Wage Dynamics: Thoughts from Micro Evidence

By

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This presentation cites results from a wide range of studies. The interpretation and opinions about these studies are those of the presenter and should not be attributed to the authors of the studies being cited. Thanks to Alan Finkelstein Shapiro for excellent research assistance.

Overview

- **Who is the marginal worker?**
  - DMP (Diamond-Mortensen-Pissarides) perspective and evidence
    - Focus is on new hires/job creation
    - What are wage dynamics for new hires/job creation?
  - What are margins of worker and job flows not captured well by DMP?
    - Important role of job loss for both labor market flows and wage dynamics
    - Why are earnings losses so large and persistent from displacement?
    - Is DMP consistent with these patterns?
    - Rents and specific capital?
- **Taking a step backwards:**
  - What determines wages?
- **Open questions**

Marginal Worker?

- DMP and especially Pissarides/Shimer version with exogenous separations highlights the vacancy posting/job creation margin.
  - Even with endogenous job destruction, DMP model has destruction of only zero surplus matches
- Pissarides (2009) argues that in turn that the marginal worker is new hires.
  - Much evidence that new hires have more procyclical wages than stayers.
  - Cyclicality roughly consistent with Shimer (2005) calibration: $\varepsilon_{w,p} \approx 1$
    - To get this need roughly elasticity of wages with respect to unemployment equal to -3.

Table 4: Estimates of the cyclicality of hourly wages, United States

Author	Data	Coefficient on $-\Delta u \times 100$	
Bils (1985)	NLSY 1966-80	all (sep whites/nonwh.)	1.6/1.8
		stayers	0.6/0.4
		changers	3.0/4.0
Shin (1994)	NLSY 1966-81	all (sep whites/nonwh.)	1.7/1.4
		stayers	1.2/0.2
		changers	2.7/3.8
Barlevi (2001)	PSID, 1968-93	changers	2.59
	NLSY, 1979-93	changers	3.00
Beaudry and DiNardo (1991)	PSID 1976-84	all, cont. u^1	0.7
		all, initial u^2	0.6
		all, min u^3	2.9
Beaudry and DiNardo (1991)	CPS 1979, 1983	all, cont. u^1	0.0
		all, initial u^2	0.0
		all, min u^3	3.1
Grant (2003)	NLSY 1966-81	all, cont. u^1	2.37
		all, initial u^2	0.60
		all, min u^3	2.29
Solon, Barsky and Parker (1994)	PSID 1968-87	all men	1.40
		all women	0.53
		stayers, men	1.24
Devereux (2001)	PSID 1970-91	all	1.16
		stayers	0.81
		single job holders	0.54
Shin and Solon (2006)	NLSY 1979-93	all	1.37
		stayers	1.17
		single job holders	1.13

Source: Pissarides (2009)

Debate about evidence for new hires ongoing?

- Gertler and Trigari (2009) raise questions about cyclical upgrading and downgrading of positions.
- Carneiro, Guimarães, and Portugal (2009) show that cyclicality of new hires is robust to controlling for person, job and firm effects.
- This useful debate is ongoing – but is this the only place we should look?

Table 1: Real Wage Sensitivity to the Unemployment Rate

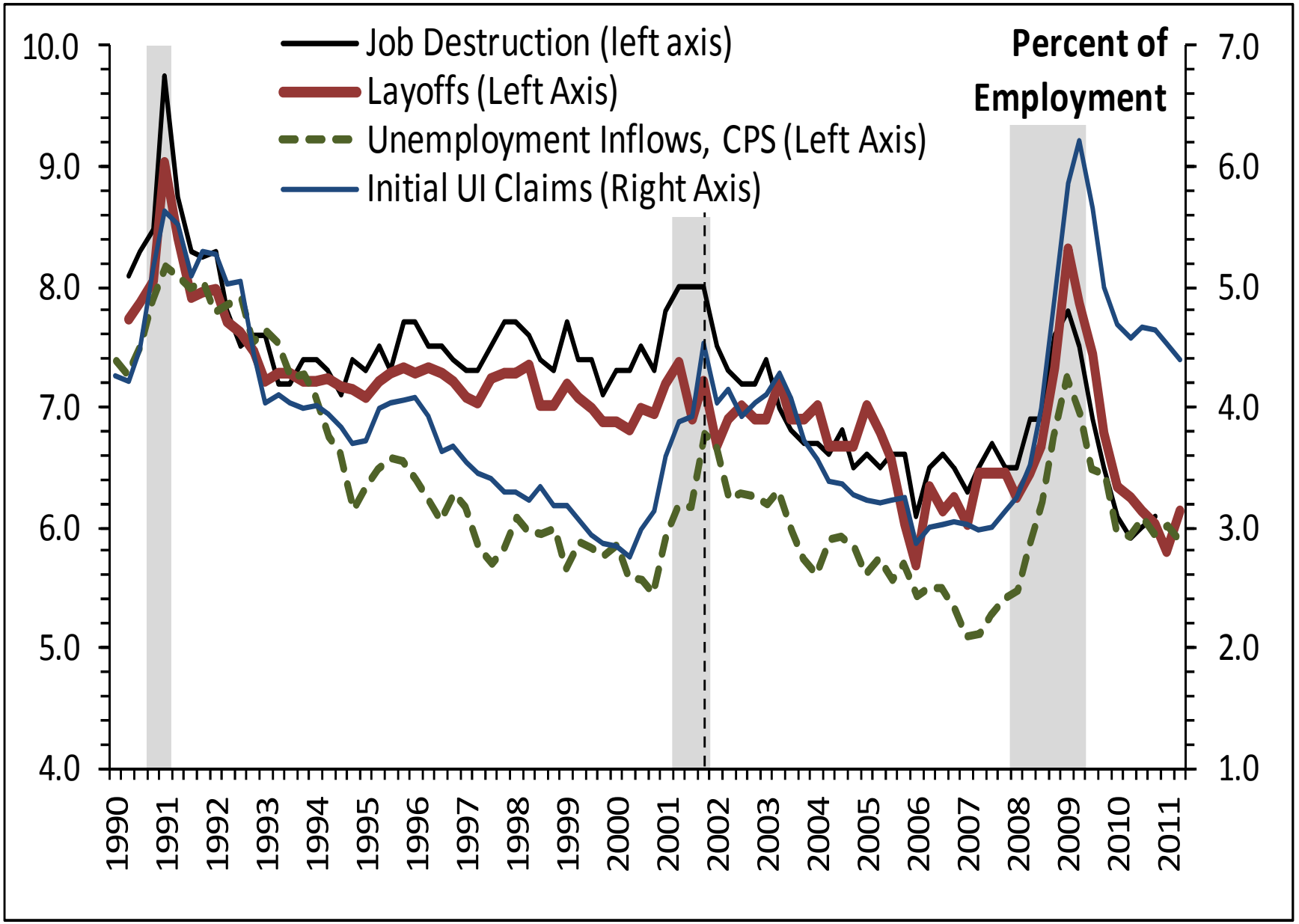
Portugal, 1986-2007 (N=31,631,954)

