

FINANCIAL SHOCKS AND JOB FLOWS

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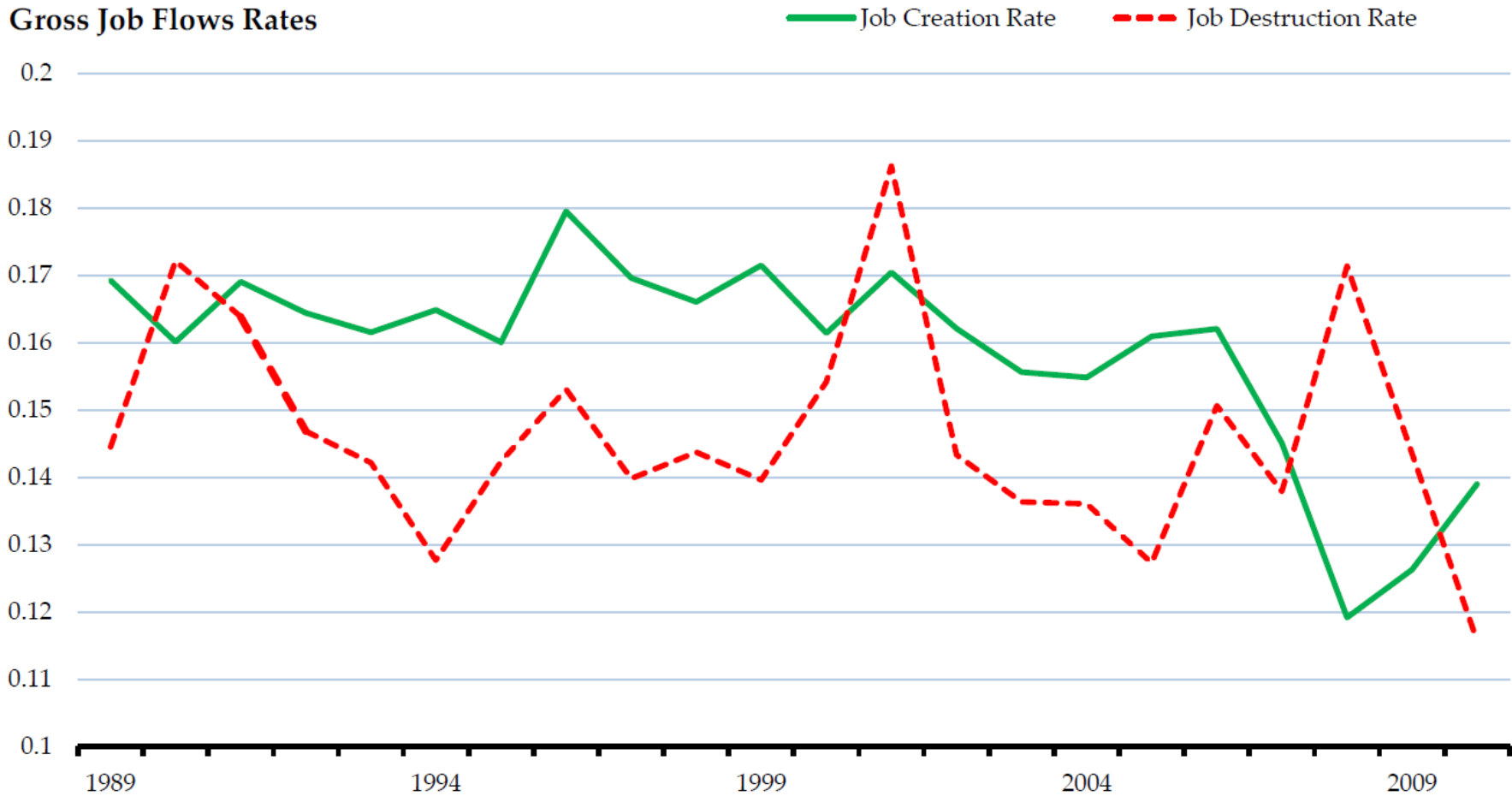
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Macro Financial Modeling Winter 2017 Meeting
March 9-10, 2017

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JOB FLOWS AND THE GREAT RECESSION

Gross Job Flows Rates



Source: Business Dynamic Statistics

$$JCR_t = \frac{1}{N_t} \sum_i \max\{0, \Delta N_{i,t}\}, \quad JDR_t = \frac{1}{N_t} \sum_i \max\{0, -\Delta N_{i,t}\}$$

WHAT WE DO?

