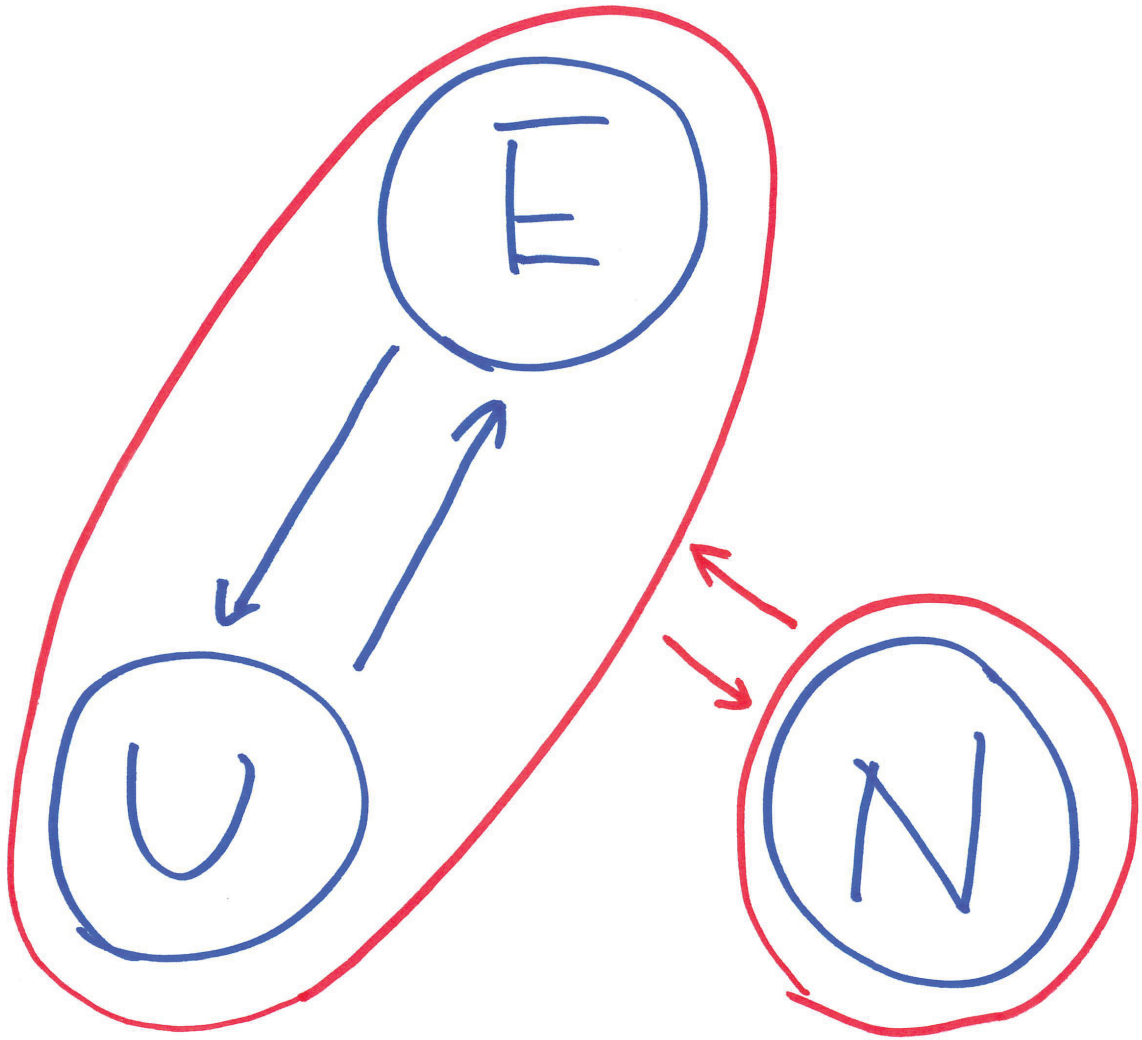
