The Role of Non-Regular Work for Labour Input Adjustment in Japan

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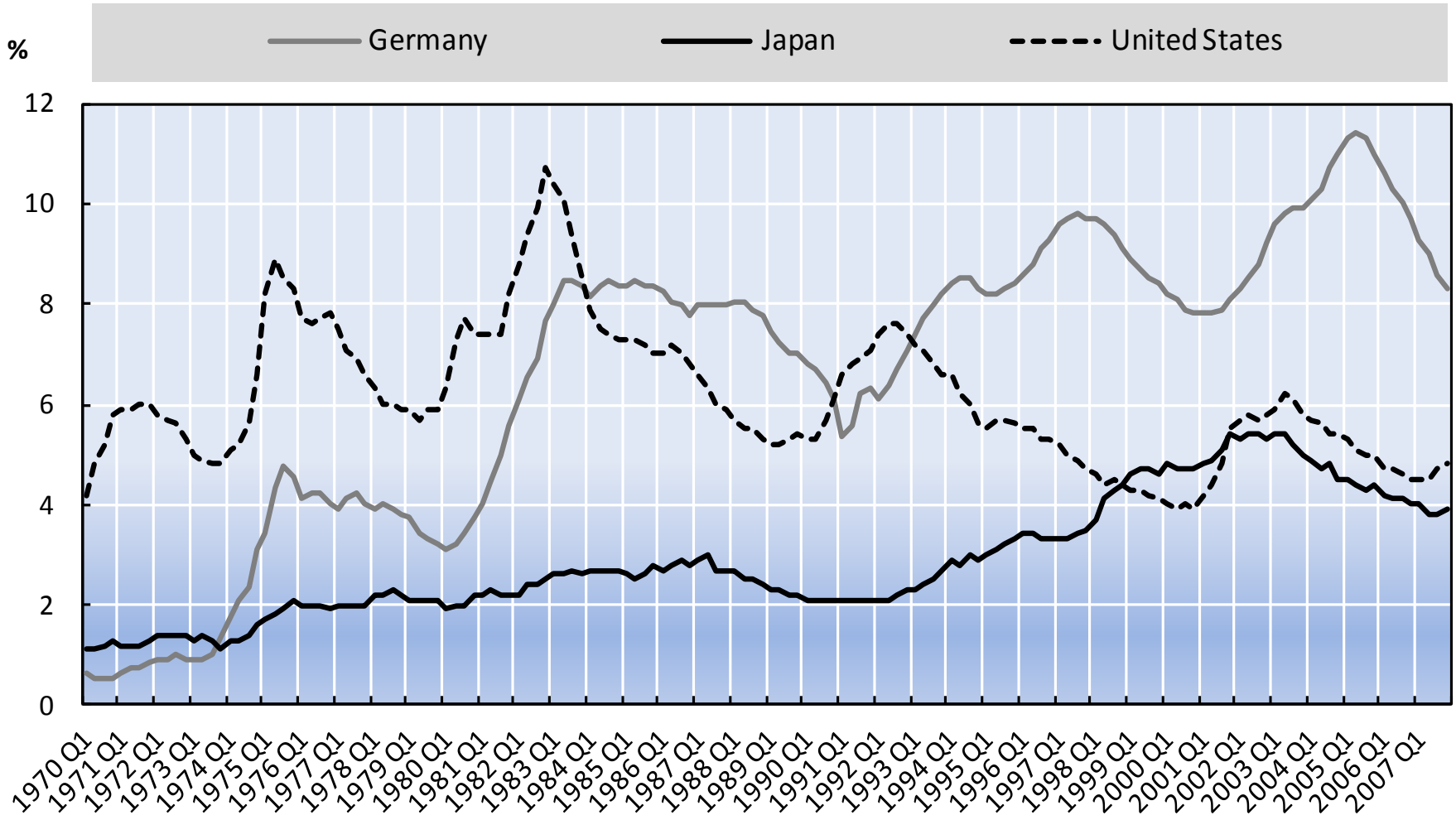