Model

- Build heterogenous firm dynamics model with financial frictions
- Calibrate shocks to fit job flows in the Great Recession
 - ⇒ firm credit disruption explains 18% decline in employment

Empirics

- Estimate the effects of financial shocks on job flows
 - ⇒ In line with theoretical model predictions

ECONOMIC ENVIRONMENT

- Goods: consumption good
- Assets: capital, riskless bonds
- Technology: $y_{i,t} = z_t \epsilon_{i,t} \left(k_{i,t}^\alpha n_{i,t}^{1-\alpha} \right)^\phi$
- Agents: households, intermediaries , firms

FIRMS

$$V^F(\epsilon, a, x) = \max_{k, n, a'} \int \left\{ \sigma \Lambda' a' + (1 - \sigma) V^F(\epsilon', a', x') \right\} d\Phi(x'|x) dG(\epsilon'|\epsilon)$$

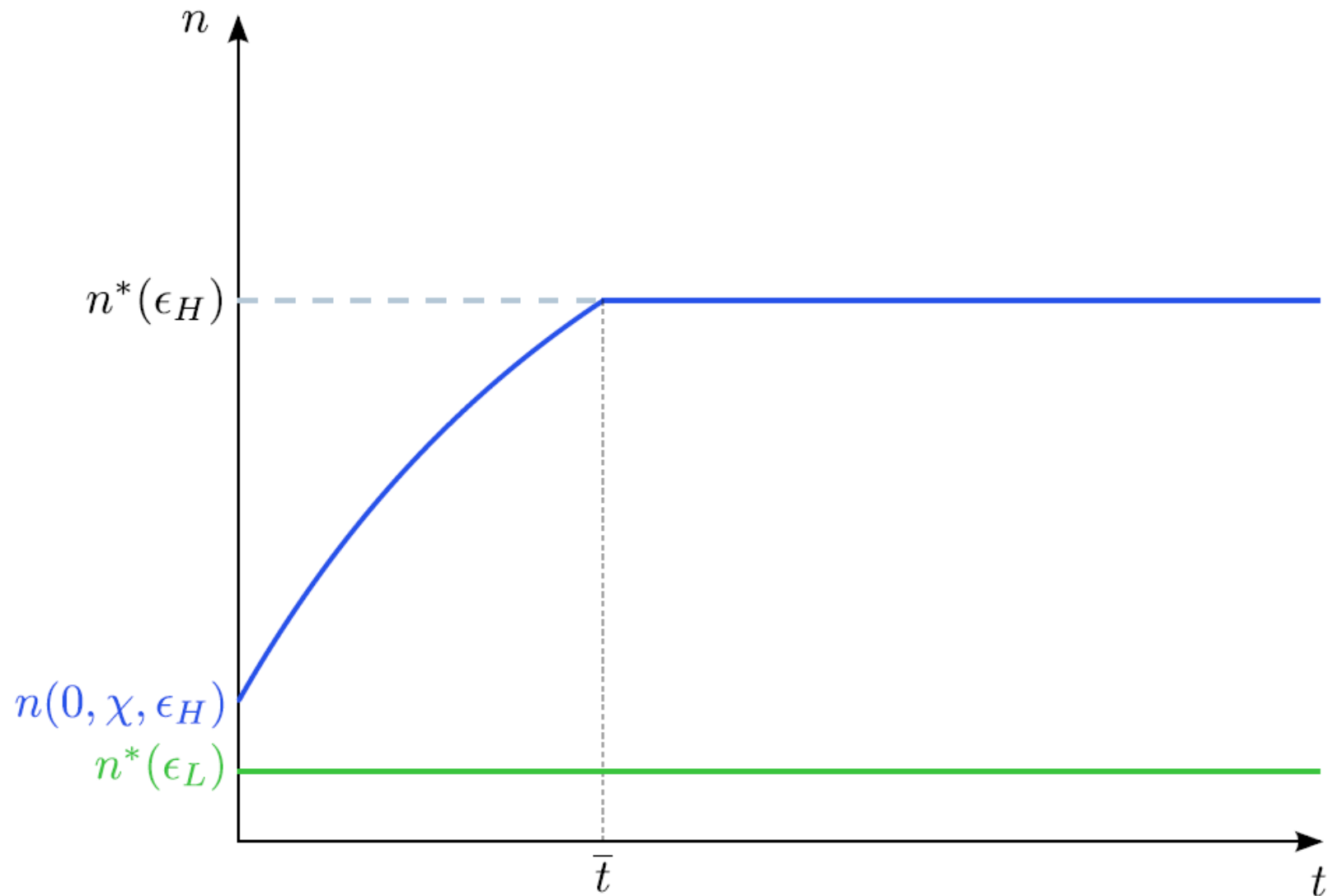
$$\text{s.t. } a' = z\epsilon \left(k^\alpha n^{1-\alpha} \right)^\phi - r_k k - \omega n + (1 + r)a$$

