Reallocation in the Great Recession: Cleansing or Not?

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Overview

- U.S. characterized by a high pace of job creation, destruction and reallocation
  - Much evidence this is productivity enhancing
- What happens to this reallocation over the cycle?
  - Some theories and evidence suggest recessions are times of more intense productivity enhancing reallocation
    - Sometimes referred to as cleansing
  - But also theory and evidence that at least in some circumstances reallocation will be distorted in recessions
    - Decoupling of creation/destruction, sullying, and scarring effects
- This paper:
  - What do the patterns of reallocation look like in the Great Recession?
  - Was the reallocation cleansing or not? Perhaps the financial crisis distorted reallocation dynamics

Alternative Hypotheses

- Reallocation timing
  - Incentives for productivity-enhancing reallocation increase in recessions
    - In Caballero and Hammour (1994), marginal cost of job creation increases in booms
    - In Mortensen and Pissarides (1994), job filling rate is countercyclical
    - In Davis and Haltiwanger (1990), opportunity cost of time is low
- Sullying/Scarring
  - Bad matches are more likely to persist in recessions (Barlevy, 2000)
  - Survival and growth margins distorted – less driven by market fundamentals like productivity and more by market distortions (e.g., breakdown of credit markets) (Barlevy, 2003)
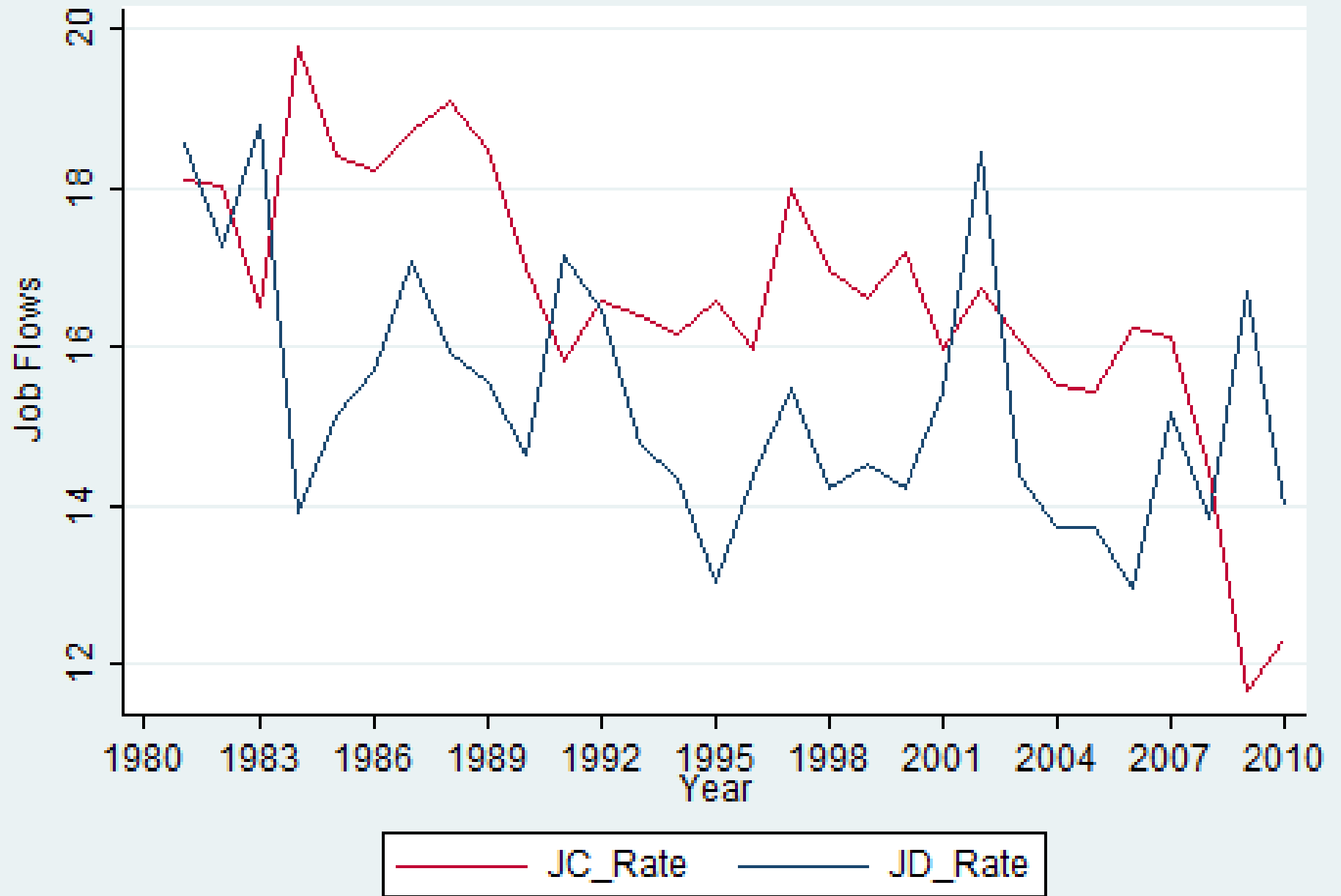
DID THE PATTERNS OF REALLOCATION CHANGE IN THE GREAT RECESSION?
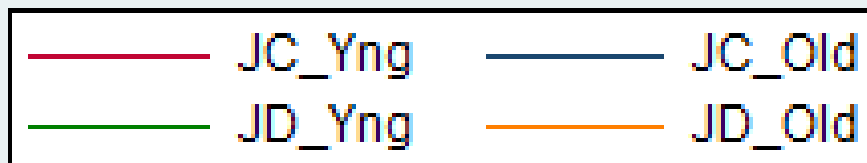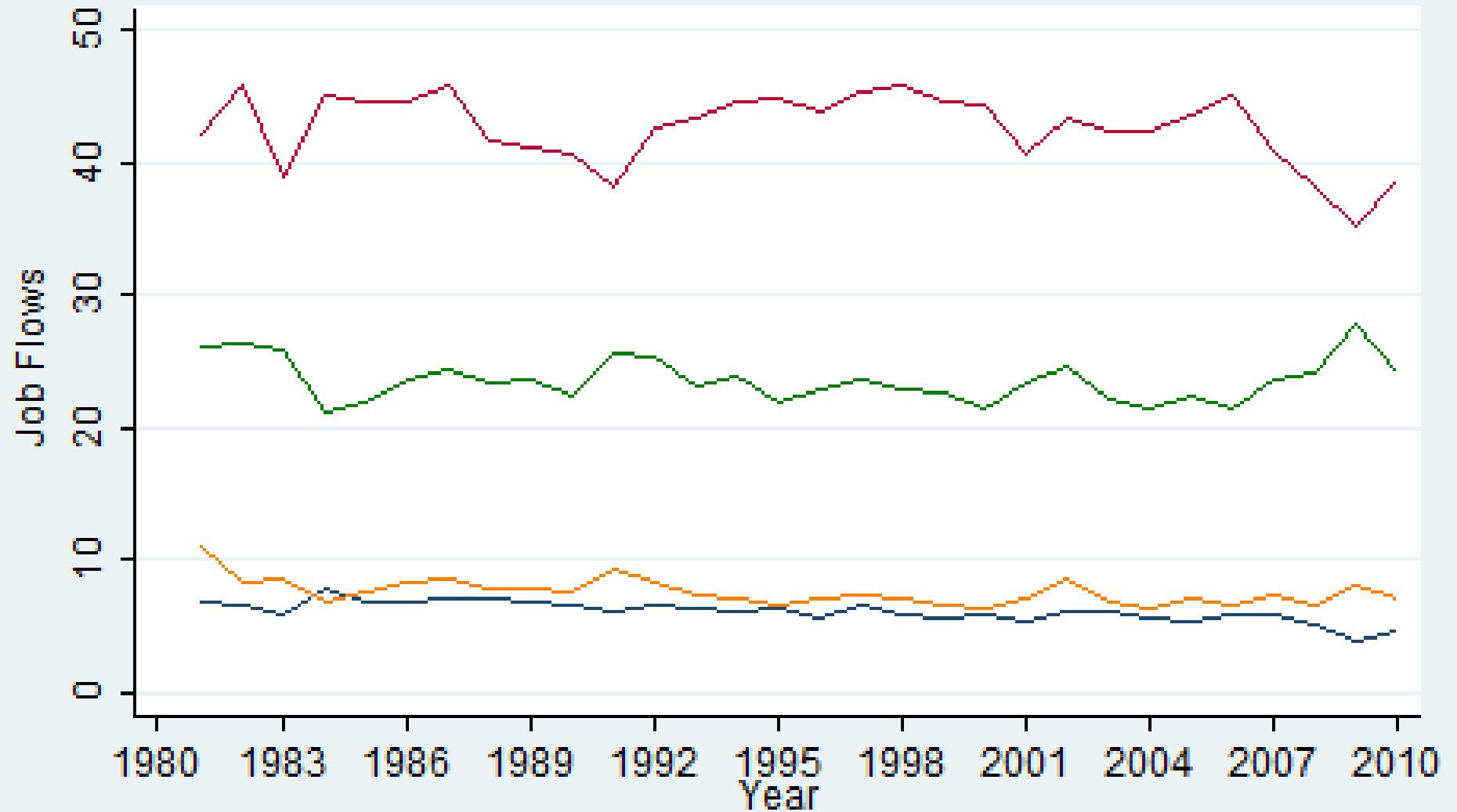
Private Sector Job Flows -- BED, Quarterly, 1990-2012
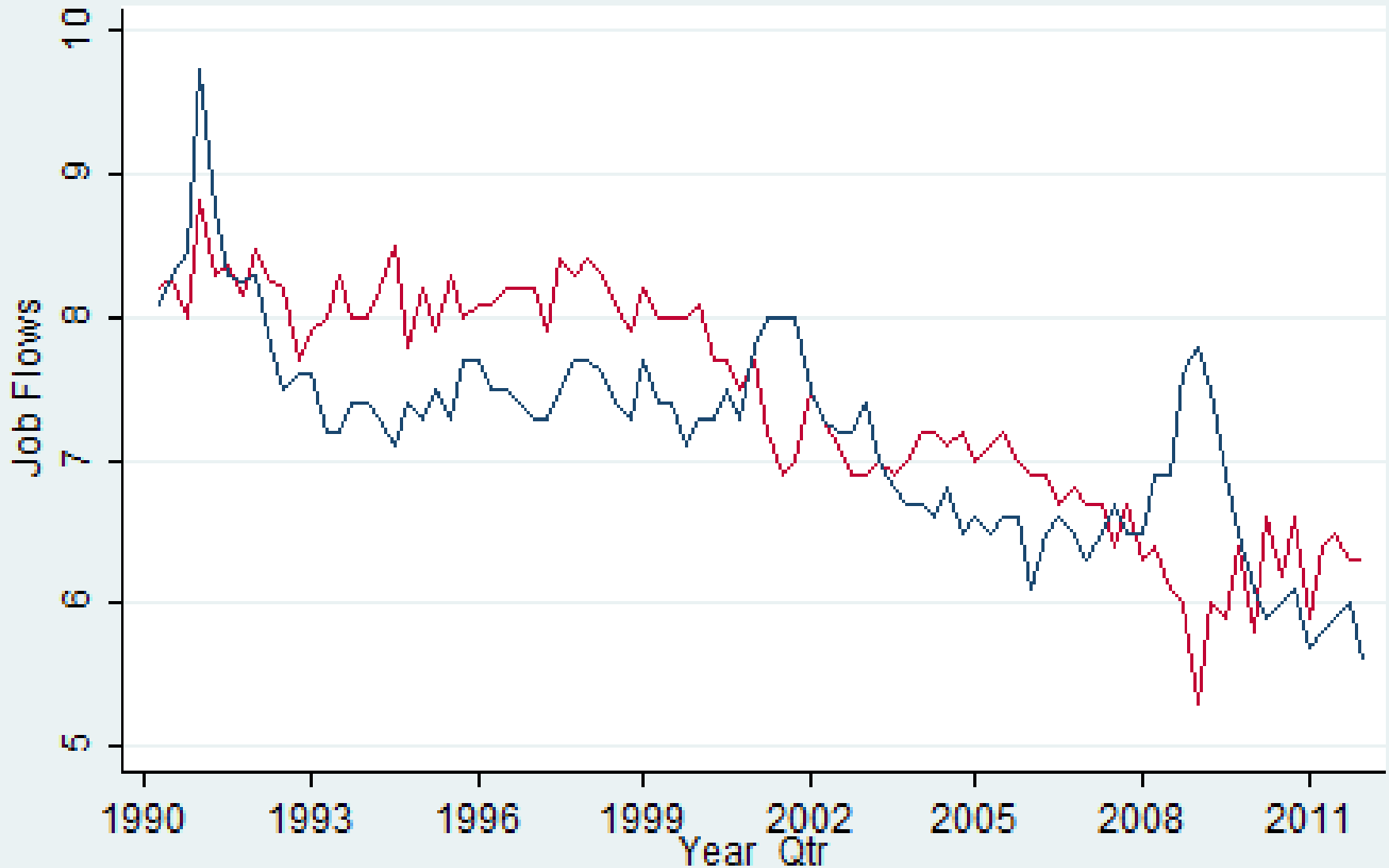
Private Sector Job Flows -- BDS, 1980-2010

