Comments on "A Cross-Country Comparison of Labor Market Frictions" by Geert Ridder and Gerard van den Berg

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Cascais, June 4, 2001

- This paper shows how aggregate cross-sectional data and an equilibrium search model can be combined to estimate quantities of policy interest.
- The exercise is carried out for the US and 4 EU countries. The estimated parameters are used to compare their labor markets, and to assess potential policy changes.

1. Motivation

- Estimating an equilibrium search model with micro panel data is difficult and the data may not be available. Moreover, with joint estimation of all parameters it may be difficult to know how compelling results really are.
- A "sequential" method of estimation is helpful for detecting the sources of identification of each parameter. In this way the assumptions needed to attach a particular interpretation to an empirical quantity are transparent.
- I will provide a summary of the paper, focusing on the methodology, followed by some generic comments.

2. Estimating frictional and structural unemployment (from data on unemployment durations)

- Suppose the *frictionally unemployed* have constant exit rate λ_0, whereas the *structurally unemployed* have exit rate equal to zero.
- Then, the aggregate probability of a spell longer than t is

$$\begin{aligned}\overline{\Psi}(t) &= \Pr(T > t \mid S)\Pr(S) + \Pr(T > t \mid F)\Pr(F) \\ &= 1 \times \pi + e^{-\lambda_0 t} \times (1 - \pi)\end{aligned}$$

- We can estimate π and λ_0 from estimates of $\overline{\Psi}(t)$ for different values of t. e.g. if we have estimates of $\overline{\Psi}(6)$ and $\overline{\Psi}(12)$ we can solve for π and λ_0 from the equations

$$\begin{aligned}\overline{\Psi}(6) - \pi &= (1 - \pi)\, e^{-6\lambda_0} \\ \overline{\Psi}(12) - \pi &= (1 - \pi)\, e^{-12\lambda_0}.\end{aligned}$$

- One problem with this is that heterogeneity in λ_0 will be attributed to π.
- The structurally unemployed are low productivity workers who are priced out of the market as a result of the existence of a minimum wage.

3. Estimating the job destruction rate (from λ_0, π, and observed unemployment rates)

- The total number of unemployed workers is the sum of the structurally and the frictionally unemployed:

$$u = u_s + u_f$$

- Similarly, the total number of workers is

$$m = u_s + m_f$$

where m_f is the number of "frictional workers".

- Given $\pi = u_s/u$ and the observed unemployment rate u/m, from a simple accounting decomposition we can get the frictional unemployment rate as

$$\frac{u_f}{m_f} = \frac{(1-\pi)\frac{u}{m}}{\left(1-\pi\frac{u}{m}\right)}$$

- The flow from unemployment to employment is $\lambda_0 u_f$ whereas the flow from employment to unemployment is $\delta\left(m_f - u_f\right)$.

- In equilibrium the two are equal so that we can estimate the (equilibrium) *job destruction rate* δ as

$$\delta = \lambda_0 \frac{u_f}{\left(m_f - u_f\right)} = \lambda_0 \left(1-\pi\right) \frac{\frac{u}{m}}{\left(1-\frac{u}{m}\right)}$$

- The value of δ reflects legal restrictions on lay-offs, but no data on lay-offs are used. It all comes from unemployment durations, unemployment rates, and the equilibrium condition.

4. Estimating arrival rates of job offers while employed (from data on wages and job durations by wage)

- Suppose the duration of a job with wage w has hazard rate
$$\delta + \lambda_1 \overline{F}(w)$$
λ_1 is the arrival rate of job offers while employed, $\overline{F}(w)$ is the probability of an offer with a wage higher than w, and $k_1 = \lambda_1/\delta$ is an *index of search frictions*.

- Thus, the average duration t_j of a job with wage w is
$$E(t_j \mid w) = \frac{1}{\delta + \lambda_1 \overline{F}(w)}$$

- Let the stock of workers with wage not greater than w be
$$G(w)(m_f - u_f)$$
$G(w)$ is the *cdf* of wages of a cross-section of employees.

- The outflow of this stock is $\left[\delta + \lambda_1 \overline{F}(w)\right] G(w)(m_f - u_f)$, and the inflow is $\lambda_0 F(w) u_f$, with $F(w) = 1 - \overline{F}(w)$.