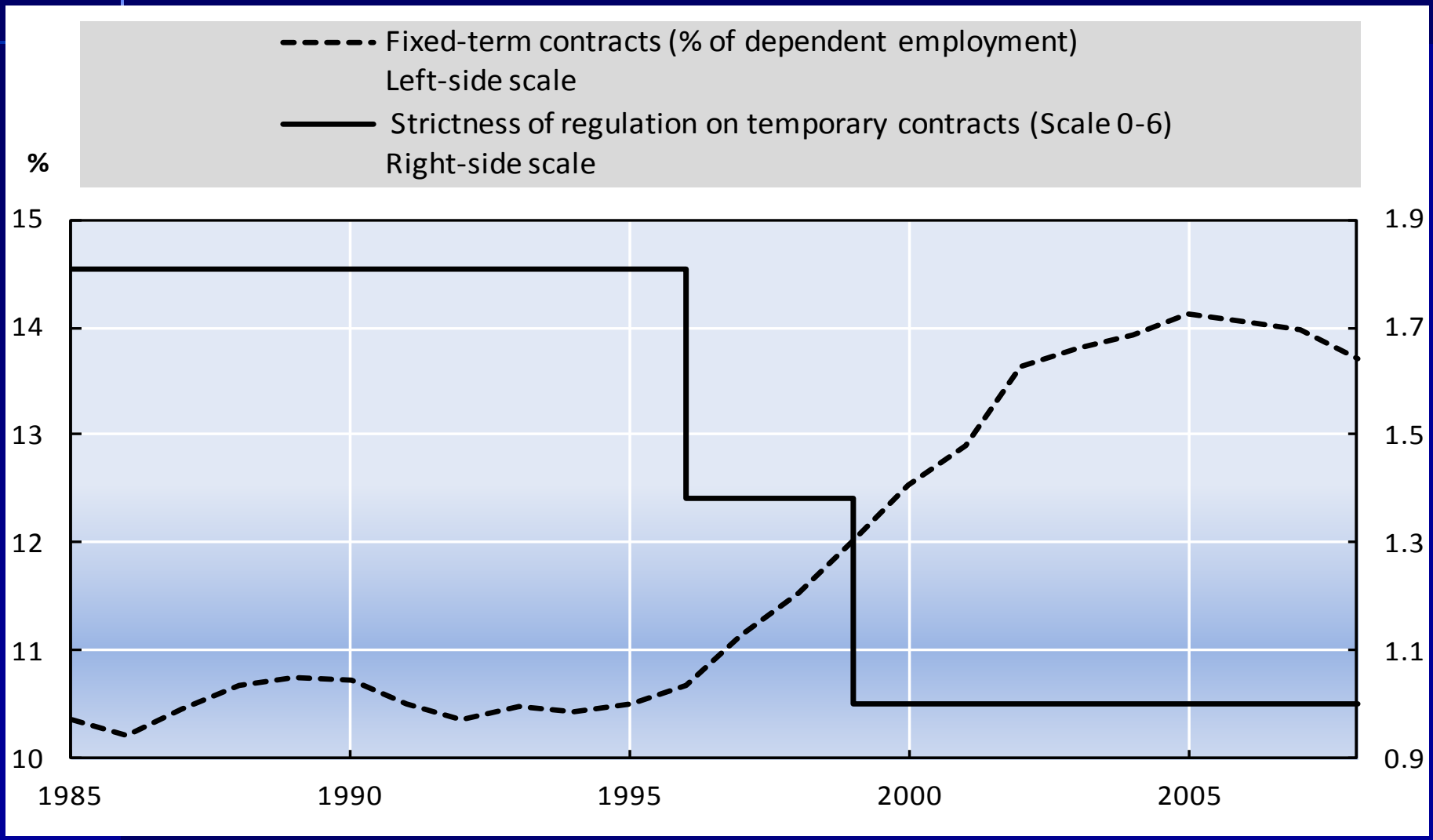
1. Motivation for labour flow analysis in Japan
2. Two kinds of datasets
3. Butterfly charts
4. Heterogeneous technology
5. Further issues