Dependent variable: log real hourly earnings

	Stayers	Incremental Effect for New Hires
1. OLS estimator		
Cycle variable: Unemployment Rate	-1.61^{***}	-0.38
	(0.53)	(0.22)
2. Within estimator, worker fixed effect		
Cycle variable: Unemployment Rate	-1.87^{***}	-0.60^{***}
	(0.56)	(0.16)
3. OLS solution with worker and firm fixed effects		
Cycle variable: Unemployment Rate	-1.85^{***}	-0.75^{***}
	(0.56)	(0.22)
4. OLS solution with worker, firm, and job title fixed effects		
Cycle variable: Unemployment Rate	-2.20^{***}	-0.47^{***}
	(0.60)	(0.16)
5. OLS solution with worker and firm-job title fixed effects	-2.18^{***}	-0.44^{***}
Cycle variable: Unemployment Rate	(0.63)	(0.15)

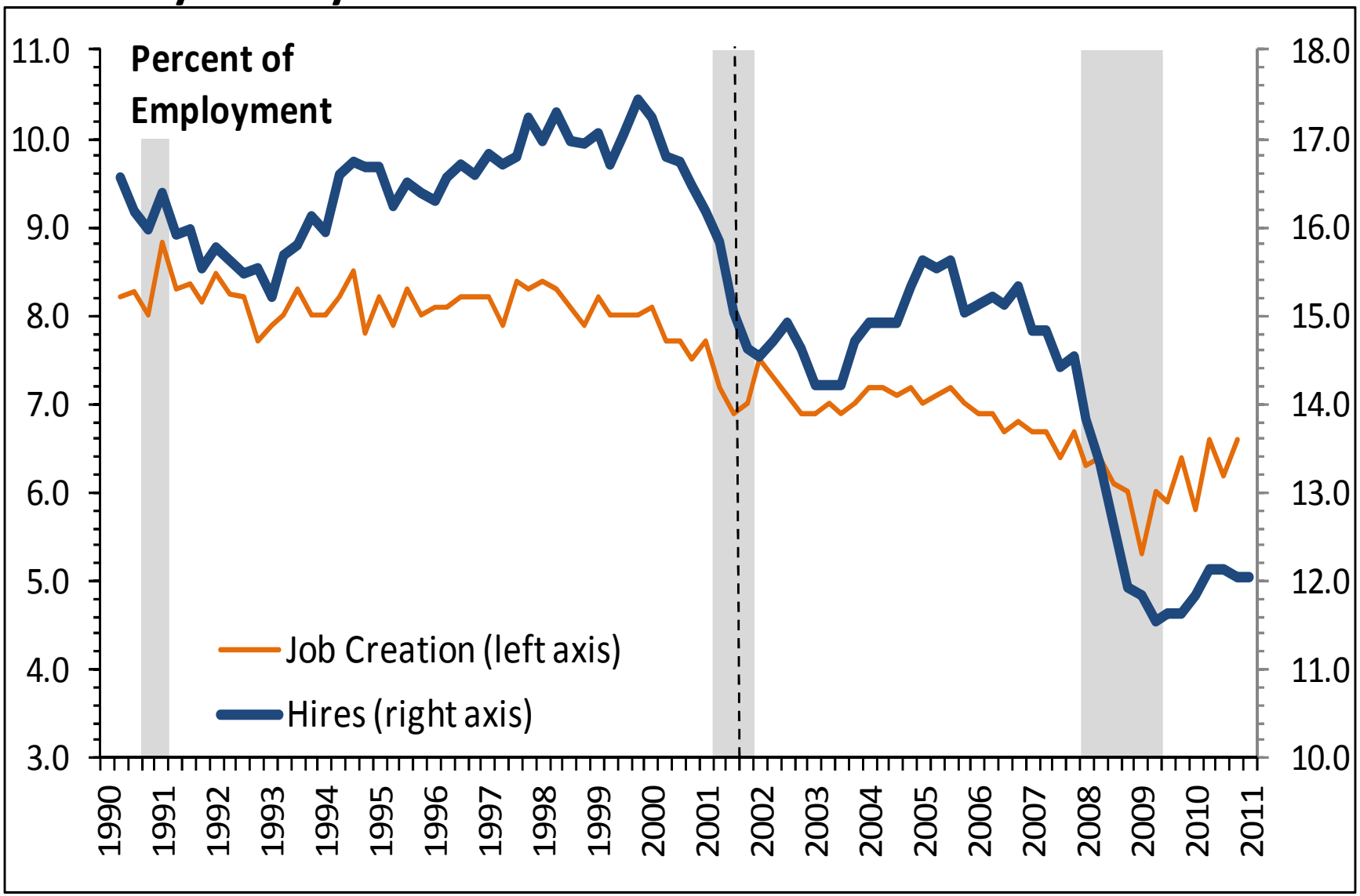
Source: Carneiro, Guimarães, and Portugal (2009)

The Cyclicality of Different Measures of Job Loss



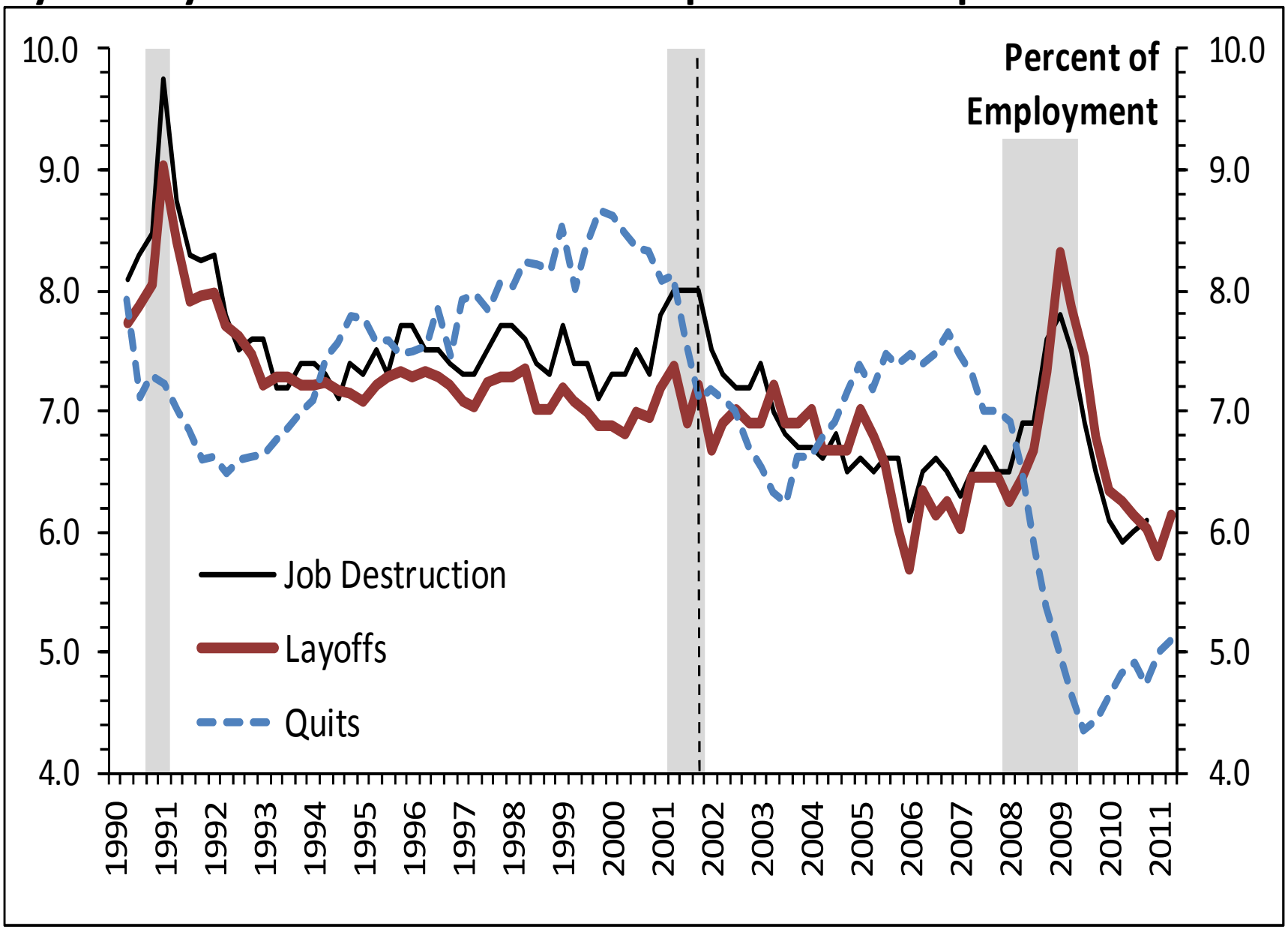
Source: Davis, Faberman and Haltiwanger (2011)

