# The Rise of Market Power and the Macroeconomic Implications

De Loecker et al. (QJE 2020)

# Questions

- How has market power in the US economy evolved since the 1950s?

- What are the macroeconomic implications of this change?

# Approach

- Derive firm-level mark-ups based on a cost minimization problem

  - No need to assume market structure and firm conduct

  - Study firms from very different industries

- Analyze firm profitability

  - Higher mark-ups may be explained by higher fixed costs

  - Higher profits and higher mark-ups provide evidence of an increase in market power

# Data

- Compustat, 1950-2016

  - Financial statements from all publicly traded firms in the US

  - Sales, input expenditure, capital stock, industry, cost of goods sold (variable costs) + some measure of overheads (fixed costs)

- US censuses

  - Available for Manufacturing, Retail Trade and Wholesale Trade

  - Universe of establishments (includes private firms)

# The Production Approach

- A firm $i$ in year $t$ solves the cost minimization problem:

$$\mathscr{L}(V_{it}, K_{it}, \lambda_{it}) = P_{it}^V V_{it} + r_{it} K_{it} - \lambda_{it}(Q(\,\cdot\,) - \bar{Q}_{it})$$

- Which leads to the first-order condition (wrt $V_{it}$):

**Output elasticity of variable input**
$$\theta_{it}^v = \frac{1}{\lambda_{it}} \cdot \frac{P_{it}^V V_{it}}{Q_{it}}$$

- Since $\lambda$ is a direct measure of marginal cost, mark-ups are

**Mark-up**
$$\mu_{it} = \frac{P_{it}}{\lambda_{it}} = \theta_{it}^v \cdot \left(\frac{P_{it}^V V_{it}}{P_{it} Q_{it}}\right)^{-1}$$
**Output elasticity of variable input** **X** **Revenue share of variable input (Inverse)**

