Labor Dynamics of a Recovery

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Abstract

I propose a modeling framework to resolve the puzzle of slow and near-linear recoveries. A key feature of this model is a two-sided ranked many-to-many matching mechanism in an otherwise standard framework. Early in the recovery, composition effects and separations depress job creation incentives and therefore job finding rates. This effect becomes much stronger for the unemployed who under slack markets consistently get out-ranked by their employed peers. This reinforces the composition effects, keeping markets slack until into the recovery. The model is able to match the last 5 recovery processes in the US economy closely.

Motivating fact 1: Slow, near linear recoveries

Experiment: Up until the beginning of the recovery, match \( V_i s_i \) to mimic empirical transition probabilities. Then let the model determine all variables and only adjust \( \delta_i, \sigma_i \) to mimic empirical transition probabilities (measured period-to-period) to generate realistic recoveries.

Motivating fact 2: Workers with low job finding rates are more exposed to the cycle

Just like the data, the model predicts that low job finding rates are much more cyclical than high job finding rates.

Model implications for JFR

Composition effects keep markets slack

The decomposition illustrates that market tightness is depressed during the recovery primarily because the workers searching are low-rank/low-productivity workers. This decreases the hiring incentive and therefore vacancy posting.

Model sketch

• Homogeneous firms posting vacancies under free entry
• Heterogeneous workers, characterized by
  \[ \text{Rank}(y_i, \theta_i, \phi_i, \psi_i) \]
  \( y_i \): Productivity
  \( \theta_i \): Rank (determines their order of selection)
  \( \phi_i \): Relative transition probability into unemployment
  \( \psi_i \): Relative transition probability into non-participation
• Three employment states: Non-participation, unemployment, employment
• Transition probabilities for worker \( i \):
  \[ E_{t-1} \rightarrow N_t \]
  \[ U_t \rightarrow U_t \]
  \[ N_t \rightarrow U_t \]
  \[ N_t \rightarrow E_t \]
  \[ E_t \rightarrow N_t \]
  \[ E_t \rightarrow U_t \]
  \[ E_t \rightarrow E_{t+1} \]
• \( \delta_i \): Relative transition probability into non-participation
• \( \sigma_i \): Endogenous determination of available labor force
• \( \delta_i, \sigma_i \) are chosen to replicate empirical transition probabilities (measured period-to-period)
• \( \lambda \): Determined endogenously by the model

Many-to-many matching produces realistic recoveries

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Model mechanism

• Slack markets mean more encounters per firm but fewer per worker
• Under slack markets, hiring shifts towards high rank workers (mostly employed) and the relative search advantage enjoyed by high rank workers rises
• Better workers are then less likely to search, so most searchers are now of lower quality
• This decreases the hiring incentive for firms
• As a consequence, vacancy posting goes down, reinforcing slack markets

Conclusion

• Labor market selection can help explain the puzzle of slow and near-linear recoveries
• Selection and composition effects reinforce each other: to generate slack markets with high unemployment years into the recovery
• In the data and the model, slack markets create job search particularly difficult for less productive workers, slowing their exit from unemployment

QR link to paper