Job Flows by Young/Old -- Private Sector

Job Flows and Unemployment Rates Correlations

	Annual (BDS)		Quarterly (BED)	
	1981-2006	1981-2010	1990:1-2007:3	1990:1-2012:1
Job Creation, Chg_UR	-0.60	-0.71	-0.30	-0.44
Job Destruction, Chg_UR	0.77	0.66	0.77	0.69

Simple correlations, detrended series

Descriptive Regression
Annual, National, 1981-2010

	Job Creation Rate	Job Destruction Rate	Reallocation Rate
Chg_UR	-0.504**	1.127***	0.623*
	(0.164)	(0.208)	(0.282)
GR*Chg_UR	-0.493	-0.850*	-1.343**
	(0.273)	(0.347)	(0.469)
Trend	-0.123***	-0.088***	-0.210***
	(0.018)	(0.023)	(0.032)
N	30	30	30
Notes: GR*Chg_UR is the interaction between Great Recession dummy and Chg_UR.			

Descriptive Regression
Quarterly, National, 1990:1-2012:1

	Job Creation Rate	Job Destruction Rate	Reallocation Rate
Chg_UR	-0.228	1.142***	0.914***
	(0.143)	(0.140)	(0.214)
GR*Chg_UR	-0.522*	-0.070	-0.593
	(0.216)	(0.212)	(0.324)
Trend	-0.028***	-0.024***	-0.052***
	(0.001)	(0.001)	(0.002)
N	88	88	88
Notes: GR*Chg_UR is the interaction between Great Recession dummy and Chg_UR.			

Descriptive Regression
Annual, State-Level, 1981-2010

	Job Creation Rate	Job Destruction Rate	Reallocation Rate
Chg_UR_st	-0.621***	1.254***	0.633***
	(0.045)	(0.056)	(0.072)
GR*Chg_UR_st	-0.450***	-0.667***	-1.116***
	(0.077)	(0.079)	(0.132)
Trend	-0.153***	-0.125***	-0.279***
	(0.011)	(0.011)	(0.020)
N	1,530	1,530	1,530
Notes: GR*Chg_UR_st is the interaction between Great Recession dummy and Chg_UR_st.			

Descriptive Regression
Annual, State-Level, 1981-2010

	Job Creation Young	Job Destruction Young	Job Creation Old	Job Destruction Old
Chg_UR_st	-1.514***	1.328***	-0.256***	0.720***
	(0.136)	(0.078)	(0.031)	(0.046)
GR*Chg_UR_st	-0.347*	-0.020	-0.045	-0.201***
	(0.159)	(0.112)	(0.048)	(0.057)
Trend	-0.054***	-0.083***	-0.087***	-0.111***
	(0.012)	(0.012)	(0.006)	(0.009)
N	1,530	1,530	1,530	1,530
Notes: GR*Chg_UR_st is the interaction between Great Recession dummy and Chg_UR_st.				

Taking Stock

- In Great Recession:
  - Job Creation more cyclically sensitive at the national and state level relative to prior recessions
  - Job Destruction somewhat less cyclically sensitive than in prior recessions
  - The greater sensitivity of Job Creation driven by young firms

Is Reallocation Productivity Enhancing?

- Use plant-level data from CM/ASM from years 1981-2010 to construct measures of TFP(R)

- Estimate specifications such as:

$$Y_{is,t+1} = \lambda_s + \lambda_{t+1} + \beta * TFP_{ist} + \gamma * Cyc_{s,t+1} + \delta * TFP_{ist} * Cyc_{s,t+1} + \varepsilon_{is,t+1}$$

Where i is plant, s is state, outcome is exit from t to $t+1$ or conditional on survival, growth from t to $t+1$. Cyc is the Change in Unemployment Rate at the State*Year level. TFP is log TFPR at the establishment level (deviated from industry*year mean). Note that we cluster standard errors at the state level.

Is Reallocation Productivity Enhancing?

We also consider specifications with interactions with Great Recession dummy such as:

$$Y_{is,t+1} = \lambda_s + \lambda_{t+1} + \theta * GR_{t+1} + \beta * TFP_{ist} + \gamma * Cyc_{s,t+1}$$

$$+ \delta * TFP_{ist} * Cyc_{s,t+1} + \chi * GR_{t+1} * TFP_{ist} + \mu * GR_{t+1} * Cyc_{s,t+1}$$