# Mark-ups have increased unevenly across firms



**61% in 2016**

**21% in 1980**

FIGURE I

Average Markups

**Distribution of mark-up across firms has a fatter right tail in 2016**

— 2016
---- 1980
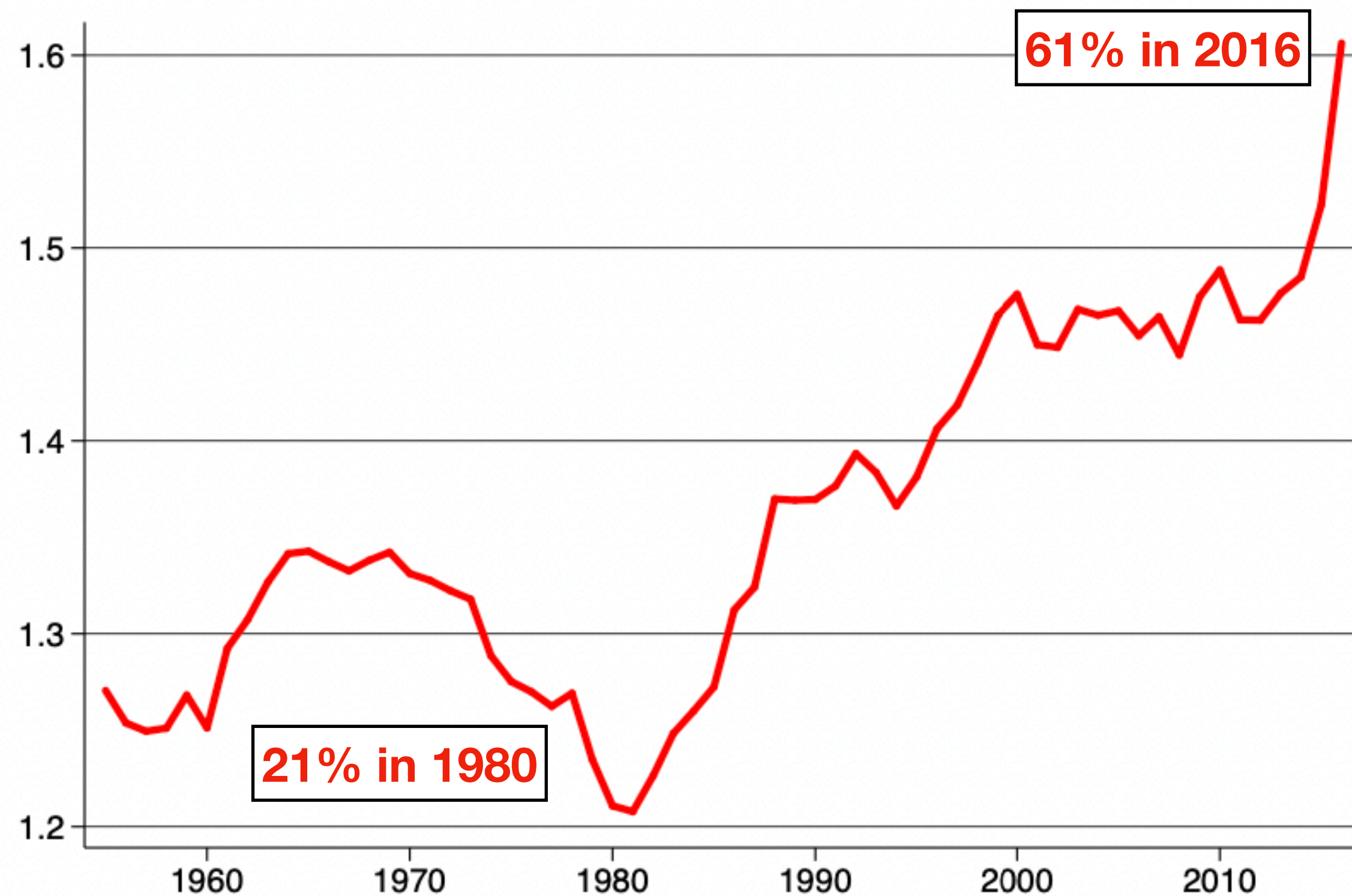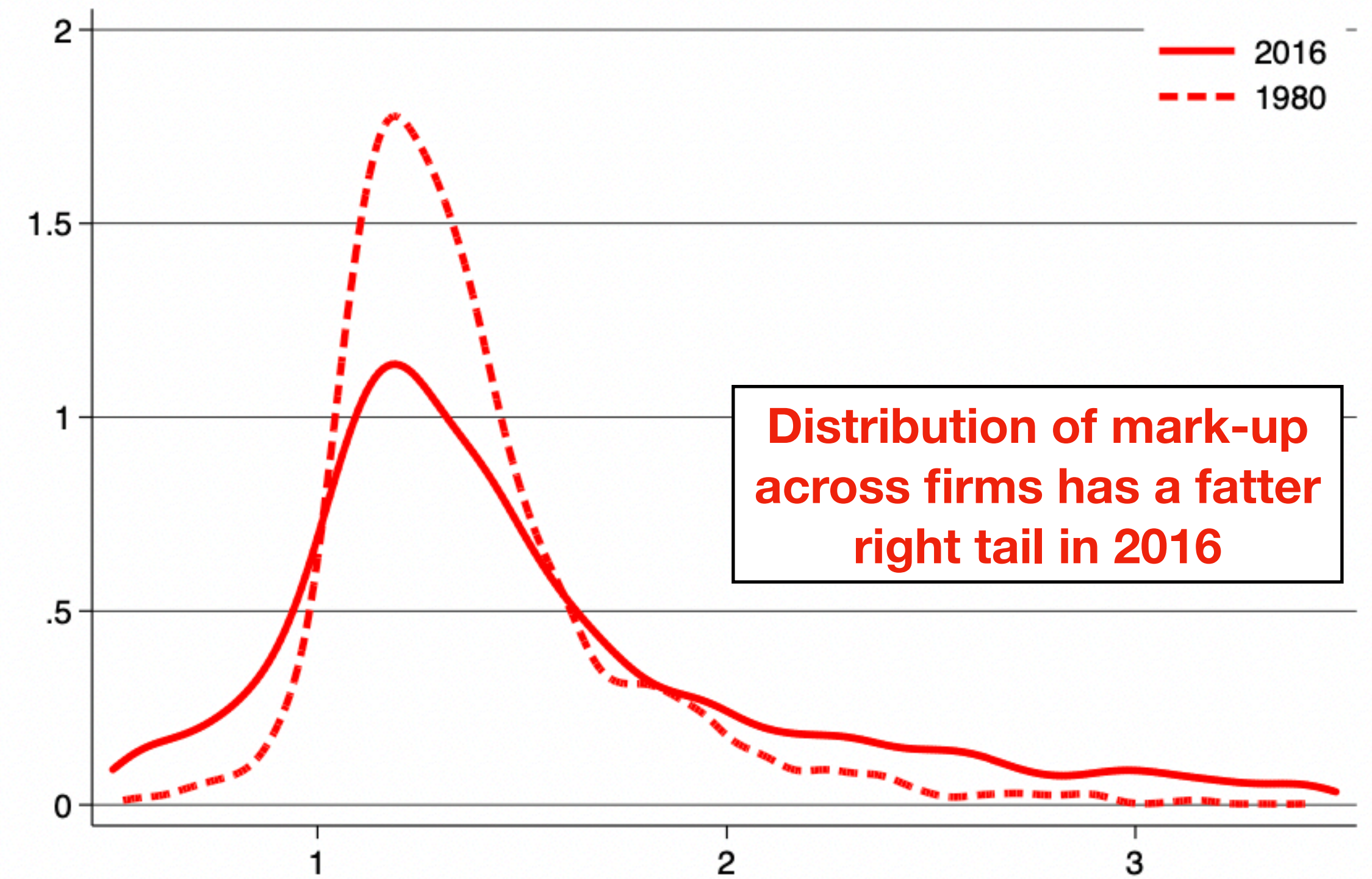
(A) Kernel density (unweighted)

