Income Inequality and Income Risk: Old Myths vs. New Facts[1]

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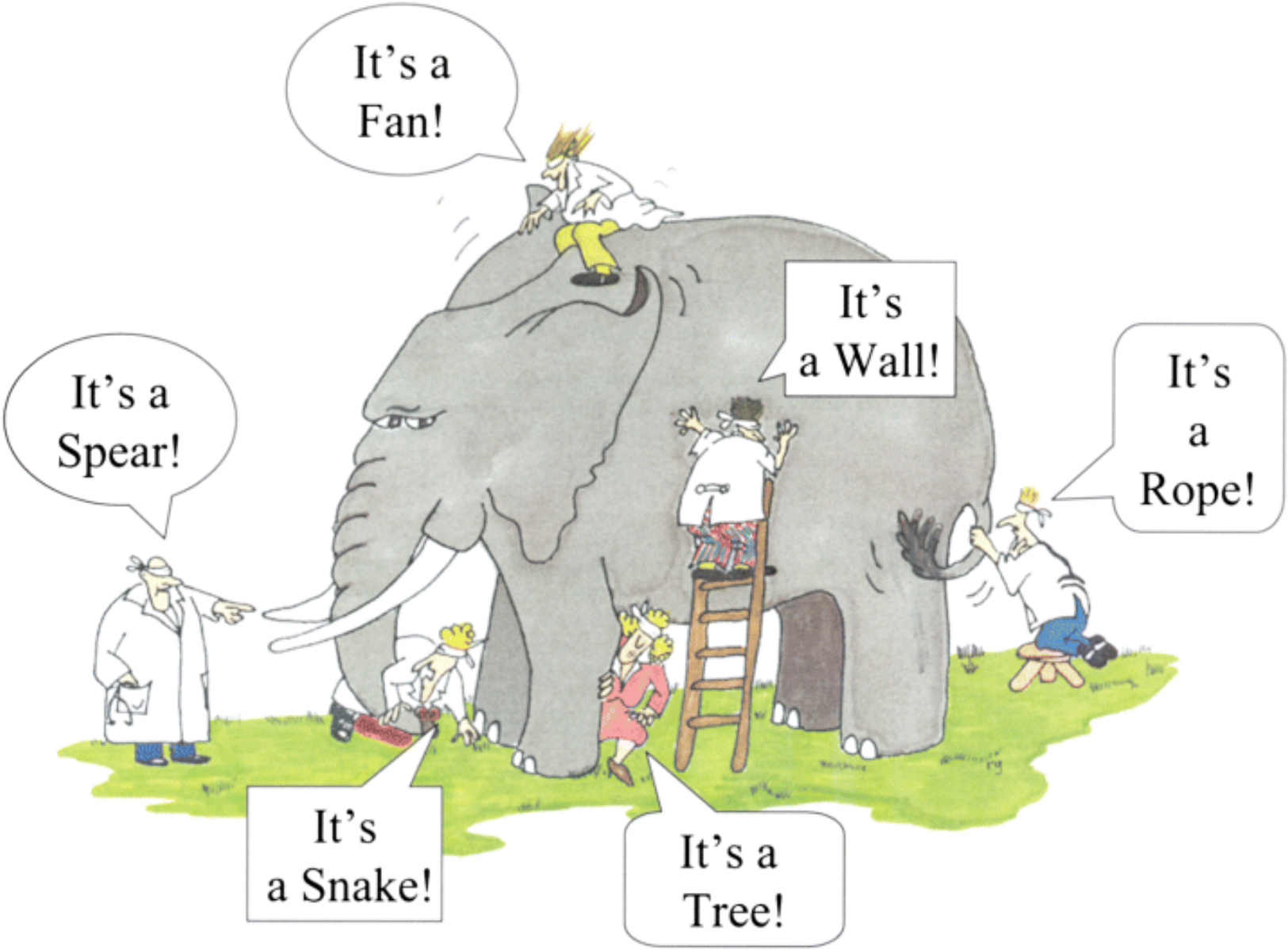
[1] This lecture summarizes research conducted jointly with Jae Song, Serdar Ozkan, Fatih Karahan, Greg Kaplan, Nick Bloom, Till von Wachter, Luigi Pistaferri, David Price, Sergio Salgado, David Domeij, Rocio Madera, Chris Busch, and Priscilla Fialho.

Blind Men and the Elephant



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  - non-random attrition
  - top-coding, etc.
- $\Longrightarrow$ myths about income inequality and income risk.

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- Earnings data:
  - Salary and wage earnings from W-2 form, Box 1
    - No topcoding
    - Unique employer identifier (EIN) for each job held in a given year.
    - 4–5 digit SIC codes for each employer
  - Self-employment earnings from IRS tax forms (Schedule SE)

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- Firms: Full population (100%) of US firms.

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   - Myth #4: Top 1% are largely immune to business cycle risk
3. Life-cycle:
   - Myth #5: Idiosyncratic income shocks can be modeled fairly well with a lognormal distribution.

Long-Run Trends in

Inequality and Risk

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  - Results from "Firming Up Inequality" with Song, Price, Bloom, von Wachter (2015)

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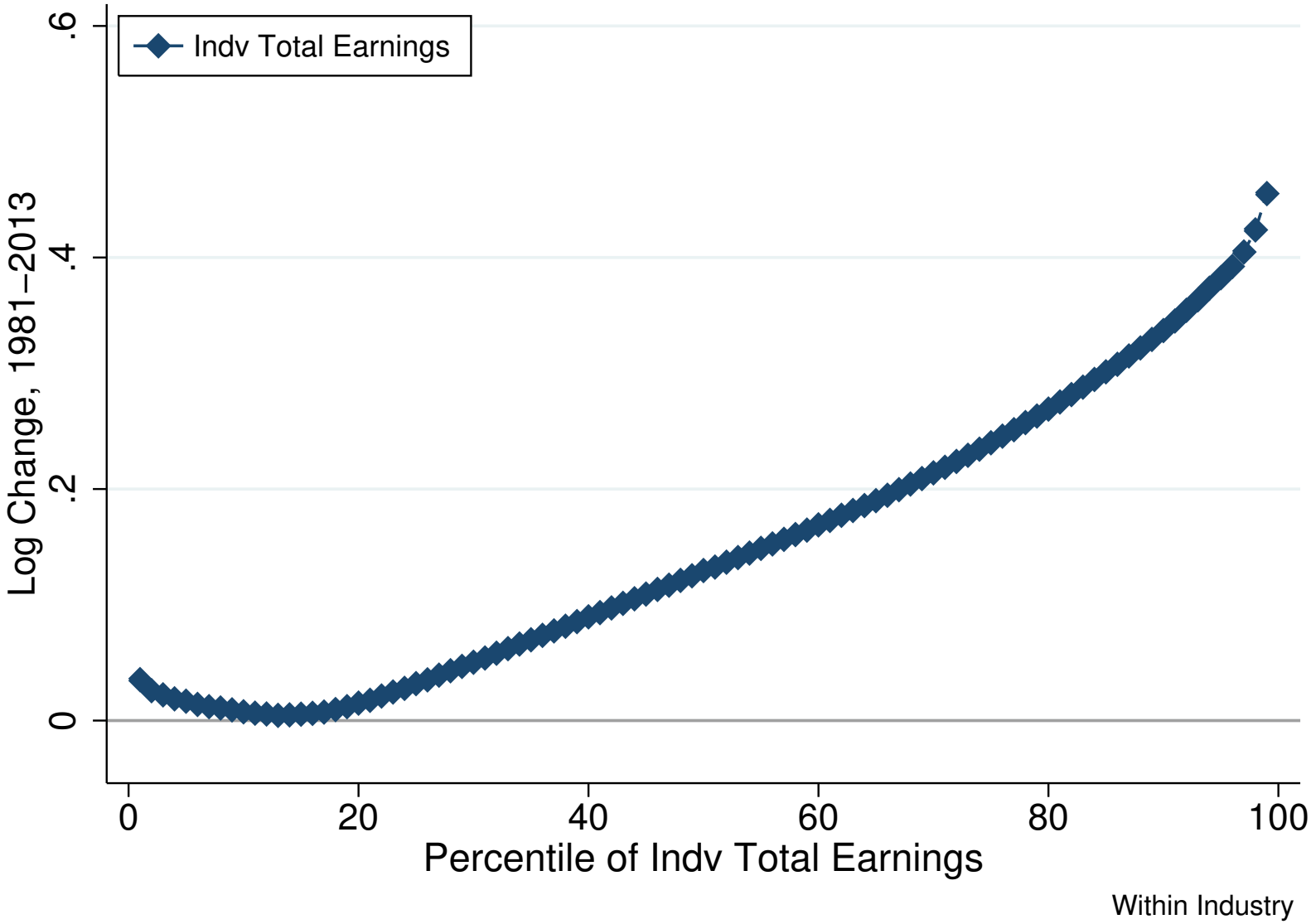
- Our findings: This view misses the "big picture".

Fact #1: Rise in Inequality is Fractal



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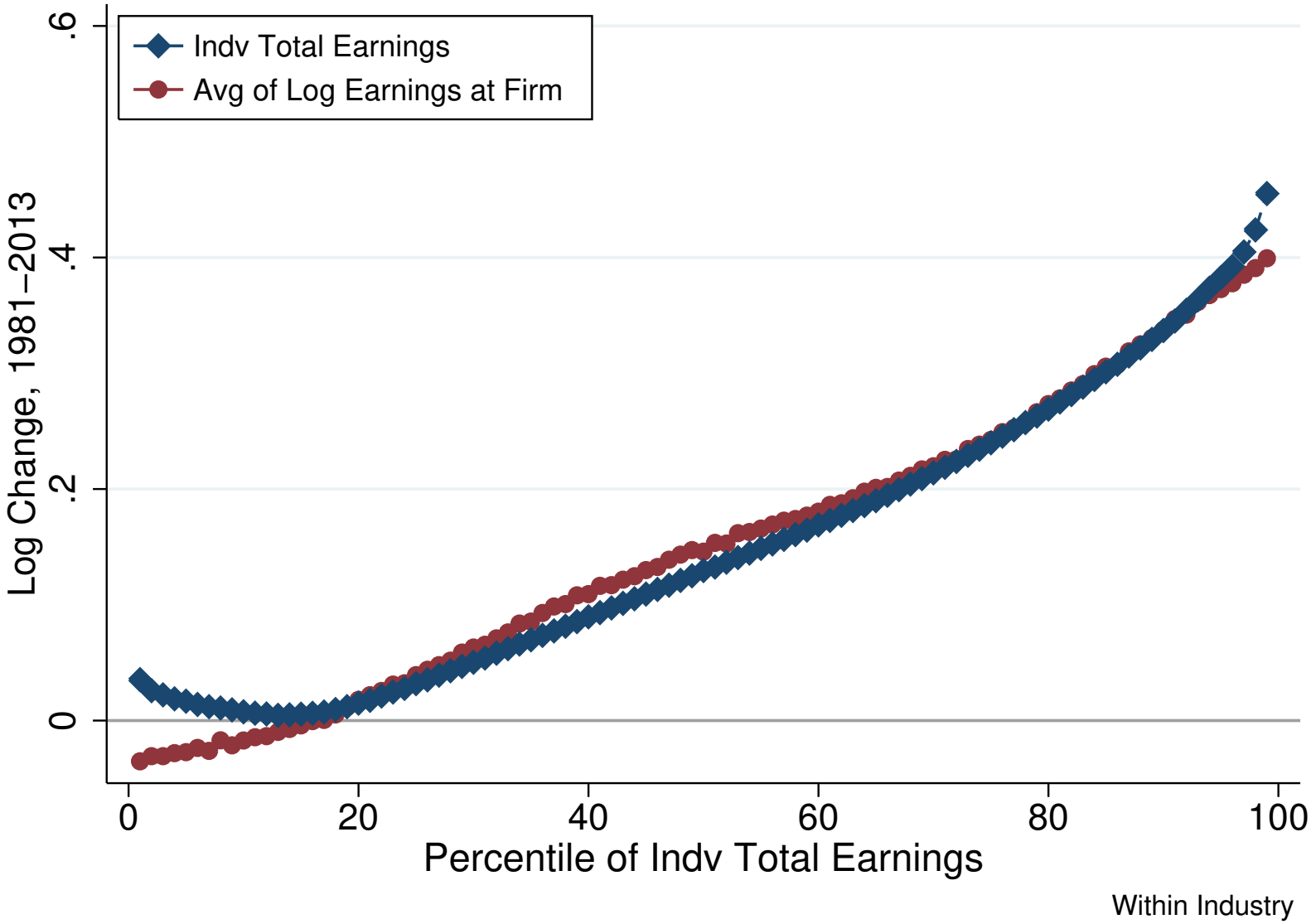
2. Next question: What is the role of employer's in rising inequality?

Fact #1: What is the Role of Employers?



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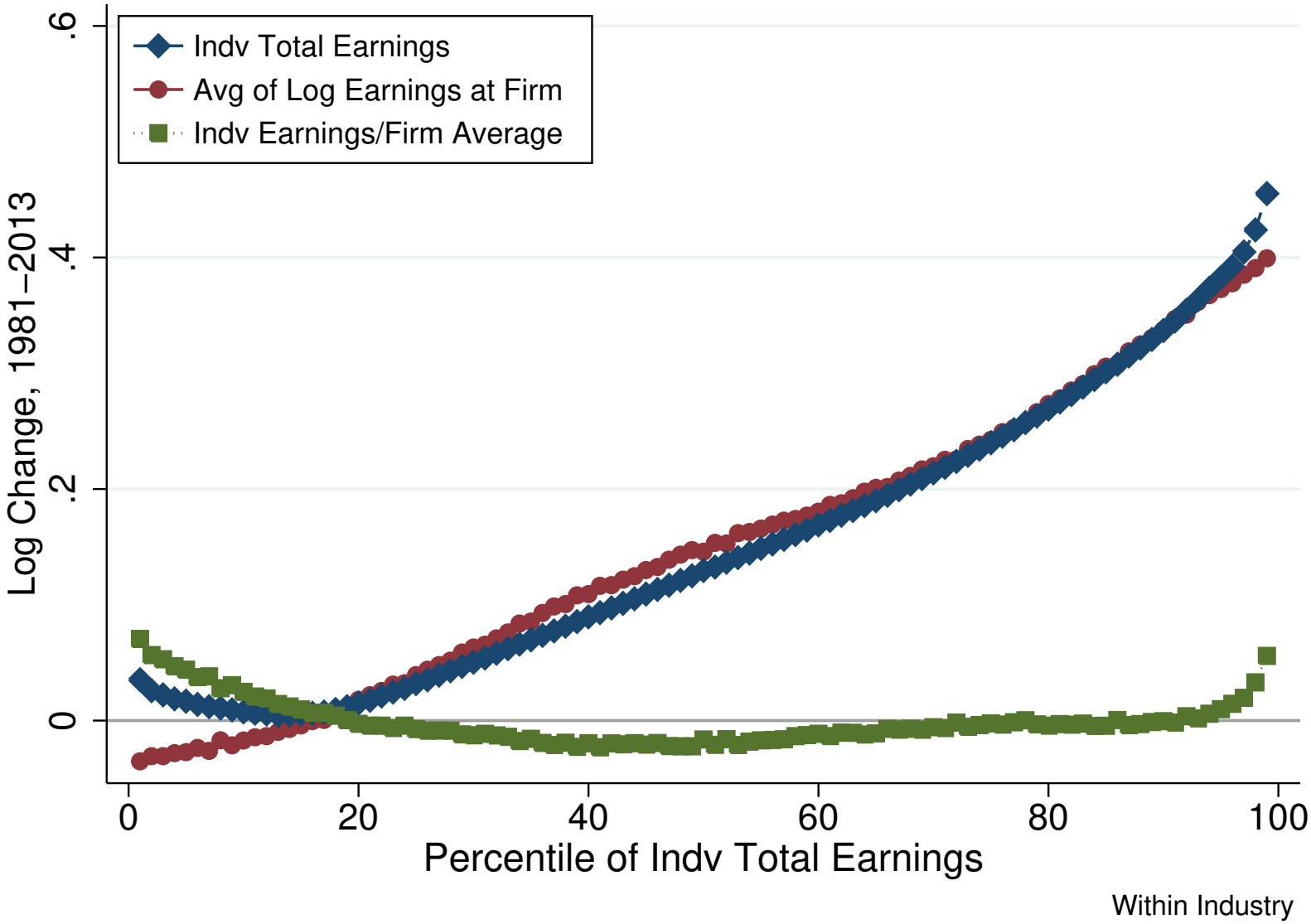

Our findings, cont'd

1. **Result 1:** Inequality rose across the entire wage distribution. Contradicts typical media accounts that rising inequality == rising top income shares.