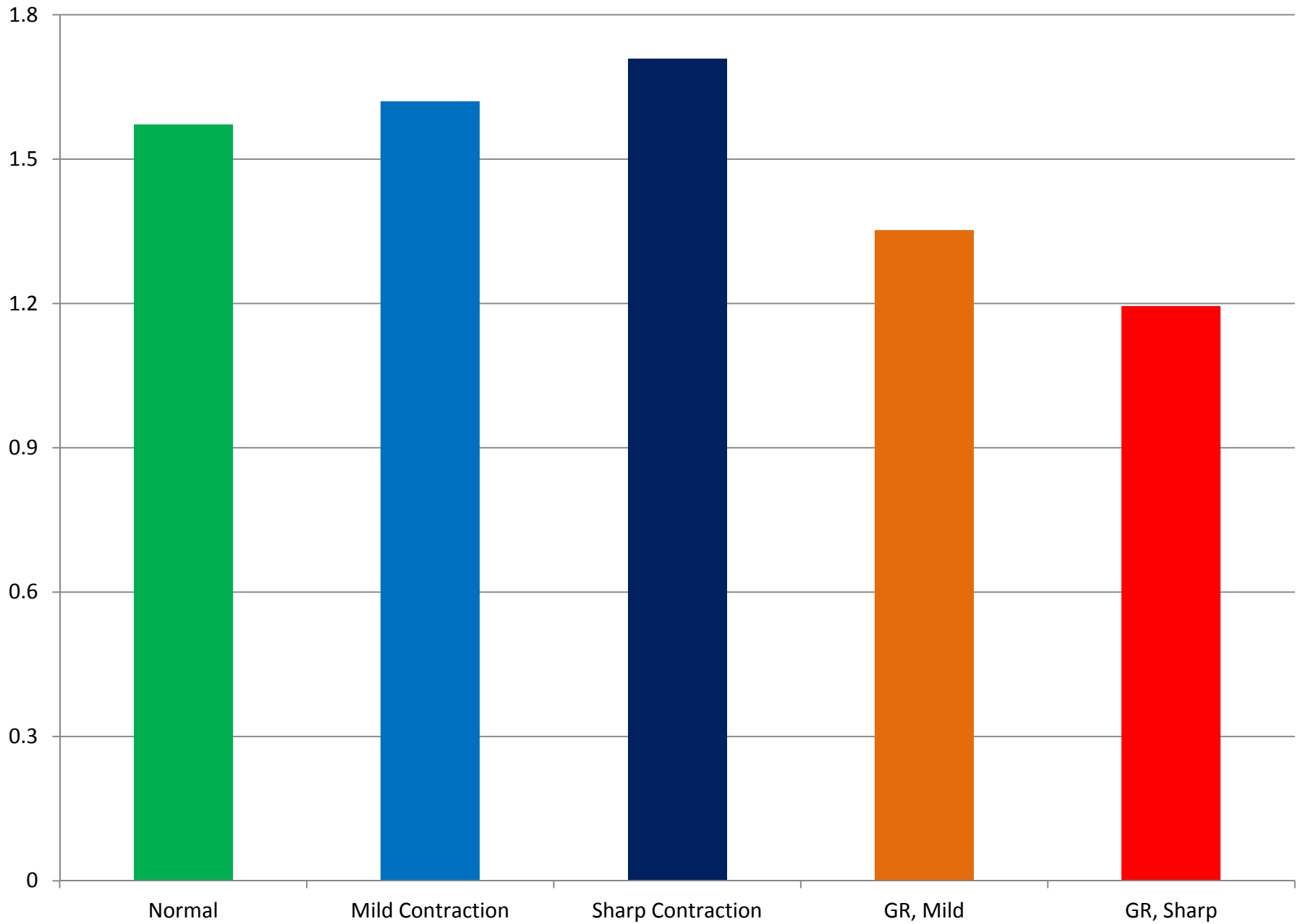$$+ \phi * GR_{t+1} * Cyc_{s,t+1} * TFP_{ist}$$

$$+ \varepsilon_{is,t+1}$$

Predicted Values Across the Cycle

- Use estimated coefficients primarily from specifications with year effects
  - GR main effect not identified in this case so use main effect from model without year effects.
