

# The Earnings Distribution and Sectoral Switching Over The Business Cycle

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Preliminary

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# Introduction

# Motivation

## Cyclicalities of the earnings growth distribution

- Understanding earnings growth is essential as a input to models and itself for welfare reasons
- How does labour earnings growth vary over the business cycle?

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- 2 common assumptions about cyclicalty of earnings shocks :
  - ▶ counter-cyclical **variance**
  - ▶ counter-cyclical **left-skewness** [Graph](#)

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- How does labour earnings growth vary over the business cycle?
- 2 common assumptions about cyclical of earnings shocks :
  - ▶ counter-cyclical **variance**
  - ▶ counter-cyclical **left-skewness** Graph

## Cyclical of earnings growth & *transitions*

- Transitions vital to earnings growth and cyclical
- The earnings growth assoc. with a transition is cyclical
- Earnings growth across transitions needs **high-frequency panel**

# Motivation

## Recent evidence

- Guvenen et al. (2014): left-skewness of yearly earnings growth.
- Unclear why: low frequency data w/o labor-market status

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## Job search approach

- Residual earnings/wage dispersion → Frictional dispersion.
- Similar workers are paid differently. See Mortensen (2003) and Hornstein et al (2011).
- Search models provide a natural way of understanding why this arises by linking workers' job mobility to firms wage posting strategies. See Burdett and Mortensen (1998).

# Earnings growth and job dynamics

## What do we do

- Statistically document relationship between job mobility, occ. switching and earnings risk over **the business cycle**.
- Develop and quantitatively assess a model for understanding the earnings change distribution [next paper].



# Earnings growth and job dynamics

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- Develop and quantitatively assess a model for understanding the earnings change distribution [next paper].

## Main results (data)

- Employer and occupational switching:
  - ▶ Increase the workers' earnings risk.
  - ▶ Explain a large proportion of dispersion in earnings risk.
- Recessions decrease return to job/occupational mobility.
- Unemployment risk is particularly important for negative earnings growth.
- Changes to flows *and* returns affects the rest of the distribution.

# Data sample

# Constructing our sample

- We use SIPP panels 1996-2008: [Data for 1996-2012](#)
- Occupations: SOC 2-digit with the homogenized codes (using IPUMS, similar to Autor and Dorn, 2013) [Table](#)
- Unemployment defined strictly:
  - ▶ Excludes “recalled workers”
  - ▶ At least 1 week “searching” actively
- Switches are counted *at separation*.
- Earnings changes are deflated by the PCE and are based on residual earnings after controlling for: quadratic on potential experience, education, gender and race dummies, mean earnings on the occupation of departure and destination.

## Constructing our sample

- Drop *UE* transitions without a matching *EU* separation
  - ▶ Then re-weight observations
- Two ways of counting earnings changes through unemployment:
  - ▶ **EUE**: Aggregation across, from pre-displacement to re-employment.
  - ▶ **EU,UE**: Separate earnings changes for *EU* and *UE* using inverse hyperbolic sine of earnings for potential 0s.

$$\Delta_{i,t+1} = \log(w_{i,t+1} + (w_{i,t+1}^2 + 1)^{1/2}) - \log(w_{i,t} + (w_{i,t}^2 + 1)^{1/2}).$$

- Base frequency is a wave (monthly in paper)

# Earnings Change Distributions

## Earnings Change Distributions: All workers

	All	Stayers	EE	EUE	All-EU,UE	EU,UE
<b>Mean</b>						
All Periods	0.01	0.00	0.10	-0.07	-0.00	-0.14
Expansion	0.01	0.00	0.10	-0.04	0.02	0.28
Recession	-0.00	0.00	0.04	-0.15	-0.10	-1.95
<b>Median</b>						
All Periods	-0.01	-0.01	0.07	-0.08	-0.01	0.00
Expansion	-0.01	-0.01	0.08	-0.06	-0.01	0.21
Recession	-0.00	-0.00	0.04	-0.14	-0.00	-0.79

Table: Moments of earnings change distribution

Young

Prime

Old

HS

Col

## Earnings Change Distributions: The role of job mobility

	All	Stayers	EE	EUE	All-EU,UE	EU,UE
<b>Med Abs Dev</b>						
All Periods	0.05	0.04	0.39	0.43	0.05	2.08
Expansion	0.05	0.04	0.39	0.43	0.05	1.99
Recession	0.05	0.05	0.40	0.42	0.06	2.84
<b>Gr-Md</b>						
All Periods	0.07	0.07	0.04	0.02	0.01	-0.03
Expansion	0.09	0.09	0.05	0.03	0.07	0.02
Recession	0.00	0.03	-0.01	-0.01	-0.23	-0.24
<b>Moors</b>						
All Periods	3.46	3.39	1.58	1.53	3.73	4.05
Expansion	3.46	3.38	1.56	1.69	3.69	4.16
Recession	3.54	3.30	1.71	1.49	3.68	1.62

Table: Moments of earnings change distribution

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# Earnings Change Distributions: The role of job mobility

	EE		EUE		EU,UE	
	Sw Occ	No Sw	Sw Occ	No Sw	Sw Occ	No Sw
<b>Mean</b>						
All Periods	0.11	0.08	-0.08	-0.05	-0.17	-0.08
Expansion	0.12	0.09	-0.05	-0.03	0.27	0.31
Recession	0.02	0.05	-0.16	-0.13	-2.14	-1.68
<b>Median</b>						
All Periods	0.10	0.06	-0.09	-0.06	0.00	0.00
Expansion	0.10	0.06	-0.07	-0.05	0.21	0.21
Recession	0.06	0.03	-0.17	-0.09	-0.91	-0.69

**Table:** Moments of earnings change distribution

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## Earnings Change Distributions: The role of job mobility

	EE		EUE		EU,UE	
	Sw Occ	No Sw	Sw Occ	No Sw	Sw Occ	No Sw
<b>Med Abs Dev</b>						
All Periods	0.47	0.30	0.47	0.35	2.07	2.09
Expansion	0.47	0.29	0.47	0.35	2.01	1.96
Recession	0.49	0.31	0.47	0.36	2.87	2.80
<b>Gr-Md</b>						
All Periods	0.02	0.05	0.02	0.01	-0.04	-0.02
Expansion	0.03	0.05	0.02	0.04	0.01	0.02
Recession	-0.05	0.04	0.03	-0.08	-0.26	-0.21
<b>Moors</b>						
All Periods	1.40	1.77	1.49	1.70	4.39	4.07
Expansion	1.44	1.79	1.48	1.54	4.06	4.46
Recession	1.40	1.96	1.53	1.99	1.62	1.62

Table: Moments of earnings change distribution

## Earnings Distributions: Var. decomposition

Employer changes are important to earnings dynamics:

	Job Stayers	EE	EU,UE
Variance	0.51	0.19	0.30
0.95-0.05	0.63	0.21	0.16
0.9-0.1	0.69	0.19	0.12
0.75-0.25	0.78	0.15	0.07

**Table:** Decomposition of earnings change dispersion

- Job movers are  $\sim \frac{1}{10}$  of the population,  $\frac{1}{2}$  growth dispersion
- For larger changes, job stayers account for a smaller portion.