2. **Result 2:** Almost all of the rise in wage inequality happened across firms, i.e., by rising gap in the average pay across firms.
   - Almost no change in pay inequality within employers, except in mega-firms.

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   - Q: What is driving the rise in between-firm inequality?
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3. **Next question:** Is the CEO pay driving rising inequality?

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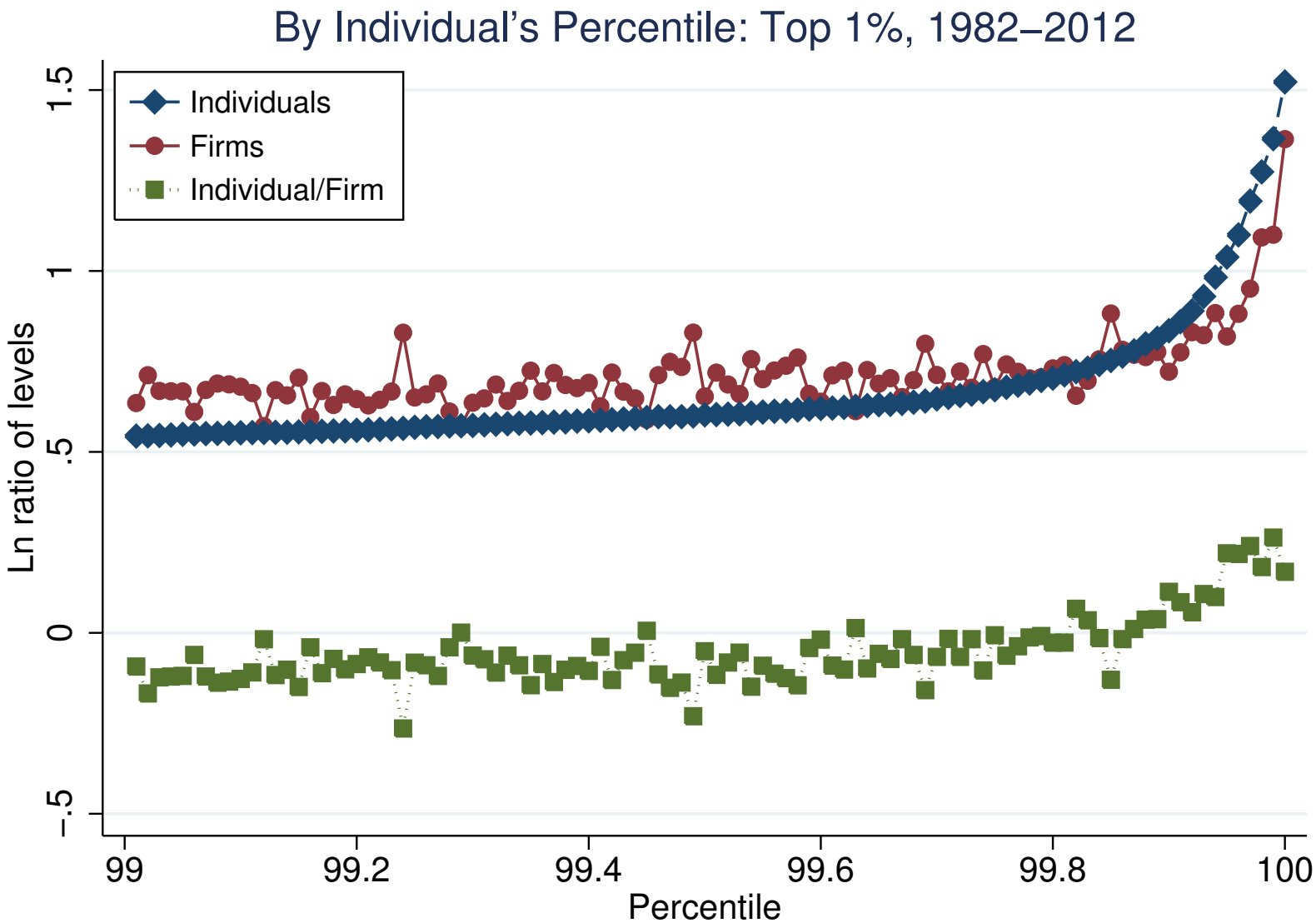
A key driver of wage inequality is the growth of chief executive officer earnings and compensation.

Mishel and Sabadish (2014)

Fact #1A: Top Paid Workers vs Firm Pay



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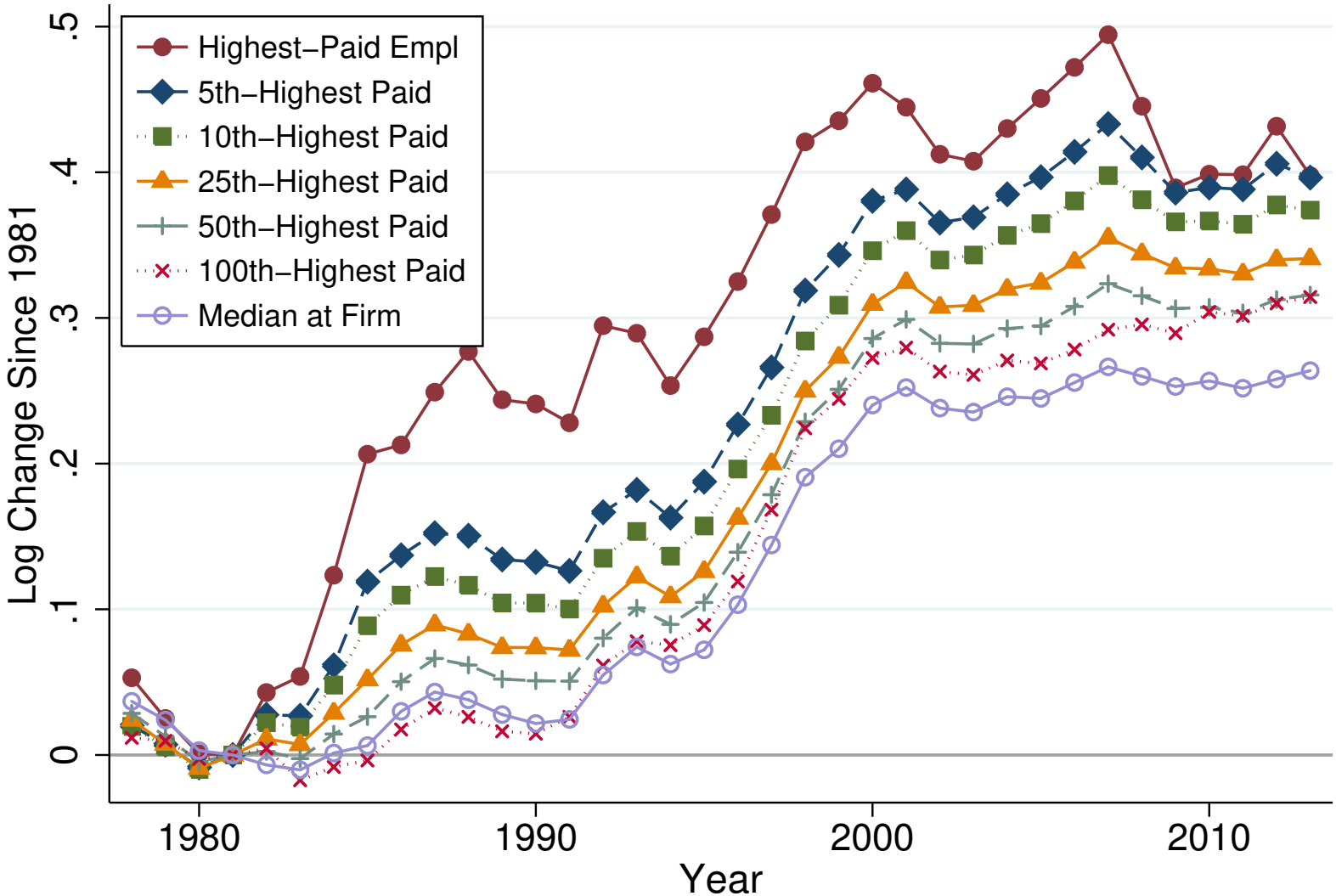
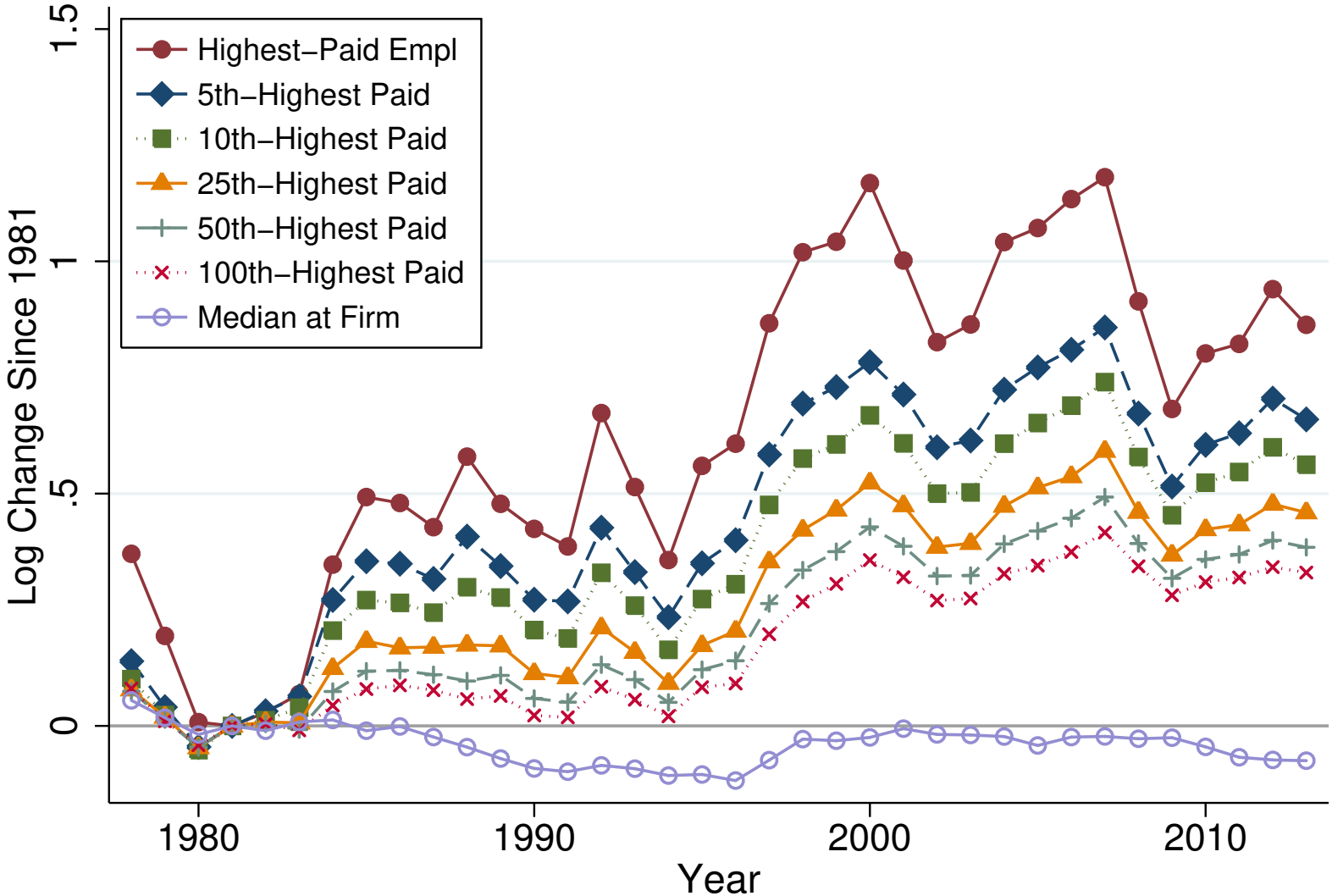
Fact #1B: Dodd-Frank: CEO/median pay