  - Intended to be just suggestive of level differences due to GR.
  - In what follows: Normal(Chg UR_st=0, GR=0), Mild(Chg_UR_st=0.01,GR=0), Severe(Chg_UR_st=0.03, GR=0), GR,Mild and GR,Severe have GR=1.
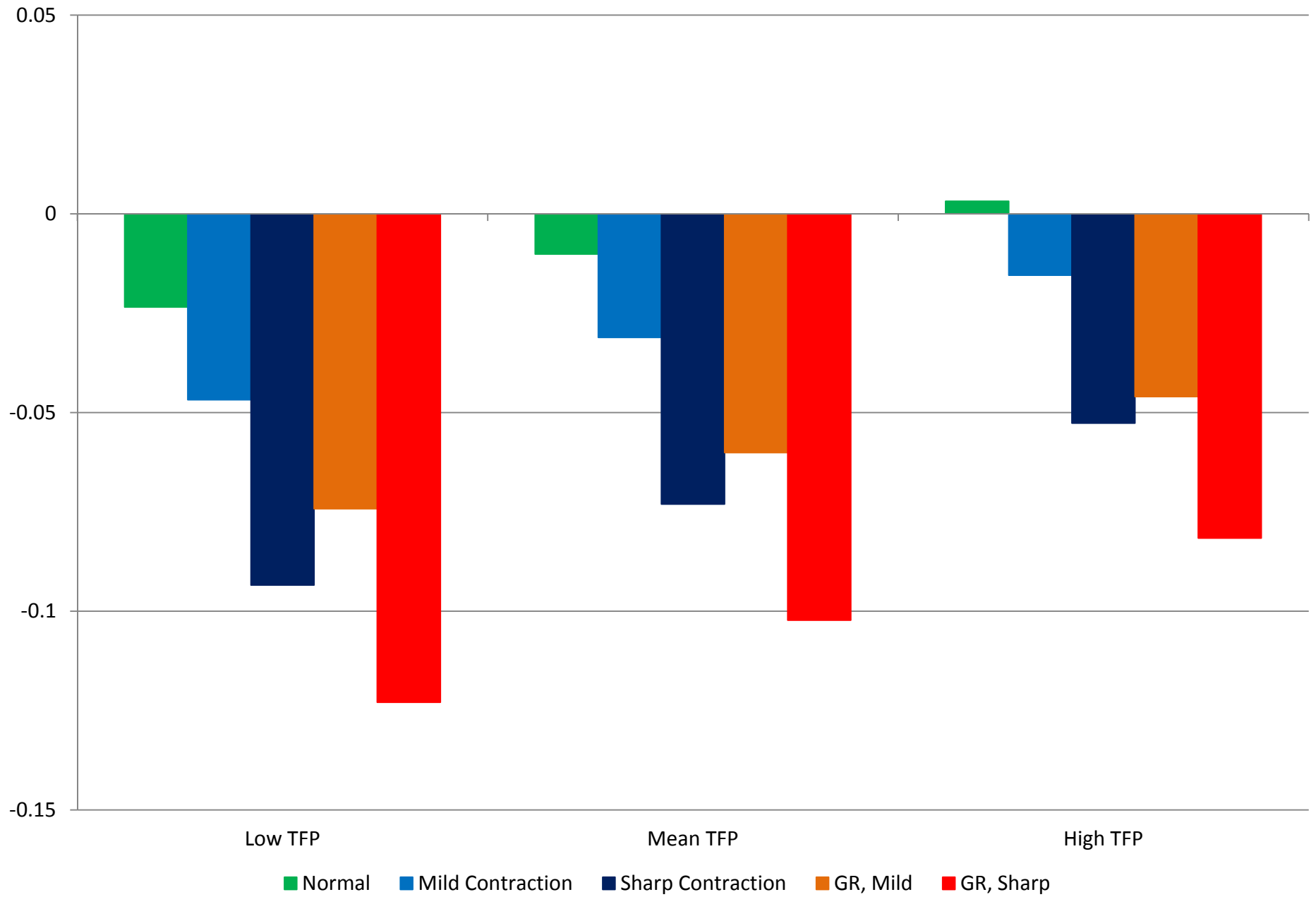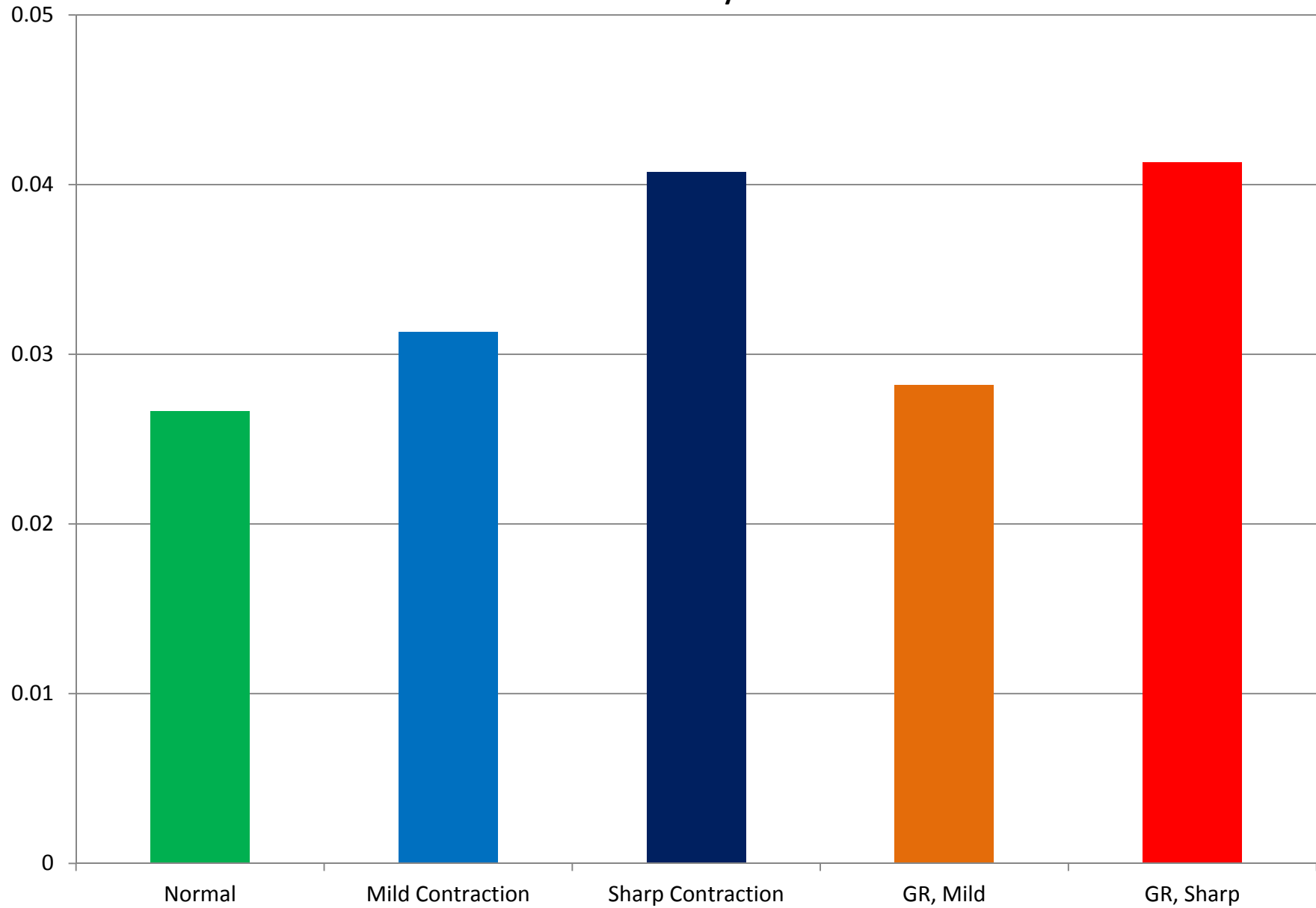
Exit Rates by Productivity Over the Cycle