# Summary

- Cyclical changes in earnings growth: at bottom and at top of earnings growth distribution.
  - ▶ compression at top in recessions
  - ▶ left-tail expands in recessions
- Stronger for job changers, stronger for occupational movers. In recessions:
  - ▶ *EE*: compression at top, mainly for occupation movers
  - ▶ *EE*: left tail drops, but not much differentially between occupation movers and stayers
  - ▶ *EUE*: significant compression at the top for both occupation movers and stayers (more for movers)
  - ▶ *EUE*: drop of left tail, especially for occupation movers

# Worker Flows

# Flows - Unemployment to Employment



Figure: UE rate at wave-frequency (with time-aggregation)

# Flows - Employment to Unemployment

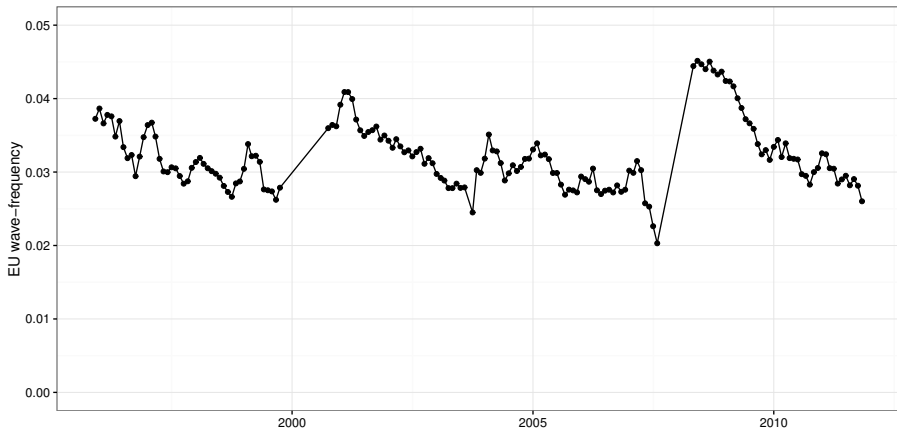


Figure: EU rate at wave-frequency (with time-aggregation)

# Flows - Job to Job

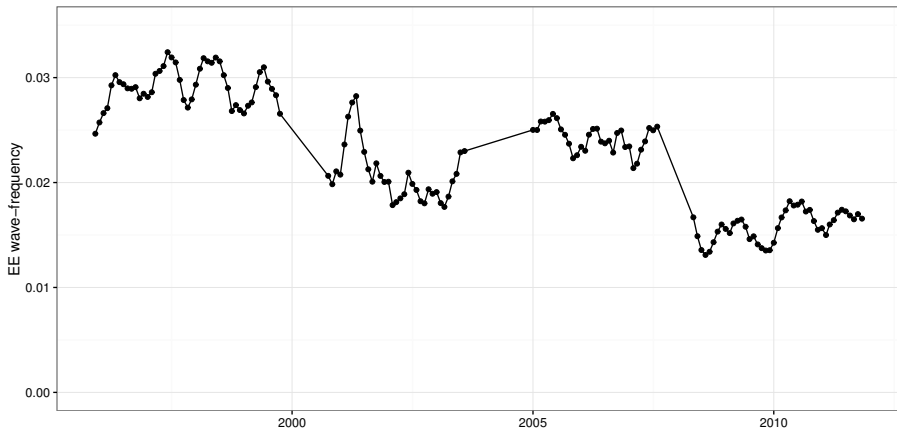


Figure: EE rate at wave-frequency (with time-aggregation)

## LPM estimates for occupational switching

	EE	EU,UE	EU,UE
Recession	-1.74*** (0.37)	-2.61*** (0.42)	-3.96*** (0.80)
Rec X Displaced			5.52*** (1.10)
Displaced			-6.97*** (0.50)
Unemp Dur		0.35*** (0.03)	0.44*** (0.04)
Base	50.02*** (0.37)	60.51*** (0.44)	61.77*** (0.64)
Demo Control	X	X	X

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

**Table:** Occupational switches—conditional on job transition—are pro-cyclical  
*Note:* Coefficients  $\times 100$



## LPM estimates for occupational switching

	EE	EU,UE	EU,UE	UE	EU
Recession	-1.736*** (0.367)	-2.608*** (0.415)	-3.958*** (0.796)		
Recession @ UE				-10.351*** (0.888)	
Recession @ EU					-1.825** (0.702)
Rec X Displaced			5.521*** (1.100)		
Rec UE X Disp				5.020*** (1.264)	
Rec EU X Disp					5.084*** (0.970)
Displaced			-6.973*** (0.497)	-6.385*** (0.482)	-7.444*** (0.524)
Unemp Dur		0.352*** (0.032)	0.439*** (0.041)	0.394*** (0.042)	0.417*** (0.042)
Base	50.018*** (0.375)	60.508*** (0.444)	61.774*** (0.636)	62.693*** (0.634)	61.649*** (0.640)
Demo Control	X	X	X		

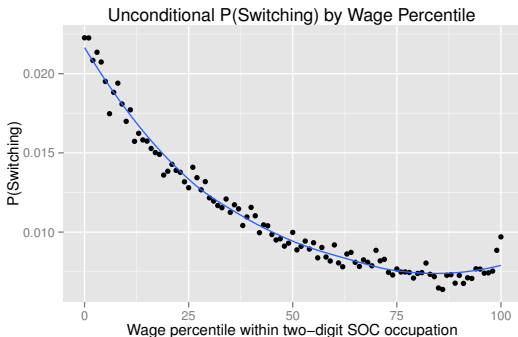
\*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

**Table:** Whether counted at separation or finding, switches are pro-cyclical

**Note:** Coefficients  $\times 100$

# The unconditional prob. of switching and earnings

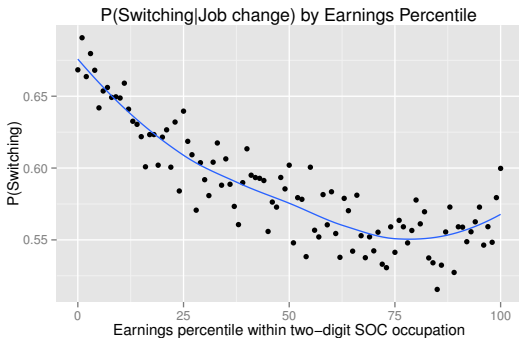
The probability of a job and occupational change declines with relative earnings.



- Job ladder effect on occupational mobility.