Subgroup: 100 ≤ Firm Size < 10k

Fact #1B: **Mega Firms (10,000+ FTE)**



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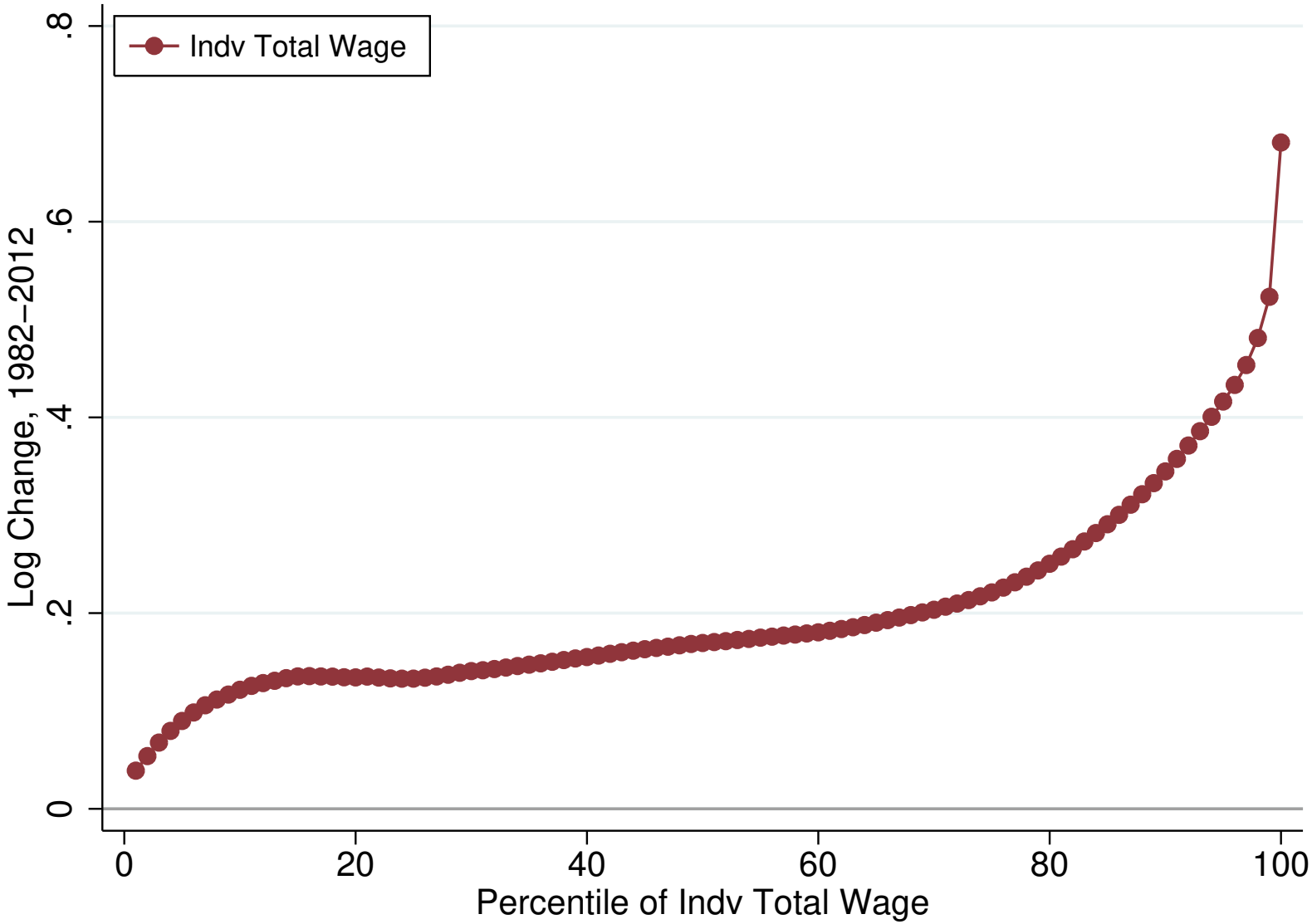
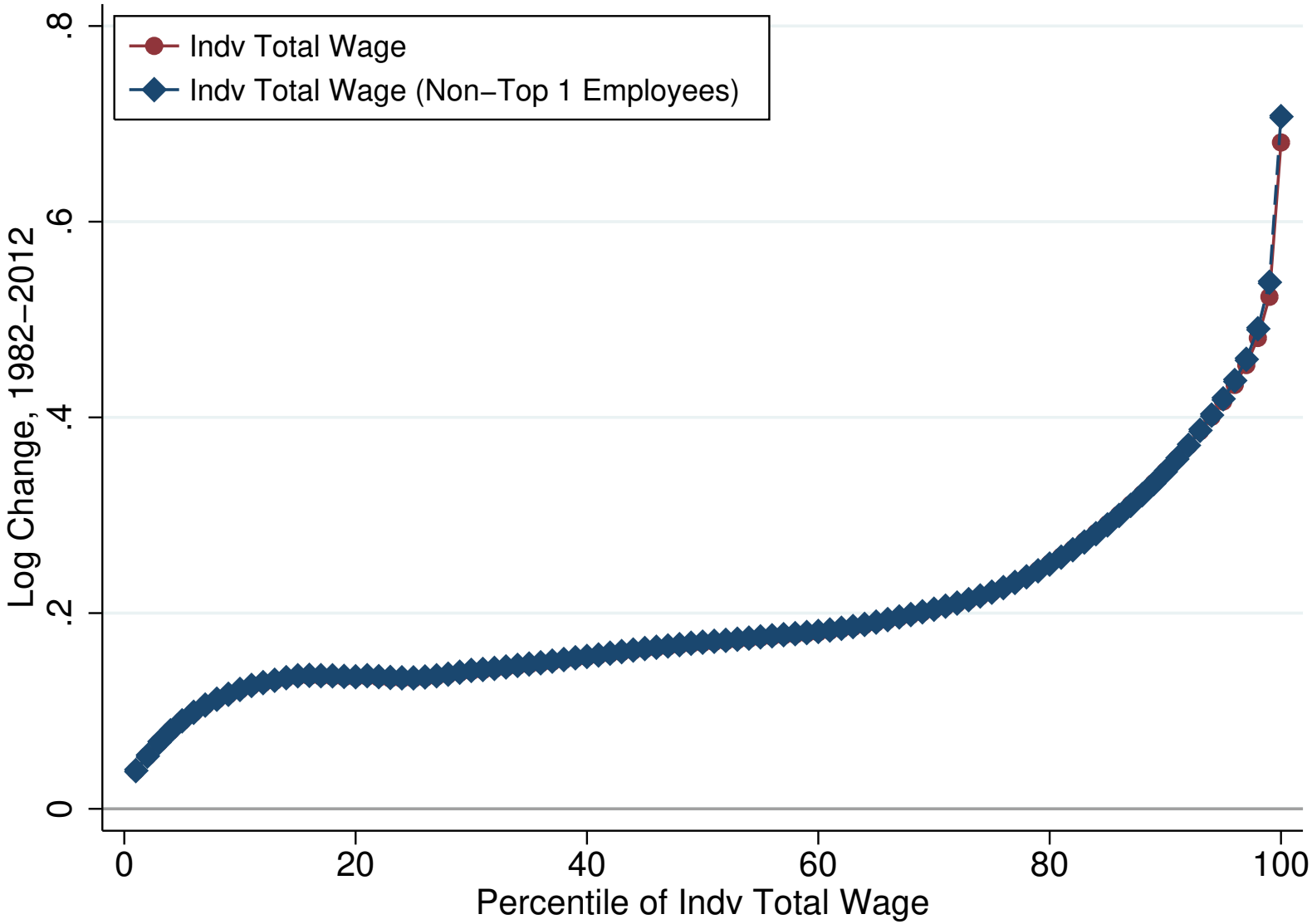
Fact #1C: Rise in Inequality



Rise in Inequality ***Without Top Executives***



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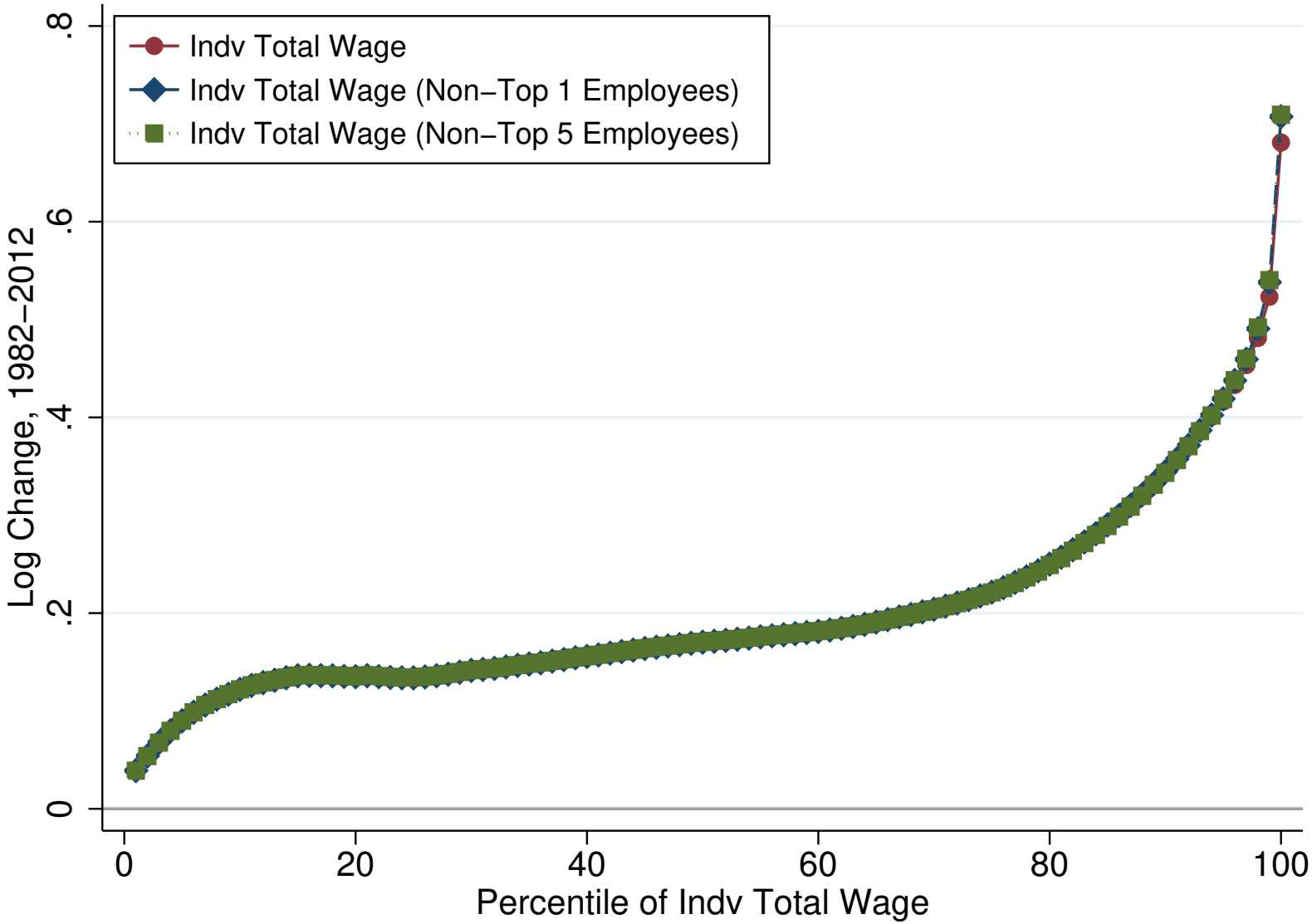
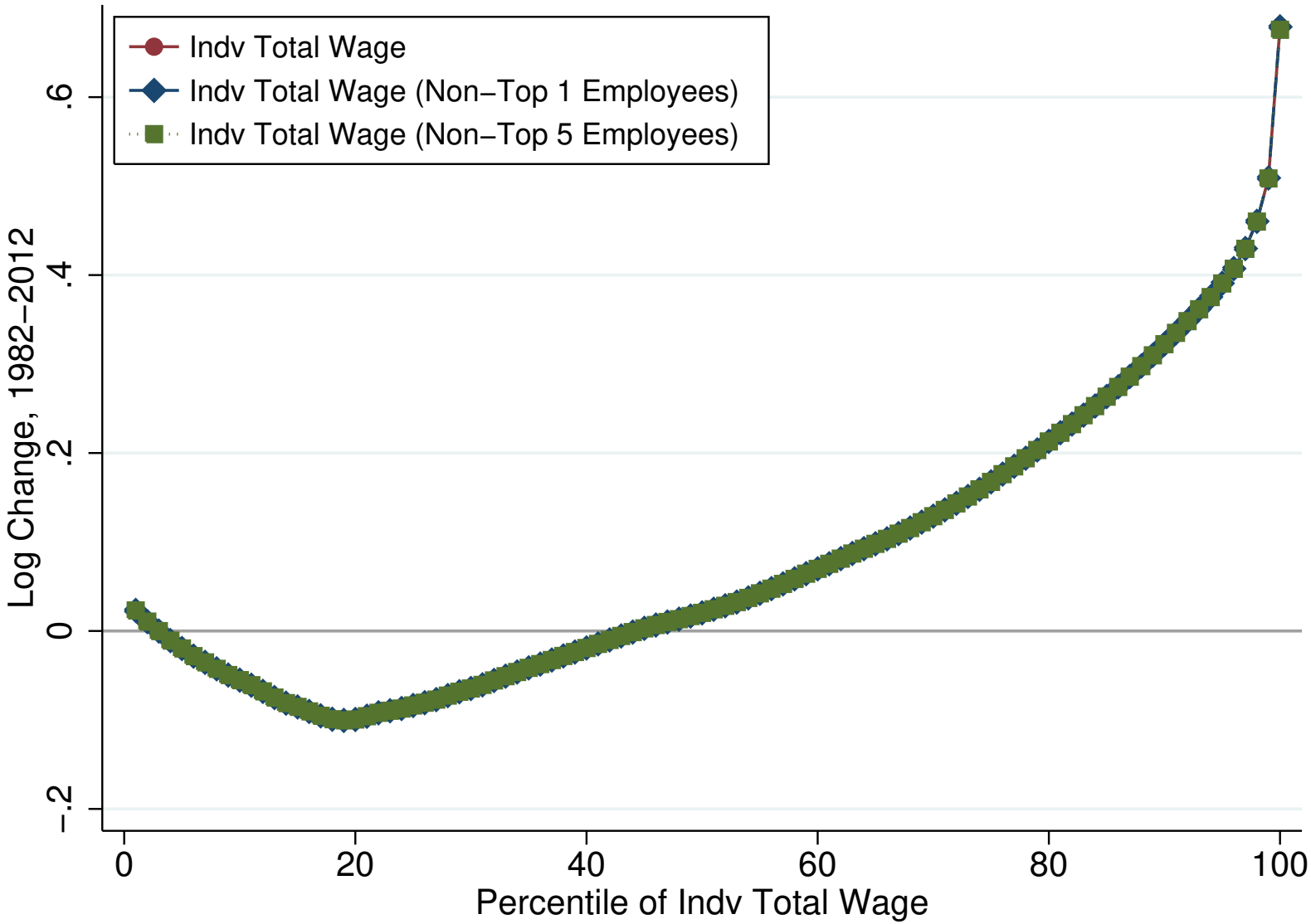
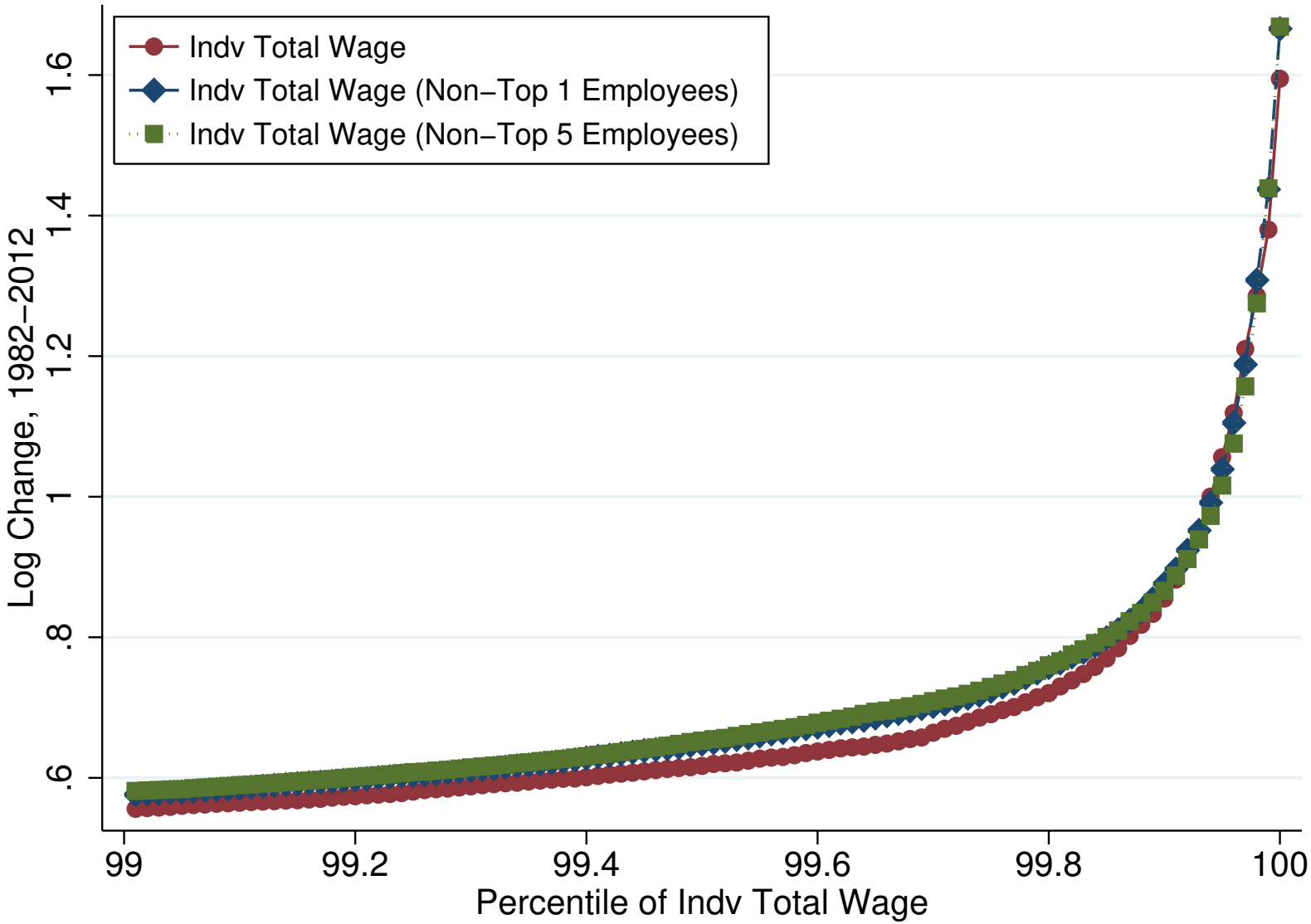