$$k \leq \chi a, \quad \chi \geq 1$$

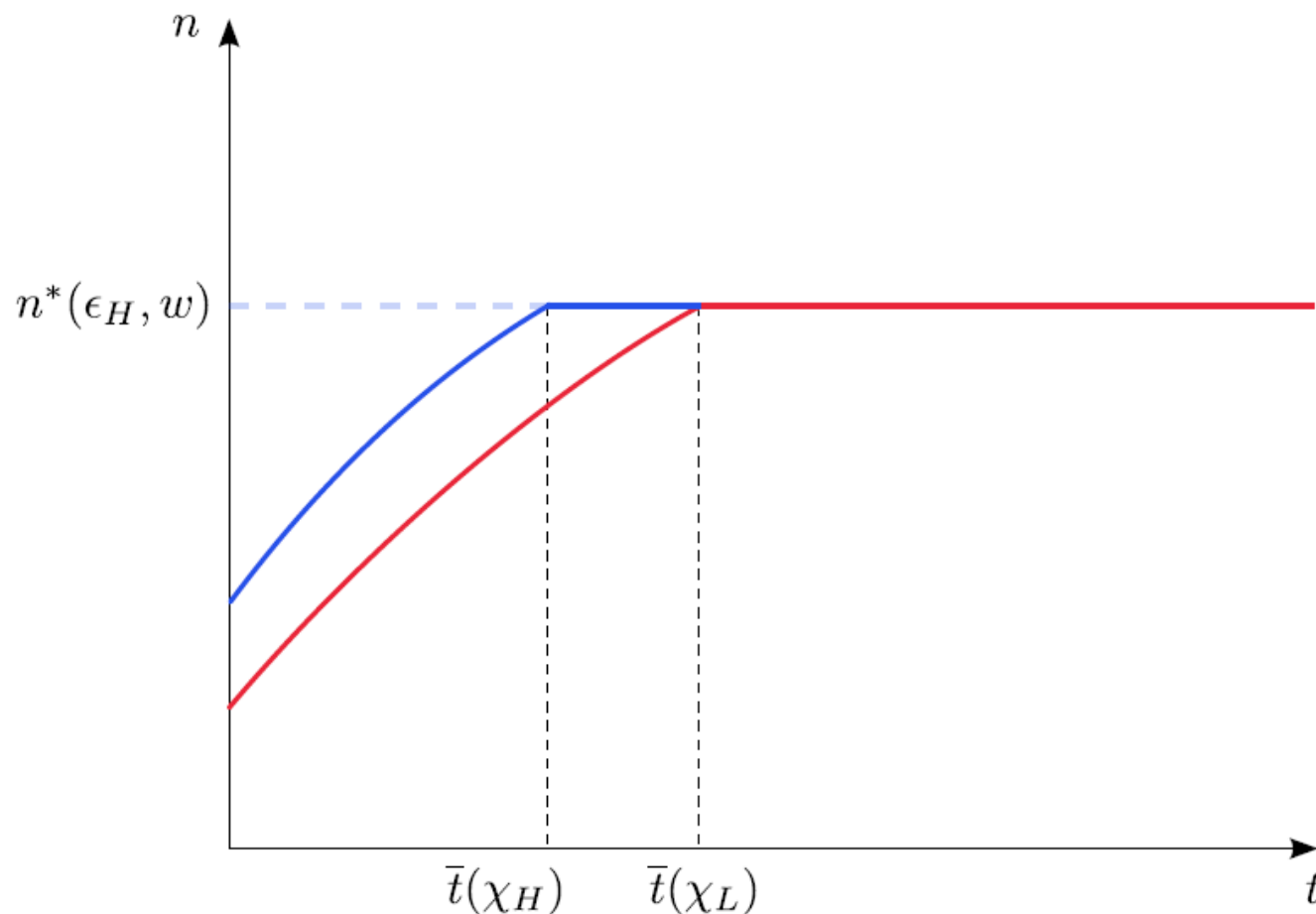
$$r_k = r + \delta + \omega$$

- ▶ $x = \{z, \chi, \mu, \omega\}$ - aggregate state
- ▶ Λ - stochastic discount factor

FIRM LIFE CYCLE



COMPARATIVE STATICS: FINANCIAL SHOCK



Proposition

PE: $N(\chi_L, w) < N(\chi_H, w)$, $JD(\chi_L, w) < JD(\chi_H, w)$, $JC(\chi_L, w) < JC(\chi_H, w)$

GE: $N(\chi_L) < N(\chi_H)$, $JD(\chi_L) < JD(\chi_H)$, $JC(\chi_L) < JC(\chi_H)$

STATIONARY EQUILIBRIUM CALIBRATION