1. Motivation
(OECD harmonized unemployment rates)

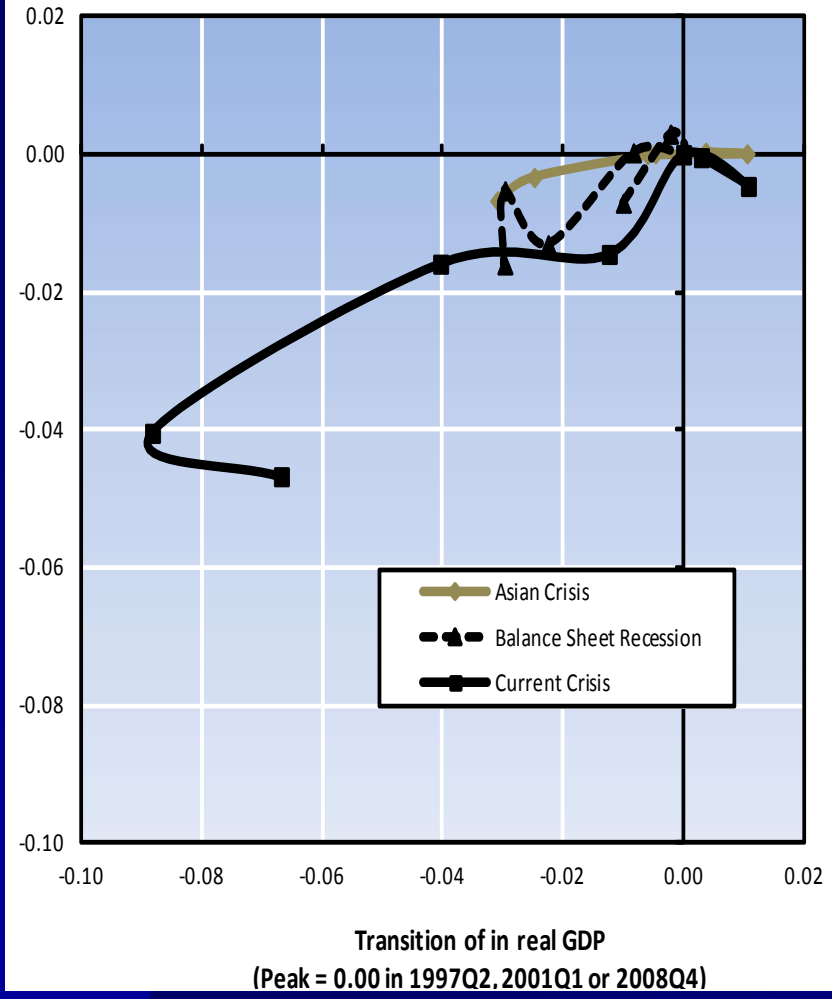


1. Motivation
(Rise of fixed-term contract workers)

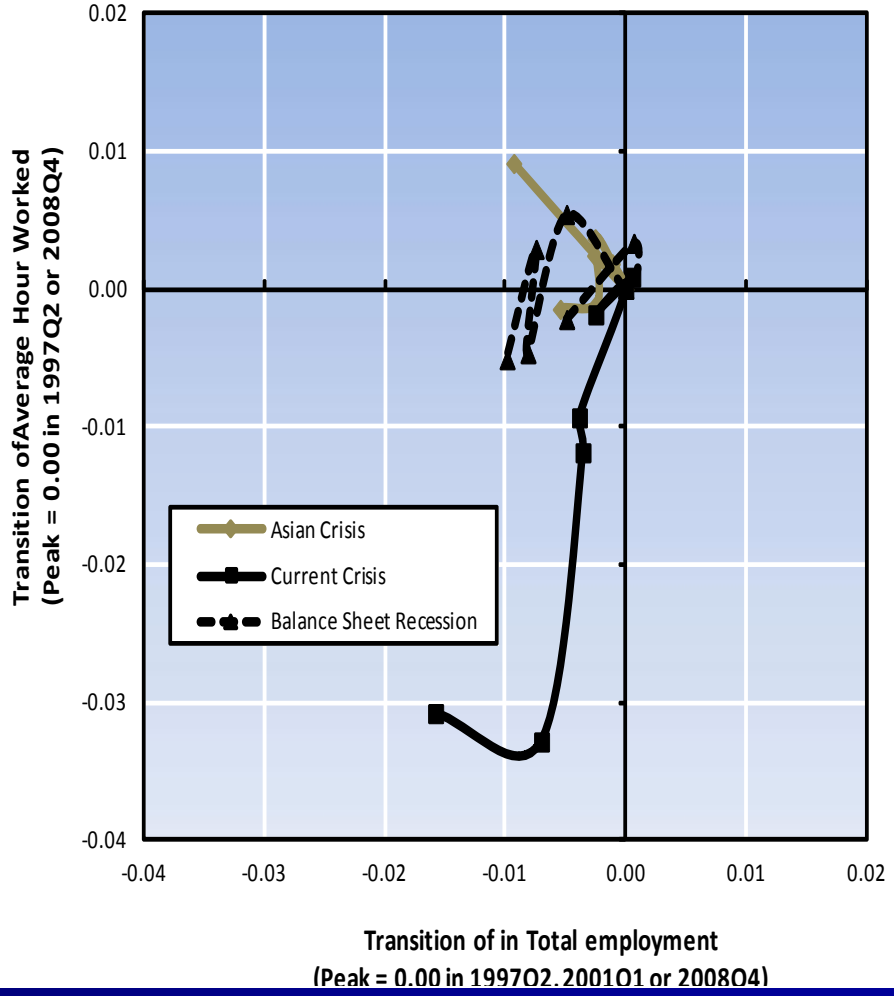


1. Motivation (Downturn responses in labor markets)

Panel A: real GDP and total hour worked



Panel B: Total employment and average hour worked



1. Motivation

- Increase unemployment rates
- Increase in non-regular workers (as a result of regulation change)

- Affected the mode of labor input adjustment during the current crisis?
  - See labor flow by microdata

2. Two kinds of datasets

- Both are microdata from governmental sample surveys for establishments between 1991 and 2009.