Rise in Inequality: *1000+ FTE*



Top 1% Inequality: ***Baseline***



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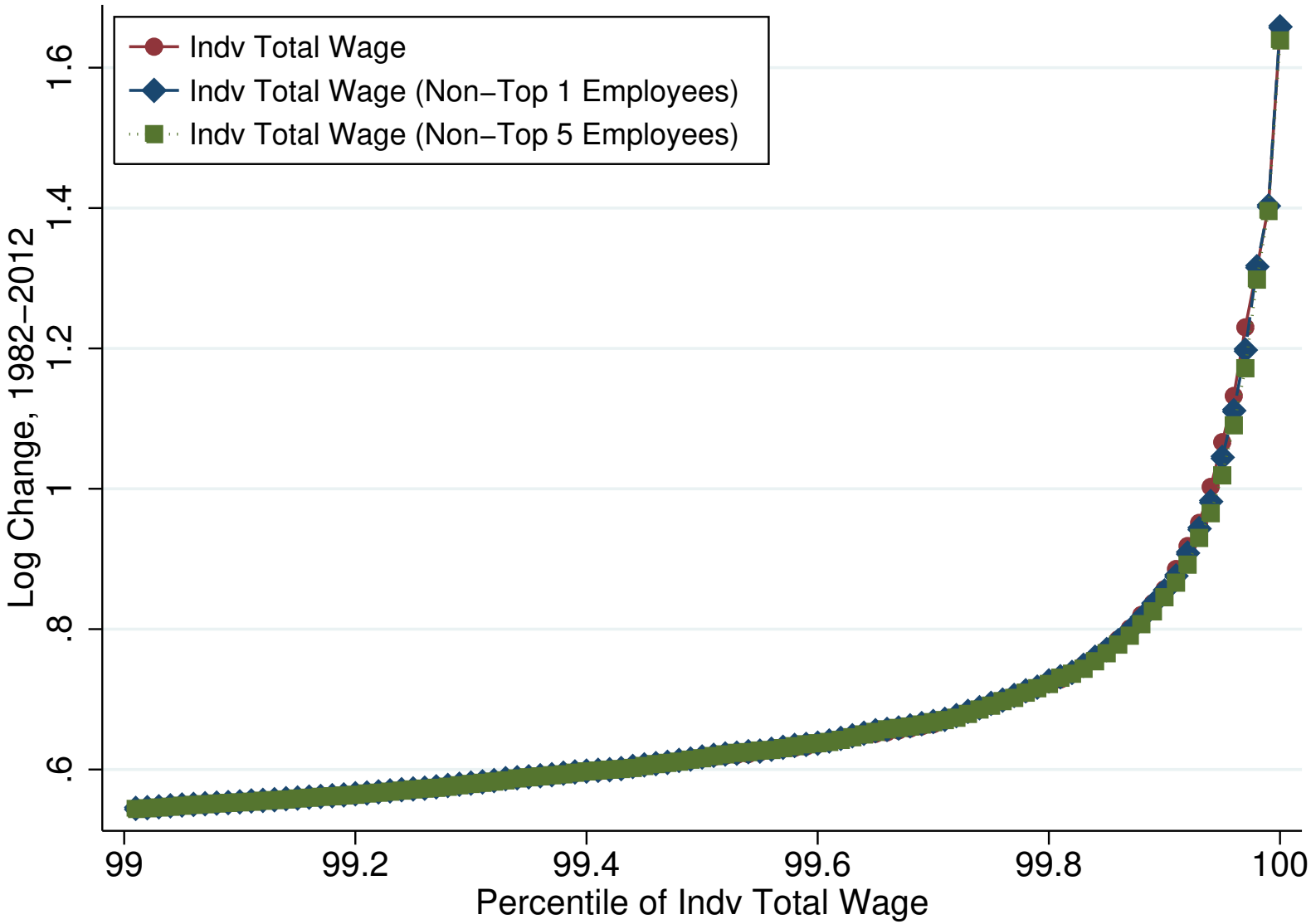

Robustness

- This pattern is pervasive. It holds within
  - most industries (44 of 49 Fama-French industries)
  - US regions (Census regions, counties)
  - across firms of different sizes

Trends in Income Risk

Myth #2:

The volatility of income shocks...

has increased significantly over the past 40 years.

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- Moffitt and Gottschalk (1995) documented it first in a now-famous paper, and it has been confirmed by a large subsequent literature.

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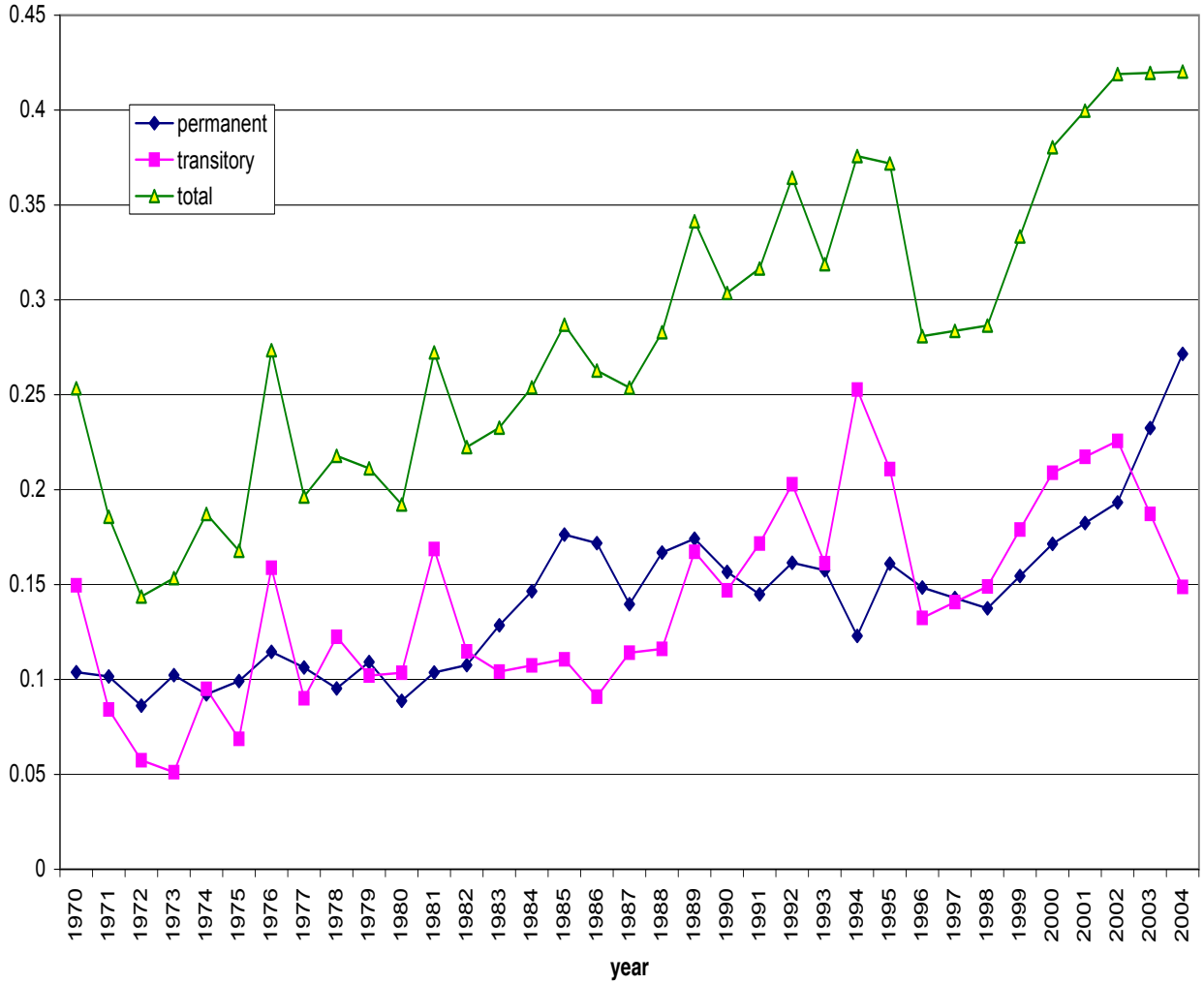
- Moffitt and Gottschalk (1995) documented it first in a now-famous paper, and it has been confirmed by a large subsequent literature.
- Opening quote from Ljungqvist and Sargent (2008, ECMA):

> *A growing body of evidence points to the fact that the world economy is more variable and less predictable today than it was 30 years ago... [There is] more variability and unpredictability in economic life*
>
> *Heckman (2003).*

Figure 10: Permanent, Transitory, and Total Variances for those 30-39 with Education Greater than 12



Source: Moffitt and Gottschalk (2012)

Fact #2: No Upward Trend in Volatility

- Administrative data: the opposite conclusion emerges robustly
- See, e.g., Congressional Budget Office (2007); Sabelhaus and Song (2010); Guvenen et al. (2014)

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- Administrative data: the opposite conclusion emerges robustly
- See, e.g., Congressional Budget Office (2007); Sabelhaus and Song (2010); Guvenen et al. (2014)
- In fact, volatility of earnings changes has been declining within most
  - industries
  - age groups
  - gender groups
  - U.S. regions
  - etc.

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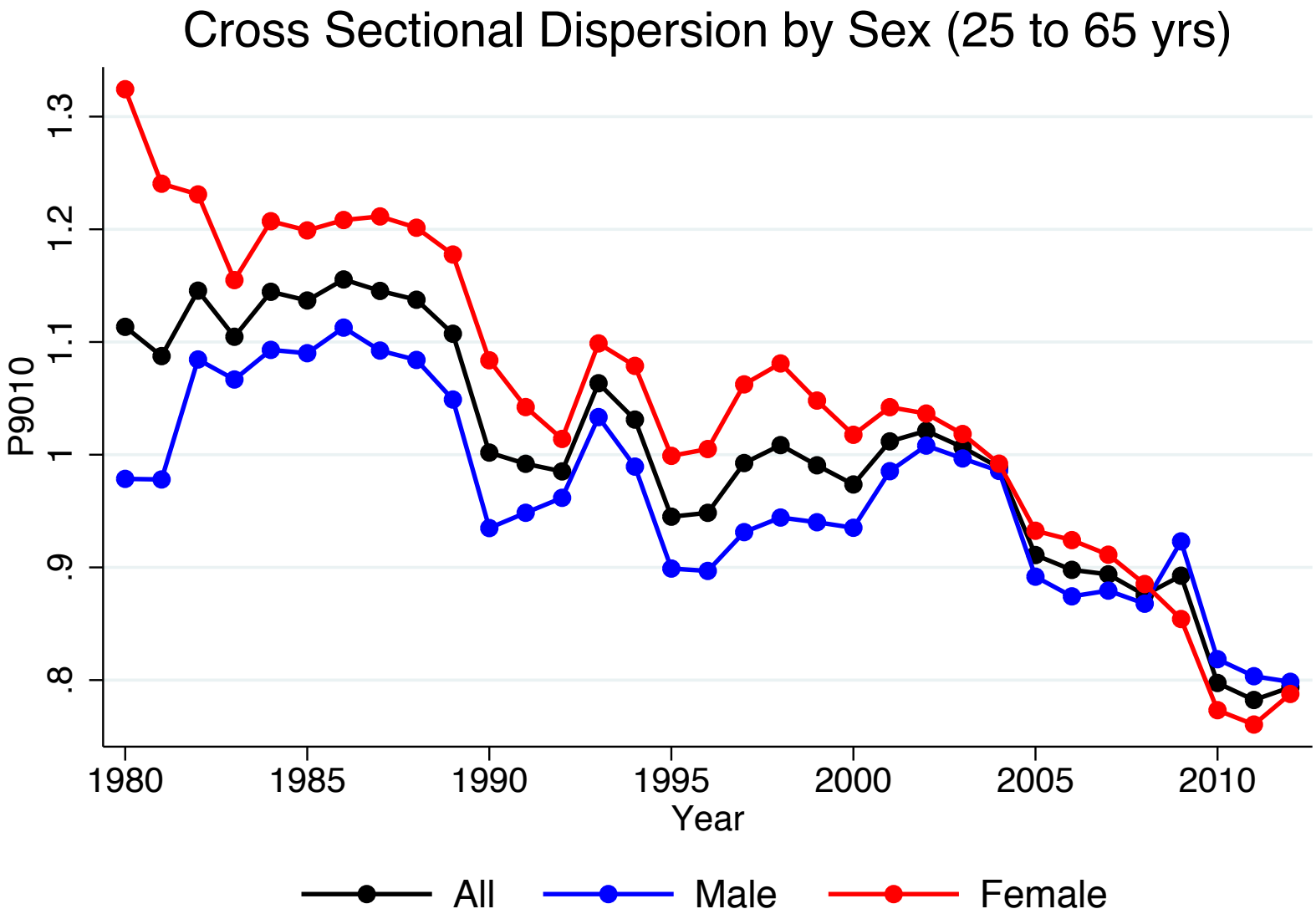

