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Changkeun Lee

Korea Development Institute

LABOR REALLOCATION, PRODUCTIVITY, AND WAGES IN KOREA

CONTENTS

Motivation

- Efficient labor reallocation is a key to growth
- Recent concerns: reduced & malfunctioning reallocation
- Reduced labor market dynamism (Davis-Haltiwanger 2014)
  - Both job and worker reallocation fell in US
  - Why concern: close link between employment rate and fluidity
  - Particularly important for young and marginal workers
- Productivity-enhancing reallocation weakened (Foster-Grim-Haltiwanger 2016)
  - Postwar US economy has reallocated labor from less to more productive establishments, and recessions accelerated it
  - Such mechanism did not work like before during Great Recession

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Research Questions

- Pace of reallocation
  - Has Korean labor market become less fluid?
  - What type of establishments have driven the change?
  - How is reallocation intensity associated with economic outcomes?
- Patterns of reallocation
  - From where to where did labor flow?
  - What does it mean for aggregate productivity and wages?
  - What are policy implications?

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Data

- No JOLTS or BED in Korea (yet)
- Annual Mining and Manufacturing Survey
  - Unit: establishment(plant)
  - Period: 2000~2014
  - New industry classification system was introduced in 2008 (so from 2007 survey on)
  - Concordance complete

Measurement: DHS Job Flows

- Definitions
  - Net employment change at establishment i : $NEG_{i,t} = E_{i,t} - E_{i,t-1}$
  - Job creation : $JC_t = \sum_{NEG>0} NEG_{i,t}$
  - Job destruction: $JD_t = \sum_{NEG<0} |NEG_{i,t}|$
  - Job reallocation: $JR_t = JC_t + JD_t$
  - Excess job reallocation: $EJR_t = JR_t - |NEG_t|$
  - Rates: divide by $(E_t + E_{t-1})/2$
- NEG for new and closed establishments
  - New establishment: $NEG_{i,t} = 2$
  - Closed establishment: $NEG_{i,t} = -2$

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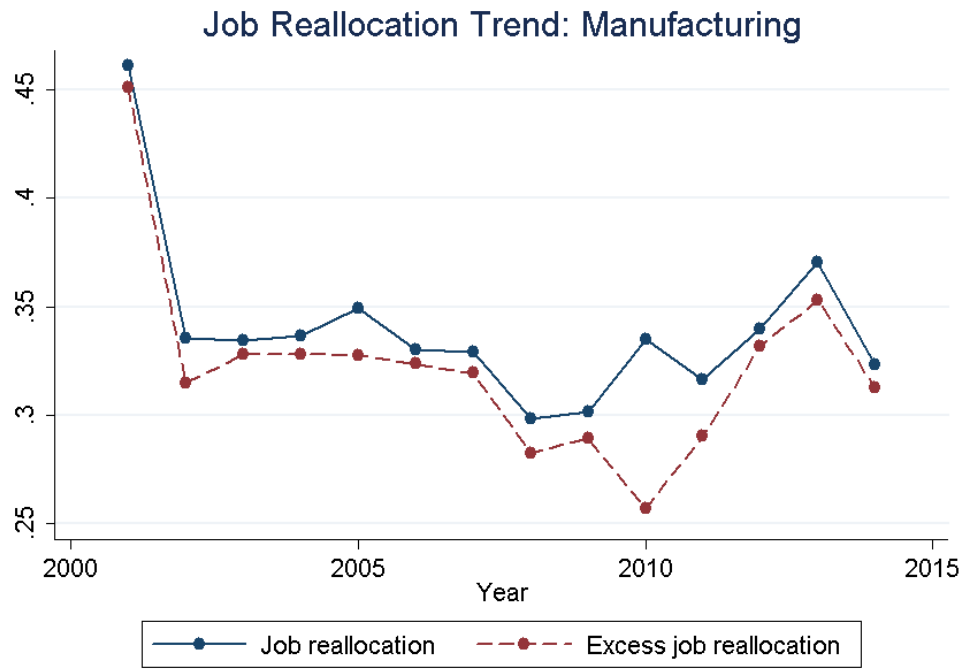
Stylized Facts: JR Rebounding after 2010