The Cyclicality of Hires and Job Creation



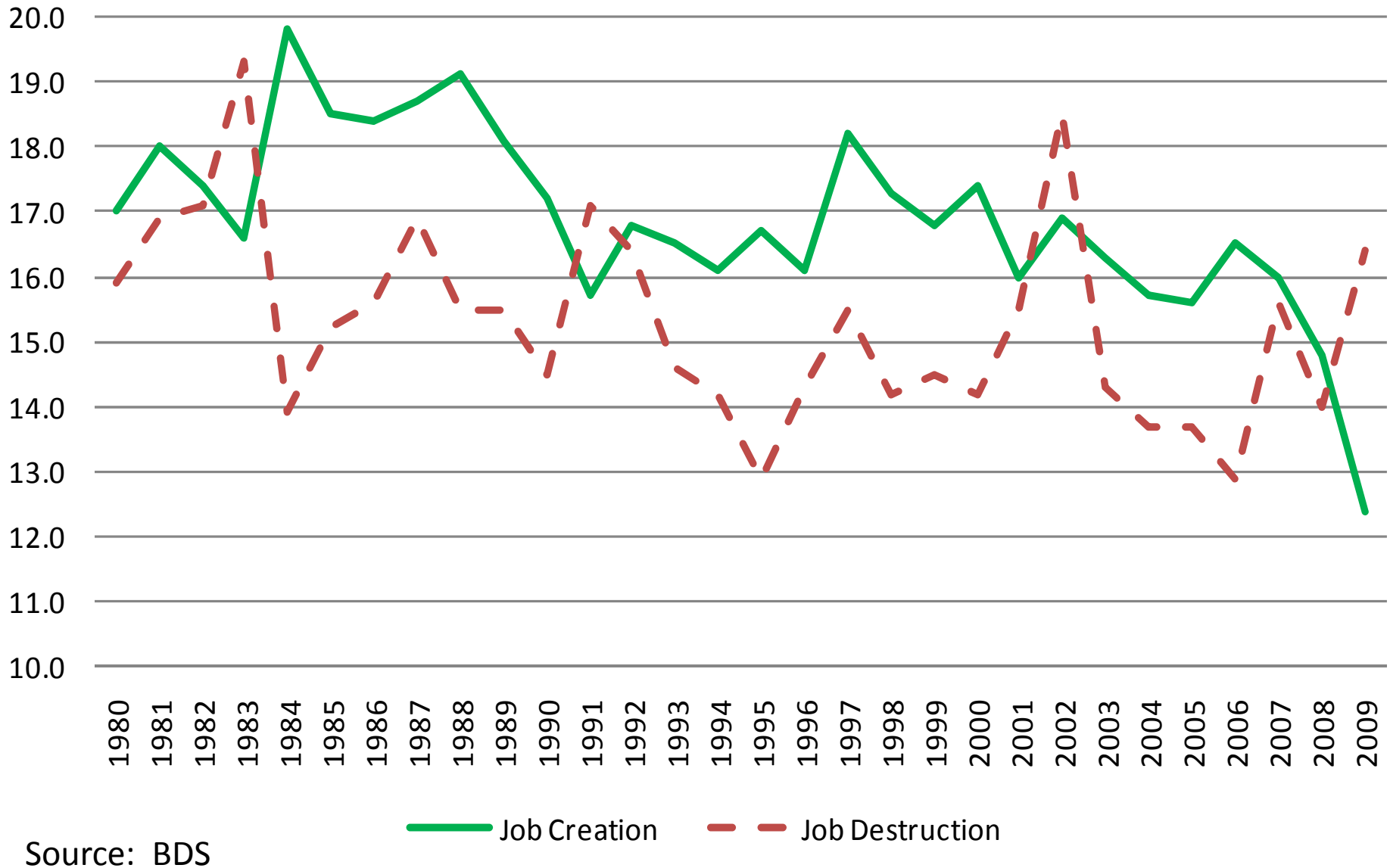
Source: Davis, Faberman and Haltiwanger (2011)