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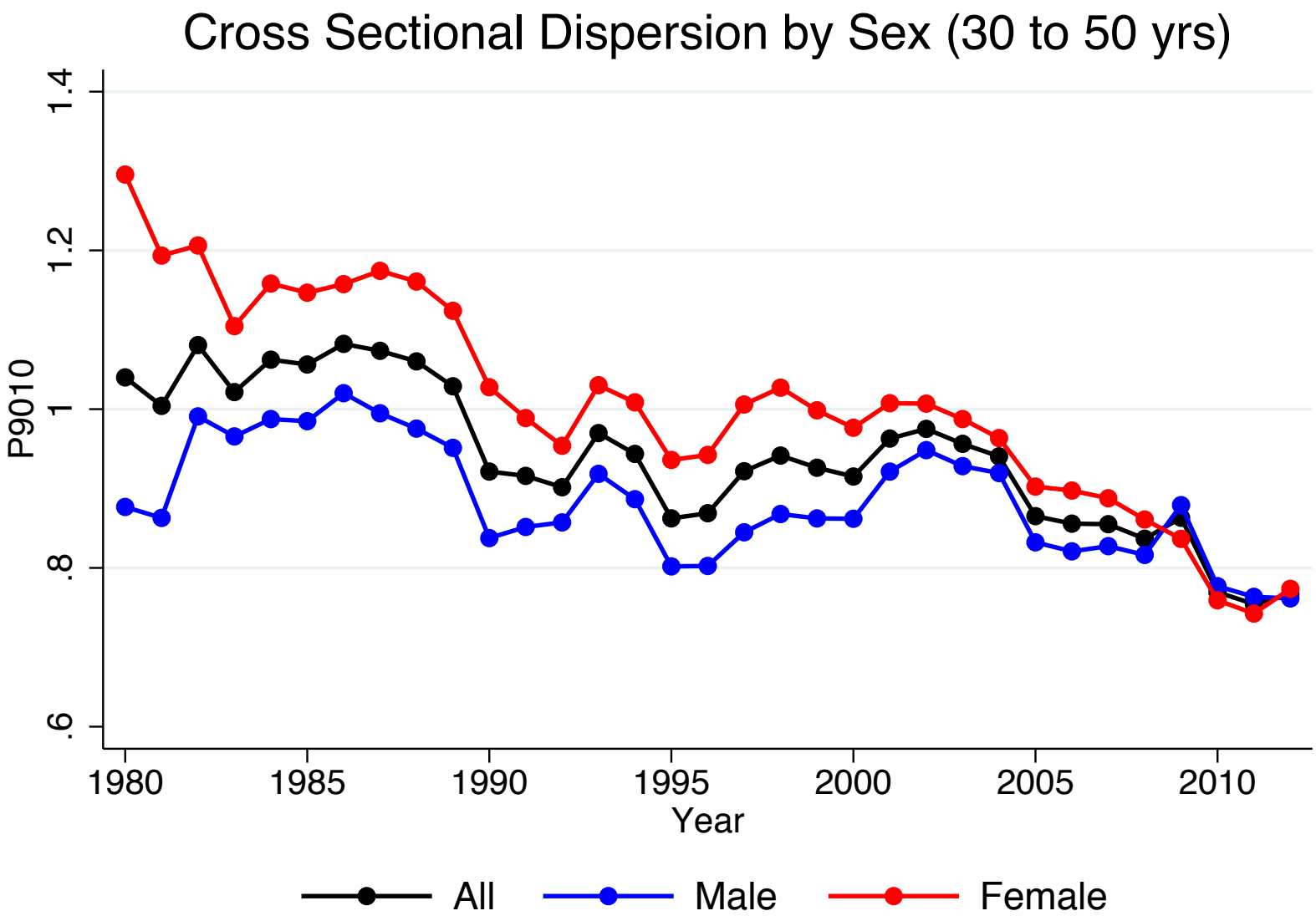


Robustness

- Declining wage volatility holds within every private industry, with the exception of agriculture (2% of employment).
- It is also robust to alternative measures of dispersion (top end: P90-50, bottom end, P50-10, and so on)

Risk and Inequality Over the Business Cycle

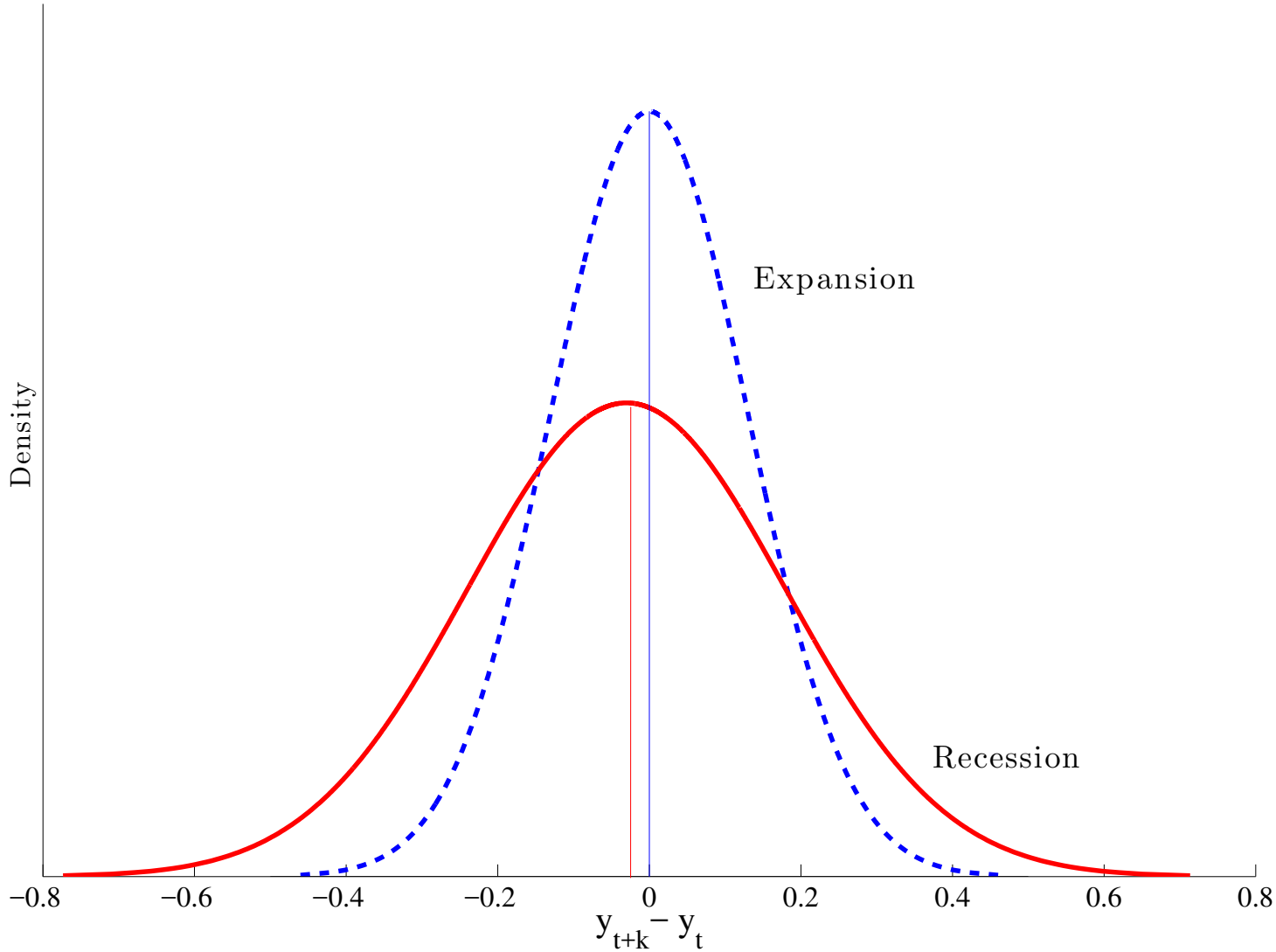
Business Cycle Variation in Shocks

Myth #3:

The variance of idiosyncratic shocks

rises substantially during recessions.

Myth #3: Countercyclical Shock Variances



Countercyclical Variance

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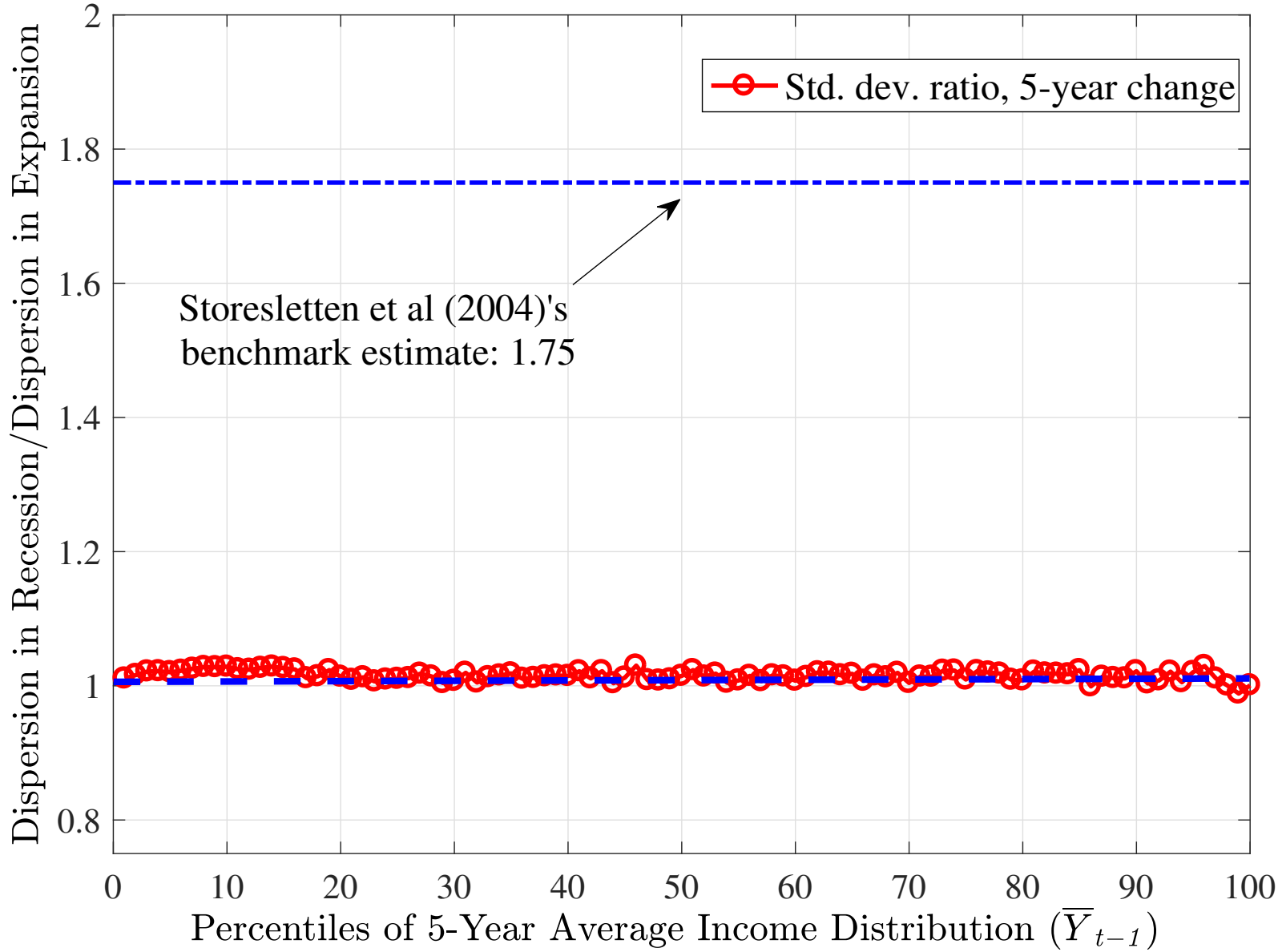
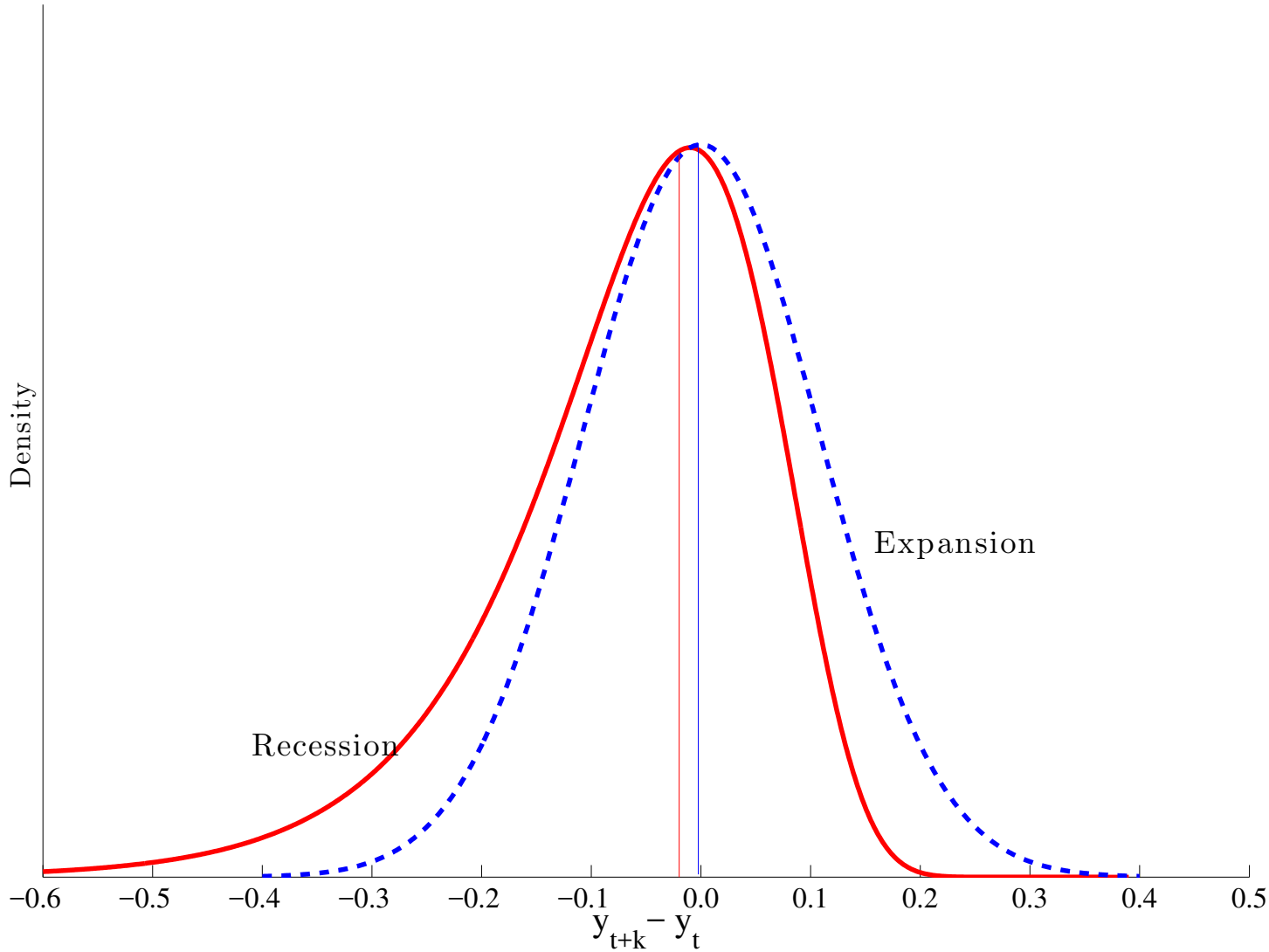
- Existing indirect parametric estimates find a tripling of the variance of persistent innovations during recessions (e.g., Storesletten et al (2004)).
- Our direct and non-parametric estimates show no change in variance over the cycle.