Low TFP — Mean TFP — High TFP

Normal ■ Mild Contraction ■ Sharp Contraction ■ GR, Mild ■ GR, Sharp
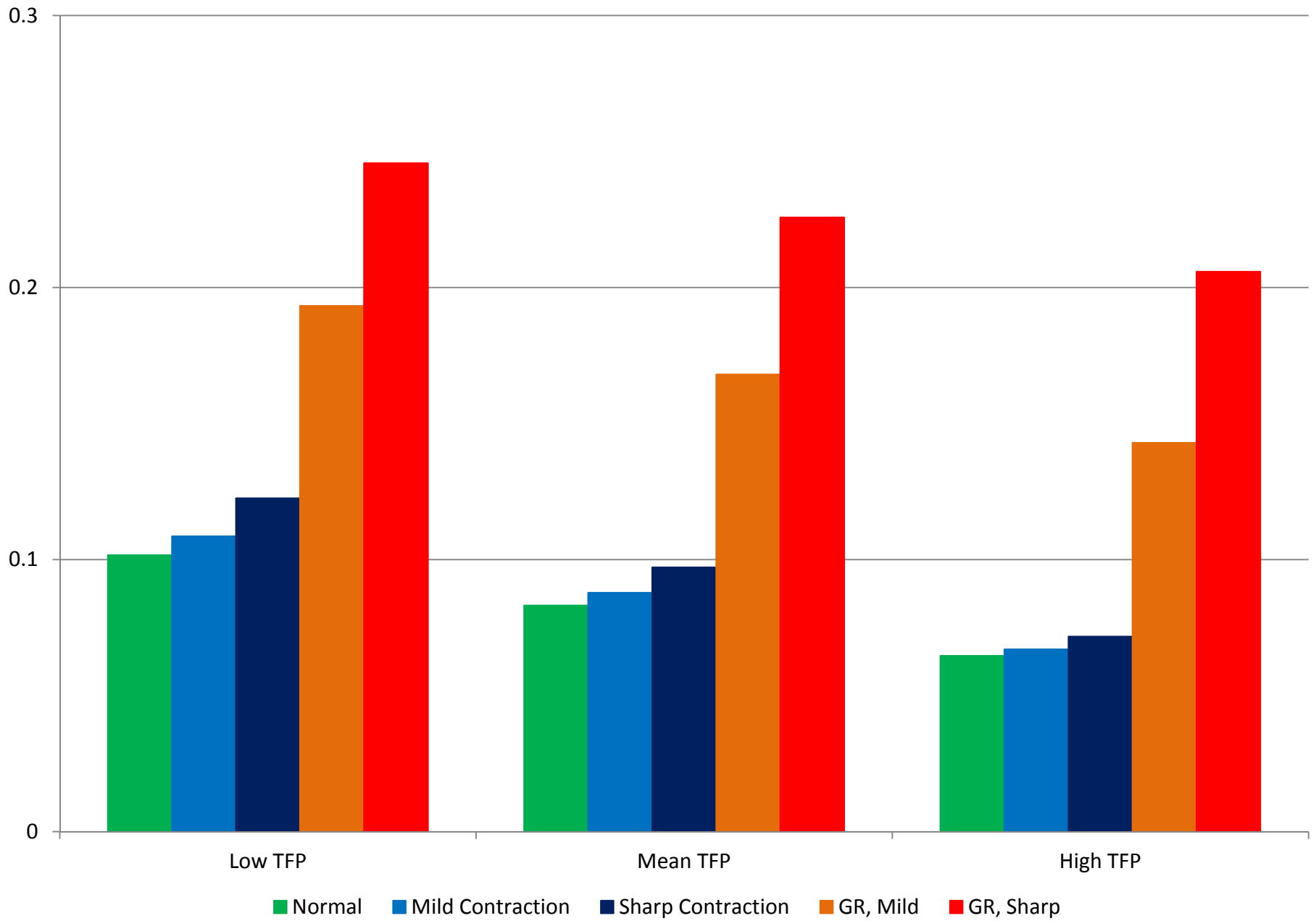
Ratio of Exit Rates Between Low and High Productivity Plants Over The Cycle
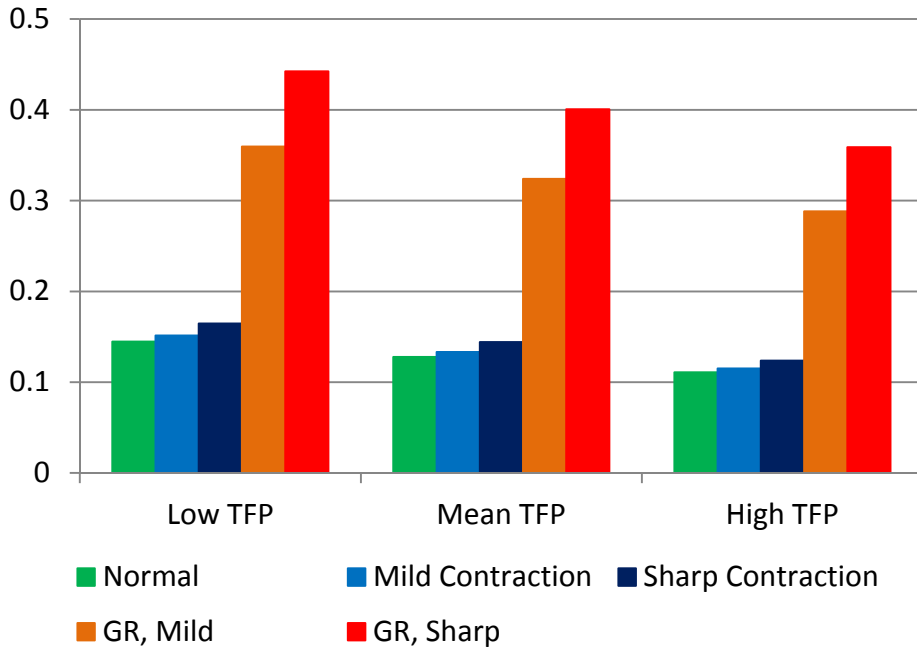
Growth Rates of Continuing Establishments Over the Cycle

Legend: Normal · Mild Contraction · Sharp Contraction · GR, Mild · GR, Sharp

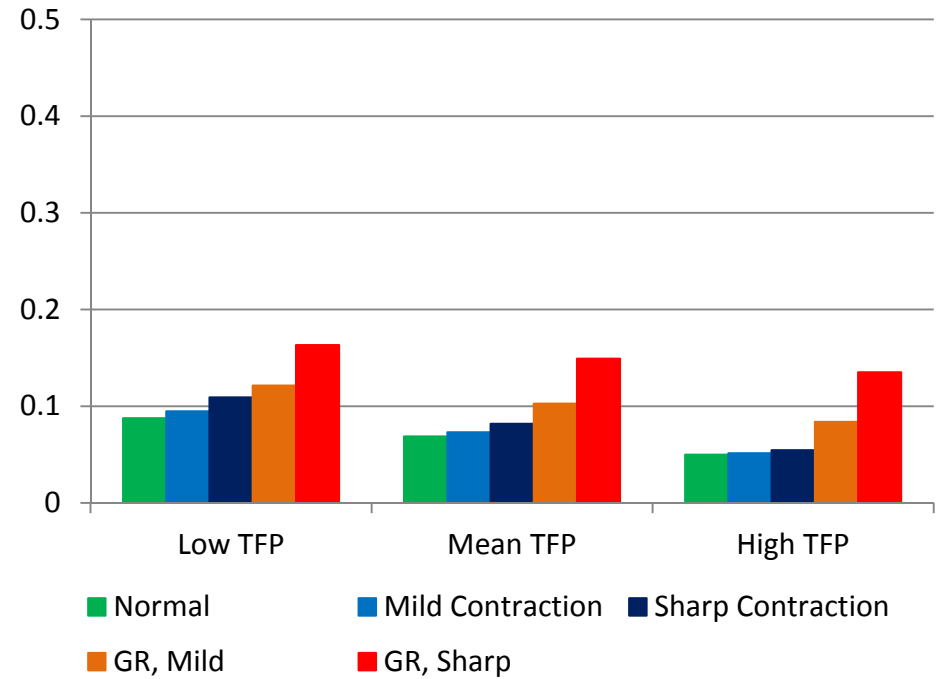**Difference in Growth Rates of Continuing Plants Between High and Low Productivity Plants Over The Cycle**