## Conditional probability of switching and earnings

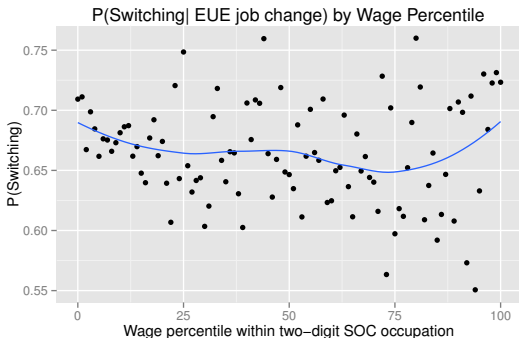
Conditional on switching jobs, the probability of an occ. switch is non-monotonic in earnings.



- Switchers tend to be those with below expected wages. Similar to Groes, Kircher and Manovskii (2014), though second part of U-shape not as pronounced.

# Probability of switching through unemployment and earnings

Conditional on switching jobs through unemployment, the probability of an occ. switch hardly depends on earnings.



- Higher probability than *EE* switchers.

# Take away

## Movers-stayers

- Job movers have more disperse earnings growth
- Occupational switchers are even more disperse than non-switchers
- This occurs whether workers undertake a *EE* or *EUE* transition.

## Recession-Expansions

- Recessions increase the downside risk and decrease the upside risk  
especially for job changers.
- Occupation switchers are even more cyclical.
- Job finding is pro-cyclical

# Decomposition

# Explaining Earnings Growth

## Reduced Form: Returns vs Flows

- How important are the number of workers changing jobs and occupation relative to the returns to switching?
- Is the contribution of these elements different at different quantiles?
- To address these questions we decompose our earnings change distribution using the Machado-Mata method.

# Machado-Mata Decomposition

- We partition groups in two ways:
  - ▶ Partition 1:  $j \in \{EEs, EUEs, EEo, EUEo, Stay\}$   
(connecting pre- and post-separation earnings into one transition)
  - ▶ Partition 2:  $j \in \{EEs, EUs, UEs, EEo, EUo, UEO, Stay\}$
- We run a **quantile regression** for  $i \in \{Recession, Expansion\}$

$$F^{-1}(\Delta; \tau) = \sum_j \beta_j^i(\tau) \mathbb{I}_j^i$$

at quantile  $\tau$

- **Flows** in recession and expansions are  $\{E[\mathbb{I}_j^R], E[\mathbb{I}_j^E]\}_j$
- **Returns** at each quantile is the set of  $\{\beta_j^i(\tau)\}_j$ .



# Machado-Mata Decomposition

- Create a counterfactual distribution by sampling from  $\{\mathbb{I}_j^R\}_j$  and applying  $\{\beta_j^E(\tau)\}$ .
- The CF is the **recession flows** given the **expansion returns**.

$$F^{-1,CF}(\Delta; \tau) = \sum_j \beta_j^E(\tau) \mathbb{I}_j^R$$

- Compute standard errors around the CF by pairs bootstrap (not today)

## Moments of the decomposition EU,UE:

- Flows make most of decline in **mean** and  $\therefore$  **skewness**

	Exp	Rec	CF: $\beta^E, \mathbb{I}^R$	CF: $\beta^E, \mathbb{I}^R$ + Switch Rtn
Mean	0.02	-0.10	-0.06	-0.07
Median	-0.01	-0.00	-0.00	-0.00
Med Abs Dev	0.05	0.05	0.05	0.05
Groenv-Meeden	0.08	-0.27	-0.18	-0.21
Moors	3.41	3.40	3.35	3.36

**Table:** Moments of Machado-Mata Decomposition (EU,UE-view)

## Moments of the decomposition EUE:

- Even w/o zeros, Flows cause decline **skewness**

	Exp	Rec	CF: $\beta^E, \mathbb{I}^R$	CF: $\beta^E, \mathbb{I}^R$ + Switch Rtn
Mean	0.01	-0.00	0.00	0.00
Median	-0.01	-0.00	-0.00	-0.00
Med Abs Dev	0.04	0.05	0.05	0.05
Groenv-Meeden	0.11	0.01	0.04	0.03
Moors	3.34	3.20	3.20	3.18