- JR and excess JR move together, going down until 2010 and then rising
- Reallocation dropped in downturns
- In 2009-10, excess JR dropped while JR went up – role of gov. policy

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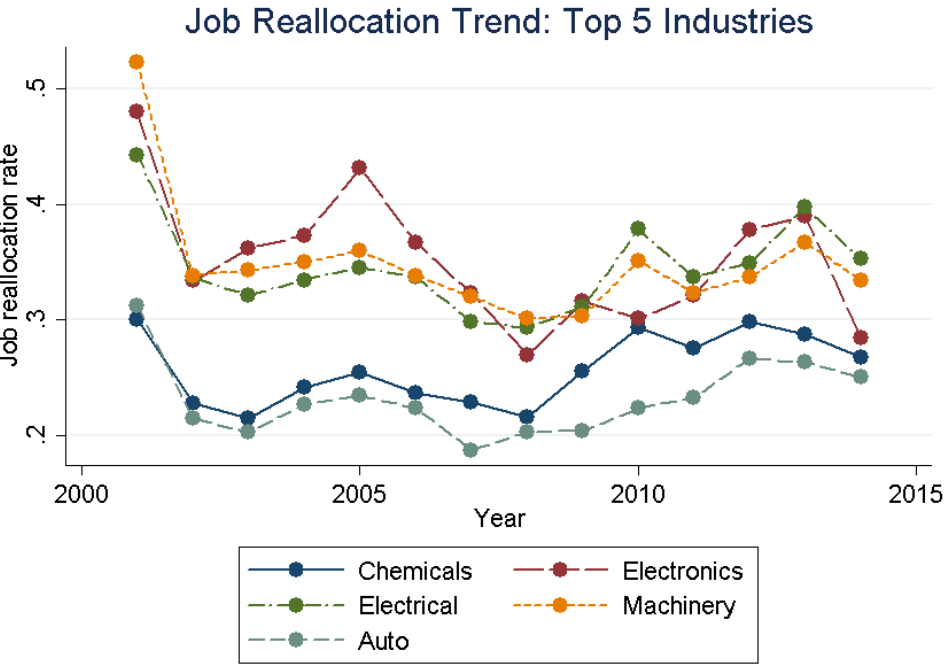
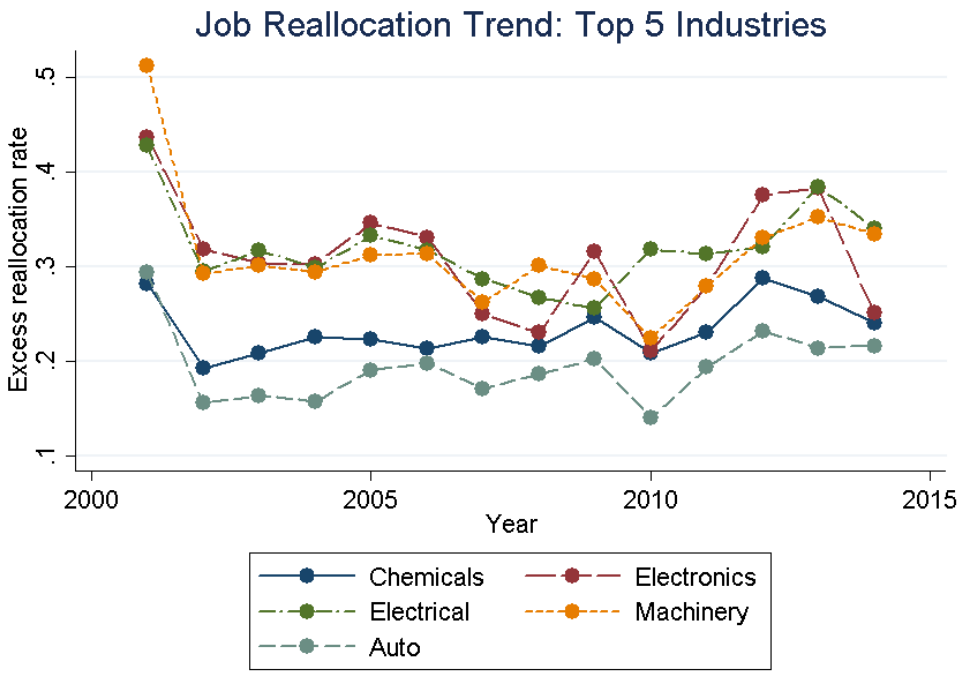
…in All Major Industries