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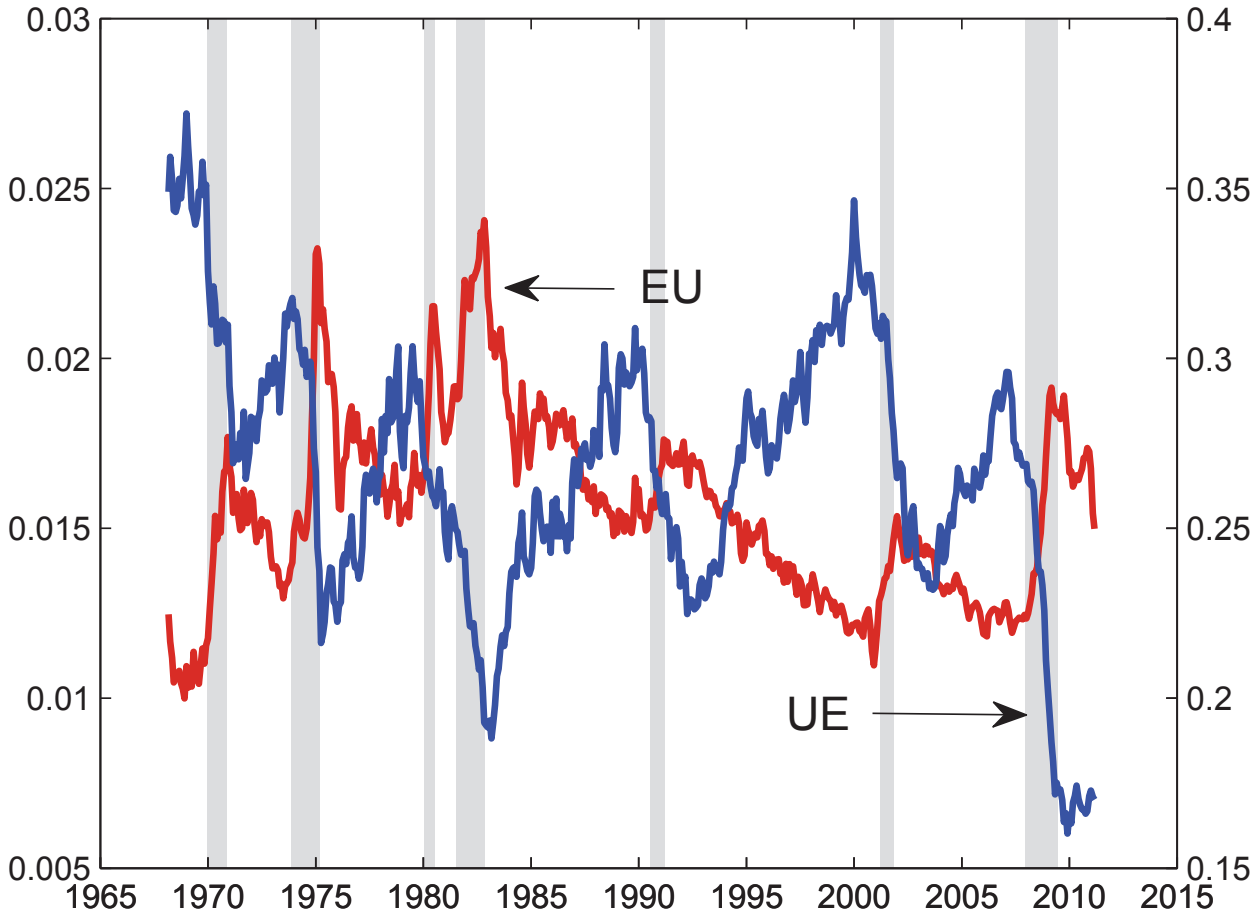