- Equating them, in equilibrium $G(w)$ and $F(w)$ satisfy
$$G(w) = \frac{\lambda_0 F(w)}{\left[\delta + \lambda_1 \overline{F}(w)\right]} \left(\frac{u_f}{m_f - u_f}\right) = \frac{\delta F(w)}{\left[\delta + \lambda_1 \overline{F}(w)\right]}$$

- This implies that average job durations are linearly related to $G(w)$ with k_1 as the ratio of the slope and the intercept:
$$E(t_j \mid w) = \frac{1}{\delta + \lambda_1} + \frac{\lambda_1}{\delta(\delta + \lambda_1)} G(w)$$

- Using data on $G(w)$ and average job spells by wage (available for France and US), k_1 can be estimated by OLS or ML. This holds regardless of the form of $G(w)$, but estimates may be sensitive to measurement error in wages.
- k_1 can also be identified from marginal job durations, but the estimates are unreliable. The problem is that there are too many short tenure jobs.
- For EU countries $\lambda_0 > \lambda_1$ whereas for the US $\lambda_0 < \lambda_1$.

5. Estimating wage variation due to search frictions

- The interpretation of estimates of (λ_0, λ_1 and δ) only requires the equilibrium condition, and that job seekers follow a partial job search model with on-the-job search. It is independent of wage setting by the employers.
- If firms set w to maximize steady-state profits, the marginal revenue product p is constant, and $p > \max\{b, w_{\min}\}$, the Burdett-Mortensen equilibrium $F(w)$ satisfies

$$F(w) = \frac{\delta + \lambda_1}{\lambda_1}\left(1 - \sqrt{\frac{p-w}{p-\underline{w}}}\right)$$

  with support $(\underline{w}, \overline{w})$, $\underline{w} = \max\{\phi, w_{\min}\}$, $\overline{w} = F^{-1}(1)$; ϕ is the reservation wage, $w_{\min}$ is the mandatory minimum wage, and b denotes unemployment benefits.
- Suppose the labor market is made of many segments with different p. In each segment there is an equilibrium $F(w)$ for the corresponding p. In a segment with $p < w_{\min}$ there are no firms and all workers are structurally unemployed.
- Thus, in a given segment wages are distributed as

$$G(w \mid p) = \frac{\delta F(w \mid p)}{\delta + \lambda_1 \overline{F}(w \mid p)} = \frac{1}{k_1}\left(\sqrt{\frac{p - \underline{w}(p)}{p-w}} - 1\right).$$

  with $E(w \mid p)$ linear in p and $\underline{w}(p)$, and $Var(w \mid p)$ proportional to $[p - \underline{w}(p)]^2$.

- In general $\underline{w}(p) = \max\{\phi(p), w_{\min}\}$, but if $\lambda_0 < \lambda_1$ then $\phi(p) < b$, and $\underline{w}(p) = w_{\min}$, since for all countries $b < w_{\min}$.
- The aggregate mean and variance of w satisfy:

$$E(w) = E[E(w \mid p)] = \frac{k_1}{1+k_1} E(p) + \frac{1}{1+k_1} E[\underline{w}(p)]$$

$$Var(w) = E[Var(w \mid p)] + Var[E(w \mid p)]$$

  If $\underline{w}(p) = w_{\min}$, these equations can be solved for $E(p)$ and $Var(p)$. The general idea is that using moments of w we can determine those of p. Hence we can obtain:
- The *fraction of wage variation due to search frictions* (since $Var[E(w \mid p)]$ is the variation due to productivity dispersion):

$$\frac{E[Var(w \mid p)]}{Var(w)},$$

  and a measure of *average monopsony power*:

$$\mu = \frac{E(p - w)}{E(p)}$$

- A problem of these measures is that they depend on estimates of k_1 (which are not robust), and the assumptions about wage setting by firms and type of heterogeneity.
- The notions of "segments" or "productivity" have no empirical counterpart. Here p is just a label for a distribution that makes up for the difference between the Burdett-Mortensen earnings distribution and that in the data.

6. General comments

- I like the approach. In particular the focus on policy parameters and the sources of their empirical identification (both in terms of data requirements and assumptions).
- The objective of getting estimates from published cross-sectional aggregates is only a partial success. Estimation of the index of search frictions ends up requiring data on durations of job spells by wage.
- Inference on search frictions and monopsony power depends crucially on estimates of the wage distribution and are thus sensitive to measurement error in observed wages.
- A virtue of the approach is to exhibit clearly the limitations of the theoretical framework. Among them:
- Difficulty to accommodate realistic patterns of heterogeneity in this calibration setting.
- Productivity differences are exogenous.
- The firm's decision problem is underdeveloped, partly reflecting the fact that only workers' data are used. Aggregates from matched firm-worker data seem promising.
- Is there anything to be learned from time series and life-cycle data (role of age and shocks)?
- The connection between employment protection and the job destruction rate in the policy discussion is very loose.