Cyclicality of Destruction and Components of Separations

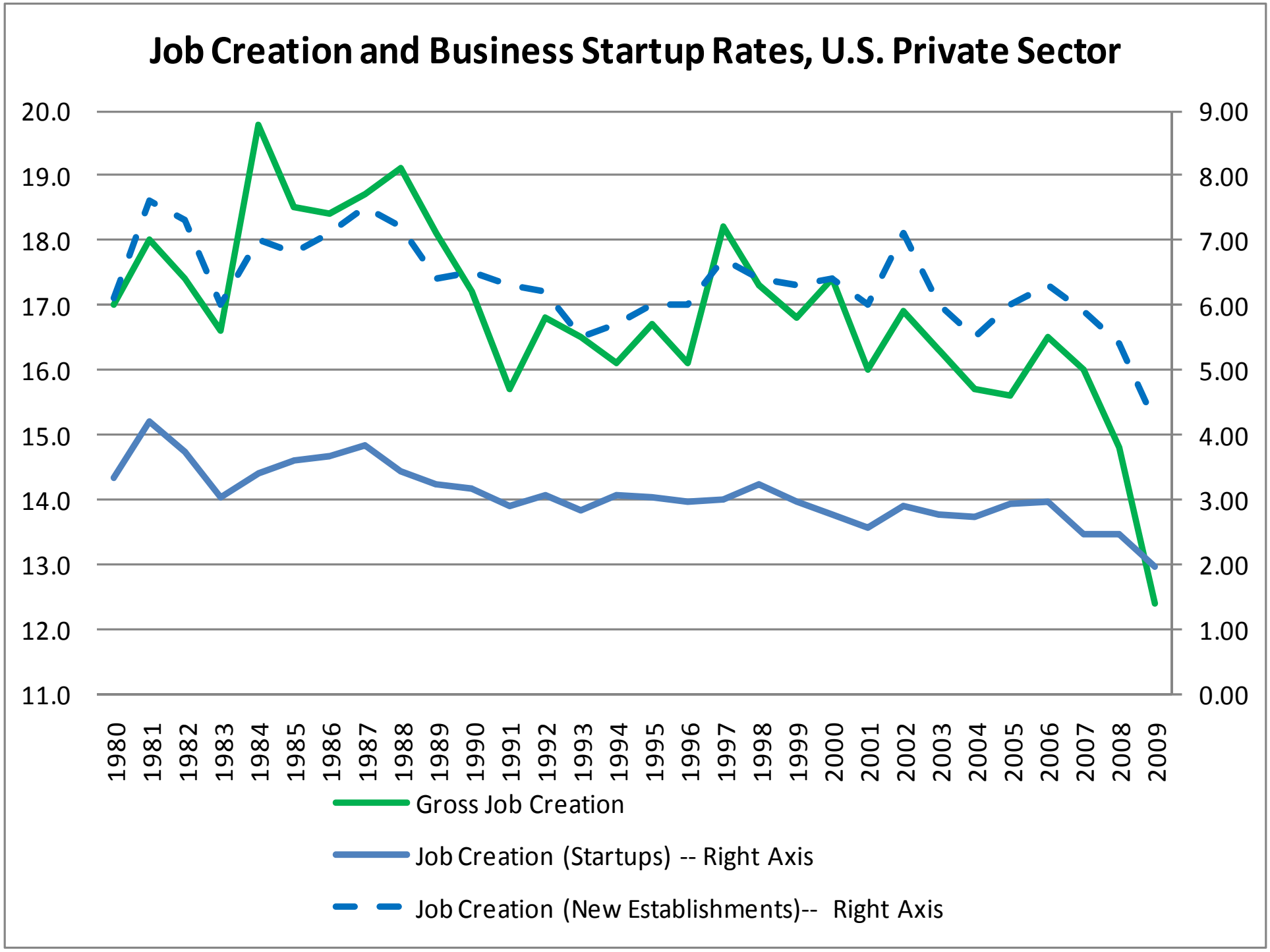


Source: Davis, Faberman and Haltiwanger (2011)

Gross Job Creation and Destruction Rates, U.S. Private Sector



Source: BDS


Job Creation and Business Startup Rates, U.S. Private Sector
20.0
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
9.00
8.00
7.00
6.00
5.00
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1980
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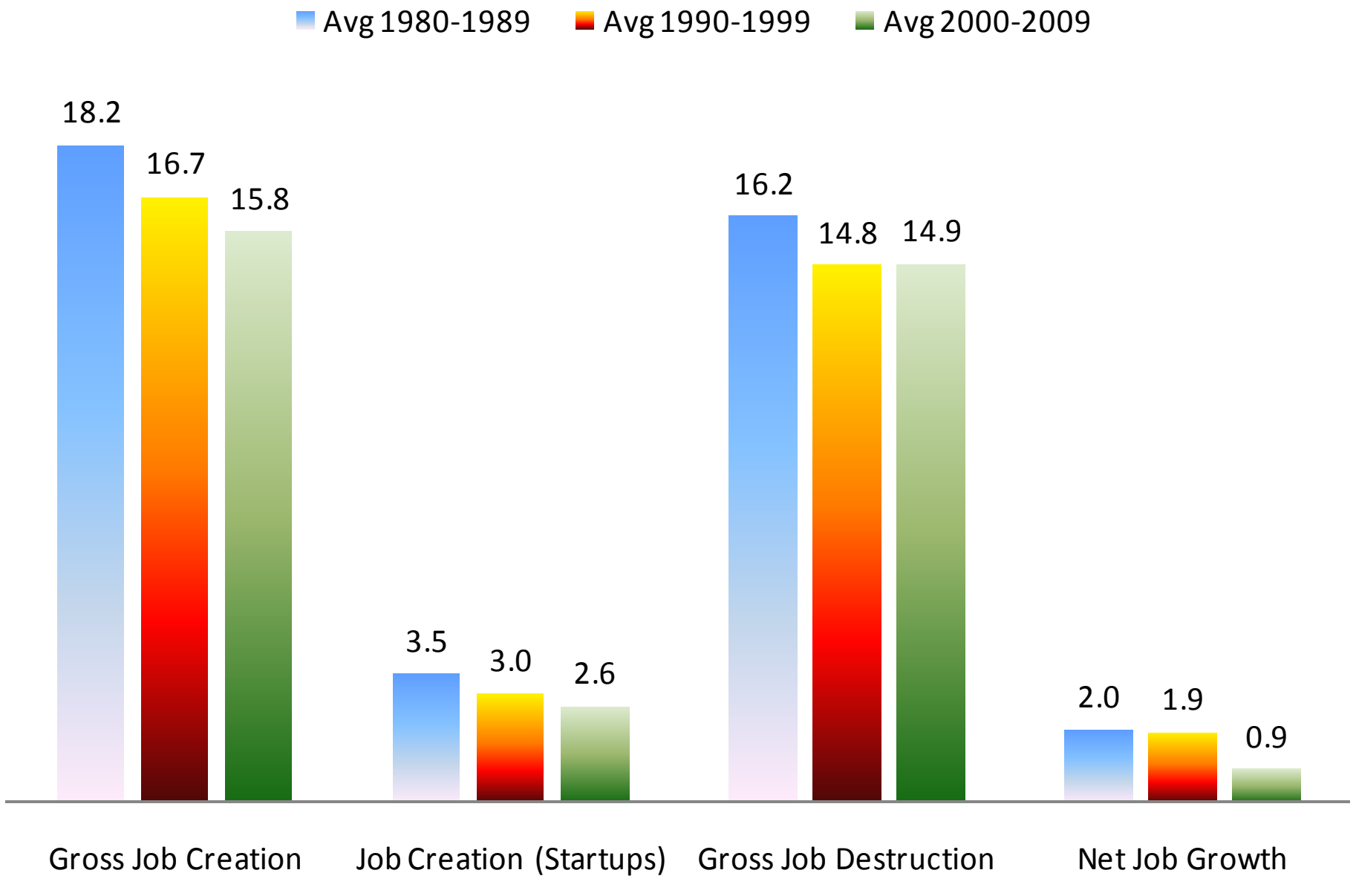
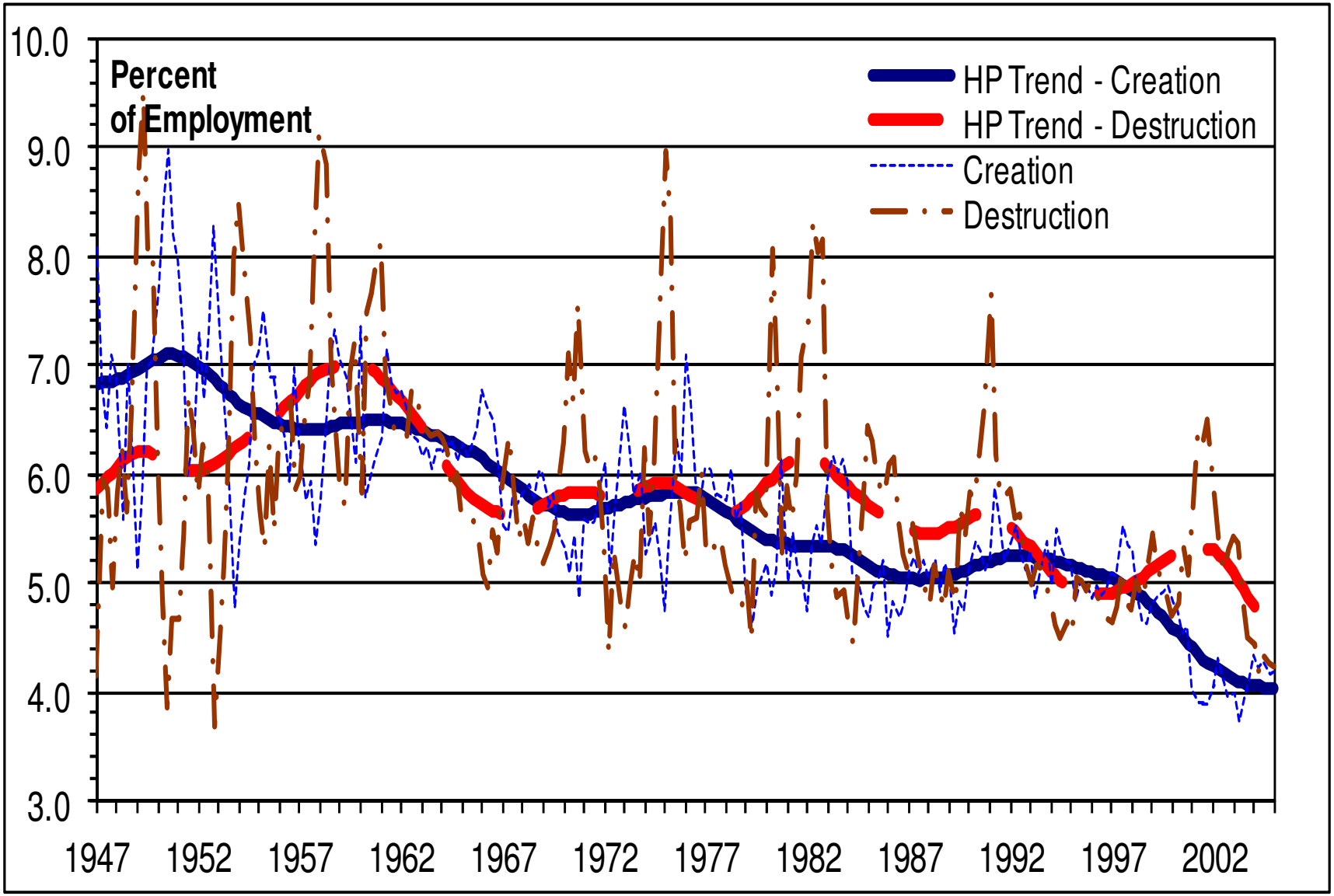
2009
Gross Job Creation
Job Creation (Startups) -- Right Axis
Job Creation (New Establishments)-- Right Axis