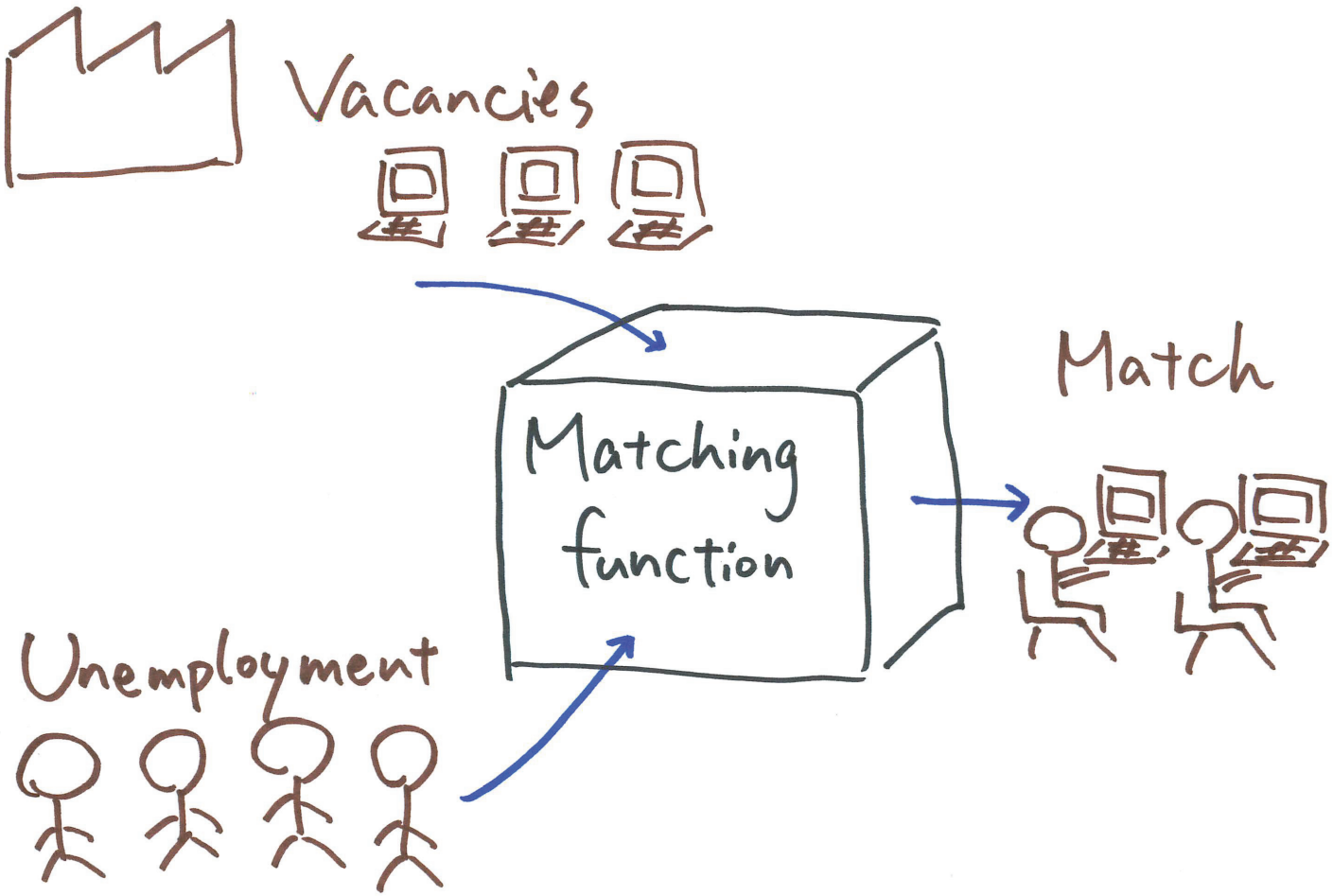
EU and *UE* flows