Fact #3: No Change in Variance



Fact #3: Procyclical Skewness



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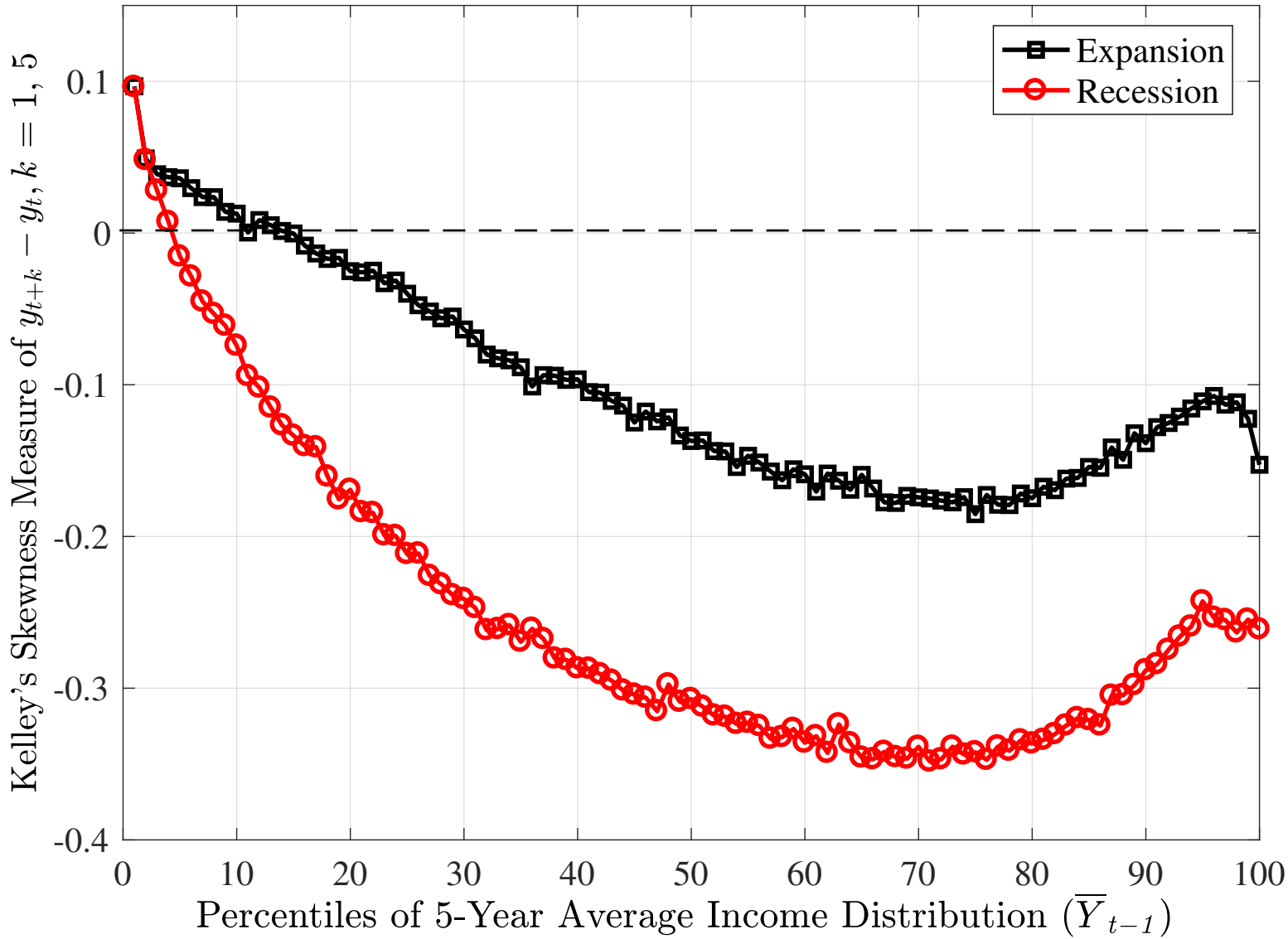
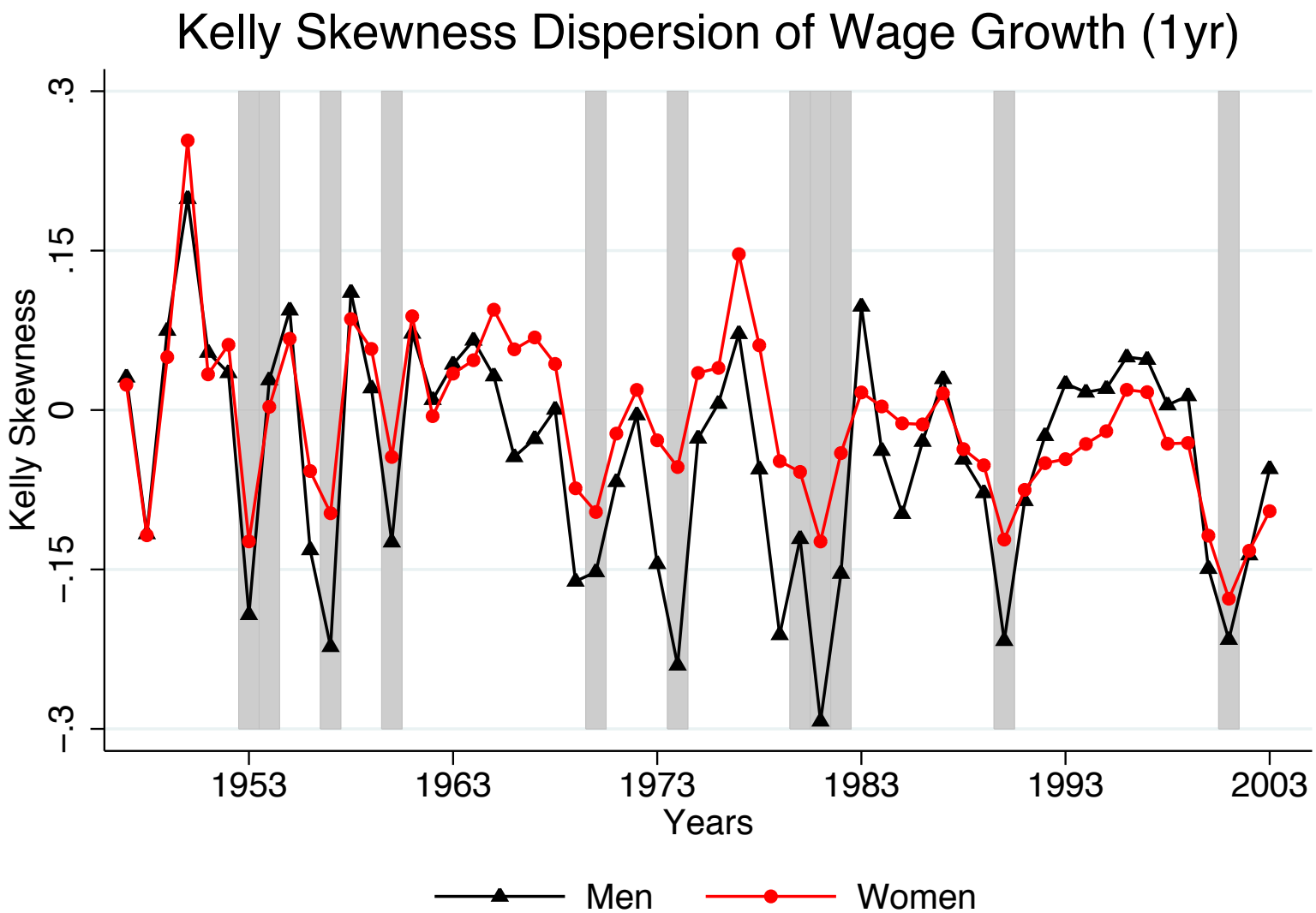


Fact #3: Procyclical Skewness: Longer Series



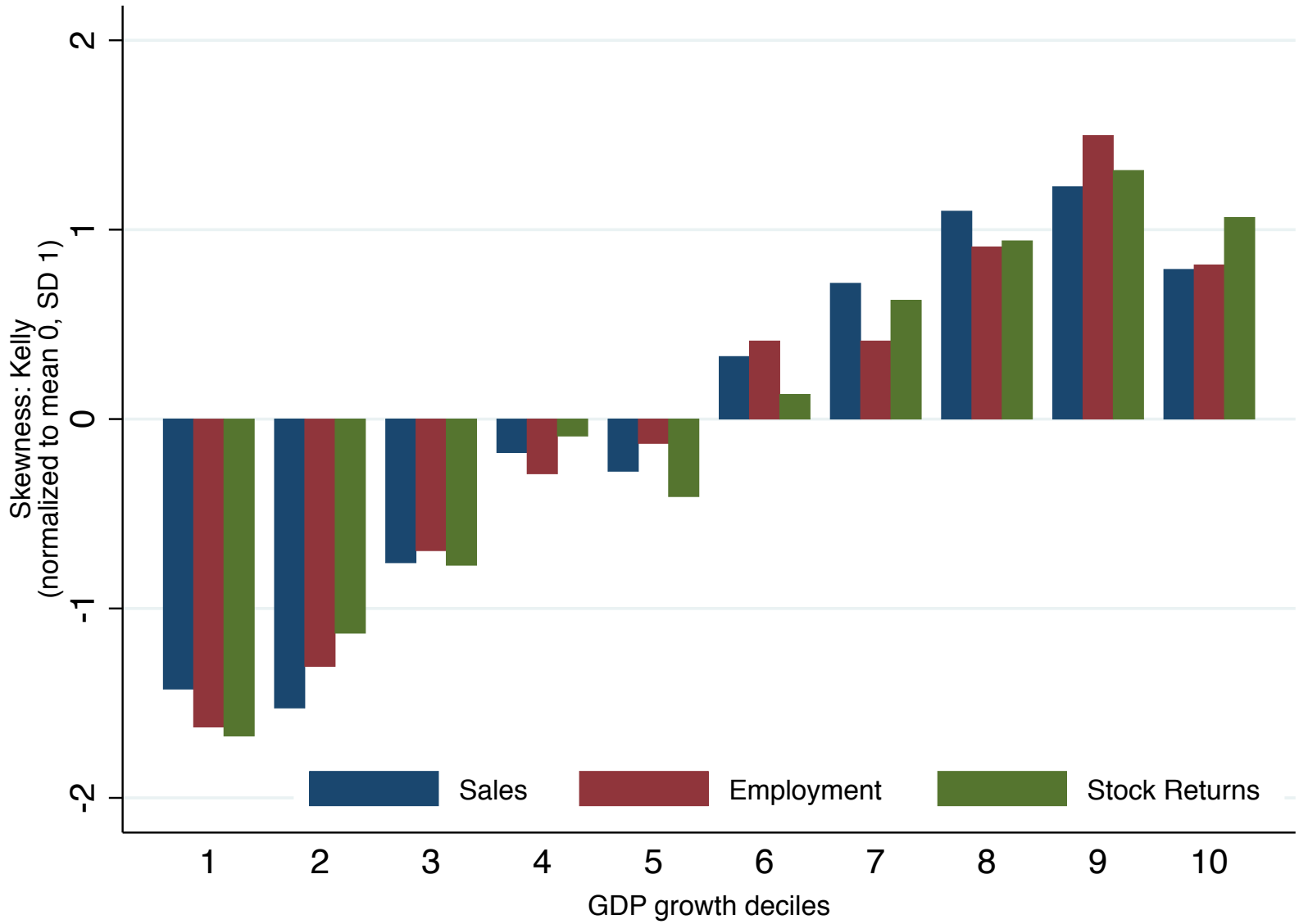
How About in Europe? Robustness

- We find exactly the same patterns for Sweden, Germany, and France:
  - flat shock variance, procyclical skewness (Busch, Domeij, Guvenen and Madera, 2016; and Busch, Fialho, Guvenen, 2016).
- Moving from individual to household income, as well as incorporating government policy has little effect on countercyclical left-skewness in the US.
- Gov't policy more effective in Germany and Sweden
- ∴ **Procyclical skewness of income shocks is a common feature of modern business cycles.**