Trends in Gross Flows and Net Job Creation



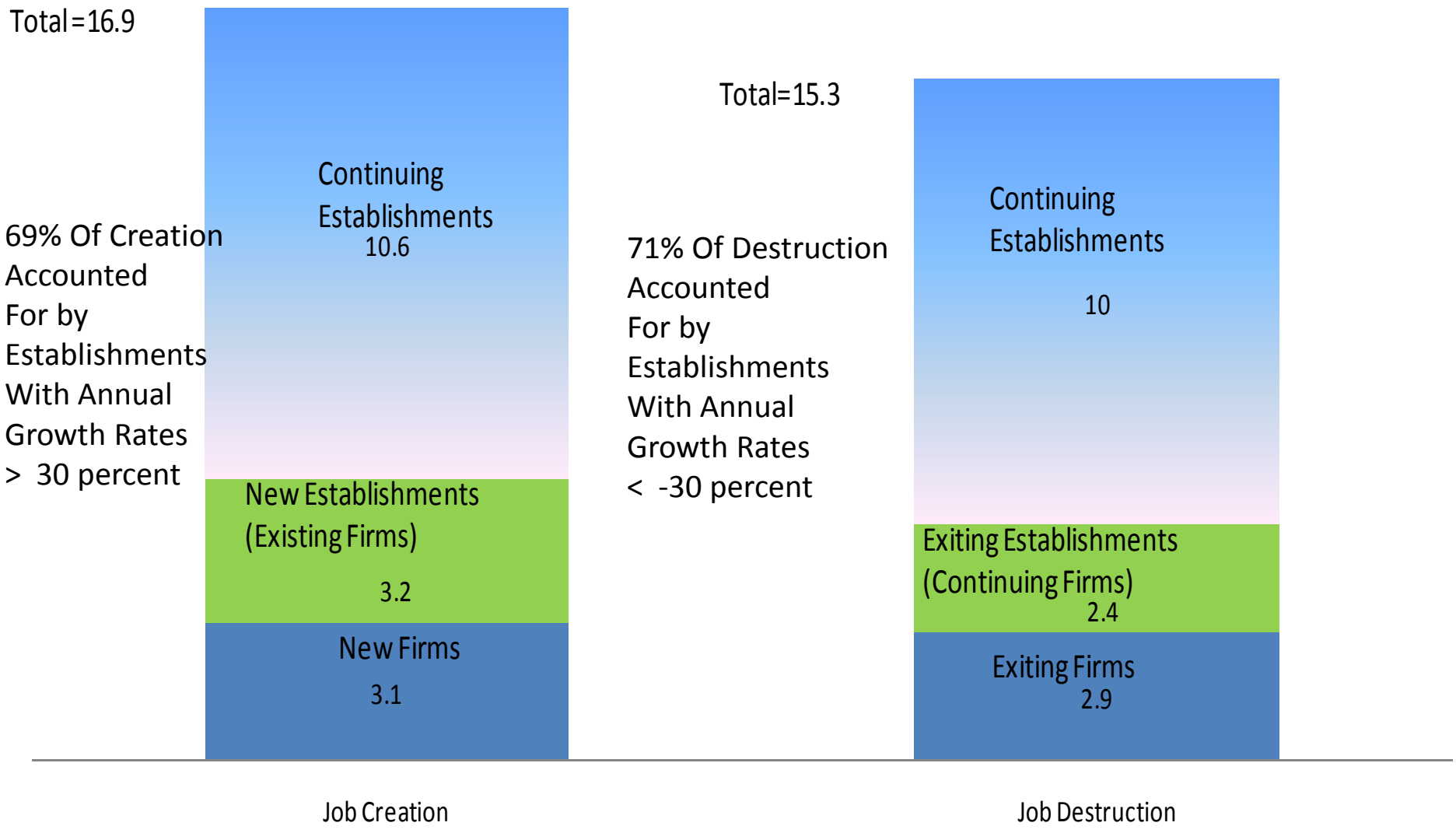
U.S. Manufacturing (Quarterly) Job Flows