Young Plants

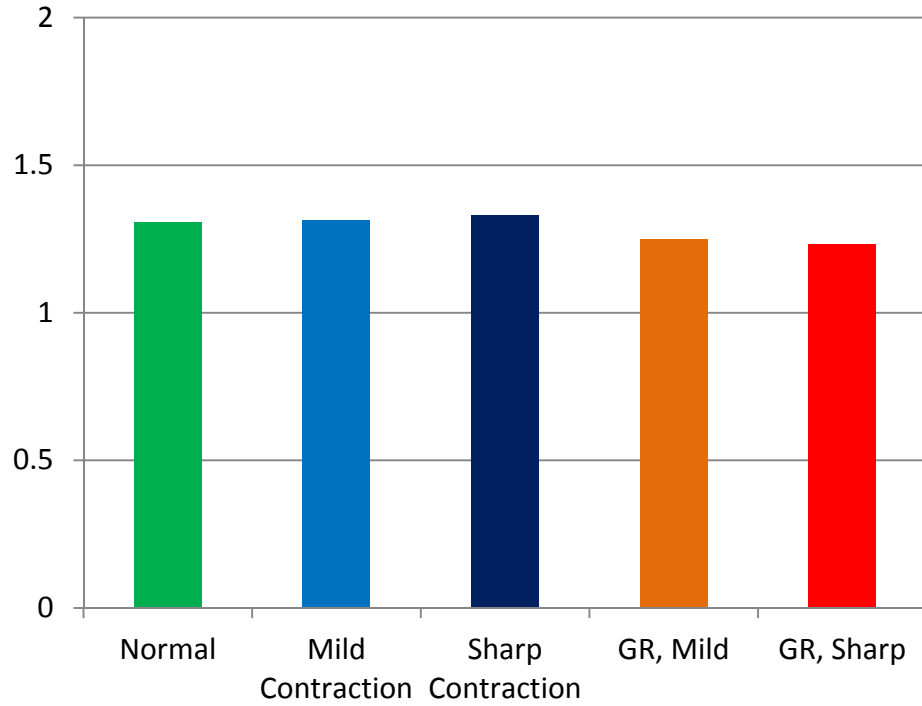## Exit Rates by Productivity Over the Cycle

Older Plants

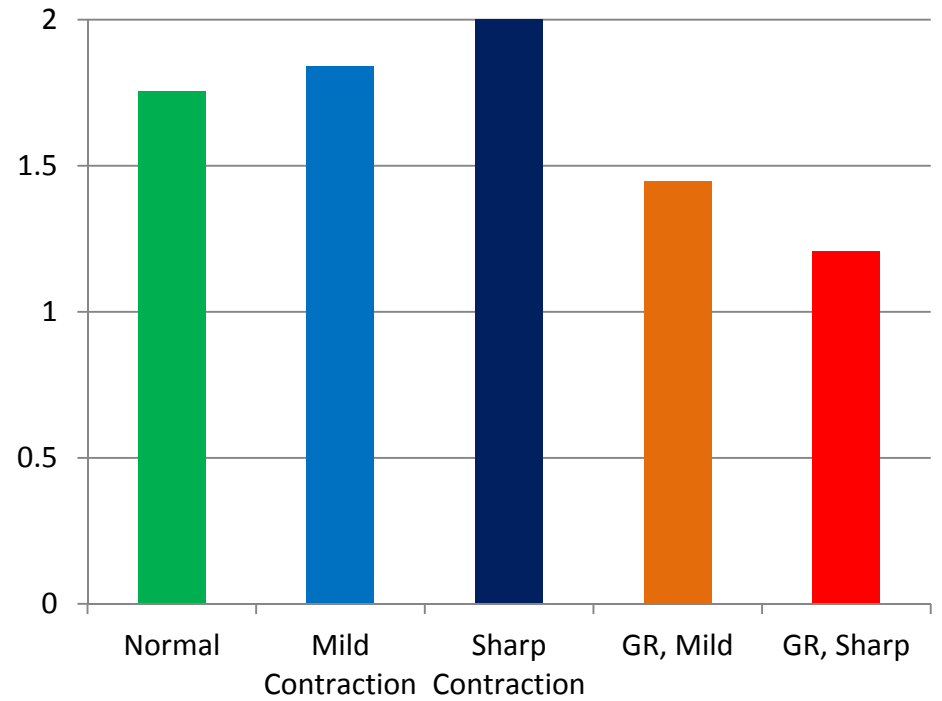## Exit Rates by Productivity Over the Cycle

Young Plants

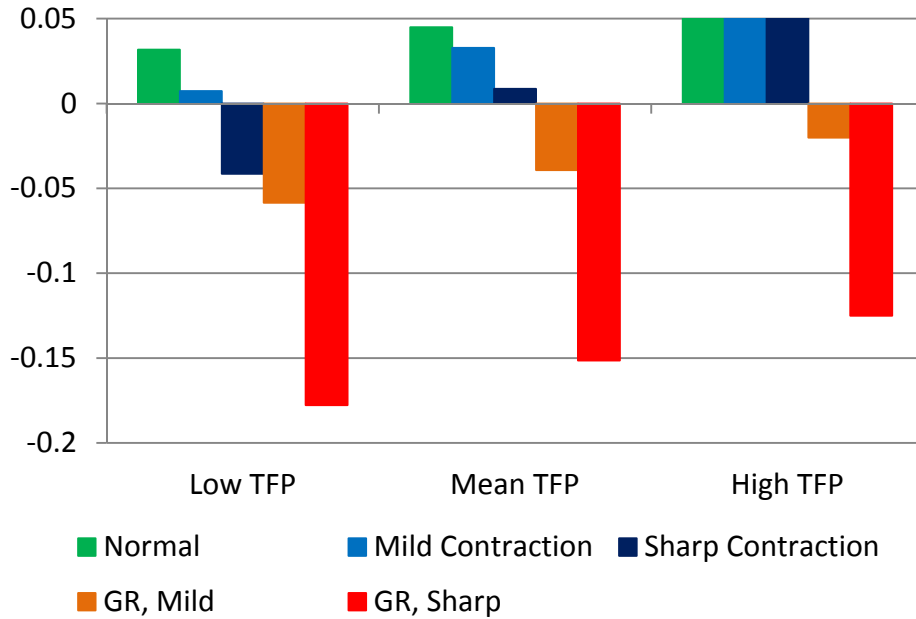**Ratio of Exit Rates Between Low and High Productivity Plants Over The Cycle**