- Excess JR measures flows across employers after accounting for NEG
- Industry ranking has been stable over time
- In top 5 industries (2-digit level), JR also went down and up around 2010

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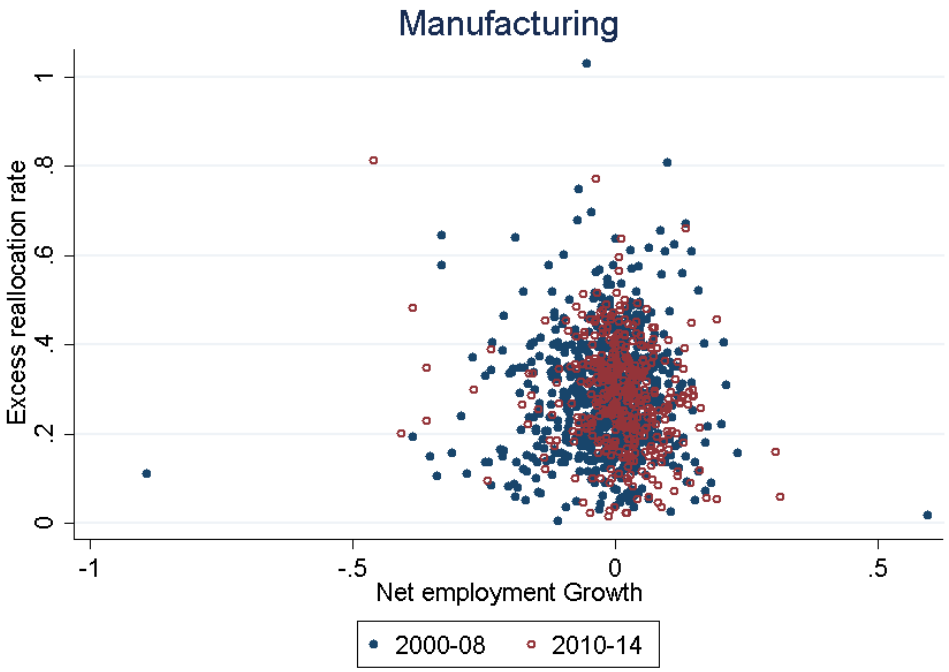
…Not Only Because of Aggregate Employment Growth



- Excess JR and NEG have no significant relationship before and after crisis
- This suggests that observed trend is not driven by biz cycle effects
- Excess JR seems to be a good measure of labor fluidity

