The Cyclicality of Job Creation with Multiple Offers

Junjie Guo

University of Wisconsin-Madison

January 2021
In search of a job, a worker may receive multiple offers

- Wolthoff (2017): about 10% of job offers are rejected by workers due to “the simultaneous arrival of a financially more attractive offer from a different firm”
- Guo (2020): more than a third of new hires from non-employment report choosing their work over an alternative job opportunity

Multiple offers are ignored in standard job search models, mainly through the no recall assumption

- Some exceptions are Albrecht et al. (2006), Galenianos and Kircher (2009), Kircher (2009) and Wolthoff (2014)
- None studies on the impact of multiple offers on job creation

This paper studies the interaction between multiple offers and job creation over the business cycle

- Endogenize multiple offers and in turn, the wage offer distribution, in a DMP model
- Empirical evidence consistent with the model’s predictions on the cyclicality of multiple offers and the wage offer distribution
Diamond-Mortensen-Pissarides (DMP) meets Burdett and Judd (1983)

DMP: Discrete time; homogeneous workers and homogeneous firms; random meetings between unemployed workers and vacancies; no on-the-job search; exogenous job destruction

Deviation: Each period, a worker can meet *multiple* vacancies, and vice versa

- Vacancies are created at the beginning of a period with a *posted* wage
- The total number of meetings across all workers and vacancies is deterministic \( m(u, v) \)
- The number of meetings at the individual level is random; Poisson with mean \( \lambda_j = \frac{m(u, v)}{j}, j \in \{u, v\} \)
- At the end of a period, a vacancy makes an offer to *one* of the workers it meets, if any
- A worker with one or more offers accepts the one with the highest wage if it’s better than unemployment

BJ: Multiple offers imply wage dispersion: the wage offer distribution is endogenous and non-degenerate
The Cyclicality of Multiple Offers Among New Hires

- Let $P_M = \frac{\sum_{k \geq 2} p_o(k)}{\sum_{k \geq 1} p_o(k)}$ be the fraction of new hires with multiple offers: $\frac{\partial P_M}{\partial y} > 0$
  - $\frac{\partial \theta}{\partial y} > 0$ due to free entry: $\theta \equiv \frac{v}{u}$ is the market tightness
  - $\frac{\partial g(\theta)}{\partial \theta} > 0$ where $g(\theta)$ is the offer arrival rate
  - $\frac{\partial P_M}{\partial g(\theta)} > 0$: true for any Poisson distribution

- From 1984 to 1987, PSID asked respondents working at the time of the survey
  - “At the time you ... started in your present (position/work situation), was it the only job opportunity you had, or did you choose it over something else?”

The slope of the fitted line is 2.11 with a standard error of 0.822.
Let \( w^q_F \) be its 100\( q \)th percentile of the wage offer distribution \( F \) defined by \( F(w^q_F) = q \) for any \( q \in [0, 1] \).

For any \( 0 \leq q_1 < q_2 \leq 1 \)

\[
\frac{\partial w^{q_2}_F}{\partial y} > \frac{\partial w^{q_1}_F}{\partial y} > 0
\]

- A rightward shift: \( \frac{\partial w^q_F}{\partial y} > 0 \) for any \( q \)
- A clockwise rotation: \( \frac{\partial w^{q_2}_F}{\partial y} > \frac{\partial w^{q_1}_F}{\partial y} \) for any \( q_2 > q_1 \)

Intuition for the rotation
- with \( \frac{\partial g(\theta)}{\partial y} > 0 \), workers receive more offers on average when \( y \) is high
- low-wage offers are more likely to be rejected
- pushes firms to post a larger share of high-wage vacancies
An increase in productivity $y$ is associated with an increase in the share of vacancies posted by high-wage industries.

$$\Delta \log \left( \frac{v_{j,t}}{v_t} \right) = \eta_j \Delta \log y_t + \varphi_j + Q_t \beta_j + \zeta_{j,t}$$

The slope of the fitted line is 0.053 with a standard error of 0.023.
Let $G$ be the wage distribution of new hires

$$G(w) = \frac{\sum_{k \geq 1} p_o(k) F^k(w)}{\sum_{k \geq 1} p_o(k)}$$

For any $q \in [0, 1]$, let $w^q_G$ be its $100q$th percentile defined by $G(w^q_G) = q$. For any $0 \leq q_1 < q_2 \leq 1$

$$\frac{\partial w^{q_2}_G}{\partial y} > \frac{\partial w^{q_1}_G}{\partial y} > 0$$

Two channels

- Impact of $y$ on $F$ discussed above
- Impact of $y$ on $p_o(k)$
Let $w_{q,t}$ be the 100$q$th percentile of the residual wage distribution of new hires in quarter $t$ in CPS

$$\Delta \log w_{q,t} = \eta_q \Delta \log y_t + \varphi_q + Q_t \beta_q + \epsilon_{q,t}$$

The slope of the fitted line is $0.013$ with a standard error of $0.003$.

**The slope of the fitted line is 0.013 with a standard error of 0.003.**
Provide a model of job creation with multiple offers

The model predicts that an increase in productivity leads to an increase in
- the fraction of new hires with multiple offers
- the share of high-wage vacancies
- the share of new hires in high-wage jobs

Present empirical evidence consistent with the predictions

Two new channels for the sullying effect of recessions
- the procyclicality of multiple offers
- the procyclicality of the share of high-wage vacancies
- complement existing theories focusing on OTJ search, e.g., Barlevy (2002)

Future work
- Augment the model with firm and worker heterogeneity and on-the-job search
- More evidence on the significance of multiple offers