# Reallocation accounts for more than two-thirds of the increase in mark-ups

Change in average mark-ups can be decomposed:

$$\Delta\mu_t = \underbrace{\sum_i m_{i,t-1}\Delta\mu_{it}}_{\Delta\text{within}} + \underbrace{\underbrace{\sum_i \tilde{\mu}_{i,t-1}\Delta m_{i,t}}_{\Delta\text{market share}} + \underbrace{\sum_i \Delta\mu_{i,t}\Delta m_{i,t}}_{\Delta\text{cross term}}}_{\Delta\text{reallocation}}$$

$$+ \underbrace{\sum_{i\in\text{Entry}} \tilde{\mu}_{i,t}m_{i,t} - \sum_{i\in\text{Exit}} \tilde{\mu}_{i,t-1}m_{i,t-1}}_{\text{net entry}},$$

where $\tilde{\mu}_{it} = \mu_{it} - \mu_{t-1}$ and $\tilde{\mu}_{it-1} = \mu_{it-1} - \mu_{t-1}$
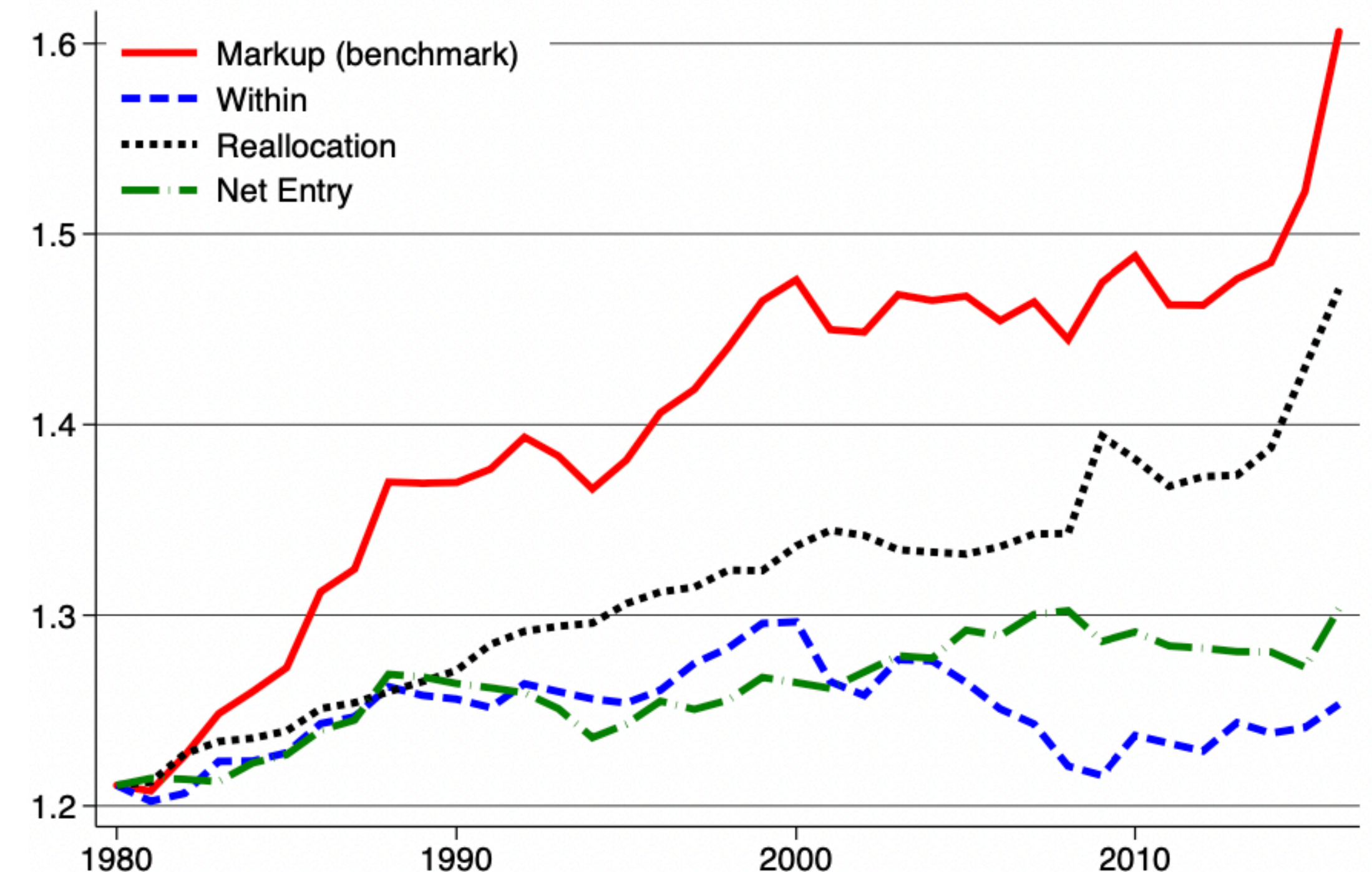


FIGURE IV

Decomposition of Markup Growth at the Firm Level

# Profits

- Higher mark-ups may not necessarily imply that firms have more market power if their fixed costs had increased over the same period

- Need to analyze profits in order to understand whether higher mark-ups are indicative of a rise in market power in the US