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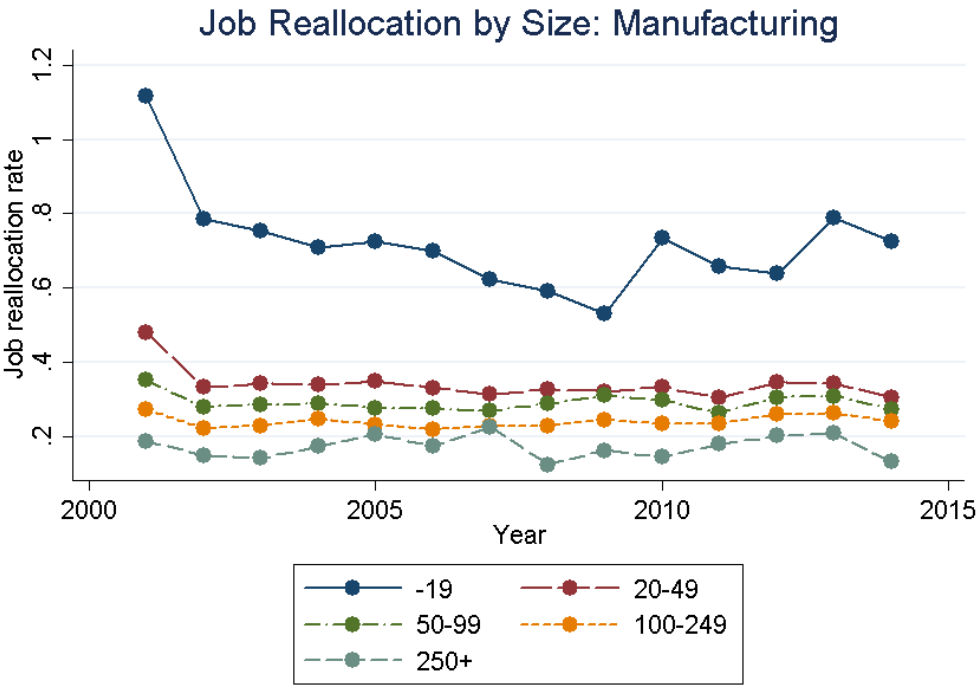
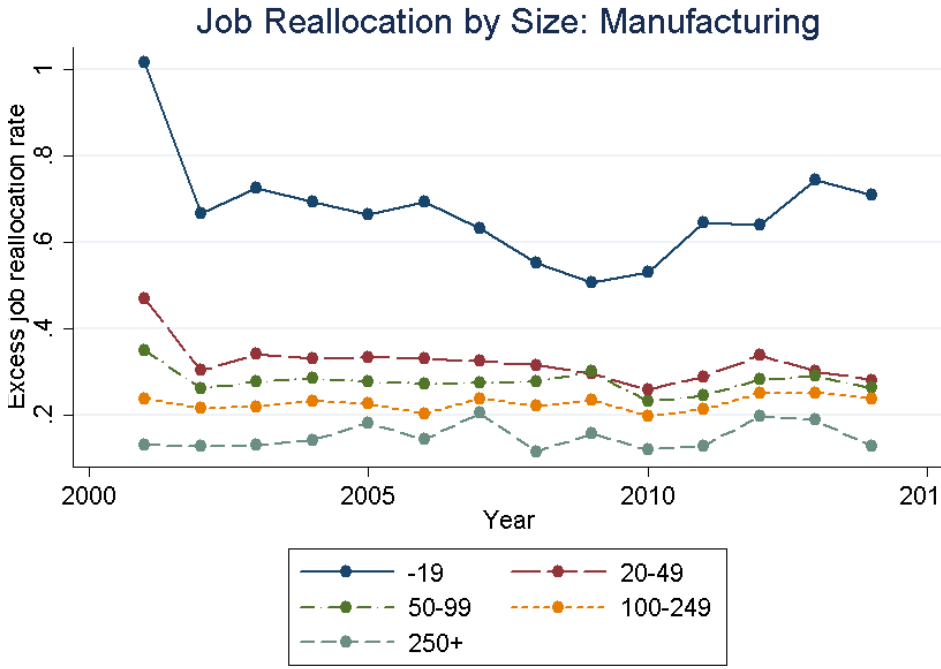
Source of Changes: Establishment Size





- Reallocation is usually lower among larger establishments
- However, rebound is strong only among small estb with -20 employees

