The Effect of Expected Income on Individual Migration Decisions

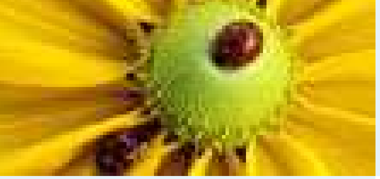
Kennan and Walker (2006)

Introduction

Table 1: Interstate Migration Flows
NLSY, 1979-92

	Less than High School	High School	Some College	College
No. of people	1768	3534	1517	1435
Movers	423	771	376	469
Movers (%)	23.9%	21.8%	24.8%	32.7%
Moves Per Mover	2.0	1.8	1.7	1.6
Repeat moves (% of all moves)	50.6	45.9	41.3	35.7
Return Migration (% of all moves)				
Return - Home	24.0	24.1	17.5	13.4
Return - Else	12.4	7.2	5.9	3.3
Movers who return home (%)	48.7	44.5	29.8	20.9
Return-Home: % of Repeat	47.5	52.5	42.4	37.5

- Younger and more educated people are more likely to move
- Repeat moves are a large part of observed migration flows
- Return moves are a large part of observed migration flows



Introduction

- Question: What is the extent to which people move to improve their income prospects?
- Need a dynamic model that allows for multiple moves and multiple other locations.
- They build and estimate an optimal search model of migration

Model

$$V(x,\zeta) = \max_j \{v(x,j) + \zeta_j\}$$

$$v(x,j) = u(x,j) + \beta \sum_{x'} p(x'|x,j)\bar{v}(x')$$

$$\bar{v}(x) = \int V(x,\zeta) f(\zeta) d\zeta$$

ζ is drawn from a Type 1 extreme value distribution, iid across location and period and $\perp$ to x.

$$\exp(\bar{v}(x)) = \sum_{k=1}^{n} \exp(v(x,k))$$

Then probability of choosing location j when the state is x is given by multinomial logit:

$$\rho(x,j) = \exp(v(x,j) - \bar{v}(x))$$

Details

If we allow agents to recall match value of every location they've visited then $J(n)^J$ states to compute (for each age and type).

So, K&W allow agents to recall only $M = 2$ most recent location matches. States = 23409.

However, 2 is a magic number.

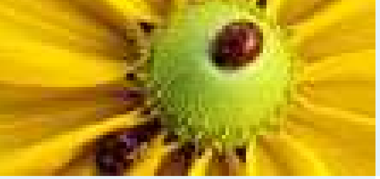
Let $l = (l^0, l^1)$ be vector of recent locations and ω be the corresponding sequence of recent wage information. Then the state vector $x = (l, \omega, a)$

Flow payoffs

$$\tilde{u}_h(x,j) = u(x,j) + \zeta_j$$

$$u(x,j) = \alpha_0 y(l^0, \omega^0) + \sum_{k=1}^{K} \alpha_k Y_k(l^0) + \kappa \xi(l^0 = h) - \delta_\tau(x,j)$$

$$\delta_\tau(x,j) = (\gamma_{0,\tau} + \gamma_1 D(l^0, j) - \gamma_2 \xi(j \in A(l^0)) - \gamma_3 \xi(j = l^1) + \gamma_4 a - \gamma_5 n_j)\xi(j \neq l^0)$$



Wages

Observed wage of individual i at location j is specified as:

$$w_{ij}(a) = X_i\beta + \phi(a) + \mu_j + \nu_{ij} + \eta_i + \epsilon_{ij}(a)$$

Econometrician observes only X_i, a.

μ, ν_{ij} and η_i are observable by the agent, though ν_{ij} only for $j \in l$. Only μ_j and ν_{ij} will effect migration decisions.

They estimate μ_j, using Census data, regressing annual earnings on full set of State and age dummies.

$$L_{i\tau} = \sum_s q(i,s)(\prod_{t=1}^{T_i} \rho_h(x_i(t,s), j_i(t), \theta_\tau))$$