Standard calibration

- $r, \alpha, \delta, \varphi$ are chosen to match standard moments

Firm-specific productivity $\epsilon_{i,t} = \bar{\epsilon}_i \tilde{\epsilon}_{i,t}$

- Distribution $f(\bar{\epsilon}_i)$ matches size distribution of mature firms employment in BDS, 2000-2006
- $\tilde{\epsilon}_{i,t}$ is set to match job flows of 15% of employment

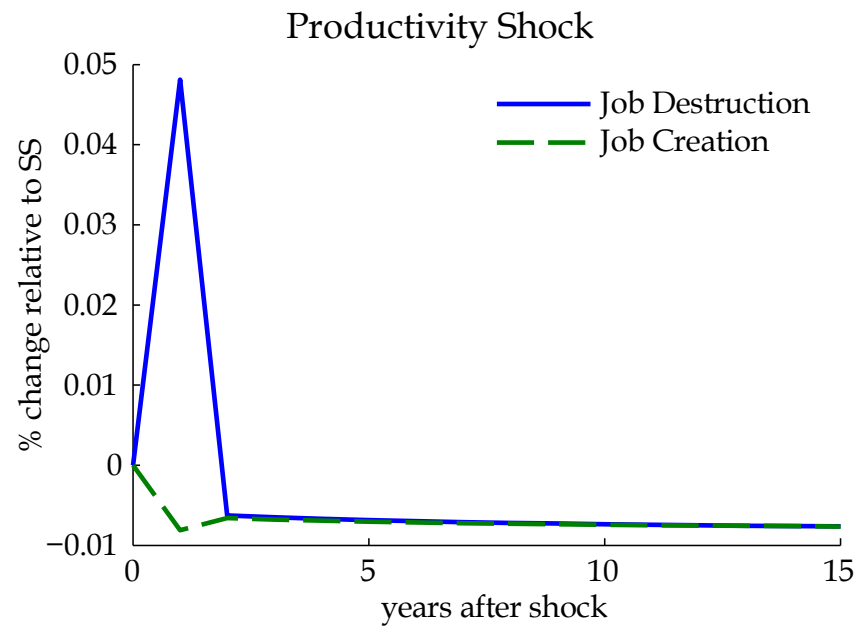
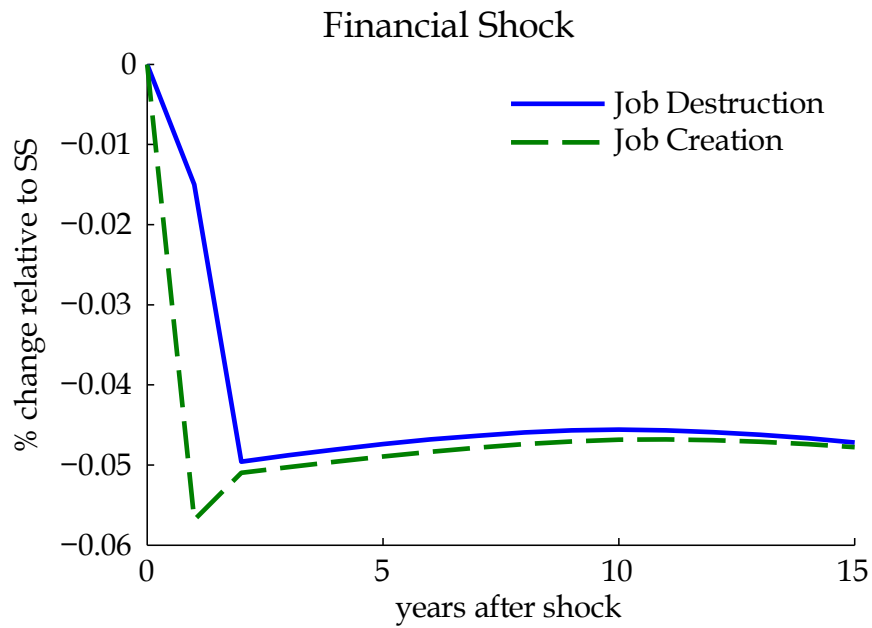
Firm exit rates σ

