Discussion of "Search, Matching and Training"

C. Flinn [1] A. Gemici [2] S. Laufer [3]

Discussant: T. Lamadon [4]

[1]NYU, [2]Royal Holloway, [3]Board of Governors, [4]U. Chicago

Chicago, Dec, 2015

Search, Matching and Training

- Build and estimate a model of the labor market with:
  - **human capital**: both **match specific** and **general**
  - ability to **invest** in both with **training**
  - mobility frictions
- Important for several economic questions:
  - potential under-investment in human capital
  - long-term effect of policies that shift investment
- Presence of an important measurement challenge:
  - **human capital** (general & specific) is **unobserved** to the econometrician!

Parameters of interest

- The counterfactuals of interests involve changes in the equilibrium amount of training

- Getting this right requires:
  1. separating the effect of match VS general heterogeneity
  2. understand how they vary within match
  3. recover the investment function for both

- In order to recover these, the authors rely on:
  1. data on total amount of training in NLSY
  2. modeling assumptions and their implications on wages and mobility

- The small standard errors suggest that the parameters are tightly pinned down by the data, yet it is worth thinking about what components deliver identification

On separating general from specific human capital

- This is the central point of the paper: the two types of capital have different implications for **job mobility** and **wage growth**:

- To provide intuition on the role of general vs specific the authors re-estimate the model shutting each training type down in turn:
  - No a investment: can't match both wage growth for stayers and movers
  - No θ investment: can't match differences in wage growth and separation between short and long spells

- What in the model creates these links:
  - Bargaining assumption
  - Random search assumption with Free entry
  - Endogenous separation

Separating general from specific human capital

- The state space for a match is (a, θ)
- Bargaining without commitment:
  - makes equilibrium wages a direct function of the state $w^*(a, \theta)$
  - creates a tight link between wage growth and changes in (a, θ)
  - in comparison, in sequential contracting, wage growth can also be triggered by outside offers as well.
- Random search + Free entry
  - Free entry implies that job are ranked by values of θ, indenticaly for all a
  - Random search implies that all (a, θ) sample from the same distribution $F(\theta)$
  - Any investment in θ will lower J2J transitions, independently of the investment in a

Separating general from specific human capital

- No a investment: can't match both wage growth for stayers and movers
  - all wage growth has to be driven by θ which lowers J2J probability and wage growth on J2J
  - very convincing under model assumptions

- No θ investment: can't match differences in wage growth and separation between short and long spells
  - In the data: EU rate $\searrow$ with tenure
  - This is not matched well when θ training is removed
  - If depreciation rate was allowed to change with the j level, could a dynamics alone match the relationship between separation, wage growth and tenure?
  - how important is the fixed depreciation rate here? What if you leave only θ depreciation without investment?

Transition rates & parameters

		Baseline	No a	No θ
PARAMETERS OF INVESTMENT FUNCTIONS				
General ability investment TFP	δ_a^0	.0150	0	0.0164
Firm-specific investment TFP	δ_θ^0	.0151	0.0204	0
State-dependence of general ability investment	δ_a^1	-.050	-	0.083
State-dependence of firm-specific investment	δ_θ^1	.702	0.696	-
Curvature of general ability investment	δ_a^2	.354	-	0.261
Curvature of firm-specific investment	δ_θ^2	.493	0.610	-
Rate of decrease in general ability	$\bar{\varphi}_a$	.0011	0	0.0012
Rate of decrease in match quality	$\bar{\varphi}_\theta$	.0144	0.0118	0

	Weekly Transition Rates Between $t-1$ and t			
	Baseline		No a	No θ
EU probability by Tenure				
... ¡6 mths	1.31%	0.52%	0.51%	0.45%
... 6-12 mths	0.92%	0.46%	0.46%	0.43%
... 1-2 yrs	0.59%	0.41%	0.41%	0.44%
... 2-4 yrs	0.34%	0.36%	0.37%	0.43%
... ¿4 yrs	0.23%	0.33%	0.37%	0.42%

wage growth by tenure?

Moments on mobility and training

- Given the clean insight of how investment in θ affects mobility, it would be very interesting to add transition rates interacted with training in the previous job.
  - is it infeasible or too noisy?

- The estimation relies on matching moments unconditional of training (wage growth/mobility)
  - The moments conditional on training are not themselves always well matched
  - This might be because of large weights on unconditional moments together with tight specification.
  - This is a commom problem where the model puts too much weight on matching one part of the data.

- Would it be possible to
  1. make the model more flexible in the unconditional moment dimension?
  2. estimate with larger weights on moments interacted with training as a robustness check?

Current moment with training

Table 9: **Model Fit: Incidence of Training**

	All	HS	Some College	College or More
% who got training at least once				
..... Data	15%	18 %	13 %	13%
..... Model	16%	20 %	15 %	13%
% who got training at the start of job spell				
..... Data	6%	10 %	5 %	3%
..... Model	4%	5 %	4 %	4%

Table 12: **Model Fit: Log Wage Difference btw Interview Dates $t-1$ and t by Training**

	$logw_t - logw_{t-1}$	
	No Training	Got Training
stayers		
..... Data	0.08	0.08
..... Model	0.08	0.08
job switchers		
..... Data	0.14	0.10
..... Model	0.09	-0.05
job switchers with nonemployment spell btw $t-1$ and t		
..... Data	0.08	0.15
..... Model	-0.14	-0.30
job switchers with no nonemployment spell btw $t-1$ and t		
..... Data	0.15	0.09
..... Model	0.22	0.15

Recovering the curvature of investment functions

- A similar comment applies to the recovery of the investment functions ϕ.

$$\phi_a(i,\tau) = \delta_a^0 \cdot a_i^{\delta_a^1} \cdot (\tau_a)^{\delta_a^2} \qquad \phi_\theta(i,\tau) = \delta_\theta^0 \cdot \theta_i^{\delta_\theta^1} \cdot (\tau_\theta)^{\delta_\theta^2}$$

- The joint curvature of investment seems pinned down by the incidence of training in the data but what helps recovering δ_θ^2 and δ_a^2 is less apparent
  - In the spirit of the No-a/No-θ estimations, could we vary the relative curvature of θ to a and look at the fit on the data?
  - Could we look at the return to training at different wage levels?

Conclusion

- Ambitious paper that tackles human capital investment, both general and specific together with mobility frictions
- Uses data on training to discipline investment
- Uses carefully designed model and its implications to separate the two types of human capital.
- A few potential suggestions for the final draft:
  1. emphasize moments interacted with training for estimation
  2. sensitivity analysis to different investment function curvature
  3. efficiency measure? (I am sure this is on the authors todo-list)

References