- Let $\Pi_{it} = S_{it} - P_{it}^V V_{it} - r_{it}K_{it} - F_{it}$ denote net profits where $F_{it}$ denotes fixed cost
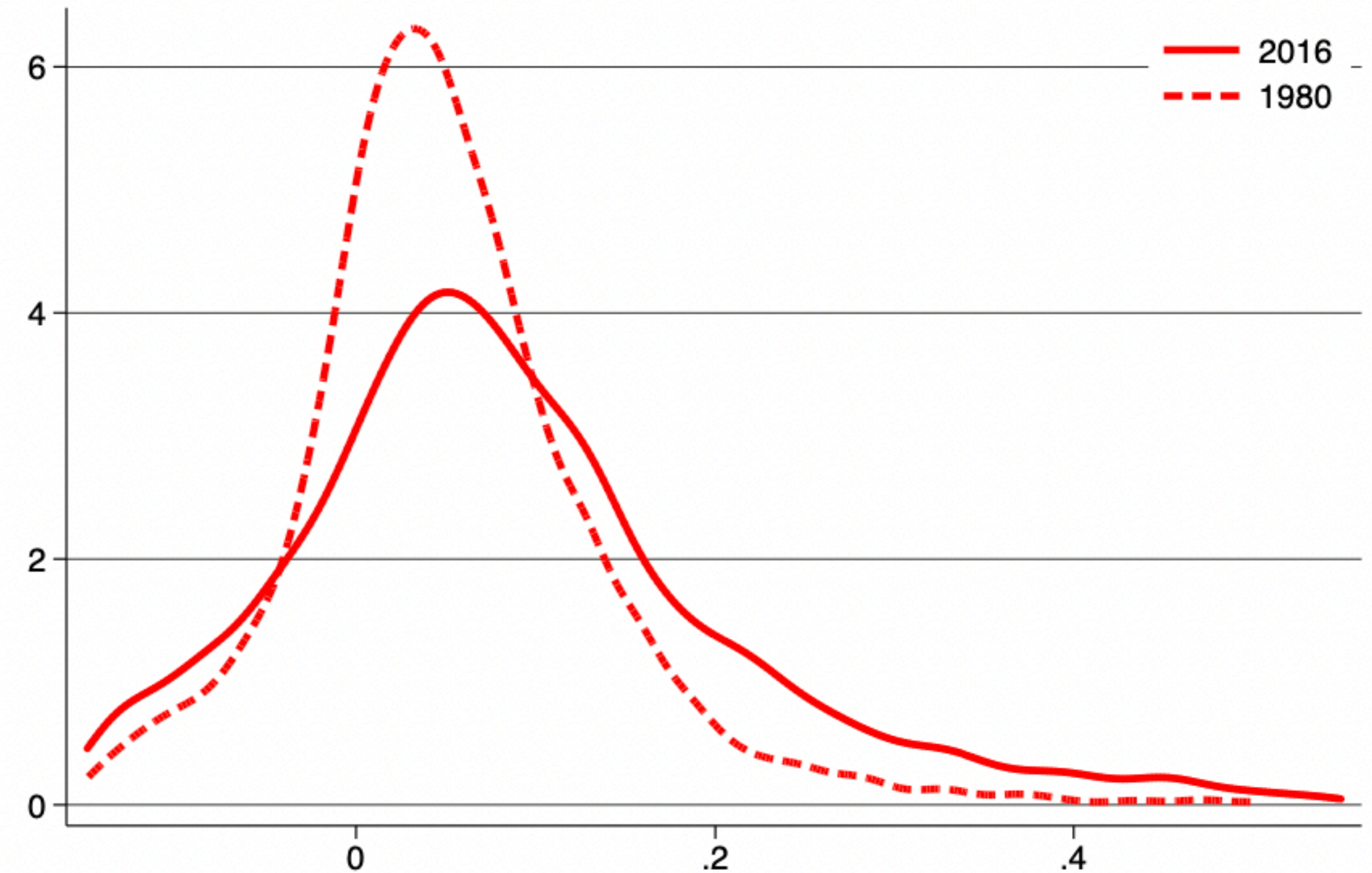
Then the net profit rate is: $\pi_{it} = \dfrac{\Pi_{it}}{S_{it}} = 1 - \dfrac{\theta_{st}}{\mu_{it}} - \dfrac{r_t K_{it}}{S_{it}} - \dfrac{F_{it}}{S_{it}}$