The theory of *UE* flows: the matching function approach



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  - $M(V_t, U_t)$ is increasing in V_t and U_t.
- We assume that the matching function has the following properties:

$$M(V_t, U_t) \leq V_t,$$

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and

$$M(\mu V_t, \mu U_t) = \mu M(V_t, U_t) \text{ for any } \mu > 0.$$

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- Then, (again ignoring the N state) the stock of employment follows

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- In terms of the unemployment rate, this can be rewritten as

$$u_{t+1} = \left(1 - \lambda\left(\frac{v_t}{u_t}\right)\right) u_t + \sigma(1 - u_t),$$

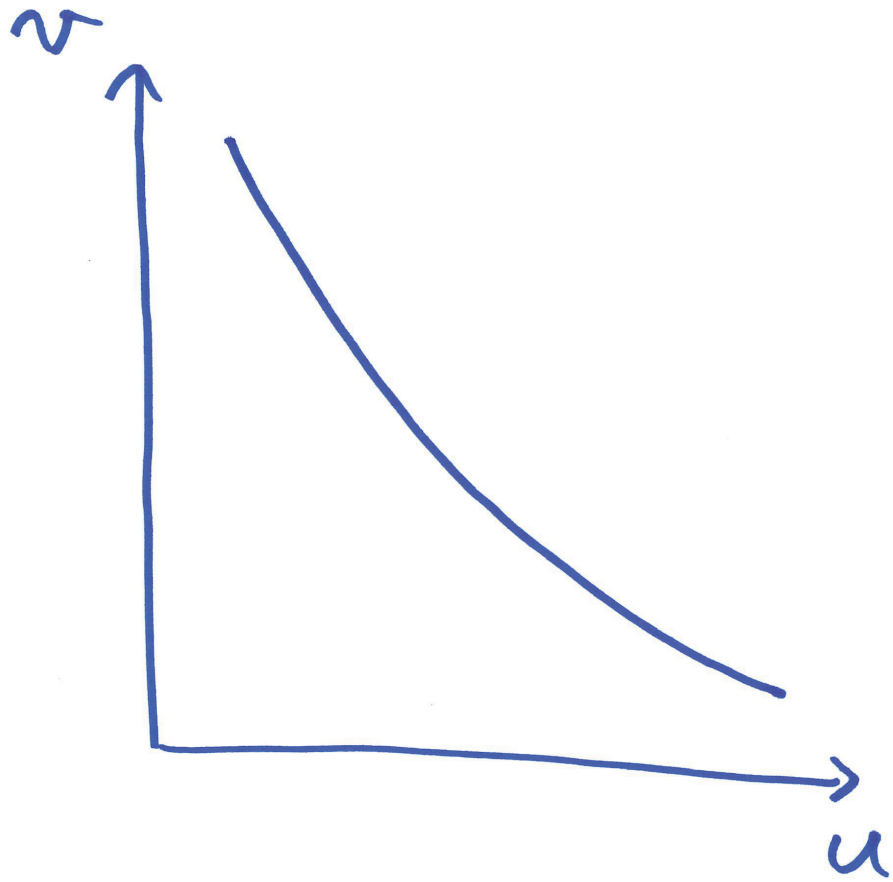
where $\lambda(v_t/u_t) \equiv M(v_t/u_t, 1)$.

- When v_t is constant, this converges to a steady state. The steady-state unemployment rate satisfies