**Table:** Moments of Machado-Mata Decomposition (EUE-view)

# Plotting the contribution of flows

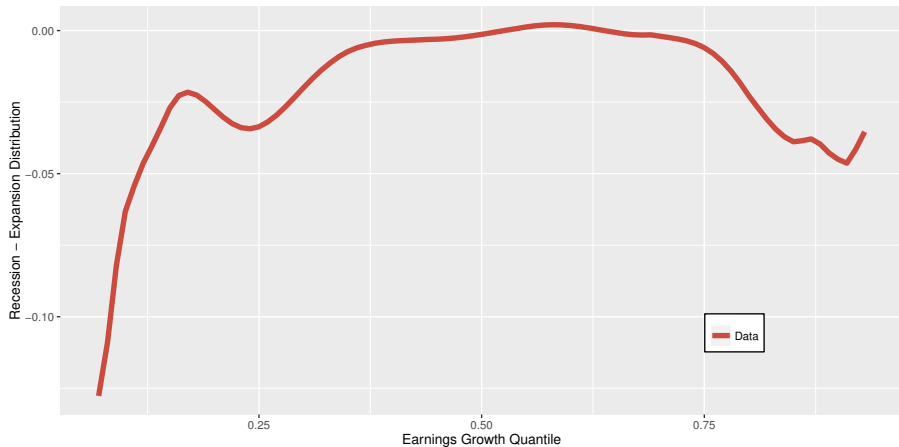


Figure: The change in distributions: **negative skewness**

# The contribution of flows

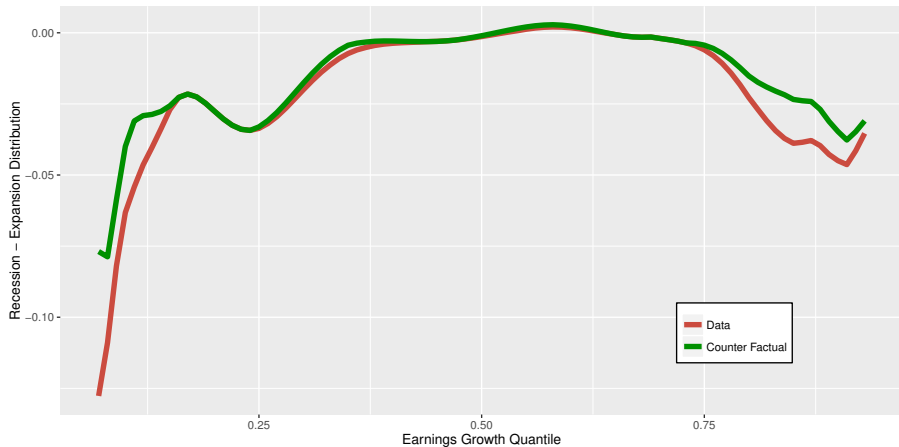


Figure: Recession flows with expansion returns

# Job stayers: very small variance counter-cyclical

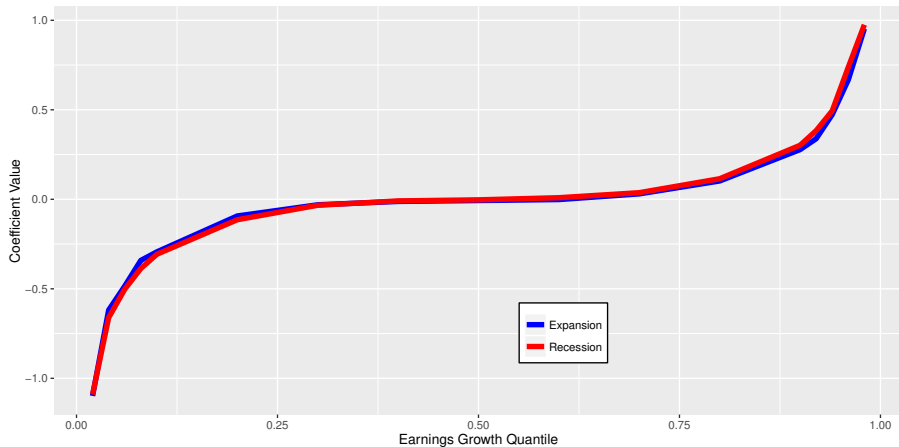


Figure: Stayers are the same - no change in that distribution

# EE Occupation movers

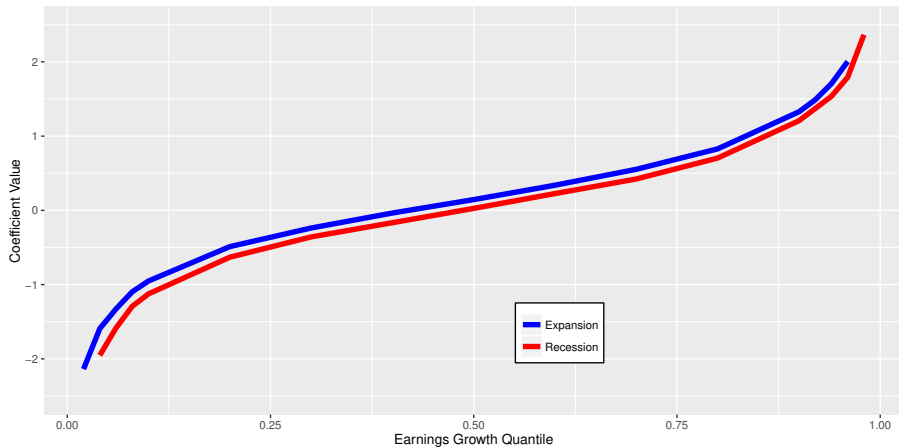


Figure: EE occupation switchers gain less in recession

# EE Occupation stayers

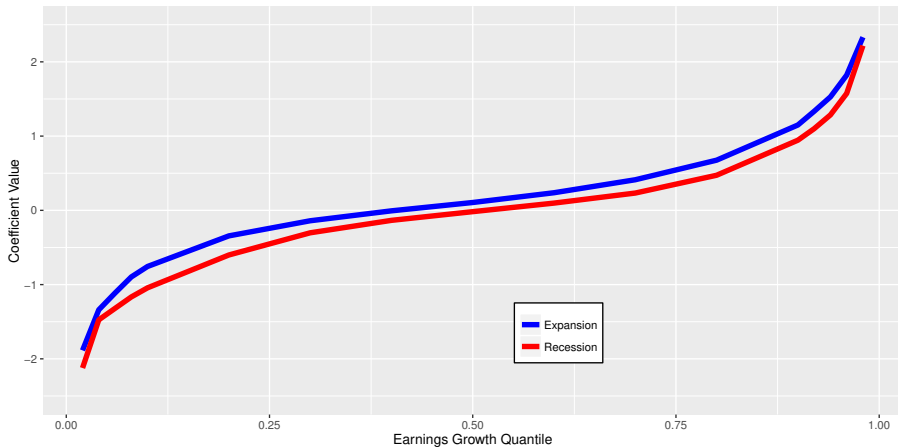


Figure: EE occupation nonswitchers gain less in recession- and in general



# Decomposition Results

- Downside dispersion: unemployment flows shift plays a significant role, but not everything.
- Upside dispersion is a split - flows and returns
- Occupation switching coefficients:
  - ▶ Exacerbate losses from unemployment
  - ▶ Diminish gains in favorable moves

# The model's role: structural decomposition

- The propensity to move jobs and occupations is not exogenous
  - ▶ Workers choosing to switch consider the expected return.
  - ▶ The risk-reward changes over the cycle.
- We cannot isolate the change in covariates from coefficients
- Uncover some **underlying change in return and contact rate**
- Observed transitions and returns are endogenous.

# Conclusion

We showed:

- Increasing the “magnitude” of the status change increases the earnings dispersion
- Recessions create negative skewness in the earnings distribution through 3 forces:
  - ① some effect of wage changes on the job, but less importance in the tail
  - ② Flows across status change
  - ③ Returns to these flows changes

# Theoretical Framework

## Some features:

- push-pull also working at occupational level: *sectoral shocks*
- significant mobility (excess mobility) across occupations: *worker-occupation shocks*
- careers within occupations/across occupations: on-the-job search, *job ladders*
- (risk/predictability of earnings changes)
- a model with many state variables... but borderline doable? Based on previous work
- still labor market equilibrium

# Environment

## Population

- Infinite horizon and discrete time,  $t$ .
- The economy is divided into different occupations,  $o = 1, \dots, O$ .
- There is a continuum of risk neutral firms operating a CRS technology with labour being its only input.
- Each firm has only one job that can be either vacant or filled.
- There is a continuum of risk neutral workers that can be either employed or unemployed.
- Both types of workers search for jobs.
- All agents discount the future with discount factor  $\beta$ .

# Environment

## Productivity

- Agg. productivity:  $p_t$ , follows first-order stationary Markov process, where  $p_t \in [\underline{p}, \bar{p}]$ ,  $\underline{p} > 0$  and  $\bar{p} < \infty$ .
- Sectoral productivity:  $s_{o,t}$  follows first-order stationary Markov process for each occupation, where  $s_{o,t} \in [\underline{s}_o, \bar{s}_o]$ ,  $\underline{s}_o > 0$  and  $\bar{s}_o < \infty$ .
- Worker-sector productivity:  $z_t$  such that  $F(z_{t+1}|z_t)$  denotes its transition law and  $z_t, z_{t+1} \in [\underline{z}, \bar{z}]$ ,  $\underline{z} > 0$  and  $\bar{z} < \infty$ .
- Worker-firm productivity:  $x_t$  follows first-order stationary Markov process for duration of the match, where  $x_t \in [\underline{x}, \bar{x}]$ ,  $\underline{x} > 0$  and  $\bar{x} < \infty$ .
- The realisations of  $\{p_t, s_{o,t}, z_t, x_t\}$  are known at the beginning of each period.
- Total output,  $y(p_t, s_{o,t}, z_t, x_t)$ : cont. diff. and strictly increasing.