Older Plants

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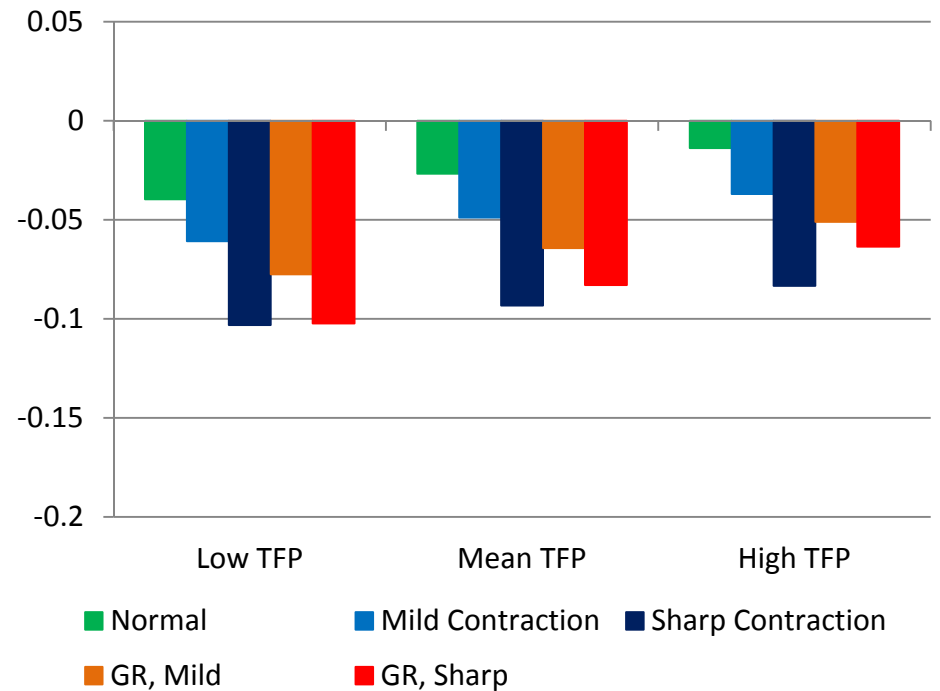
Young Plants
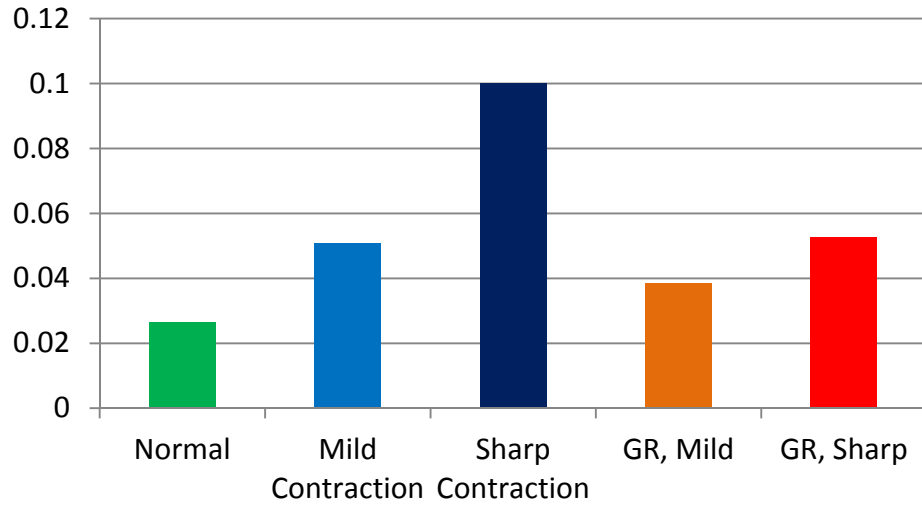
Growth Rates of Continuing Establishments Over the Cycle

Older Plants

Growth Rates of Continuing Establishments Over the Cycle
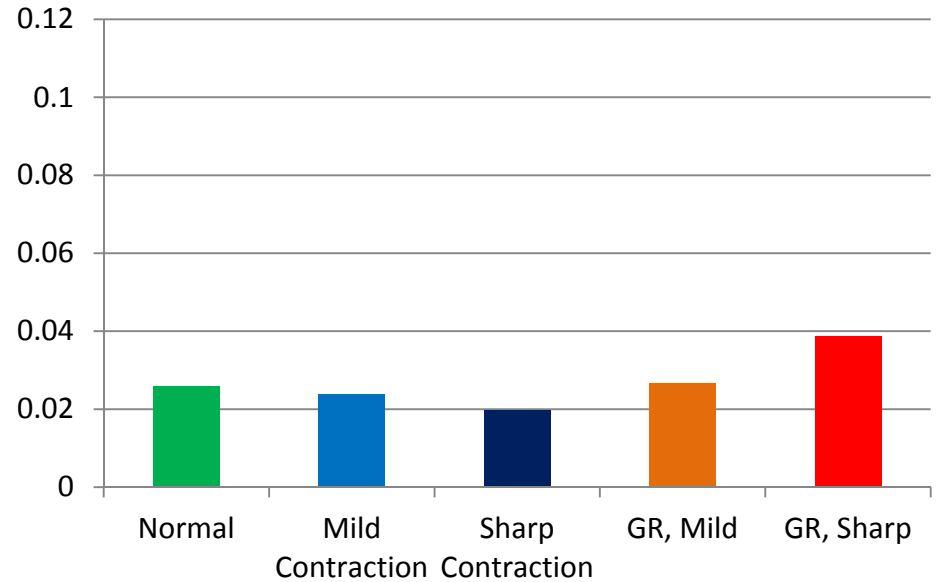
Young Plants

Difference in Growth Rates of Continuing Plants Between High and Low Productivity Plants Over The Cycle

Older Plants

Difference in Growth Rates of Continuing Plants Between High and Low Productivity Plants Over The Cycle

Summary of Findings

- Reallocation is productivity enhancing:
  - Less productive plants more likely to exit
  - More productive plants more likely to grow
- These patterns are enhanced in recessions prior to the Great Recession
  - The ratio of exits between low and high productivity plants rises in contractions
  - The difference in growth rates for high and low productivity increases in contractions

But things changed in the Great Recession…

- Patterns did not reverse:
  - Still true that high productivity plants less likely to exit and more likely to grow
- But instead of being enhanced they tended to be reduced relative to normal times
  - Ratio of exit rates of low to high productivity plants stayed above one but fell in Great Recession especially in states with especially large contractions
  - Difference in growth rates between high and low productivity plants still positive but fell in Great Recession
  - The decline in the difference in growth rates for high and low productivity plants especially present for young plants

Broader Messages

- The cycle as well as market institutions and conditions impact the magnitude and nature of productivity enhancing reallocation.
- Useful to study and understand the factors that distort reallocation:
  - Cross country analysis offers one approach.
    - Often times need some within country variation. Across size classes, industries, etc.
  - Cyclical dynamics provide additional variation.
  - More generally inherent interest in how the cycle and crises impact the relationship between productivity and reallocation.