Table 2: Interstate Migration of Young White Men

Disutility of Moving (γ_0)	7.173	3.690	4.680	4.305
	0.000	*0.543*	*0.646*	*0.645*
Distance (γ_1)		0.325	0.275	0.278
(1000 miles, State pop centroids)		*0.138*	*0.147*	*0.148*
Adjacent Location (γ_2)		0.643	0.665	0.669
		0.153	*0.158*	*0.159*
Home Premium (κ)		0.290	0.275	0.372
		0.024	*0.021*	*0.032*
Previous Location (γ_3)		2.820	4.380	3.767
		0.235	*0.317*	*0.327*
Age (γ_4)		0.094	0.112	0.095
		0.021	*0.024*	*0.024*
Population (γ_5)		0.715	0.631	0.631
(10 million people)		*0.135*	*0.132*	*0.138*
Stayer Probability		0.481	0	0.426
		0.057	-----	*0.062*
Cooling		0.109	0.095	0.140
(1,000 degree-days)		*0.023*	*0.019*	*0.024*
Heating		0.019	0.015	0.025
(1,000 degree-days)		*0.009*	*0.008*	*0.010*
"Real" Income (α)		-------	0.466	0.552
($10,000)			*0.058*	*0.075*
Loglikelihood	-1744.88	-1309.60	-1305.44	-1287.86
Observations	5,767			
Moves	213			

Note: previous location and age are important, as are expected differences in income

Table 3

Moving Cost Examples

	γ_0/α	Age	Distance	Adjacent	Population	Previous Location	Cost
Homogeneous Model							
Coefficients	$195,361	0.1121	0.2740	0.6654	0.6304	4.3772	
Young mover		20	1	0	1	0	$274,027
Average mover		23.5	0.715	0.338	0.759	0.300	$229,151
Move to Previous location		20	1	0	1	1	$91,490
Two-Type Model (mover type)							
Coefficients	$151,637	0.0948	0.2783	0.6693	0.6315	3.7668	
Young mover		20	1	0	1	0	$215,994
Average mover		23.5	0.715	0.338	0.759	0.300	$176,157
Move to Previous location		20	1	0	1	1	$58,911

Though cost is high, an agent who moves to a state with avg. wages 2σ above mean and has an match benefit of 2σ above mean would reap a lifetime benefit of $335,000.

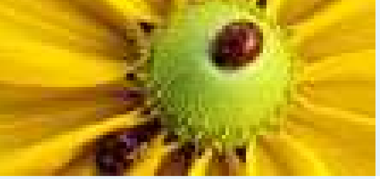


Table 5: Goodness of Fit								
Moves	**Binomial**		**NLSY**		**Homogeneous Model**		**Two-Type Model**	
None	482.8	72.6%	544	81.80%	532083	80.01%	546251	82.14%
One	154.4	23.2%	57	8.57%	69488	10.45%	49342	7.42%
More	27.80	4.2%	64	9.62%	63429	9.54%	69419	10.44%
Proportion of movers with more than one move	15.26%		52.89%		47.72%		58.45%	
Total observations	665		665		665000		665012	

Binomial probability is 3.69% - picked to match number of moves per person-year in data.

Table 6: Return Migration Statistics			
	NLSY	**Homogeneous Model**	**Two-Type Model**
Proportion of Movers who			
Return home	33.8%	32.7%	33.7%
Return elsewhere	5.6%	7.1%	7.4%
Move on	60.6%	60.1%	58.8%
Proportion who *ever*			
Leave Home	15.3%	15.4%	14.8%
Move from not-home	41.7%	58.2%	43.3%
Return from not-home	23.6%	31.7%	28.6%

Human capital and age

Table 7

Annual Interstate Migration Rates by Age and Current Location

	All		Not At Home[a]		At Home	
Age	N	Migration Rate	N	Migration Rate	N	Migration Rate
20	677	4.73%	74	21.62%	603	2.65%
21	637	4.87%	74	14.86%	563	3.55%
22	609	5.09%	81	19.75%	528	2.84%
23	569	3.51%	83	13.25%	486	1.85%
24	587	4.09%	83	15.66%	504	2.18%
25	533	4.69%	79	12.66%	454	3.30%
26	512	4.49%	80	17.50%	432	2.08%
27	465	1.94%	73	9.59%	392	0.51%
28	381	1.57%	57	5.26%	324	0.93%
29	307	1.63%	51	3.92%	256	1.17%
30	242	1.65%	38	7.89%	204	0.49%
31	149	2.01%	21	9.52%	128	0.78%
32	81	0.00%	12	0.00%	69	0.00%
33	18	0.00%	1	0.00%	17	0.00%
All	5,767	3.69%	807	13.38%	4,960	2.12%

[a]At Home means living now in the State of residence at age 14.

Note: Large drop in migration rates over life-cycle. 3 reasons for this in model:

1. Workers are poorly sorted initially, so workers may want to move initially.
2. Decreasing benefit over life-cycle of incurring fixed cost of moving (similar to education/humancapital models).
3. Age related moving costs.

The fact that (3) is significant indicates that human capital effect cannot completely explain migration.