# Timing

## Separation

- Matches separate with probability  $\delta$ , but also can separate endogenously.
- Newly unemployed workers do not participate for the rest of the period.

## Reallocation

- Employed and unemployed workers decide whether to search for jobs in their occupations or in a new occupation.
- Workers observe the current realisations of  $s_o$  in other occupations and choose which occupation to visit.
- Different occupations have different moving costs,  $c$ , as a proxy for differential human capital depreciation.
- Once a new occupation is chosen, the worker draws a new  $\tilde{z}$  from  $F(\cdot)$ .
- If a worker finds an acceptable job in the new occupation, he starts work in the new job at the beginning of the following period.



# Timing

## Search and Matching

- There is a continuum of sub-markets within an occupation indexed by  $\{V, z\}$ , where  $V$  is the lifetime expected utility offered by firms in that sub-market.
- A worker with productivity  $z$  applies to sub-markets indexed by  $z$  and then chooses which  $V$  to apply to.
- In each sub-market matching occurs through a CRS matching function as in DMP.
- New matches draw an  $x$  from  $G$  such that  $x \in [\underline{x}, \bar{x}]$ ,  $\underline{x} > 0$  and  $\bar{x} < \infty$ .
- After learning  $x$  the pair can dissolve the match or continue to production.
- If no match is formed, agents return to their previous employment state.

## Production

- Firms receive profits  $y(p_t, s_{o,t}, z_t, x_t) - w_t$ , workers get paid  $w_t$  and unemployed workers get  $b$ .

# Wage Determination

## Wage Contracts

- Here we proceed in a similar way as in Menzio and Shi (JPE, 2011).
- Firms post complete contracts that maximise the joint match surplus, such that they deliver the initial promised value  $V$ .
- A contract specifies the wage paid to the worker, the probability the match will dissolve at the separation stage and the sub-market where the worker should search while employed.
- Firms commit to these contracts for the duration of the match.
- Since there is indeterminacy on the evolution of wages, we need to think a bit more about what is the more reasonable way to pin down wages (i.e. fixed wages, sequential actions, etc)

# Theoretical Framework

## Characterisation

- We exploit the block recursive property of equilibrium so that the relevant state space is independent the distribution of workers within and across occupations.
- Separation and reallocation decisions are characterised by productivity cut-offs that are functions of aggregate productivity and sectoral shocks.

## Implications

- Searching for jobs across occupations is a risky investment: ex-post workers can improve (or not) their  $z$  and  $x$ .
- New occupations and jobs can be thought as 'experience' goods.
- Are recessions time to reallocate? The key force is the waiting decisions of workers.
- This framework can generate three types of unemployment: rest, search and reallocation.

# Conclusions

Looking under the hood of the cyclical behavior of earnings change distribution

- Tails especially often involve job and occupation flows:
- endogenous, responsive to policy
- tied together with reallocation in the economy
- labor market equilibrium: on our to-do list...

# Appendix

# Countercyclical Variance and Left-skewness

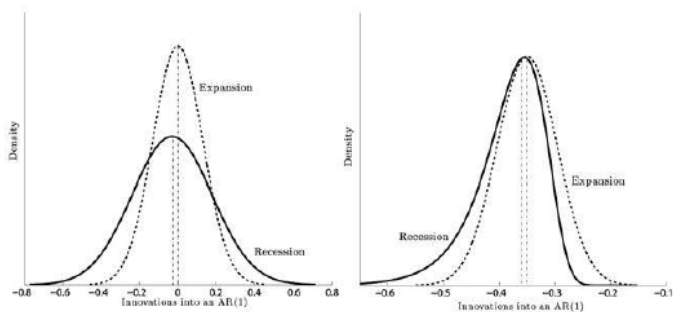


FIG. 1.—Countercyclical variance or countercyclical left-skewness? *Left*, countercyclical variance. *Right*, countercyclical left-skewness.

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# Occupational Category Classification

## Occupational Groups: 2000 SOC - 2 digits

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Management	Food Preparation and Serving Related
Business and Financial Operations	Building and Grounds Cleaning and Maint.
Computer and Mathematical	Personal Care and Service
Architecture and Engineering	Sales and Related
Life, Physical, and Social Science	Office and Administrative Support
Community and Social Services	Farming, Fishing, and Forestry
Legal	Construction and Extraction
Education, Training, and Library	Installation, Maintenance, and Repair
Arts, Design, Entert., Sports, and Media	Production
Healthcare Practitioners and Technical	Transportation and Material Moving
Healthcare Support	Military Specific
Protective Service	

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# Earnings Distributions: The role of occ. mobility

	Mean	0.05	0.25	0.5	0.75	0.95
<b>1996-2012</b>						
All job changers	0.00	-1.66	-0.44	0.02	0.49	1.76
Occ stayers	0.02	-1.36	-0.33	0.01	0.38	1.50
Occ movers	0.04	-1.58	-0.47	0.03	0.56	1.72
<b>Expansion</b>						
All job changers	0.04	-1.62	-0.42	0.03	0.51	1.79
Occ stayers	0.04	-1.34	-0.31	0.02	0.39	1.51
Occ movers	0.07	-1.55	-0.45	0.05	0.58	1.76
<b>Recession</b>						
All job changers	-0.26	-2.10	-0.57	-0.06	0.37	1.49
Occ stayers	-0.08	-1.45	-0.41	-0.02	0.31	1.37
Occ movers	-0.16	-1.86	-0.57	-0.07	0.43	1.50

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## Earnings Distributions: Young

	Mean	0.05	0.25	0.5	0.75	0.95
<b>1996-2012</b>						
All Workers	-0.01	-1.02	-0.12	-0.01	0.13	1.04
Same Job	-0.00	-0.63	-0.08	-0.01	0.09	0.63
Chng Job	-0.05	-9.76	-0.83	0.05	0.89	9.76
<b>Expansion</b>						
All Workers	0.02	-0.98	-0.12	-0.01	0.14	1.08
Same Job	-0.00	-0.63	-0.08	-0.01	0.09	0.63
Chng Job	0.14	-9.66	-0.73	0.13	0.95	9.80
<b>Recession</b>						
All Workers	-0.16	-1.28	-0.16	-0.01	0.11	0.86
Same Job	-0.00	-0.64	-0.10	-0.01	0.09	0.65
Chng Job	-1.11	-10.12	-1.47	-0.38	0.49	9.45