2. Two kinds of datasets

(A) Monthly data (*Monthly Labor Survey*)

- Information on total employment, hour worked, and wage bill during the month
- Total hiring and separation during the month.

- 33,000 establishments each month
- 18/24/36 month panel
- Use as quarterly data

2. Two kinds of datasets

(B) Yearly data (*Employment Trend Survey*)

- Cross sectional data
- 10,000 establishments in each year
- The detail information on individual hiring and separation = possible to decompose layoffs and quits.

- No information on hours and wages.

2. Two kinds of datasets

(C) Main point of Japanese data

- No sales (but total hour from MLS)
- Sample survey (not administrative data)
- With information on wage bill and hours

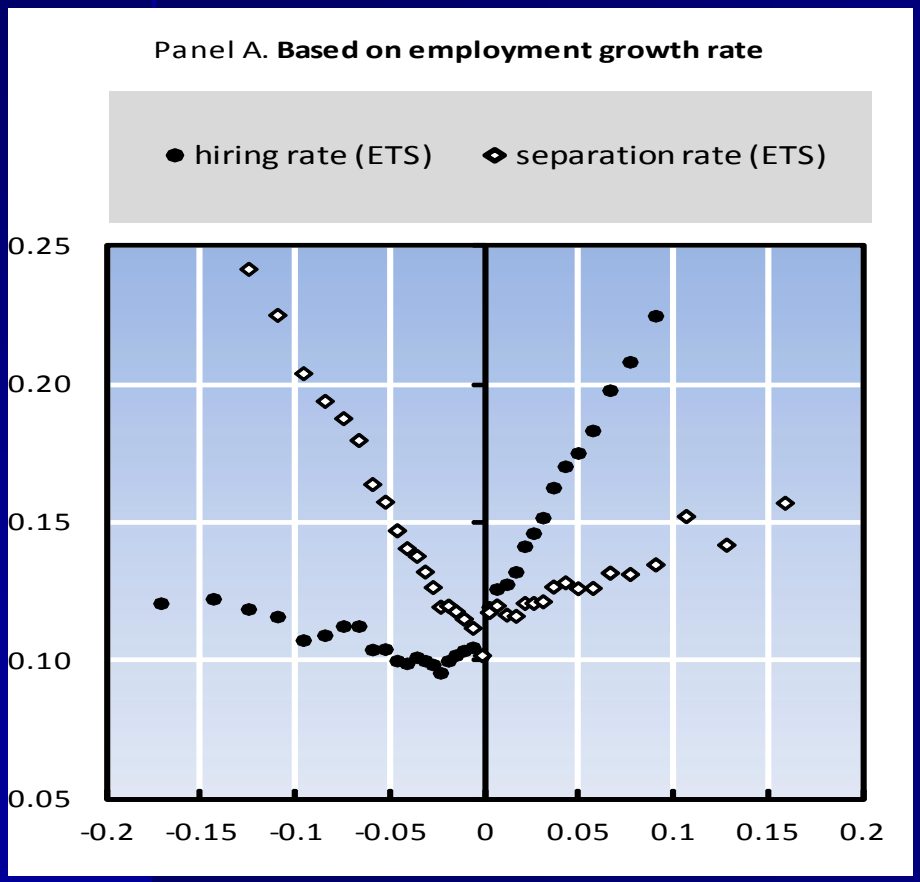
Methodology

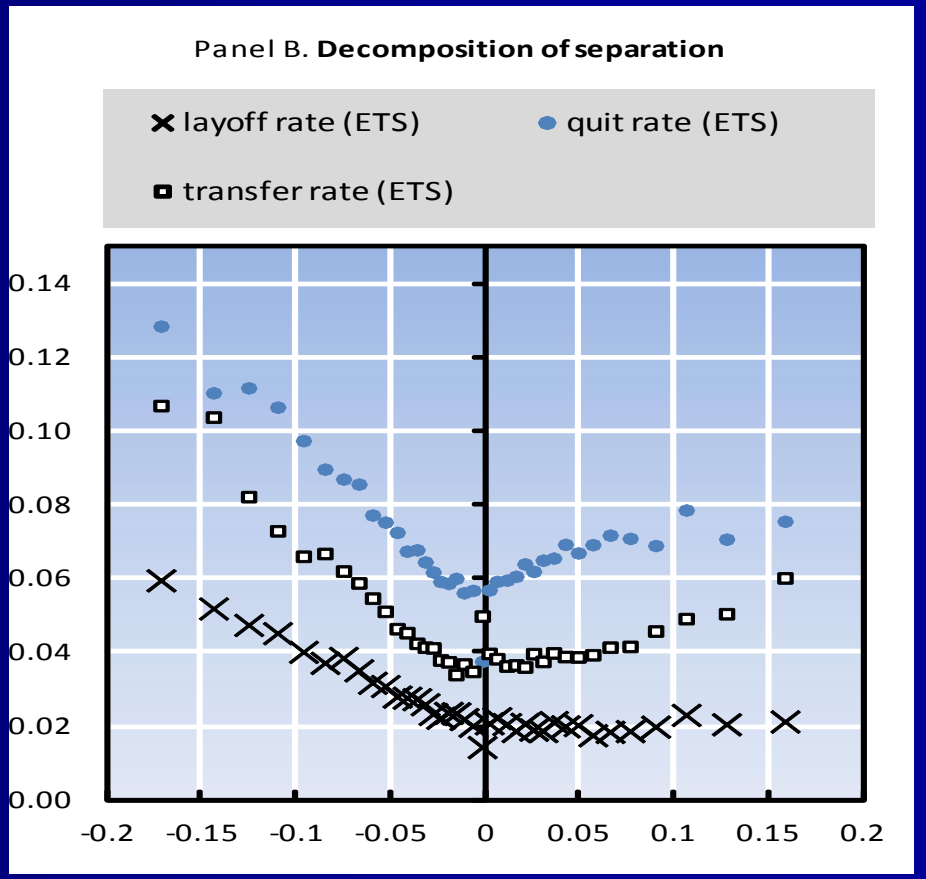
- (4.1) $$x_{it} = \alpha_{\mathrm{i}} + \sum_{g=1}^{\mathrm{G}} \beta^{\mathrm{g}} D_{it}^{g} + \varepsilon_{it}$$

- (4.2) $$x_{it} = \alpha_{\mathrm{i}} + \beta^{\mathrm{n}} \Delta l_{it} \mathrm{I}(\Delta l_{it} < 0) + \beta^{\mathrm{p}} \Delta l_{it} \mathrm{I}(\Delta l_{it} > 0) + \varepsilon_{it}$$

3. Butterfly Chart

(A) Employment Change -> Hiring/Separation