# Profits have increased (unevenly) across firms
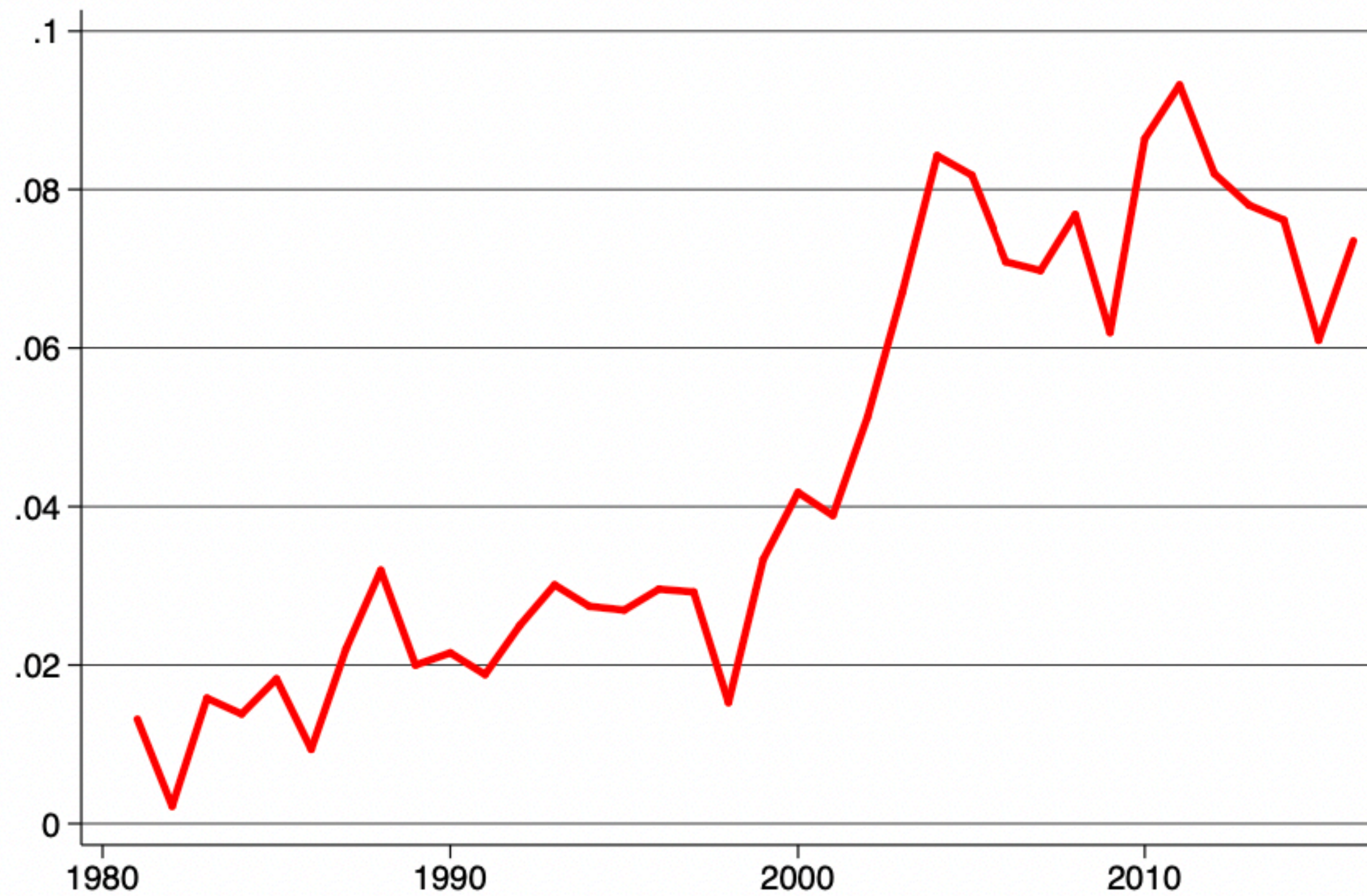


(A) Average profit rate (revenue weighted)