**Table:** Distribution of earnings changes

## Earnings Distributions: Prime

	Mean	0.05	0.25	0.5	0.75	0.95
<b>1996-2012</b>						
All Workers	-0.00	-0.59	-0.05	-0.01	0.06	0.59
Same Job	-0.00	-0.43	-0.04	-0.01	0.05	0.42
Chng Job	0.01	-9.75	-0.82	0.05	0.92	9.69
<b>Expansion</b>						
All Workers	0.01	-0.56	-0.04	-0.01	0.06	0.59
Same Job	-0.00	-0.42	-0.04	-0.01	0.05	0.41
Chng Job	0.24	-9.64	-0.71	0.13	1.01	9.72
<b>Recession</b>						
All Workers	-0.07	-0.70	-0.07	-0.00	0.06	0.58
Same Job	-0.00	-0.48	-0.05	-0.00	0.06	0.47
Chng Job	-1.15	-10.05	-1.50	-0.37	0.46	9.51

**Table:** Distribution of earnings changes

## Earnings Distributions: Old

	Mean	0.05	0.25	0.5	0.75	0.95
<b>1996-2012</b>						
All Workers	0.01	-0.55	-0.02	0.00	0.05	0.56
Same Job	0.01	-0.44	-0.01	0.00	0.05	0.45
Chng Job	0.09	-9.89	-0.99	0.01	1.07	9.74
<b>Expansion</b>						
All Workers	0.02	-0.52	-0.01	0.00	0.05	0.55
Same Job	0.01	-0.43	-0.01	0.00	0.04	0.44
Chng Job	0.32	-9.77	-0.81	0.14	1.19	9.81
<b>Recession</b>						
All Workers	-0.03	-0.65	-0.04	0.01	0.06	0.59
Same Job	0.01	-0.52	-0.03	0.01	0.06	0.52
Chng Job	-1.14	-10.11	-1.47	-0.40	0.45	9.35

**Table:** Distribution of earnings changes

## Earnings Distributions: HS-educated

	Mean	0.05	0.25	0.5	0.75	0.95
<b>1996-2012</b>						
All Workers	-0.00	-0.70	-0.07	-0.01	0.08	0.69
Same Job	0.00	-0.48	-0.05	-0.01	0.06	0.48
Chng Job	-0.02	-9.74	-0.81	0.04	0.86	9.70
<b>Expansion</b>						
All Workers	0.02	-0.68	-0.06	-0.01	0.08	0.70
Same Job	-0.00	-0.47	-0.05	-0.01	0.06	0.48
Chng Job	0.19	-9.64	-0.71	0.12	0.94	9.73
<b>Recession</b>						
All Workers	-0.09	-0.82	-0.09	-0.00	0.08	0.67
Same Job	0.00	-0.53	-0.06	-0.00	0.07	0.53
Chng Job	-1.13	-10.07	-1.45	-0.37	0.45	9.42

**Table:** Distribution of earnings changes

## Earnings Distributions: College-educated

	Mean	0.05	0.25	0.5	0.75	0.95
<b>1996-2012</b>						
All Workers	0.00	-0.60	-0.04	-0.01	0.05	0.61
Same Job	-0.00	-0.43	-0.04	-0.01	0.03	0.41
Chng Job	0.10	-9.73	-0.80	0.11	1.05	9.75
<b>Expansion</b>						
All Workers	0.01	-0.58	-0.04	-0.01	0.05	0.61
Same Job	-0.01	-0.42	-0.04	-0.01	0.03	0.40
Chng Job	0.29	-9.62	-0.71	0.20	1.12	9.79
<b>Recession</b>						
All Workers	-0.06	-0.68	-0.05	-0.01	0.04	0.58
Same Job	-0.00	-0.47	-0.04	-0.00	0.04	0.46
Chng Job	-1.03	-10.10	-1.43	-0.37	0.60	9.58

**Table:** Distribution of earnings changes

# Earnings Distributions

Earnings mobility increases with employer mobility:

	Mean	0.10	0.25	0.50	0.75	0.90
<b>1996-2012</b>						
All Workers	0.00	-0.29	-0.02	-0.00	0.02	0.33
Same Job	0.00	-0.25	-0.02	-0.00	0.01	0.27
Chng Job	0.02	-7.90	-0.81	0.03	0.92	7.82
<b>Expansion</b>						
All Workers	0.01	-0.28	-0.02	-0.00	0.02	0.32
Same Job	0.00	-0.24	-0.02	-0.00	0.01	0.27
Chng Job	0.11	-7.84	-0.75	0.04	0.94	7.83
<b>Recession</b>						
All Workers	-0.02	-0.36	-0.02	-0.00	0.02	0.35
Same Job,	0.00	-0.29	-0.02	-0.00	0.02	0.29
Chng Job	-0.47	-8.13	-1.46	-0.04	0.79	7.75

- Countercyclical left-skewness of the earnings distribution.
- Job movers experience much larger dispersion and face stronger countercyclical left-skewness. [Back](#)

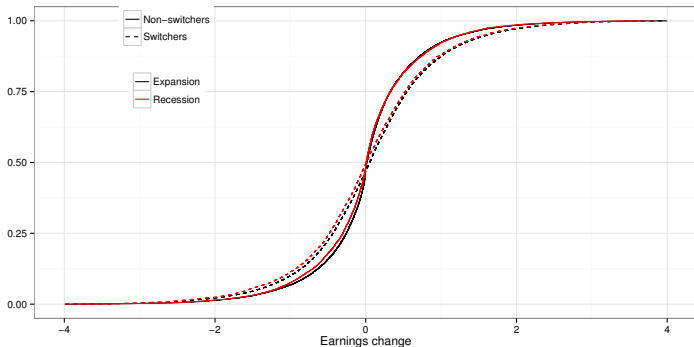
# Earnings Distributions

Conditional on changing employer, occupational mobility further increase earnings risk:

	Mean	0.10	0.25	0.50	0.75	0.90
<b>1996-2012</b>						
All job changers	0.02	-7.90	-0.81	0.03	0.92	7.82
Occ stayers	0.01	-7.98	-0.72	0.01	0.80	7.92
Occ movers	0.03	-7.83	-0.86	0.05	1.00	7.74
<b>Expansion</b>						
All job changers	0.11	-7.84	-0.75	0.04	0.94	7.83
Occ stayers	0.12	-7.94	-0.65	0.02	0.84	7.94
Occ movers	0.10	-7.75	-0.80	0.06	1.00	7.73
<b>Recession</b>						
All job changers	-0.47	-8.13	-1.46	-0.04	0.79	7.75
Occ stayers	-0.57	-8.15	-1.26	-0.03	0.60	7.73
Occ movers	-0.40	-8.11	-1.57	-0.06	0.93	7.77

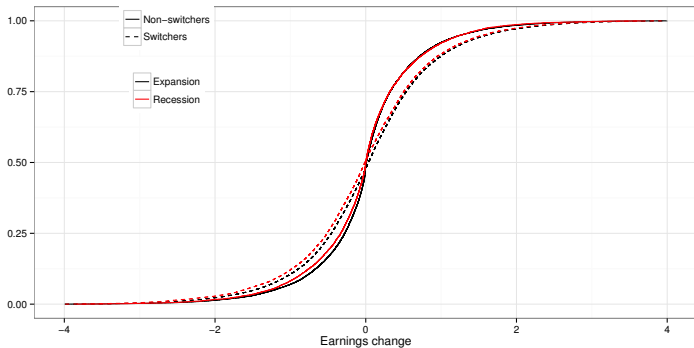
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# Occupational switch, conditional on a $EE$ transition