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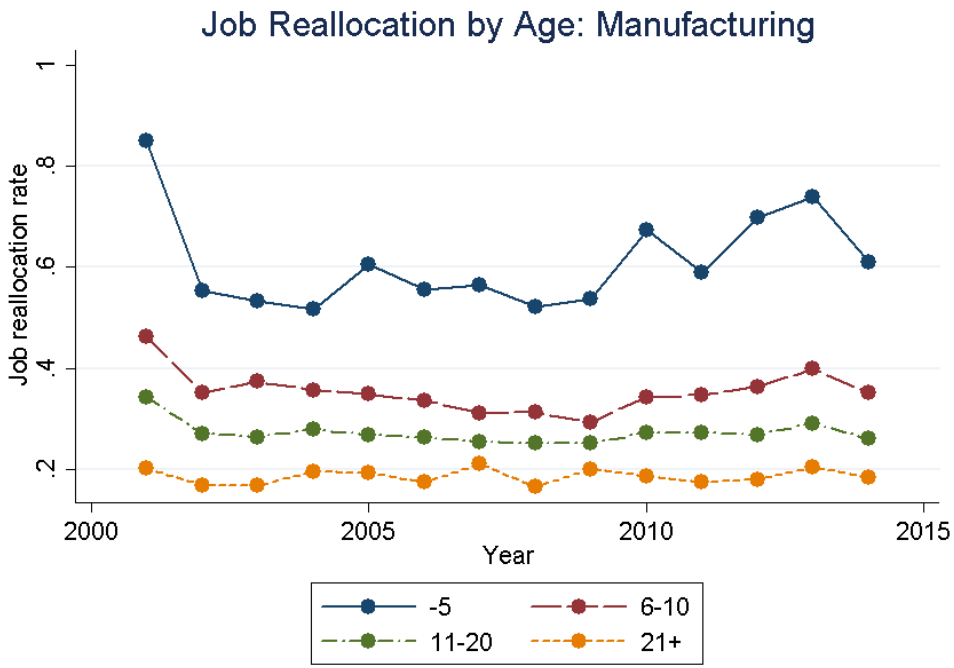
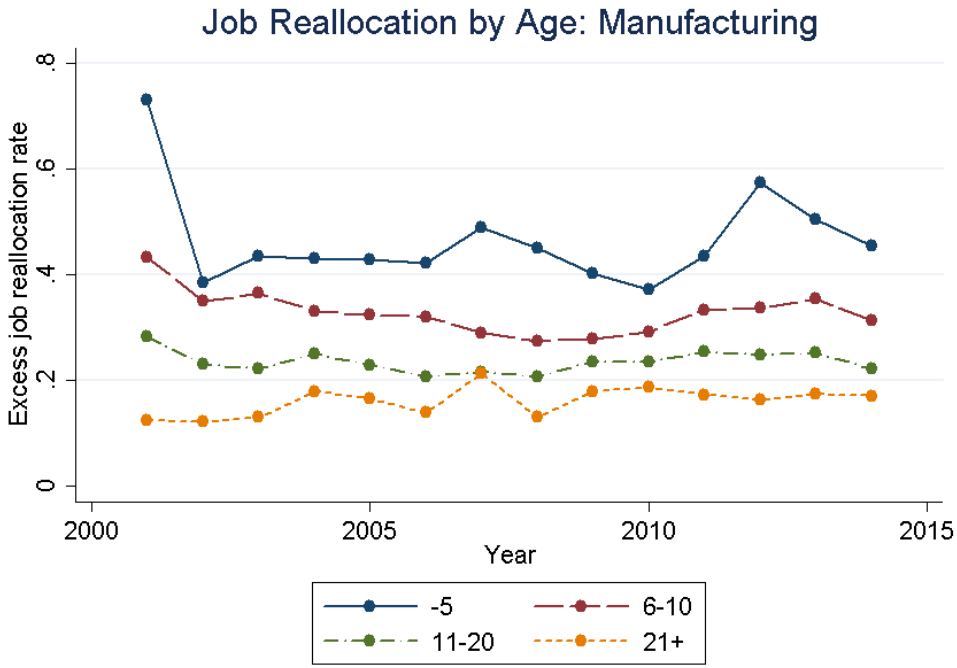
Source of Changes: Establishment Age





- Strong rebound among young plants, 5 years old or younger
- This reflects increase in entry/exit rates after 2008 crisis
- Putting together, this should be a good sign

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Did High Reallocation Boost Productivity or Wages?

- Labor Market Fluidity Hypothesis (Davis-Haltiwanger 2014)
  - High pace of reallocation helps, esp. marginal workers
  - Use worker reallocation to evaluate its effect on employment rates of various demographic groups
  - Exploits variation across states
  - Tries to isolate “true” reallocation effect, not driven by industry mix
- This analysis
  - Many agree that there are no true local labor market in Korea
  - Conducts industry-level analysis at 3 digit level

$$Y_{j,t} = \beta_0 + \beta_1 JR_{t,t-1} + \sigma_j + \eta_t + \varepsilon_{i,t}$$

  - $Y_{j,t}$: (value added/workers) for productivity, (wages/workers) for wage

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Did High Reallocation Boost Productivity or Wages?