Panel A. Decomposition of **hiring/separation behavior**

	Positive regime (β^p)	Negative regime (β^n)	**Constant**	**# of obs.**	**R^2**
Full sample					
Hiring rates	1.2592	-0.0366	0.1121	165,903	0.1897
	(0.0181)	*(0.009)*	*(0.0007)*		
Separation rate	0.2592	-1.0366	0.1121	165,903	0.3619
	(0.0181)	*(0.009)*	*(0.0007)*		
Resticted sample (-10% to 10% change)					
Hiring rates	1.4543	0.2058	0.1124	125,748	0.0902
	(0.028)	*(0.0284)*	*(0.001)*		
Separation rate	0.4543	-0.7942	0.1124	125,748	0.0249
	(0.028)	*(0.0284)*	*(0.001)*		

Panel B. **Decompostion of separation behavior**

	Positive regime (β^p)	Negative regime (β^n)	**Constant**	**# of obs.**	**R^2**
Full sample					
Quit rates	0.0939	-0.2063	0.0598	165,590	0.0473
	(0.01)	*(0.014)*	*(0.0007)*		
Layoff rate	0.0372	-0.2511	0.0185	165,590	0.1213
	(0.0058)	*(0.015)*	*(0.0006)*		
Transfer rate	0.1252	-0.5796	0.0336	165,590	0.3097
	(0.012)	*(0.0198)*	*(0.0009)*		
Resticted sample (-10% to 10% change)					
Quit rates	0.3061	-0.3068	0.0526	125,509	0.0109
	(0.021)	*(0.019)*	*(0.0006)*		
Layoff rate	0.0395	-0.2060	0.0190	125,509	0.0109
	(0.011)	*(0.013)*	*(0.0004)*		
Transfer rate	0.1087	-0.2819	0.0408	125,509	0.0079
	(0.018)	*(0.019)*	*(0.0006)*		