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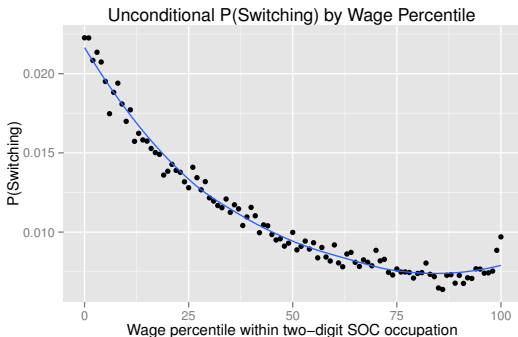


# Occupational switch, conditional on a *EUE* transition

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## The unconditional prob. of switching and earnings

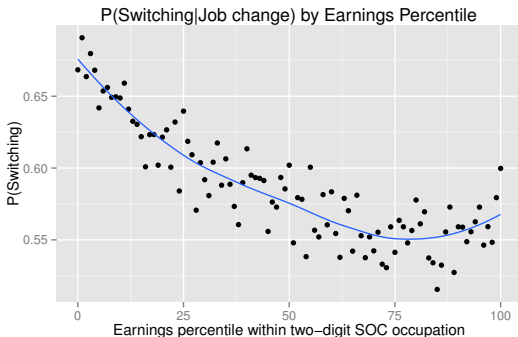
The probability of a job and occupational change declines with relative earnings.



- Job ladder effect on occupational mobility.

## Conditional probability of switching and earnings

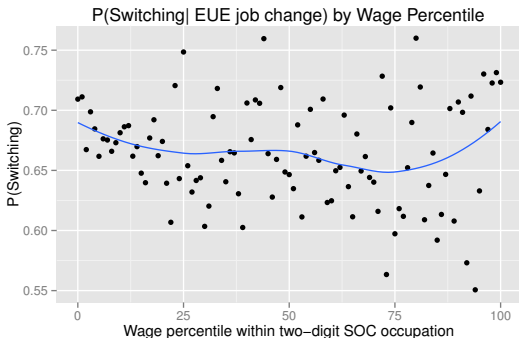
Conditional on switching jobs, the probability of an occ. switch is non-monotonic in earnings.



- Switchers tend to be those with below expected wages. Similar to Groes, Kircher and Manovskii (2014), though second part of U-shape not as pronounced.

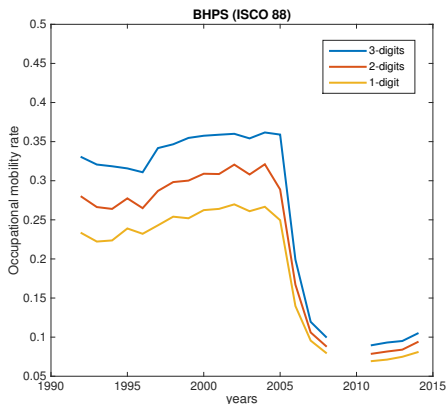
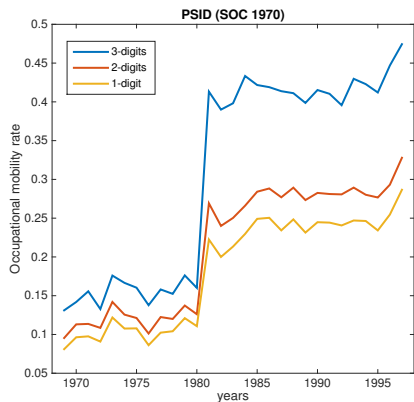
# Probability of switching through unemployment and earnings

Conditional on switching jobs through unemployment, the probability of an occ. switch hardly depends on earnings.



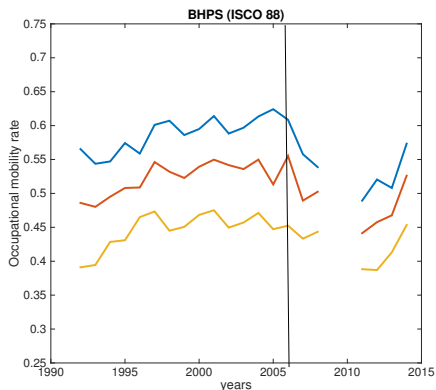
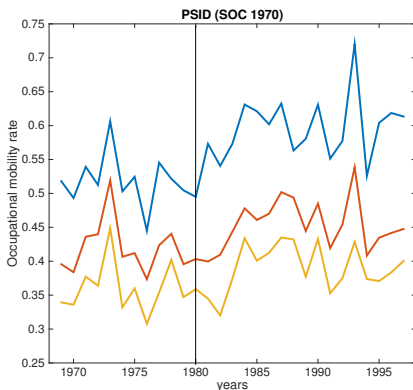
- Higher probability than *EE* switchers. [Back](#)

# Overall occupational mobility



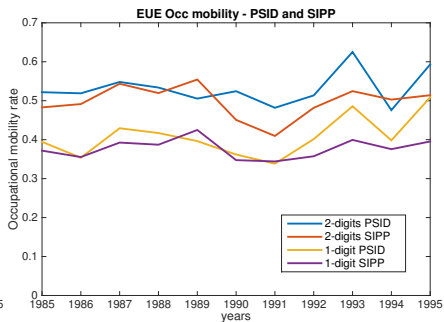
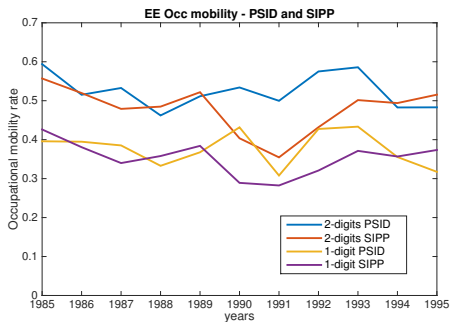
- Kambourov and Manovskii (2008) among other have argued that occupational mobility rates are inflated by measurement error.
- Break dummy is large and statistically significant when estimating a probit or LPM.