- Approximate empirical age distribution of firms using BDS averages, 2000-2006

Financial parameter χ and initial assets a_0

- Target distribution of employment by firm age and firm size

AGGREGATE GROSS JOB FLOWS

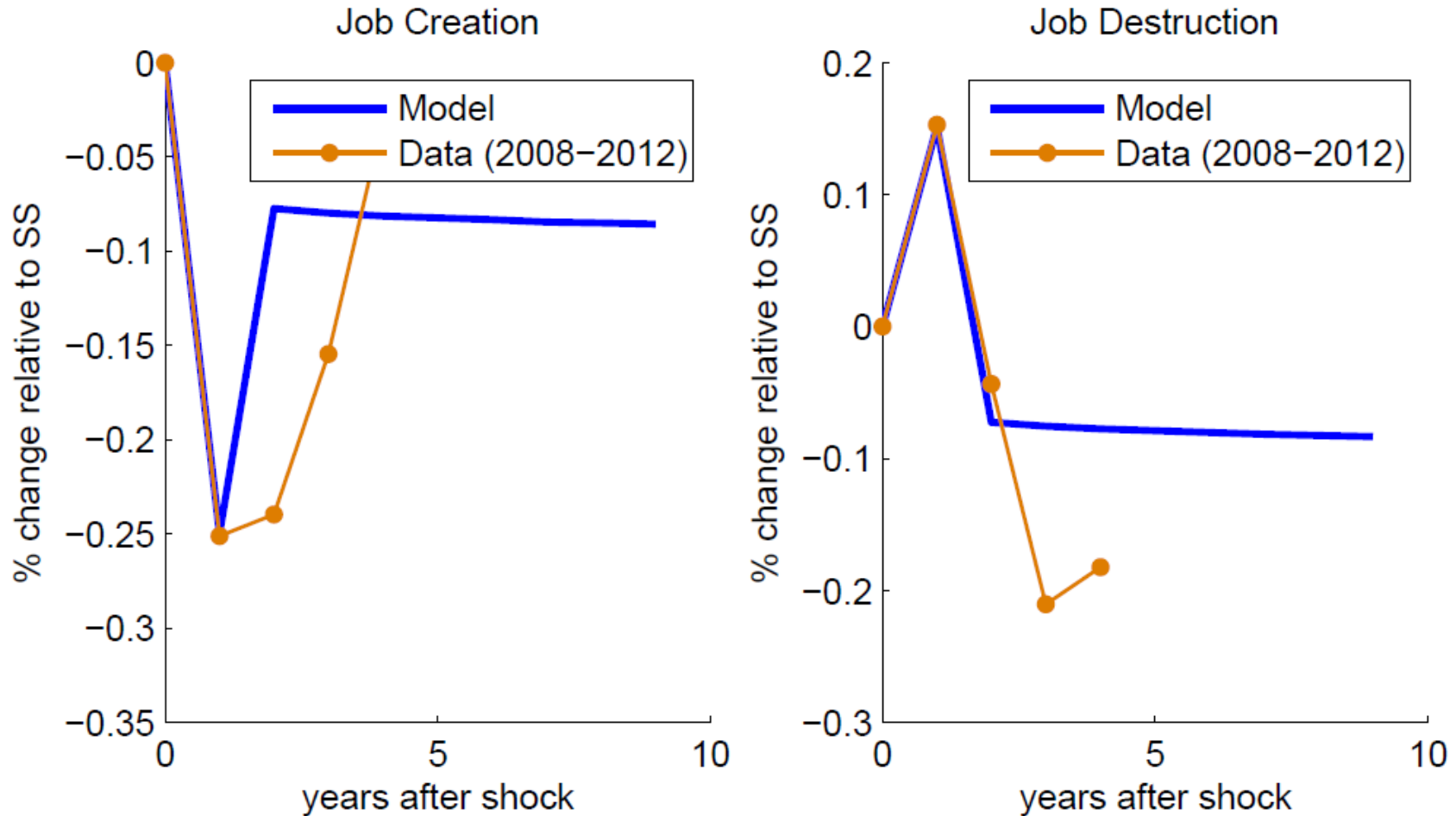


GROSS JOB FLOWS: AGE AND SIZE EFFECTS

		Permanent Financial Shock		Permanent Productivity Shock	
		Frisch = ∞	Frisch = 1	Frisch = ∞	Frisch = 1
Job Creation					
Age	Births	-0.12	-0.07	-0.07	0.00
	1-5 years	-0.47	-0.32	-0.12	0.00
	6+ years	-0.23	0.00	-0.18	-0.01
Size	1-19 emps	-0.07	0.04	-0.06	-0.01
	20-99 emps	-0.33	-0.12	-0.17	0.00
	100+ emps	-0.35	-0.10	-0.21	-0.01
Job Destruction					
Age	1-5 years	-0.07	-0.07	0.02	0.01
	6+ years	-0.04	-0.03	0.07	0.01
Size	1-19 emps	0.00	0.02	0.07	0.01
	20-99 emps	-0.07	-0.07	0.06	0.01
	100+ emps	-0.05	-0.05	0.07	0.01