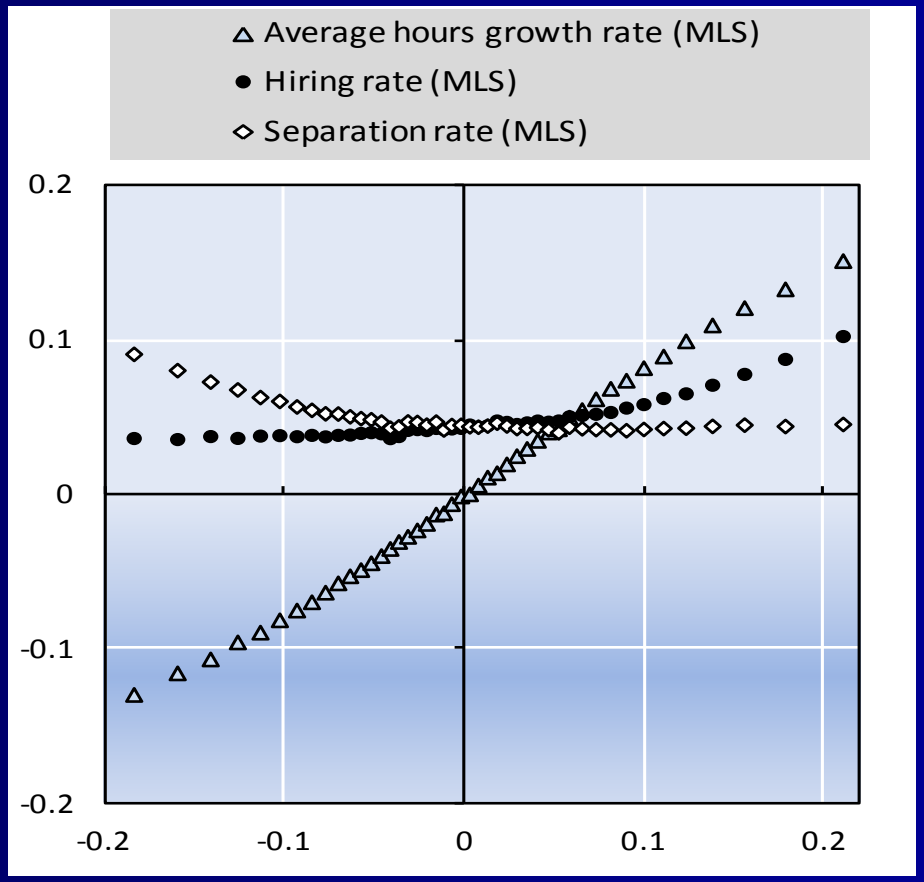
3. Butterfly Chart

(A) Employment Change -> Hiring/Separation

- (yearly) 11% churnings [as interception]
- Positive slope of separation in positive adjustment regime.
- 11% churning separation ->
  - 6% quit, 2% layoff, 3% transfer

3. Butterfly Chart

(B) Total Hour Change -> Hiring/Separation



Panel A. **Total hours change**					
	Positive regime (β^p)	Negative regime (β^n)	**Constant**	**# of obs.**	**R^2**
Full sample					
Hiring rates	0.3891	-0.0114	0.0333	1,508,261	0.1427
	(0.001)	*(0.001)*	*(0.0001)*		
Separation rate	0.0622	-0.4272	0.0311	1,508,261	0.1639
	(0.001)	*(0.001)*	*(0.0001)*		
Average hours worked	0.6799	0.5866	-0.0030	1,508,261	0.5399
	(0.001)	*(0.001)*	*(0.0001)*		
Resticted sample (-10% to 10% change)					
Hiring rates	0.1261	0.0770	0.0390	989,196	0.0071
	(0.003)	*(0.003)*	*(0.0001)*		
Separation rate	-0.0288	-0.1074	0.0397	989,196	0.0036
	(0.003)	*(0.003)*	*(0.0001)*		
Average hours worked	0.8466	0.8088	-0.0002	989,196	0.3692
	(0.003)	*(0.003)*	*(0.0001)*		

3. Butterfly Chart

(B) Total Hour Change -> Hiring/Separation

- (quarterly) 3% churnings [as interception]
- Positive slope of separation in positive adjustment regime.
- 68% of total hour change is absorbed by average hour change when it grows; on the other, it is 59% when it reduces labor inputs. Asymmetricity in adjustment behavior?

3. Butterfly Chart

(B) Total Hour Change -> Hiring/Separation

- Large difference between results of full sample and those of small change sample.

