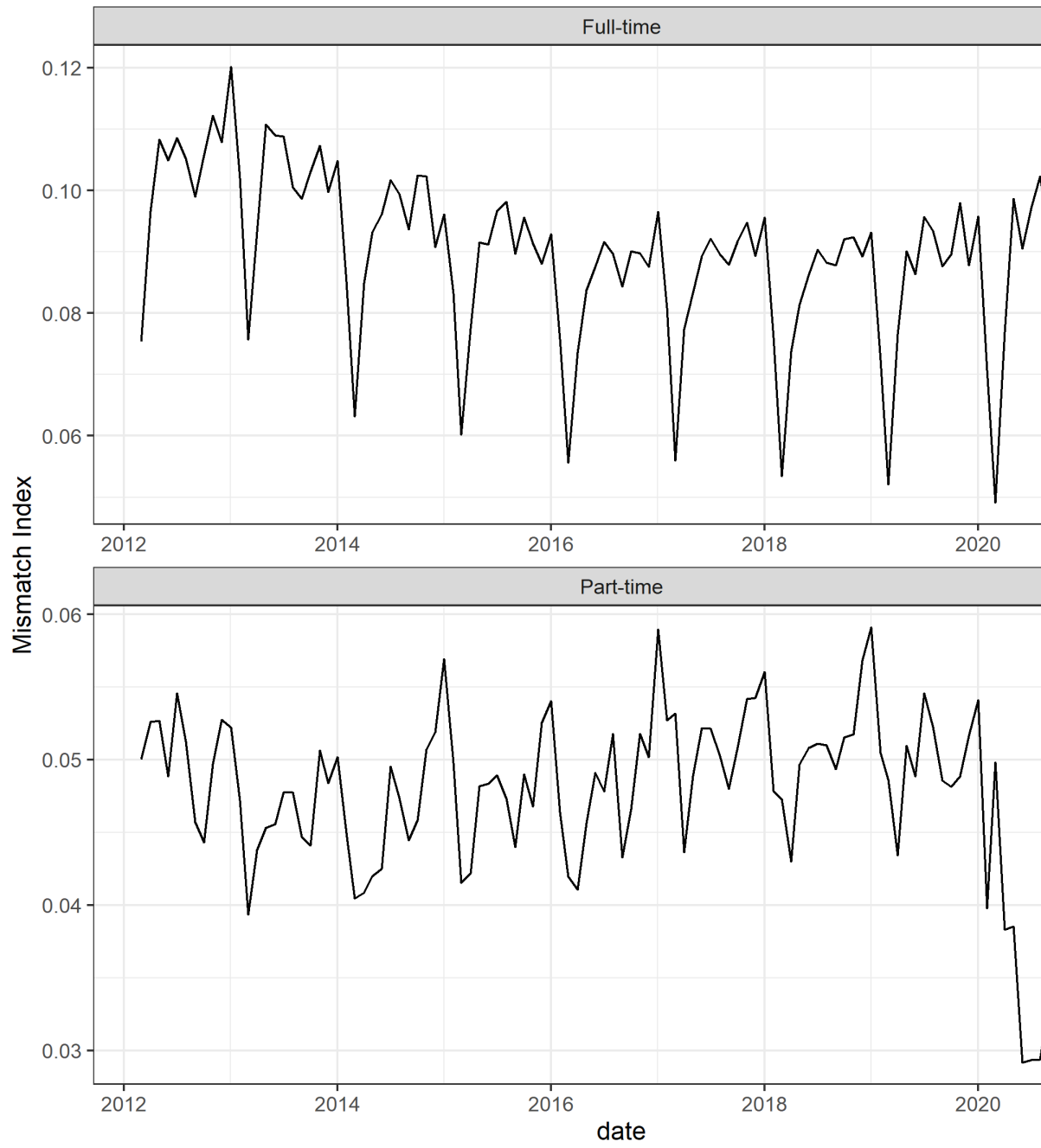


## Chapter 3

# Result

- Occupational mismatch by March, 2021.

```
include_graphics("R/figure/occ_mismatch.png")
```



# Bibliography

Şahin, A., Song, J., Topa, G., and Violante, G. L. (2014). Mismatch unemployment. *American Economic Review*, 104(11):3529–64.