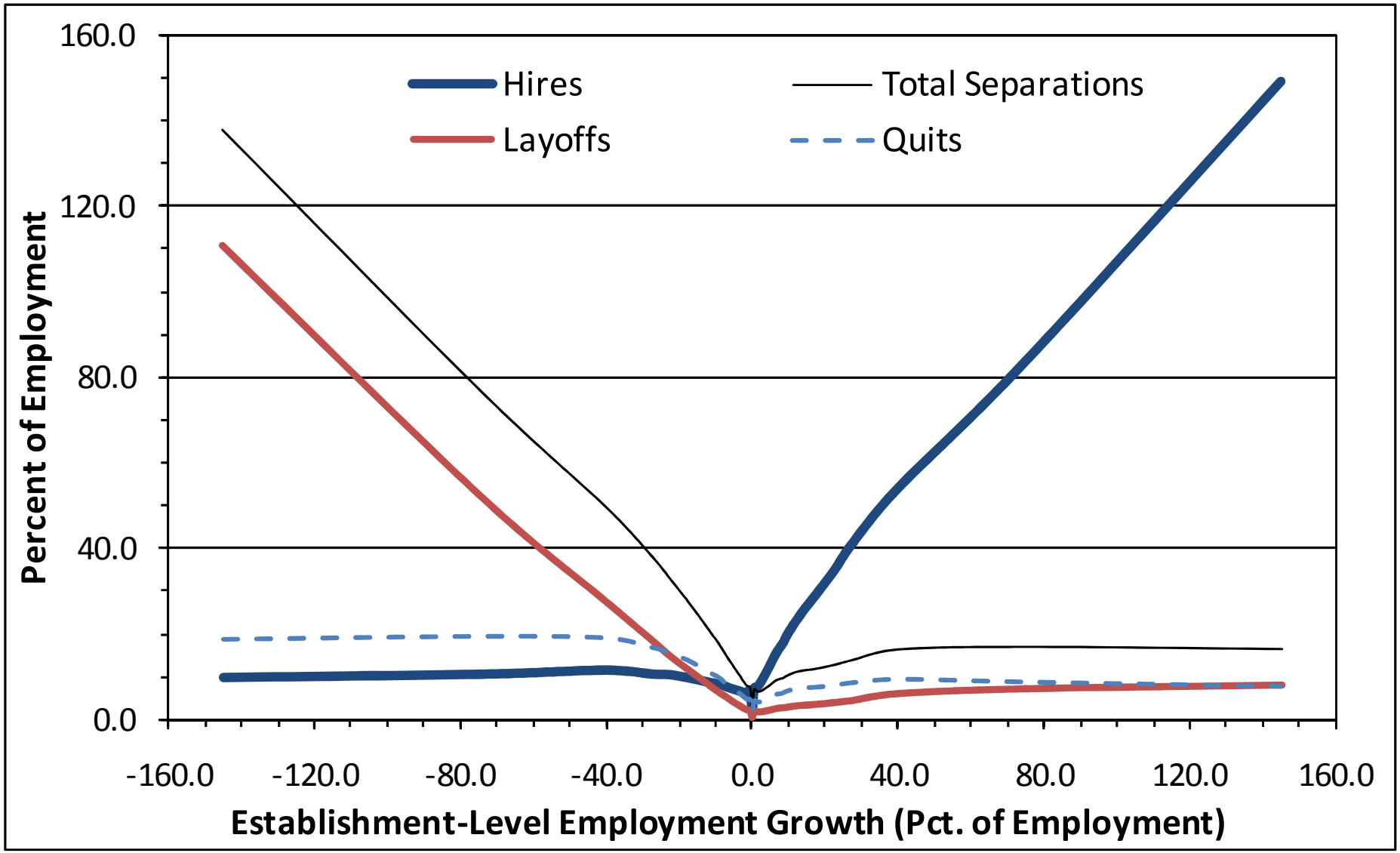
Source: Davis, Faberman, Haltiwanger, Jarmin and Miranda (2010)

Job Creation and Destruction, U.S. Private Sector, Annual Rates (Percent of Employment),1980-2009

Source: BDS



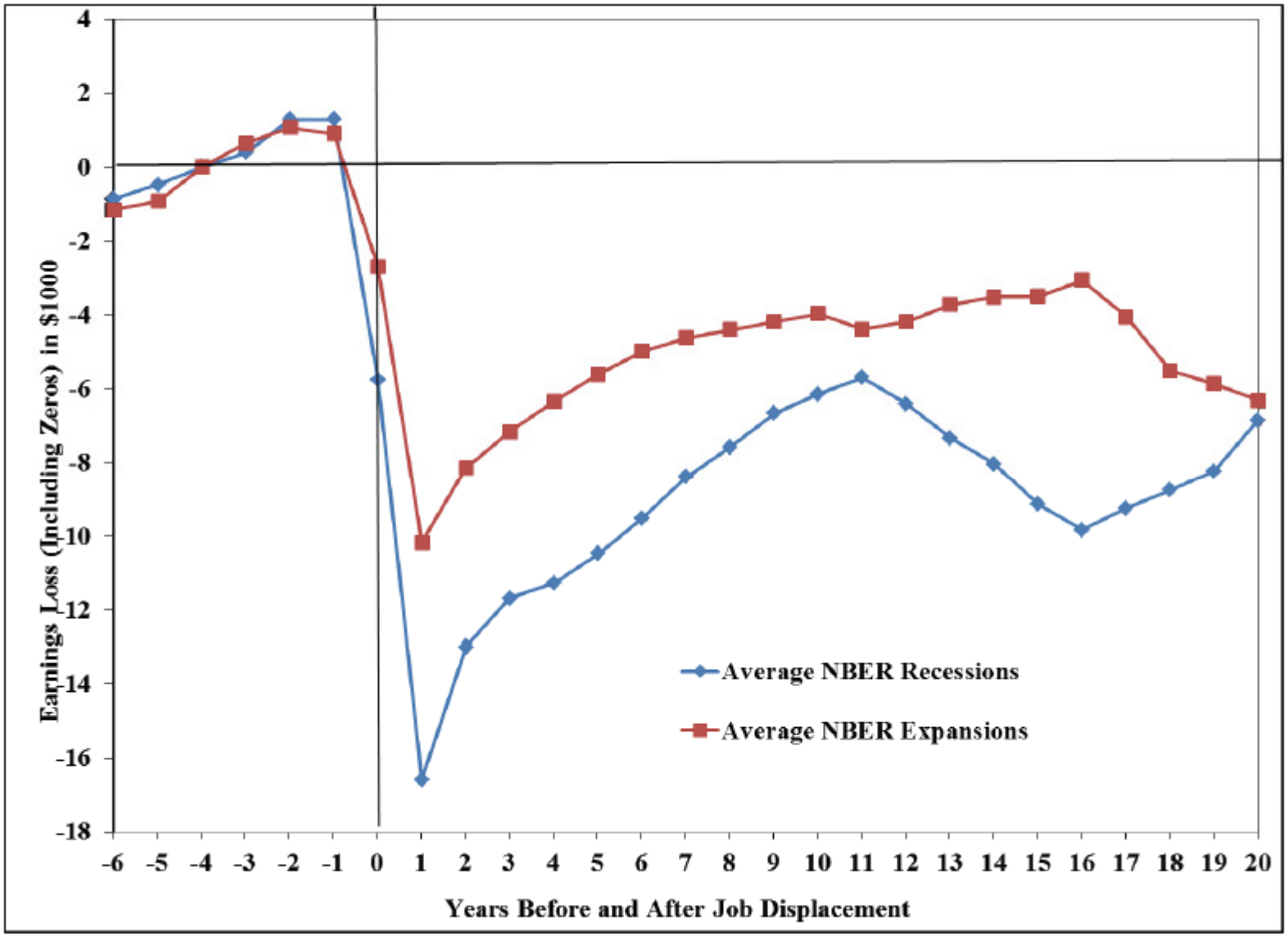
Worker Flow-Employer Growth Relationships