-> implying non-linear adjustments.

e.g.) the average hour change absorbs 80 to 85% of total hour change.

3. Butterfly Chart

(C) Sum up

- Churnings 11% (Y emp) 3% (Q total hour)
- Positively related separation behavior in positive adjustment regime.
- Asymmetric adjustment between positve and negative change.
- Non-linearity of adjustment from small change to large change.

	Panel A. Hiring Rates			Panel B. Separation Rates			Panel C. Average Hour Worked		
	Positive regime (β^p)	Negative regime (β^n)	Constant	Positive regime (β^p)	Negative regime (β^n)	Constant	Positive regime (β^p)	Negative regime (β^n)	Constant
Firm size class									
5-29	0.117	0.090	0.037	-0.047	-0.130	0.037	0.838	0.775	0.000
30-99	0.133	0.067	0.041	-0.054	-0.123	0.043	0.815	0.806	0.001
100-499	0.124	0.064	0.040	-0.033	-0.117	0.041	0.847	0.815	0.000
500-999	0.117	0.078	0.039	-0.012	-0.082	0.039	0.870	0.837	-0.001
over 1000	0.142	0.066	0.042	0.001	-0.083	0.042	0.861	0.846	0.000
Industry									
Manufacturing	0.082	0.043	0.027	-0.046	-0.102	0.029	0.875	0.850	0.002
Other service	0.163	0.097	0.046	0.015	-0.094	0.044	0.850	0.806	-0.003
Retail, Wholesale & Restaurants	0.128	0.097	0.052	-0.062	-0.127	0.054	0.814	0.767	0.000
Construction	0.136	0.093	0.033	-0.033	-0.124	0.035	0.827	0.774	0.000
Employment Status									
Regular	0.093	0.063	0.028	-0.028	-0.089	0.030	0.877	0.835	0.000
Non-regular	0.183	0.069	0.054	-0.029	-0.110	0.056	0.762	0.798	0.002

4. Heterogeneous Technology

(A) Industry

(B) Firm size

(C) Employment status

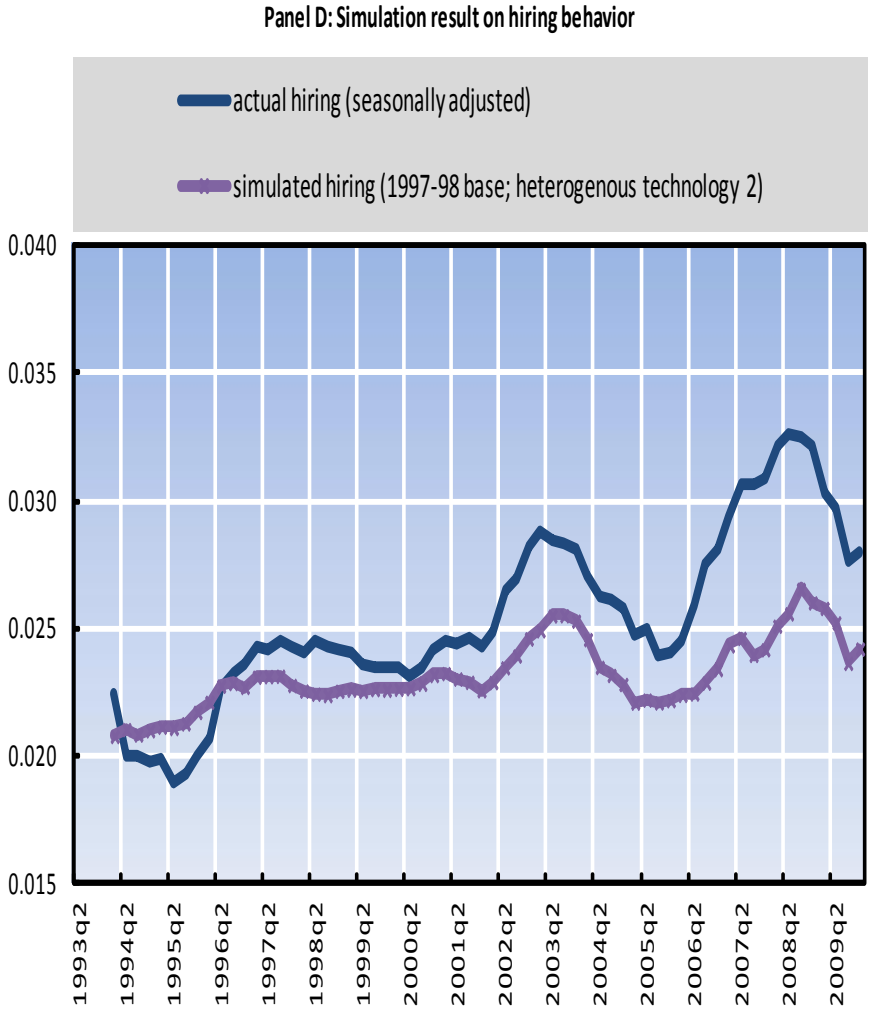
- Higher churning in non-regular workers (5-6%) than regular workers (3%)
- The difference is vivid in hiring in positive regime.
- But in other case?