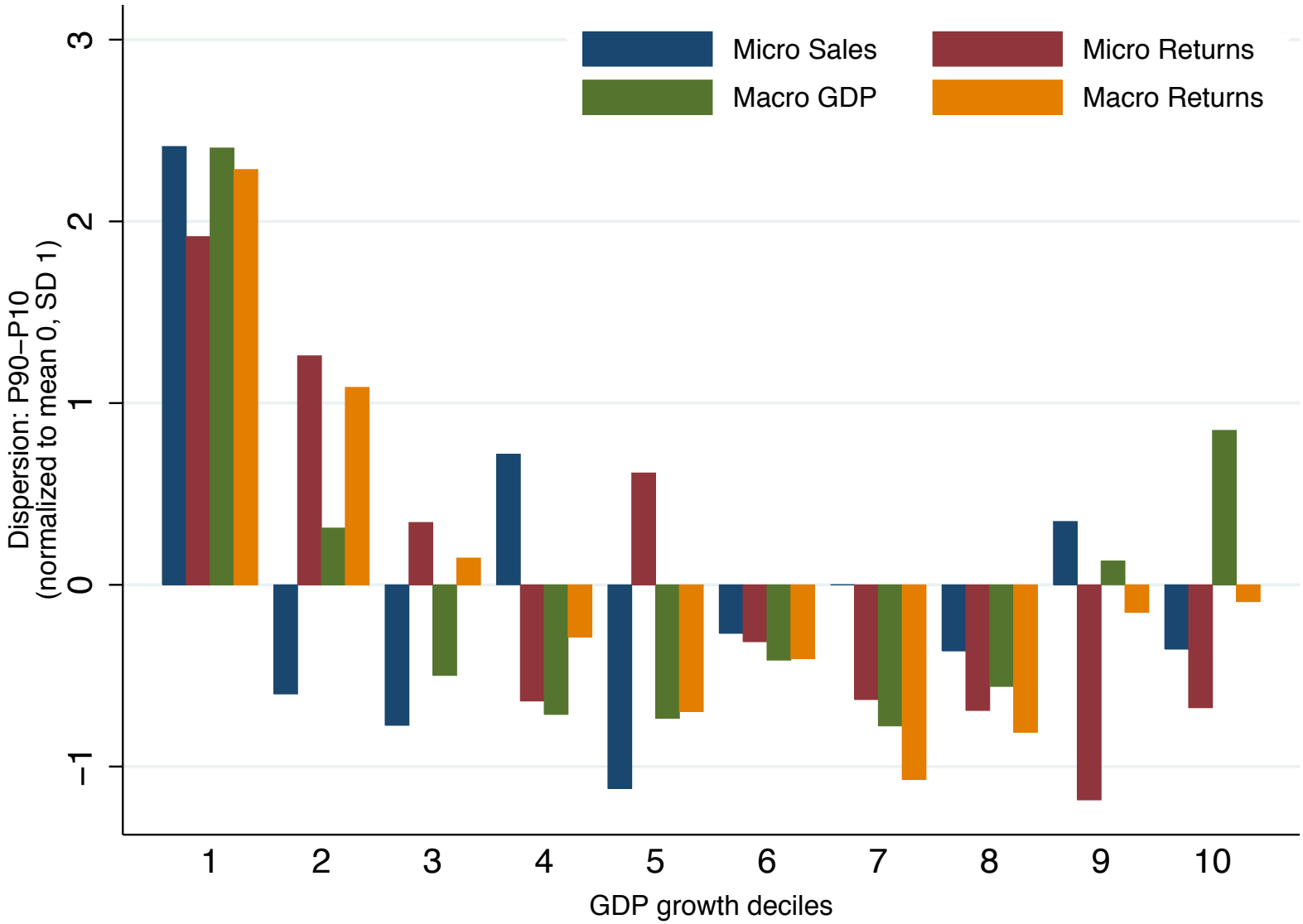
Firm-level Data

- Salgado, Guvenen, Bloom (2016): examine firm level variables in a panel of firms covering 44 countries:
  - growth rate of sales, profits, employment, inventories
  - stock prices
- Robust evidence of procyclical skewness for all variables in 90% of the countries.
- Kehrig (2016): estimates firm-level TFP for US firms and finds no cyclicality in variance, but procyclical skewness.

Firm Variables: Procyclical Skewness



Firm Variables: Slightly Countercyclical Dispersion

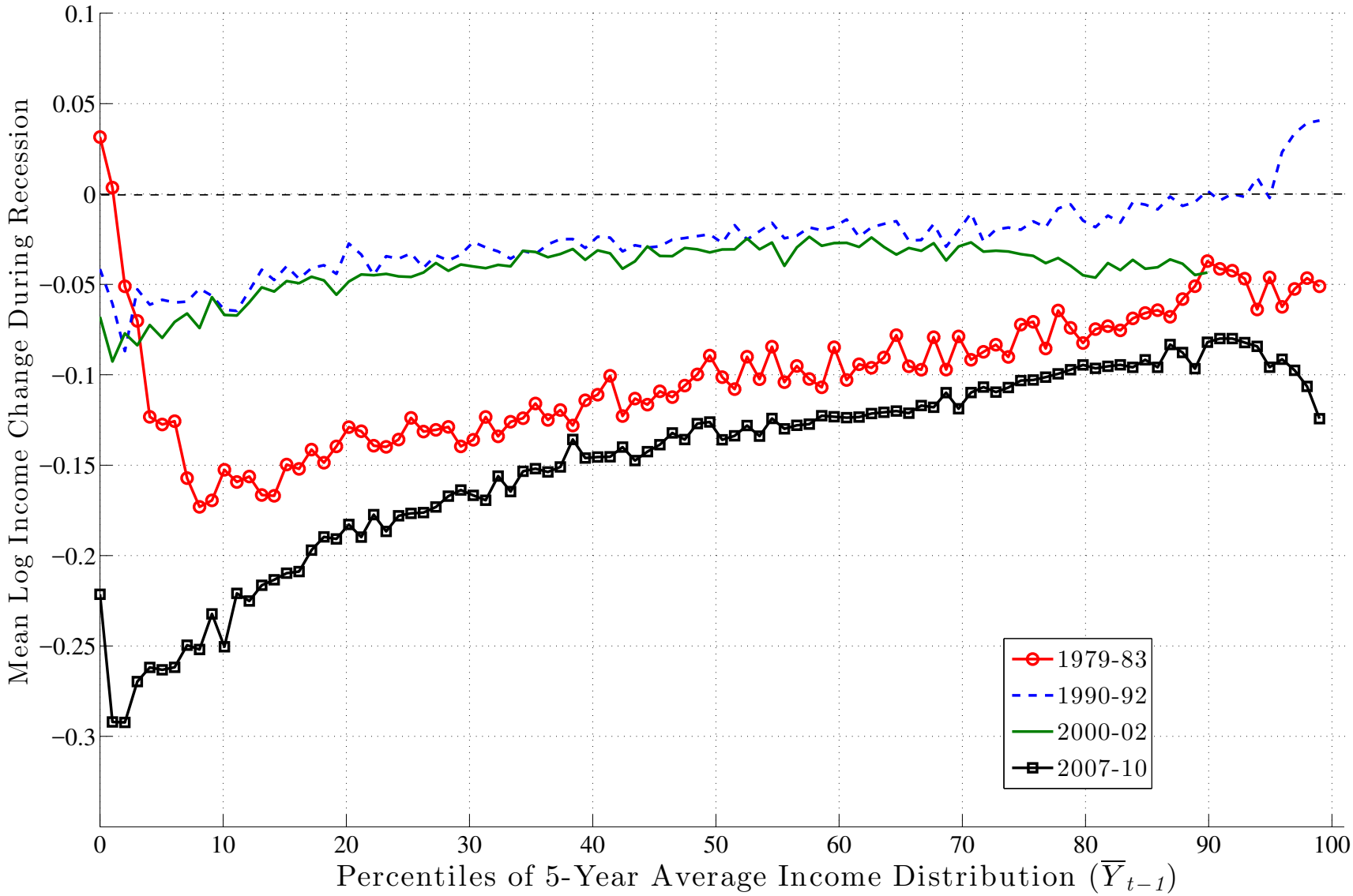


Is Business Cycle Risk Predictable?

Myth #4:

Business cycle risk is mostly *ex-post* risk

Fact #4: Business Cycle Risk is Predictable



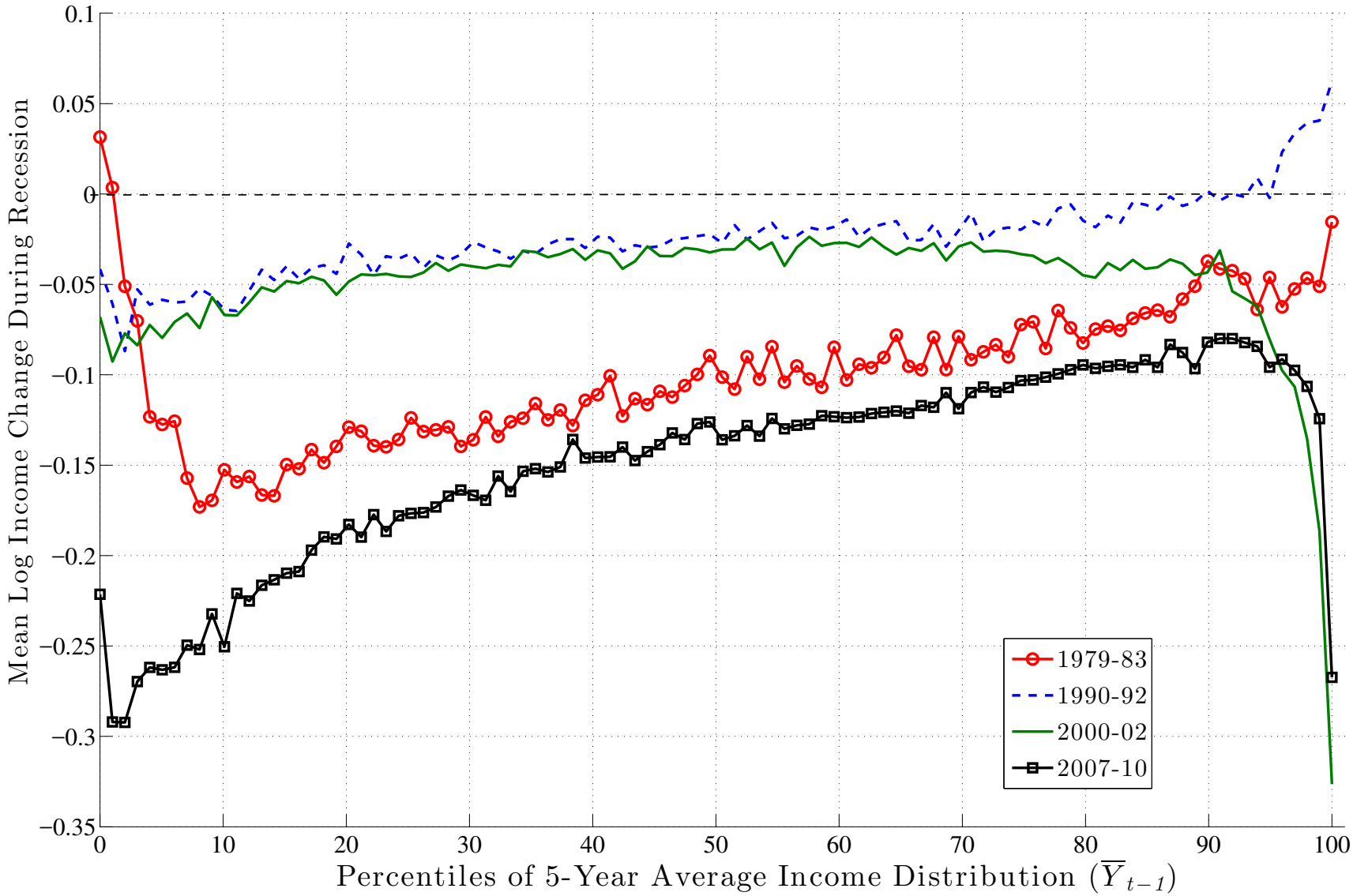
Business Cycle Risk for Top 1%

Myth #4:

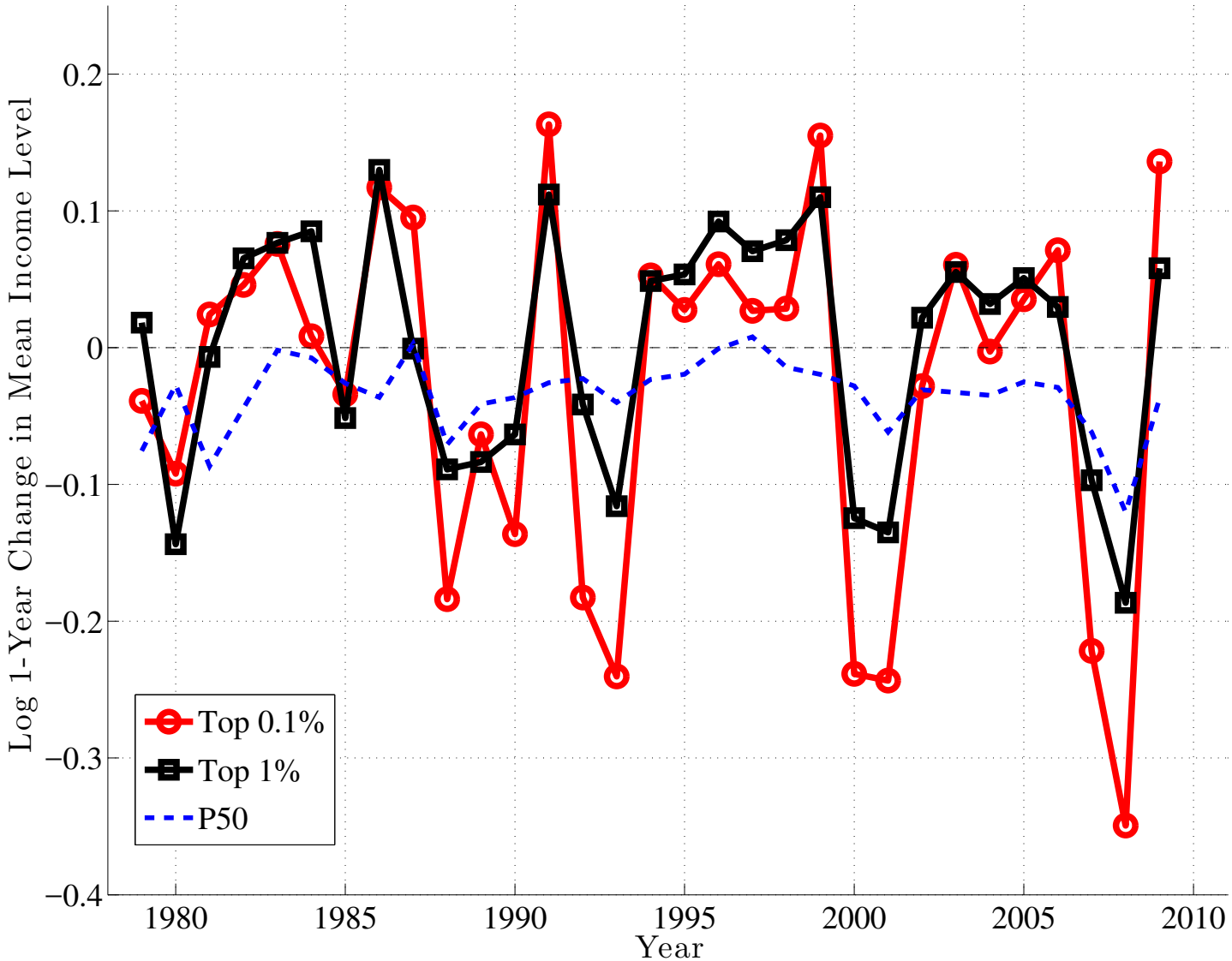
The top 1% are largely immune

to the pain of business cycles.