Source: Davis, Faberman and Haltiwanger (2011)

The Impact of Job Displacement on Earnings

(Men, 3 years of tenure, 50 employee firms with contraction of 30% over 2 years)



Source: Davis and von Wachter (2011)

Table 1. Magnitude and Cyclicality of Present Value Earnings Losses Associated with Displacement in Mass-Layoff Events from 1980 to 2003, Men with at Least Three Years of Job Tenure Before Displacement

		(1)	(2)	(3)	(4)	(5)
		Present Discounted Value (PDV) of Average Loss at Job Displacement Per Person		PDV of Average Loss as Percent of Counterfactual Annual Earnings Stream		
	Fraction of Years Covered by Row Category	Dollar Value	Relative to Annual Earnings in Year Before Displacement	PDV of Log Difference Between Loss & Counterf. Earnings	PDV of Percent Loss Relative to Counterf. Earnings	Ratio of PDV of Loss and PDV of Earnings
Average All Years	--	-72,685	-1.82	-1.8	-1.52	-11.3
Avg. in NBER Expansion Years	*0.85*	-65,424	-1.62	-1.5	-1.34	-10.0
Avg. in NBER Recession Years	*0.15*	-112,095	-2.92	-3.2	-2.58	-19.2

Source: Davis and von Wachter (2011)

Table 4. Present Value Income and Earnings Losses Associated with Job Loss in the Basic Mortensen-Pissarides Model of Unemployment Fluctuations

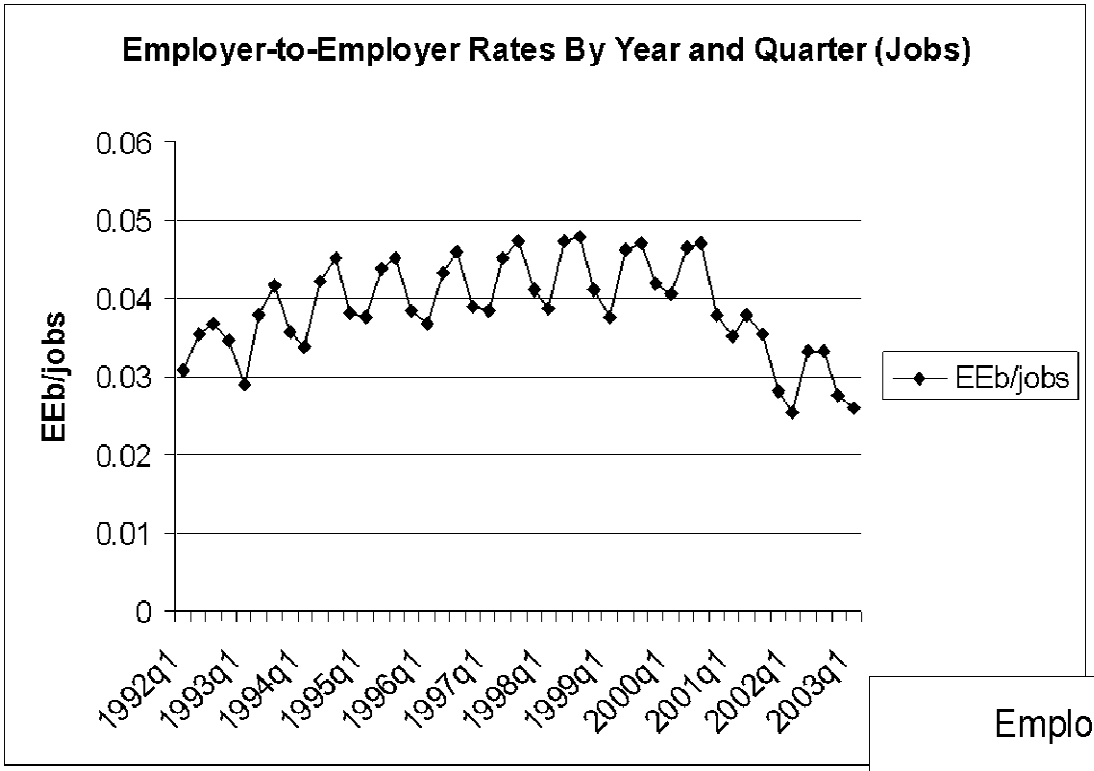
	PV Income Losses, Percent of Employment Asset Value			PV Earnings Losses, Percent
Model Version	MP-Nash	MP-Nash	MP-CB	MP-Nash
Calibration	Standard	Hagedorn-Manovskii	Hall-Milgrom	Standard
A. Range of Mean Losses Over Five Aggregate States	0.20 - 0.22	0.044 - 0.047	0.20 - 0.23	
B. All Aggregate Paths	*Realized Outcomes*			
Mean Unemployment Rate	0.065	0.066	0.065	
Monthly Job-Finding Rate	0.43	0.43	0.43	
Mean PV Losses	0.21	0.04	0.21	0.78
$10^{th}/90^{th}$ percentile losses	-0.18 / 0.66	-0.13 / 0.21	-0.15 / 0.65	-0.30/2.25
C. Aggregate Boom Paths				
Unemployment Rate	0.064	0.061	0.060	
Monthly Job-Finding Rate	0.44	0.46	0.46	
Mean PV Losses	0.01	-0.11	0.04	0.74
$10^{th}/90^{th}$ percentile losses	-0.30 / 0.43	-0.17 / -0.02	-0.25 / 0.44	-0.33/2.19
D. Aggregate Bust Paths				
Unemployment Rate	0.066	0.072	0.072	
Monthly Job-Finding Rate	0.43	0.40	0.40	
Mean PV Losses	0.43	0.20	0.40	0.81
$10^{th}/90^{th}$ percentile losses	0.13 / 0.83	0.14 / 0.27	0.08 / 0.83	-0.28/2.30
99^{th} percentile losses	1.39	0.37	1.42	4.42