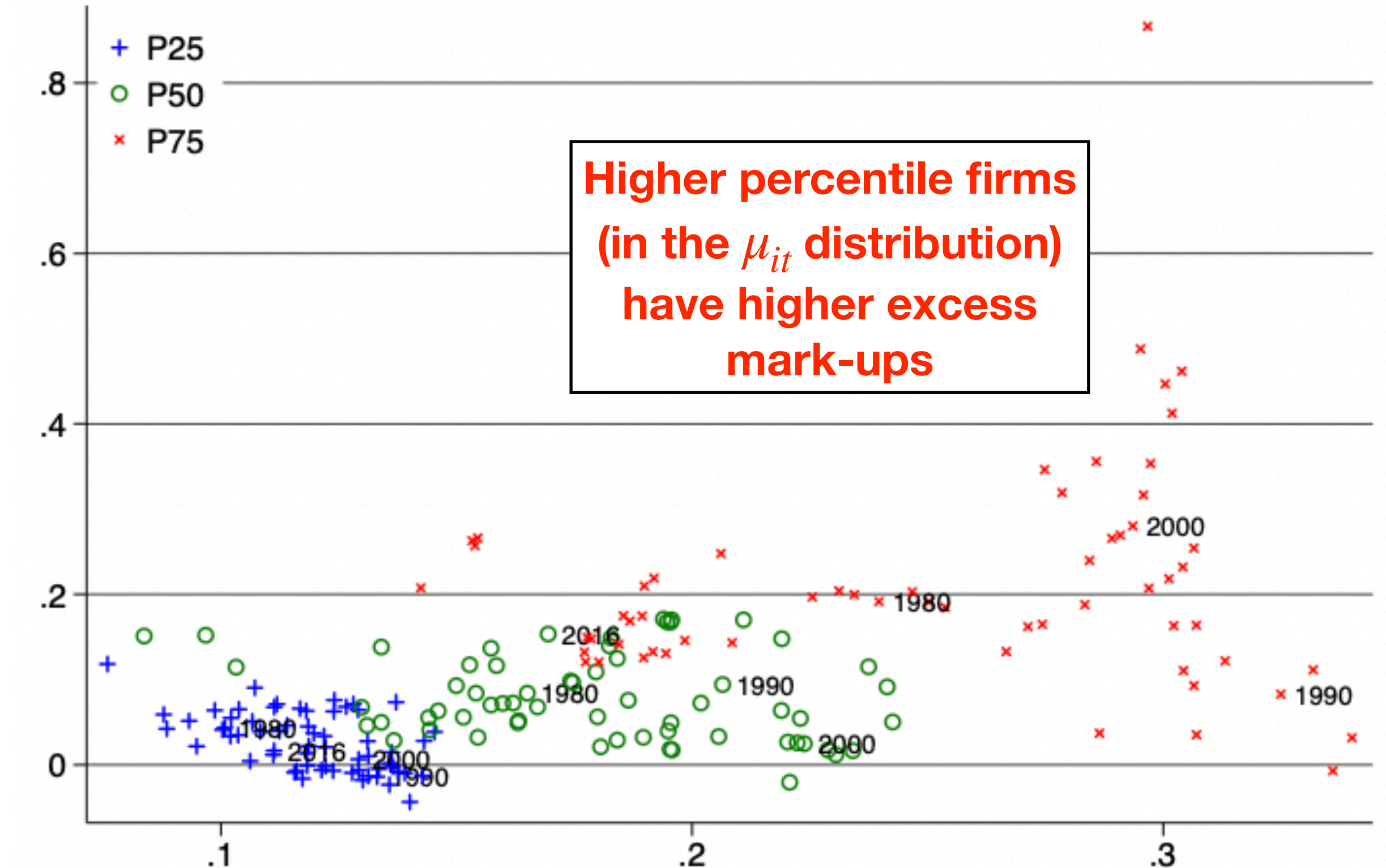(B) Kernel density profit rate (unweighted)

# Excess mark-ups

If we set

$$\pi_{it} = 1 - \frac{\theta_{st}}{\mu_{it}} - \frac{r_t K_{it}}{S_{it}} - \frac{F_{it}}{S_{it}} = 0$$

we get $\mu_{it}^* = \dfrac{\theta_{st}}{1 - \dfrac{r_t K_{it}}{S_{it}} - \dfrac{F_{it}}{S_{it}}}$

And the weak lower bound on excess mark-up is given by

$$\mu_{it} - \mu_{it}^*$$



**Higher percentile firms (in the $\mu_{it}$ distribution) have higher excess mark-ups**

(B) Excess markup $\mu_{it} - \mu_{it}^{\star}$ by SG&A share

# Increased market power could explain the secular decline in US labor share

Firms hire less labor as mark-ups increase: $\mu_{it} = \theta_{it}^v \cdot (\frac{P_{it}^V V_{it}}{P_{it}Q_{it}})^{-1} = \theta_{it}^L \cdot (\frac{w_{it}L_{it}}{P_{it}Q_{it}})^{-1}$

REGRESSIONS: LOG (LABOR SHARE) ON LOG (MARKUP)

| | Labor share (log) | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Markup (log) | −0.24 | −0.23 | −0.20 | −0.24 | −0.68 | −0.73 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.02) |
| Cost share (log) | | | | | 0.91 | 0.96 |
| | | | | | (0.01) | (0.01) |
| Year FE | | X | X | X | X | X |
| Industry FE | | | X | | X | |
| Firm FE | | | | X | | X |
| $R^2$ | 0.02 | 0.08 | 0.21 | 0.88 | 0.93 | 0.99 |
| $N$ | | | | 24,838 | | |

*Note:* FE = fixed effects. Four-digit industries. Standard errors (in parentheses) are clustered at the firm level.

# Summary

- Using data from financial statements and a cost minimization approach, the authors find substantial evidence that market power in the US has significantly increased

  - Mark-ups and net profit rates have increased; more so for high-$\mu$ firms

  - Reallocation effect: main channel for overall rise in market power

- Higher mark-ups are inversely related to firms' expenditure on labor

  - Implications for labor force participation and labor market dynamism

- Increased market power could also explain decline in capital spending (as capital adjustments occur over the long-run)