	Dependent Variable					
	ln(labor productivity)			ln(wage)		
Time coverage	2000-12	2000-08	2009-12	2000-12	2000-08	2009-12
	(1)	(2)	(3)	(4)	(5)	(6)
Job reallocation rate	-0.109	-0.0886	-0.0403	0.123	0.183	-0.0759*
	(0.0867)	(0.0886)	(0.125)	(0.127)	(0.237)	(0.0384)
Observations	988	657	331	1162	664	498
R-square	0.934	0.956	0.979	0.935	0.956	0.980
	(7)	(8)	(9)	(10)	(11)	(12)
Excess Job reallocation rate	-0.262**	-0.150	-0.175	0.0289	0.0540	-0.0156
	(0.0915)	(0.0949)	(0.118)	(0.136)	(0.255)	(0.0405)
Observations	988	657	331	1162	664	498
R-square	0.935	0.956	0.980	0.888	0.875	0.968

Industry and year fixed effects are included in all columns.

* Significant at 5% ** at 1%

- At industry level, pace of reallocation intensity did not affect outcomes
- What matters may be not whether workers move more but *where* workers move

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Patterns of reallocation: Plant-level Analysis

- Cleansing effect of labor reallocation (Foster et al. 2016)
  - Tests whether labor was reallocated from less to more productive
  - Regress net employment growth(t-1,t) on TFP(t-1)
  - TFP ranking is measured for each (industry, year) cell
  - Finds “more jobs from more productive plant” pattern
  - Implies productivity-enhancing reallocation (allocative efficiency ↑)
  - However, it weakens during Great Recession
- This analysis
  - Use normalized (z-scored) labor productivity $z(a)_{i,t-1}$, instead of TFP
  - Do not differentiate extensive (plant closure) and intensive margins

$$JR_{i,t,t-1} = \beta_0 + \beta_1 z(a)_{i,t-1} + X_{i,t-1}\Theta + \sigma_j + \eta_t + \varepsilon_{i,t}$$

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Patterns of reallocation: Plant-level Analysis

- Steps
  - Calculate labor productivity $a_{i,t} = vadd_{i,t}/E_{i,t}$
  - Exclude extreme values: top and bottom 1%
  - Normalize $a_{i,t}$ for each (industry, year) cell, obtain z-scores $z(a)_{i,t-1}$
  - Confirm that productivity ranking is highly persistent (corr≈0.67)
  - Run the regression
  - Repeat the same for wages: put wages in place of productivity

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Patterns of reallocation: Plant-level Analysis

	Dependent Variable: Net Employment Growth			
	(1)	(2)	(3)	(4)
Productivity z-score	0.0814**	0.0803**		
	(0.0010)	(0.0012)		
Productivity z-score x post-2009		0.0034*		
		(0.0020)		
ln(plant wage)			0.212**	0.204**
			(0.0024)	(0.0029)
ln(plant wage) x post-2009				0.0175**
				(0.0041)
Observations	813,049	813,049	758,517	758,517
R-square	0.046	0.046	0.055	0.055

Log plant size (employment), industry and year fixed effects are included in all columns. Errors are clustered at the plant level.
* Significant at 5% ** at 1%

- In general, labor reallocation was productivity- and wage-enhancing
- The effect is stronger among small estb (-300 employees, not reported)
- Since 2009, pace of reallocation increased; not so much did p- and w-enhancing effect

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Policy Implications

- Making labor market more flexible and fluid has been one of major policy goals of Korea government
  - They worked mostly on “rigid” labor institutions, assuming that
  - more flexibility & fluidity would bring higher productivity
- Gains were not as much as expected
  - Pace of labor reallocation actually increased after global financial crisis
  - However, it did not improve productivity- and wage-enhancing mechanism much (it did not make it worse, either)
  - High job flow itself may not be the right policy target
- This analysis: not between- but within-industry reallocation
  - Within-industry reallocation is sound in manufacturing
  - Low-productivity and low-wage problems stand out in service industry

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Thank You!
Any Questions?

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