$$u = \frac{\sigma}{\lambda(v/u) + \sigma}.$$

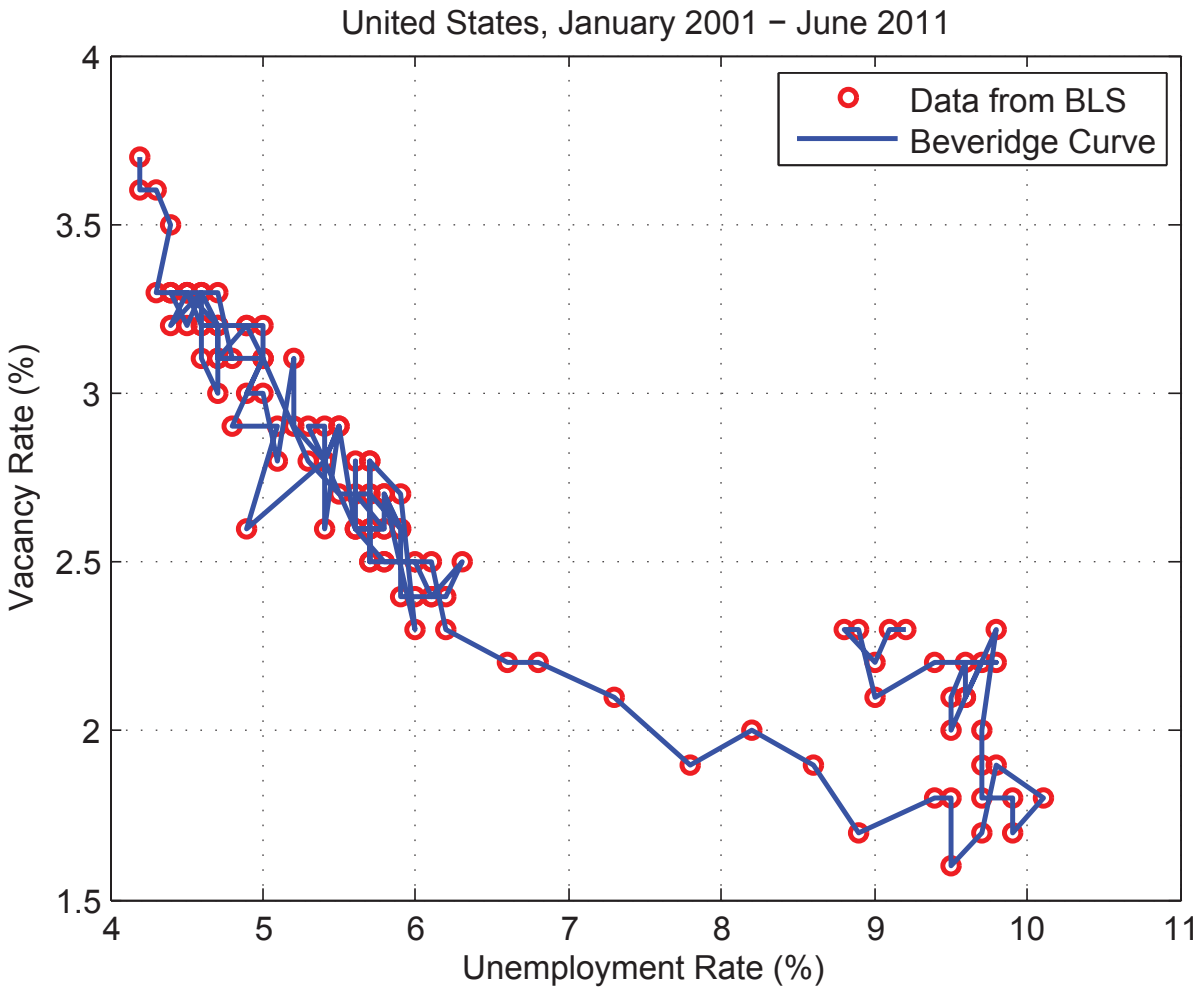
u is decreasing in v.

The steady state relationship between v and u



- Over the business cycle, v moves around (v is high in booms and low in recessions) and u changes following this relationship. Off-the-steady-state behavior turns out to be not too important.