# Occ. mobility conditional on employer mobility



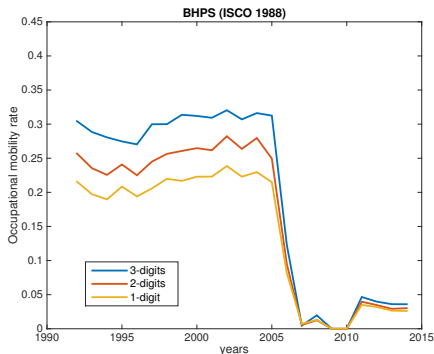
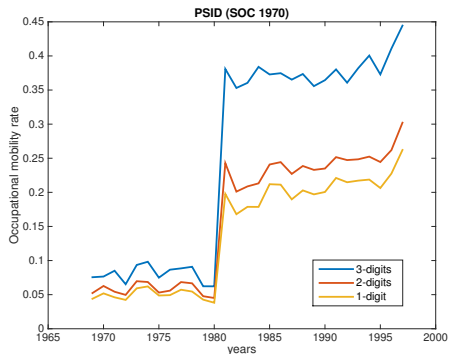
- However measurement error does not seem to matter when conditioning on employer change, particularly for the 2 and 1 digits aggregations.
- Break dummy is close to zero and not statistically significant when estimating a probit or LPM.

# Occ. mobility conditional on employer mobility



- Here we use David Dorn's homogenise occupational code for both the SIPP and PSID and adjust the SIPP for yearly transitions.
- The probabilities of occupational mobility are very similar in the two data sets.

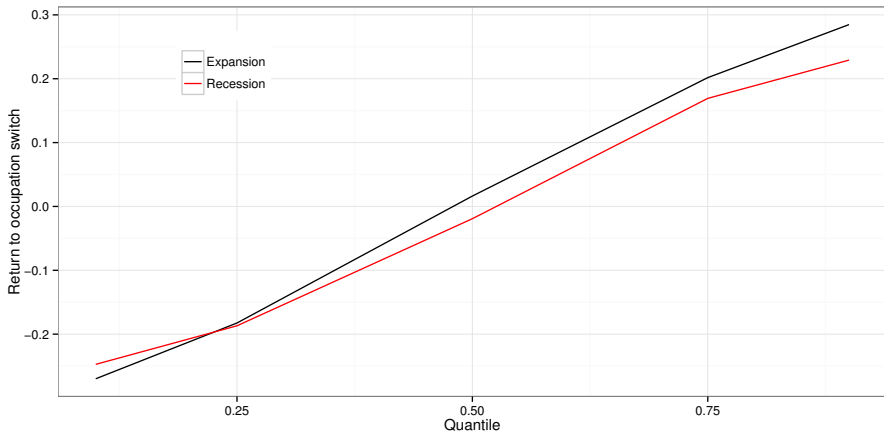
# Occ. mobility conditional on staying with employer



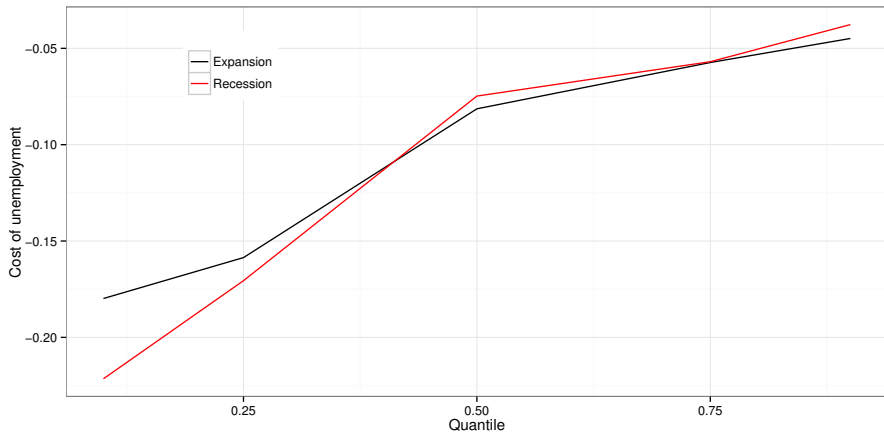
- Measurement error affects **within employer** occupational mobility.
- Break dummy is large and statistically significant when estimating a probit or LPM.



# Returns to Occupational Mobility

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# Returns to Re-employment

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## Decomposition Results - Partition 2

Quantile	CF Rec	Rec	Exp	Rec-Exp	Pct CF
0.20	-6.76	-6.91	-1.28	-5.63	0.97
0.30	-0.73	-0.82	-0.48	-0.34	0.75
0.40	-0.27	-0.32	-0.15	-0.17	0.70
0.50	-0.02	-0.04	0.04	-0.08	0.69
0.60	0.18	0.16	0.26	-0.10	0.85
0.70	0.51	0.51	0.63	-0.11	1.01
0.80	1.52	1.31	1.62	-0.31	0.33

- By treating separately the flow into and out of unemployment the importance of the returns to switching drop.
- However, we keep the same pattern such that the importance of worker flows is stronger at higher quantiles while the importance of the returns is stronger at lower quantiles. [Back](#)

## Earnings Change Distributions: All workers

	Mean	0.10	0.25	0.50	0.75	0.90
1996-2012 All Workers	0.02	-0.52	-0.12	-0.01	0.14	0.56
Expansion All workers	0.04	-0.49	-0.11	-0.01	0.15	0.59
Recession All workers	-0.03	-0.59	-0.17	-0.01	0.12	0.48

- Large dispersion and countercyclical left-skewness of the earnings change distribution (see Guvenen et al. 2014). [Back](#)

# Earnings Change Distributions: The role of job mobility

	Mean	0.10	0.25	0.50	0.75	0.90
<b>1996-2012</b>						
All Workers	0.02	-0.52	-0.12	-0.01	0.14	0.56
Job stayers						
Job movers	-0.02	-0.98	-0.42	-0.01	0.40	0.99
<b>Expansion</b>						
All workers	0.04	-0.49	-0.11	-0.01	0.15	0.59
Job stayers						
Job movers	0.03	-0.95	-0.39	0.02	0.46	1.07
<b>Recession</b>						
All workers	-0.03	-0.59	-0.17	-0.01	0.12	0.48
Job stayers						
Job movers	-0.16	-1.03	-0.50	-0.08	0.26	0.73

- Job movers experience much larger dispersion and face strong collapse of the right tail and strong increase in the left tail of their earnings distribution.

# Earnings Change Distributions: The role of job mobility

	Mean	0.10	0.25	0.50	0.75	0.90
<b>1996-2012</b>						
All Workers	0.02	-0.52	-0.12	-0.01	0.14	0.56
Job stayers	0.03	-0.39	-0.09	-0.01	0.11	0.45
Job movers	-0.02	-0.98	-0.42	-0.01	0.40	0.99
<b>Expansion</b>						
All workers	0.04	-0.49	-0.11	-0.01	0.15	0.59
Job stayers	0.04	-0.38	-0.08	-0.01	0.11	0.46
Job movers	0.03	-0.95	-0.39	0.02	0.46	1.07
<b>Recession</b>						
All workers	-0.03	-0.59	-0.17	-0.01	0.12	0.48
Job stayers	0.00	-0.43	-0.11	-0.00	0.11	0.41
Job movers	-0.16	-1.03	-0.50	-0.08	0.26	0.73

- Job stayers experience much less dispersion and face no collapse of the right tail and small increase in the left tail of their earnings distribution.