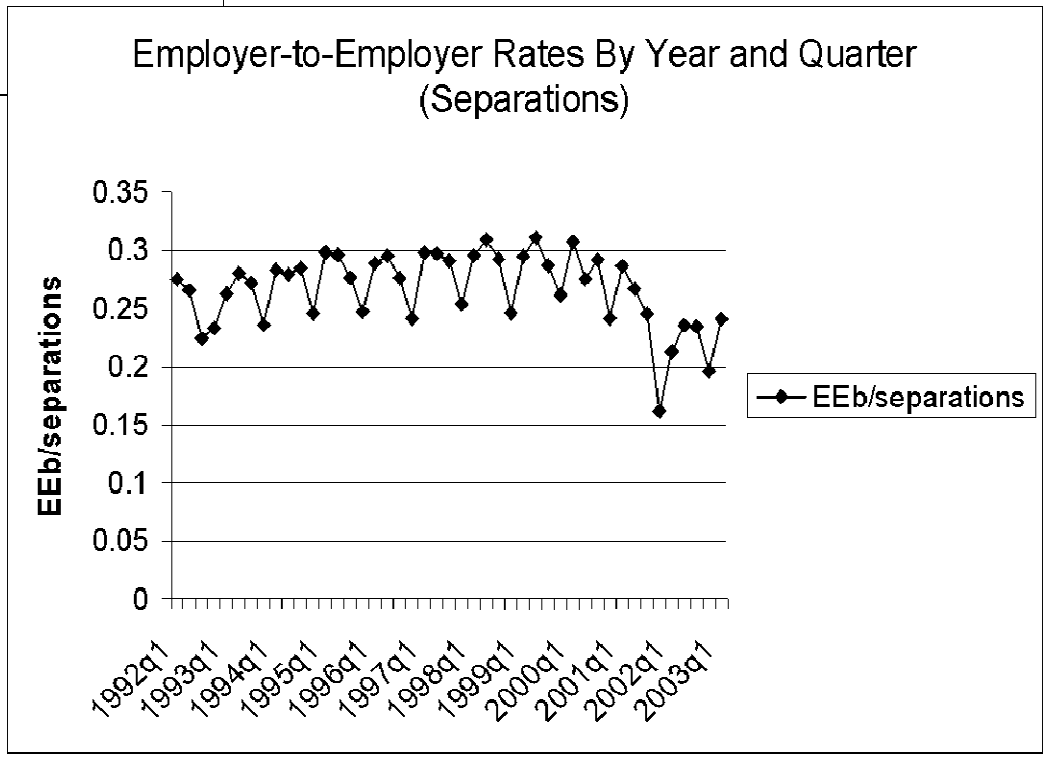
Source: Davis and von Wachter (2011)

Median Real Quarterly Earnings Change First New Job Relative to Separating Job, By Length of Non-Employment Spell After Separation
Full-Quarter Earnings, Excluding Recalls
(percent)

Distressed Separations (30% Decline in Employment in Year Following Separation, One year of tenure)			
	1995	1999	2001
New job in same quarter	4.2	10.3	2.7
New job in adjacent quarter	1.7	13.4	-3.9
Full-quarter non-employed	-12.2	5.9	-16.5
Two or three quarters non-emp	-15.4	-2.7	-18.3
Four or more quarters non-emp	-14.0	-5.6	-23.9
Secondary Job Becomes Main	-24.5	-9.2	-19.2
All Attached Separators (One Year of Tenure)			
	1995	1999	2001
New job in same quarter	8.5	14.7	6.8
New job in adjacent quarter	3.3	12.8	0.8
Full-quarter non-employed	-11.7	-3.2	-14.6
Two or three quarters non-emp	-11.3	-0.9	-13.8
Four or more quarters non-emp	-3.8	-1.5	-15.1
Secondary Job Becomes Main	-13.4	-9.1	-19.6
Job Stayers	0.0	1.3	0.0

Source: Fallick, Haltiwanger and McEntarfer (2011)





Source: Bjelland, Fallick, Haltiwanger and McEntarfer (2011)

Nonemployment Duration Following Separation: Distressed Separators 1995, 1999, 2001 (percent)

	Re-employment same quarter	Re-employment subsequent quarter	One full-quarter of non-employment	2-3 quarters of non-employment	At least 4 quarters non-employment	No additional UI earnings observed in state
Distressed 1995	32.81	19.63	17.60	8.86	11.41	9.70
Distressed 1999	39.23	22.81	14.71	6.43	8.73	8.08
Distressed 2001	31.73	22.01	13.39	8.90	13.04	10.92

- Distressed separators have reasonable chance of job-to-job flow
- But this is procyclical (with an especially large decline from 1999 to 2001)

Source: Fallick, Haltiwanger and McEntarfer (2011)

Nonemployment Duration Following Separation: All Separators
1995, 1999, 2001
(percent)

	Re-employment same quarter	Re-employment subsequent quarter	One full-quarter of non-employment	2-3 quarters of non-employment	At least 4 quarters non-employment	No additional UI earnings observed in state
All Separations 1995	27.08	15.74	23.71	8.30	13.52	11.65
All Separations 1999	32.97	17.86	17.02	7.63	11.70	12.82
All Separations 2001	29.13	17.38	16.62	8.25	13.71	14.91

- All Separations duration patterns somewhat less cyclical
- Puzzle? All Separators Not Higher Rate of Job-to-Job Flows than Distressed Separators
  - Unobserved heterogeneity?
  - Distinction Between Joblessness and Unemployment?
  - Topic for another day…discussed in detail in Fallick, Haltiwanger and McEntarfer (2011)

Taking Stock

- Distressed separators (especially those with spells of joblessness) experience large and persistent earnings losses.
  - Not just due to quarters with reduced weeks of work
  - Substantially larger in recessions
- DMP models cannot account for these patterns.
  - Focus is on creation not destruction. Model does not capture patterns of job loss/destruction
  - Destruction is for zero surplus jobs. Earnings losses small.
- Findings suggest specific capital/rent losses which are substantial.

What Determines Wages?

- Who you are vs. Where you work?
  - Abowd et. al. (2002, 2005, 2010):
    - Person effects, worker experience and firm effects together account for about 84 percent of variation in earnings.
    - Most of the person effects is accounted for by unobserved person effects as opposed to observable measures of human capital
    - Worker and firm effects contribute about equally to overall variance
    - Correlations with other outcomes:
      - High productivity, high market value firms are high (unobserved) person effect firms.
      - Employer size wage effect is mostly due to firm effects.
    - Caution about structural interpretation

What Determines Wages?

- Davis and Haltiwanger (1992), Doms et. al. (1997), Dunne et. al. (2004) and Barth et. al. (2010):
  - Between plant dispersion accounts for about half of overall dispersion
  - Most of the increase (e.g., 75%) in overall wage dispersion is due to increased dispersion between plants.
  - High wage plants are high productivity plants (correlation is 0.55 within industries).
  - Plants with increases in productivity have increases in wages (correlation of changes is 0.37).
  - Skill sorting vs. rent sharing?
    - High wage, high productivity plants are larger, more skill intensive, have adopted more advanced technology.

Conjectures and Questions

- Conjectures:
  - Rents (including rent sharing) and specific human capital are important sources of variation in wages.
  - Displaced workers (and more generally those workers with spells of joblessness) experience a substantial loss in rents/specific human capital.
- Questions:
  - Are these positive joint surplus matches?
  - If so, why are separations (mass layoffs) occurring?
  - Why aren't wages adjusting?
  - Aggregate vs. idiosyncratic effects?

Back to Marginal Worker?

- Job and Worker Flow patterns imply we should not be only looking at new hires:
  - Even for new hires, marginal new hire in boom is more likely to be replacing quit than job creation.
  - Marginal separation in recession is more likely job destruction/layoff. The extent to which this is true varies by severity of recession.
  - Marginal separation in boom is more likely quit inducing a replacement hire
- DMP model focus on creation/hire margin only part of the story.