Beveridge curves in the United States



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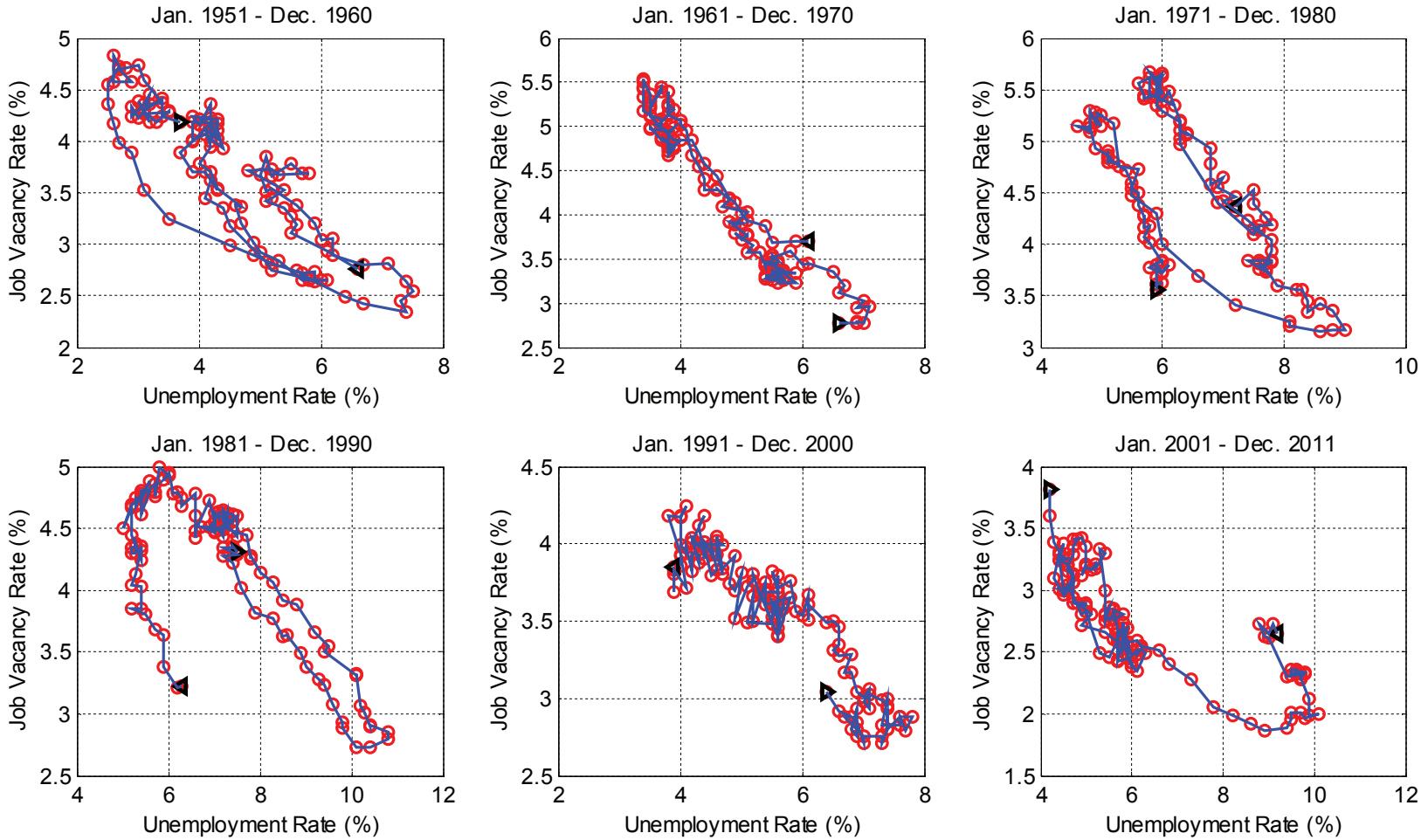

- So, this theory fits the data very well.
- One central question is: Why does v move around over time?

Conclusion

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- The theories of the worker flows are under development.
- I outlined the "matching function approach." It is a "black box" approach but it fits the data well (Beveridge curves).
- Future research topics
  - Why does vacancy move so much over the business cycle?
  - Roles of labor supply and worker job search
  - Opening up the "black box."

References

- Ching-Yang Lin and Hiroaki Miyamoto (2012). "Gross Worker Flows and Unemployment Dynamics in Japan," *Journal of the Japanese and International Economies.*
- Per Krusell, Toshihiko Mukoyama, Richard Rogerson, and Ayşegül Şahin (2012). "Is Labor Supply Important for Business Cycles?" NBER Working Paper 17779.