IMPULSE RESPONSE MATCHING

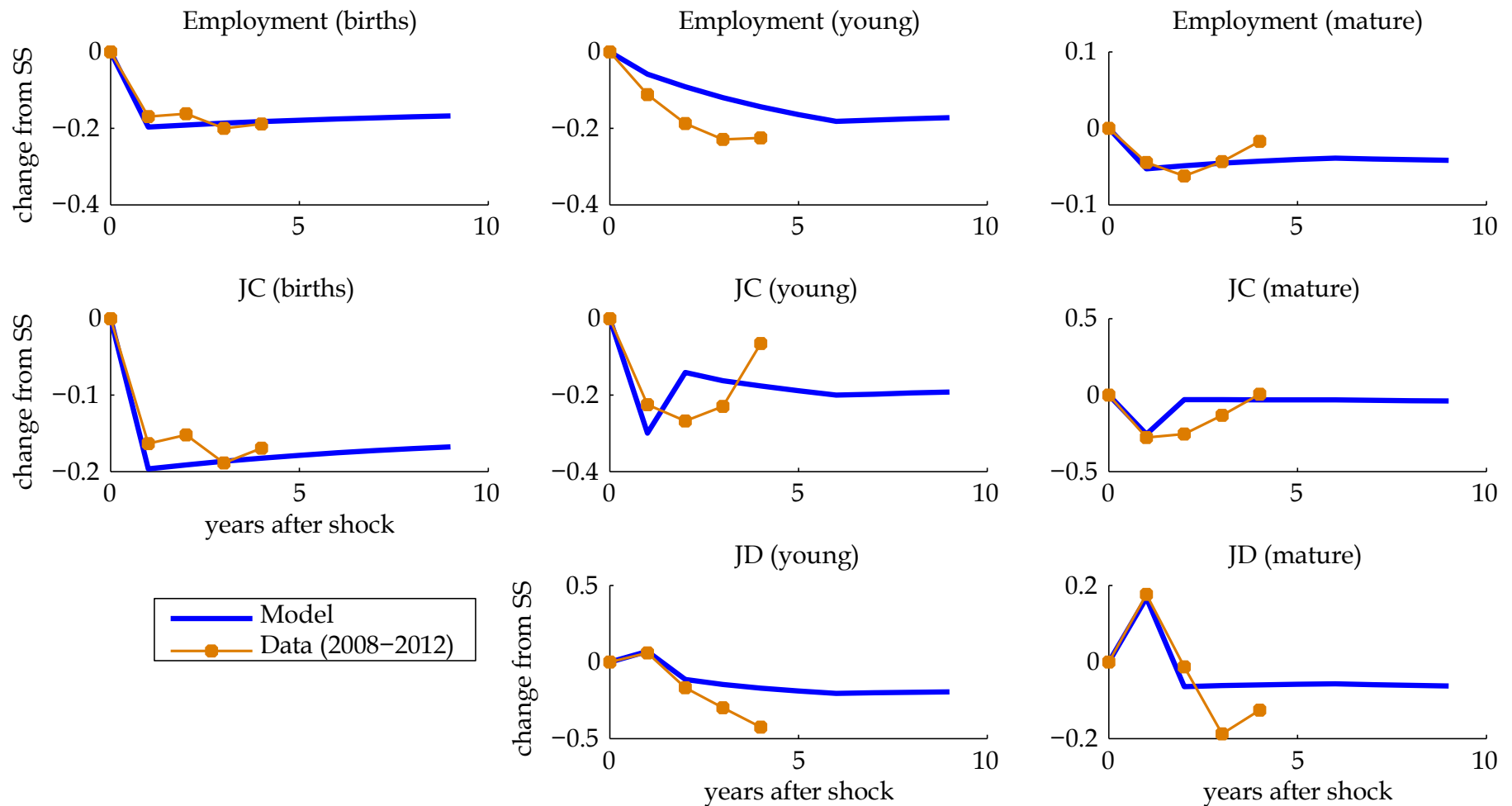
AGGREGATES



- ▶ $\frac{\Delta\chi_t}{\chi_{t-1}} = -0.21, \frac{\Delta a_{0,t}}{a_{0,t-1}} = -0.23, \frac{\Delta Z_t}{Z_{t-1}} = -0.013, \Delta\omega = 0.01$
- ▶ 18% fall in employment is due to the firm credit channel

