How Useful are Posted Job Openings? // Evidence from Sweden

immediate

Version: July 13, 2015

— preliminary and incomplete version - please do not circulate —

Abstract

1   Introduction

Job openings is a key component in labor market analysis within the search matching framework. In the canonical search matching model (*e.g.* as presented in **?**) hires happens as unemployed workers and job openings created by firms meet via an aggregate matching function. The success of this framework stems from its ability to match the observed labor market behaviour over the business cycles. Indeed, in the model a positive productivity shock will increase the firms' payoff from a match and thus induce it to create more job openings. As the labor market becomes tighter hiring increases and unemployment falls.

Hence, time series for job openings are key when taking the search-matching framework to the data. The current *gold-standard* for such data are surveys where a job opening is defined as a position for which (i) work could start within 30 days and (ii) the employer is *actively recruiting* for outside the firm. In the US this is done in the Job Opening and Labor Turnover (JOLTS) since 2000, whereas a similar survey for Europe only goes back to 2000 (**?**).

Consequently, when estimating matching functions researchers often have to rely on other data sources for job openings. In Europe, many studies uses postings at the Public Employment Service as proxy for the true number of vacancies in the economy (**?????**) (TBD: Add from chp. in Pissarides). However, here one obvious concern is that postings via these channels are not representative for all openings, and that the firm's propensity to use these channels can vary over time.

Indeed, not accounting for this measurement problem can lead to spurious conclusions within the search matching. In the search matching framework movements

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in the Beveridge curve can only be caused by exogenous shifts in (i) the match efficiency or (ii) the job destruction rate. However, as we will argue more precisely below shifts in the Beveridge curve can also be caused by change in firms recruitment behavior. Indeed, if firms substitute between observed postings and other channels this can also shift the Beveridge curve as well as the perceived labor market efficiency.

This paper aims at quantifying this measurement problem. By linking data for vacancies and hires at the establishment level, we gauge the amount of hiring happening with and without preceding vacancies at the PES. We document how this ratio differs in the cross-section and across time. Moreover, using a simple search-matching model with two recruitment channels we assess the consequences for fluctuations in the perceived matching efficiency of ignoring shifts in the firms recruitment behaviour.

[Findings]

[Related literature]

2 Data

2.1 Raw data

[Data sources] We use plant-level micro data from three different data sources. First, for vacancies we use the database from Swedish Public Employment Service (PES). This database contains start and end dates on each listed vacancy at PES. Second, for hires we use the microdata from the *Short-term employment statistics* (Kortperiodisk sysselsätningsstatistik) collected by Statistics Sweden. This is a monthly representative survey of approx. 18 700 private work places on the plant level, and 650 public work places on the organizational level (juridisk enhet). This database contains the number of new hires done by the specific plant each month. Third, as a cross-check we also construct hires from the employment register from the IFAU database. This includes monthly start and end dates of all employment Swedish spells. From this we can compute the number of hires on the plant level in each month. All sources cover the period XX-XX.

[Descriptives on vacancies] Show graph and explain exactly which variable is used

[Descriptives on hires] Figure X shows the time series for both the survey and register based database.

[Data selection] We restrict the sample to plants availiable in all three databases. As both the PES database as well as the employment register covers the universe of Swedish plants, while the Short-term employment statistics is a survey, this means restricting the sample of plants to what is in the latter survey for each month.

2.2 Announced and unannounced hires

[Announced and unannounced hires]

2.3 Patterns in cross section

2.4 Patterns across time

3 Model

4 Conclusion

5 Appendix

5.1 Computing total number of posted vacancies in a month

- From the survey we are given the number of vacancies medio in a given month, V_{medio}. However, we wish to know the total number of posted vacancies in this model. How do compute this?

- We know that the total number of posted vacancies in month τ equals (assuming T days in the month)

$$V_1 + a_\tau V_1 + a_\tau V_2 + \cdots + a_\tau V_T \tag{1}$$

- Here V_s is the total stock of vacancies at day s, while a_τ is the arrival rate of new vacancies. The latter is assumed to be constant during the month.

- Also note that the vacancy dynamics is given by

$$V_{t+1} = (a_\tau - f_\tau)V_t \tag{2}$$

  here a_τ is the (daily) arrival rate of new vacancies, while f_τ is the (daily) filling rate of existing vacancies.

- This means that we can compute the number of vacancy *primo* in month τ from the observed number *medio*

$$V_{primo} = (a_\tau - d_\tau)^{-T/2}V_{medio} \tag{3}$$

- Knowing the number of vacancies primo month τ, we can compute the number of vacancies throughout the month

$$V_1 + a_\tau V_1 + a_\tau V_2 + a_\tau V_3 + \cdots + a_\tau V_T \tag{4}$$
$$= V_1 + a_\tau V_1 + a_\tau(a_\tau - f_\tau)V_1 + a_\tau(a_\tau - f_\tau)^2 V_1 + \cdots + a_\tau(a_\tau - f_\tau)^{T-1}V_1 \tag{5}$$
$$= V_1(1 + a_\tau + a_\tau(a_\tau - f_\tau) + a_\tau(a_\tau - f_\tau)^2 + \cdots + a_\tau(a_\tau - f_\tau)^{T-1}) \tag{6}$$
$$= V_1(1 + a_\tau a_\tau \frac{1 - (a_\tau - f_\tau)^T}{1 - (a_\tau - f_\tau)}) \tag{7}$$

- The remaining question is now how we calibrate a_τ and f_τ. We will compute these from the vacancies registered at the PES

- TBD: Insert Figure with time series for a_τ and f_τ. These are on server.

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[Figure 1 about here.]

List of Figures