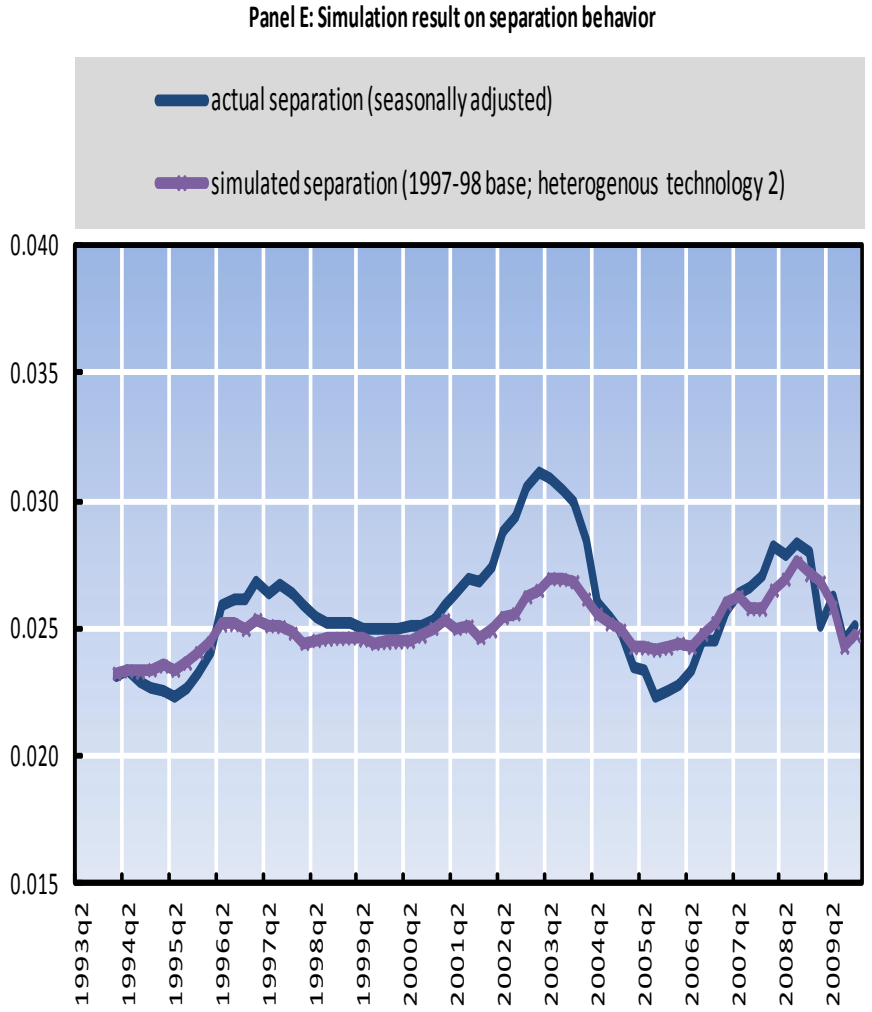
4. Heterogeneous Technology

(D) The role of hiring/separation technology: Simulation approach.

- Produce simulated hiring/separation by using actual total hour change and 1997/98 hiring/separation (non-parametric) technology
- Using only restricted sample (small total hour change sample)

4. Heterogenous Technology





4. Heterogeneous Technology

(D) The role of hiring/separation technology: Simulation approach.

- Deviation (between simulated and actual) can be found in hiring since the 2000s.
- In the separation behavior, the change in labor flow technology may not be important.

4. Heterogeneous Technology

(E) Why only in hiring?

- The characteristics of non-regular workers.
  - Upward hour adjustment may be constrained by supply condition.
  - Downward hour adjustment may be almost in the same line with regular workers.

5. (Some of) Further Issues

(A) Why only hiring?

- Hiring technology of non-regular workers has been affected by institutional change?
- DiD approach

(B) More changing establishment

- The role of over 10% change establishment

(C) Monthly data rather than quarterly data?