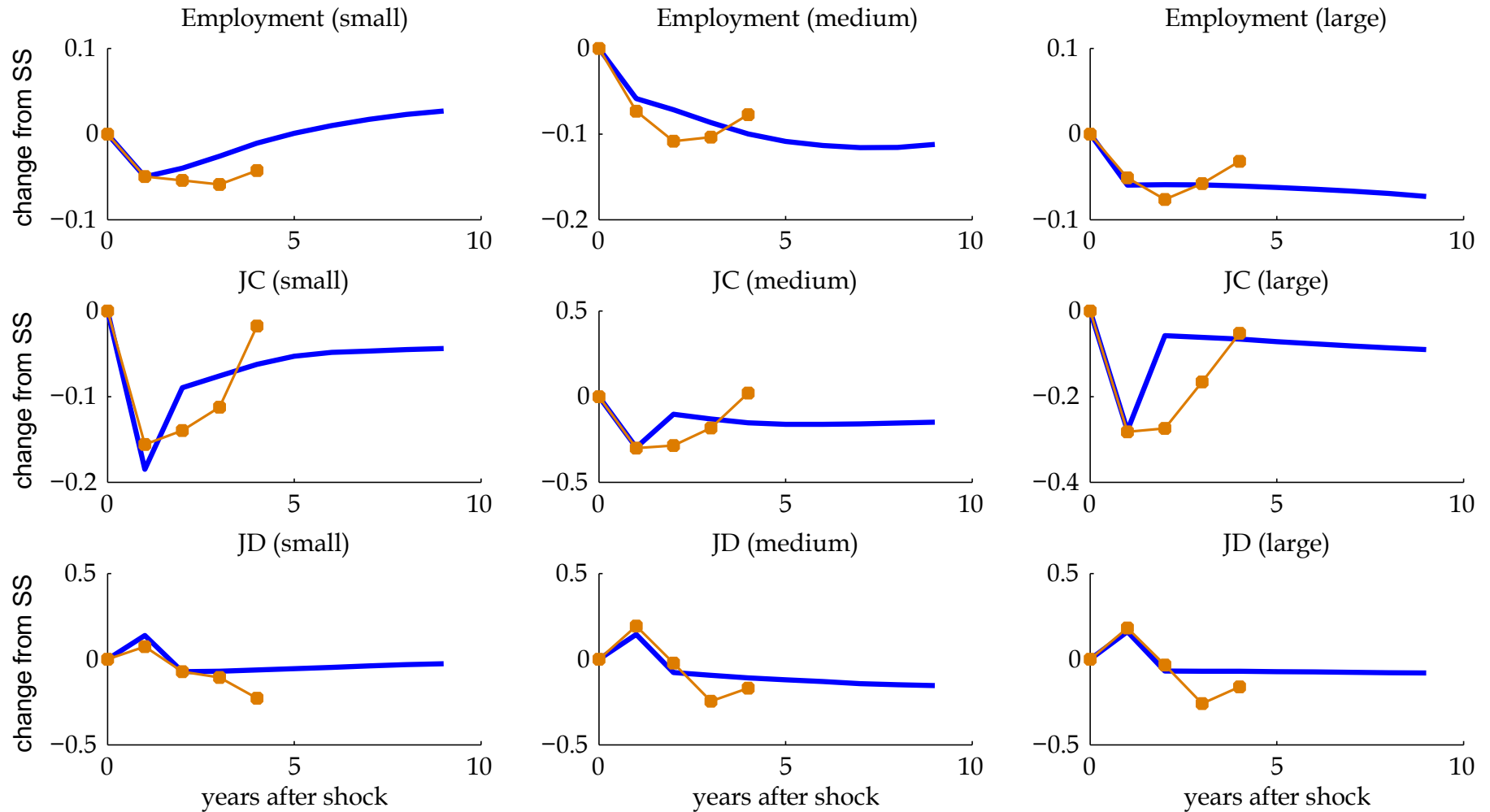
IMPULSE RESPONSE MATCHING

FIRM AGE CATEGORIES



IMPULSE RESPONSE MATCHING

FIRM SIZE CATEGORIES



EMPIRICAL STRATEGY

Effect of financial shocks on job creation and destruction?

$$y_{it} = \beta(L)\Delta hp_{it} + \epsilon_{it}$$

$$y_{it} \in \{\log(\text{JobCreation}_{it}), \log(\text{JobDestruction}_{it})\}$$

1. Financial shocks measure?

- Use housing prices as proxy

2. Sufficient observations?

- Use MSA-level variation in job flows and housing prices

3. Omitted variables?

- OLS: time fixed effects, local business cycle measure
- IV: Bartik approach

4. Parallel channels? [household demand channel]

- Compare new firms vs. new establishments

JOB FLOWS

	Job Creation		Job Destruction	
	OLS	IV	OLS	IV
Δhp_t	0.34**	0.31**	-0.34**	-0.21
Δhp_{t-1}	0.18**	0.06	0.13**	-0.48**
Δhp_{t-2}	0.00	0.20**	0.29**	0.64**
Sum of coefs	0.53**	0.57**	0.09*	-0.05

- Job creation falls on impact after negative shock
- The shock has a persistent effect on job creation

JOB FLOWS BY FIRM AGE

Categories	Job Creation		Job Destruction	
	OLS	IV	OLS	IV
Young Firms, 1-5 years	0.48**	0.63**	0.36**	0.20**
Mature Firms, 5+ years	0.33**	0.31**	-0.06	-0.19**
H = Young - Mature	0.15**	0.36**	0.43**	0.40**

- Job creation by new/young firms falls the most after negative shock
- Job destruction at young firms falls after a decline in house prices

JOB FLOWS BY FIRM SIZE

Categories	Job Creation		Job Destruction	
	OLS	IV	OLS	IV
Small Firms, 1-19 emps	0.37**	0.25**	-0.10**	-0.34**
Medium Firms, 20-99 emps	0.75**	0.73**	0.28**	0.01
H = Medium - Young	0.38**	0.49**	0.38**	0.23**

- Job creation falls disproportionately at medium-sized firms
- Job destruction *rises* at small firms consistent with model predictions

CONCLUSION

1. *Firm dynamics model*

- Use job flows to decompose sources of fall in employment in US
- Firm credit channel accounts for 18% of decline in employment

2. *Empirics*

- House price changes affect job flows in line with model predictions
- Strongest effects for young and medium-sized firms
- New establishments of existing firms do not significantly react to housing price changes while new firms do