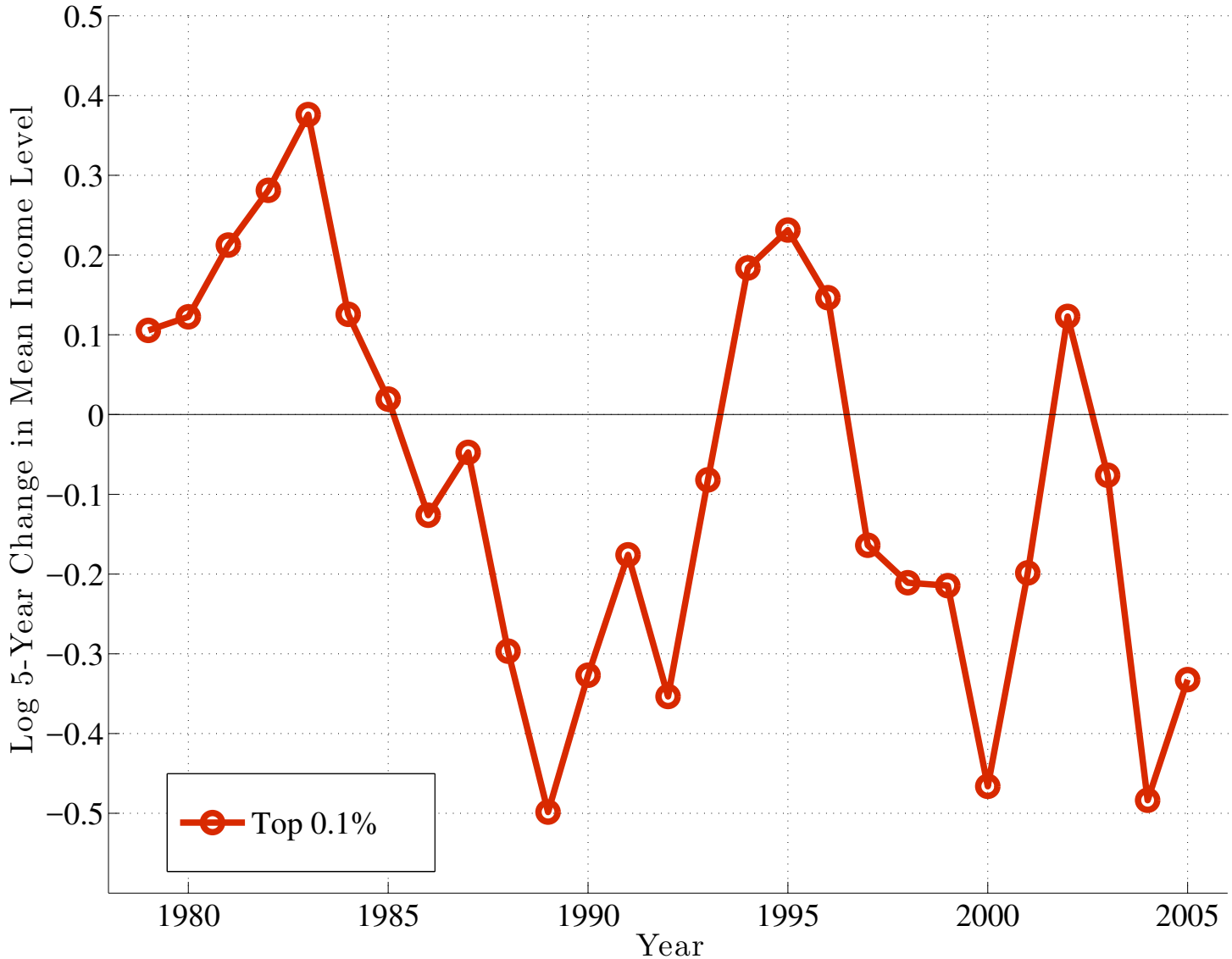
Fact #4: The "Suffering" of the Top 1%



Fact #4: 1-Year Income Growth, Top 1%



Fact #4: 5-Year Income Growth, Top 0.1%



Risk and Inequality Over the Life Cycle

Distribution of Income Shocks

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...as a lognormal distribution

$\Longrightarrow$ it is OK to assume...

...zero skewness and no excess kurtosis

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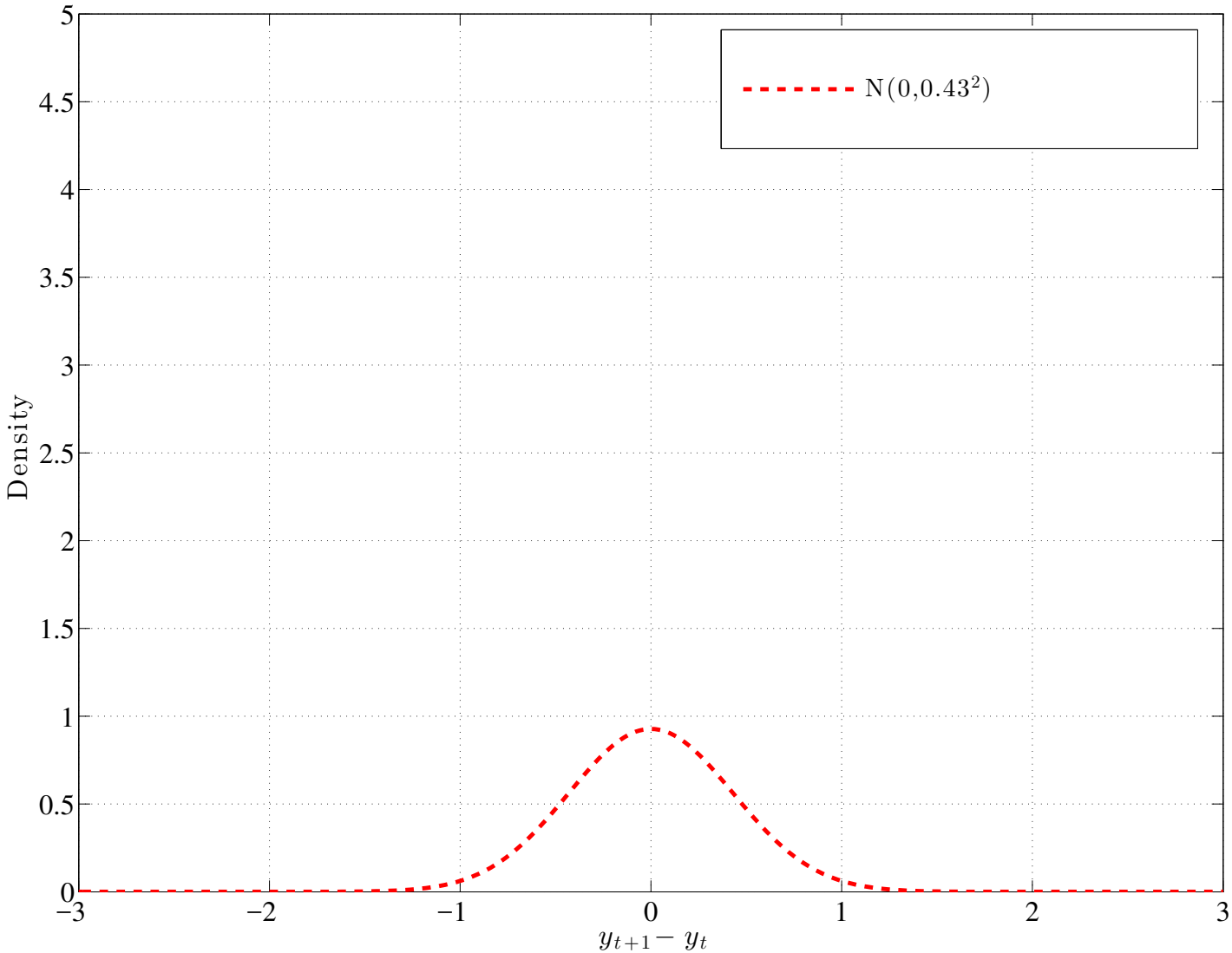
...zero skewness and no excess kurtosis

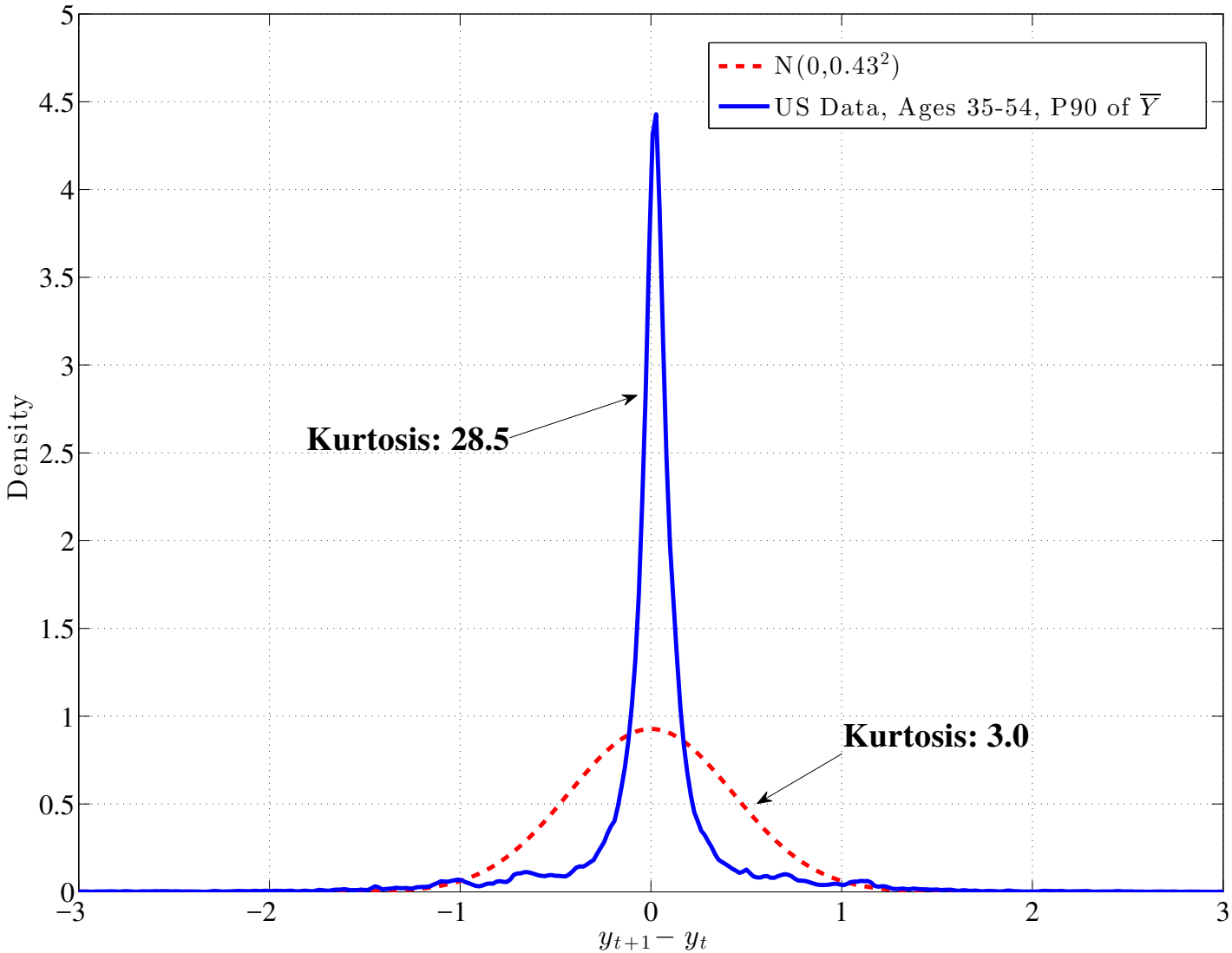
$$y_t = z_t^i + \varepsilon_t^i \qquad \varepsilon_t^i \sim \mathcal{N}(0, \sigma_\varepsilon^2)$$
$$z_t^i = \rho z_t^i + \eta_t^i \qquad \eta_t^i \sim \mathcal{N}(0, \sigma_\eta^2)$$

Kurtosis

Myth #5: Lognormal Histogram of $y_{t+1} - y_t$



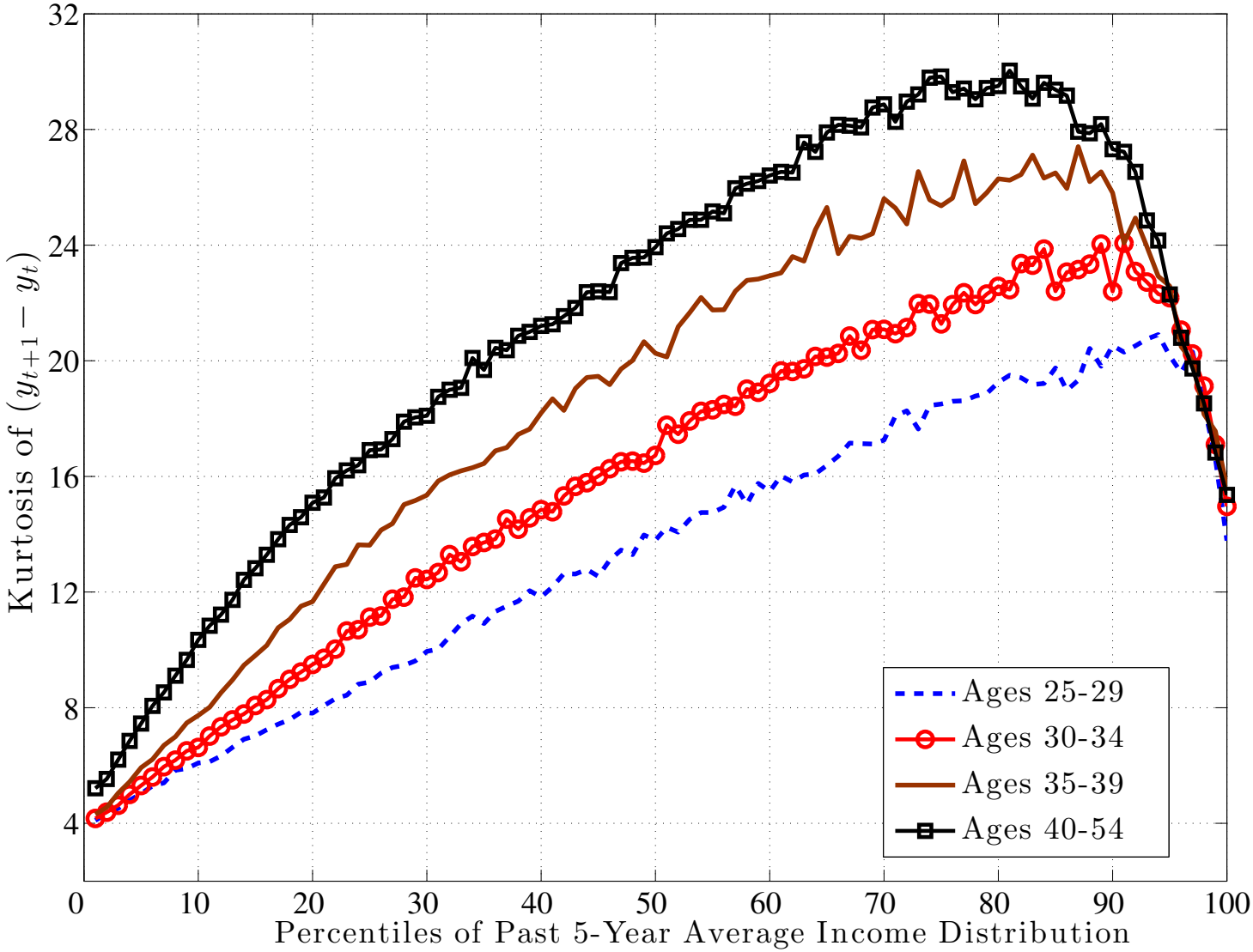
Fact #5: Excess Kurtosis



Fact #5: Excess Kurtosis

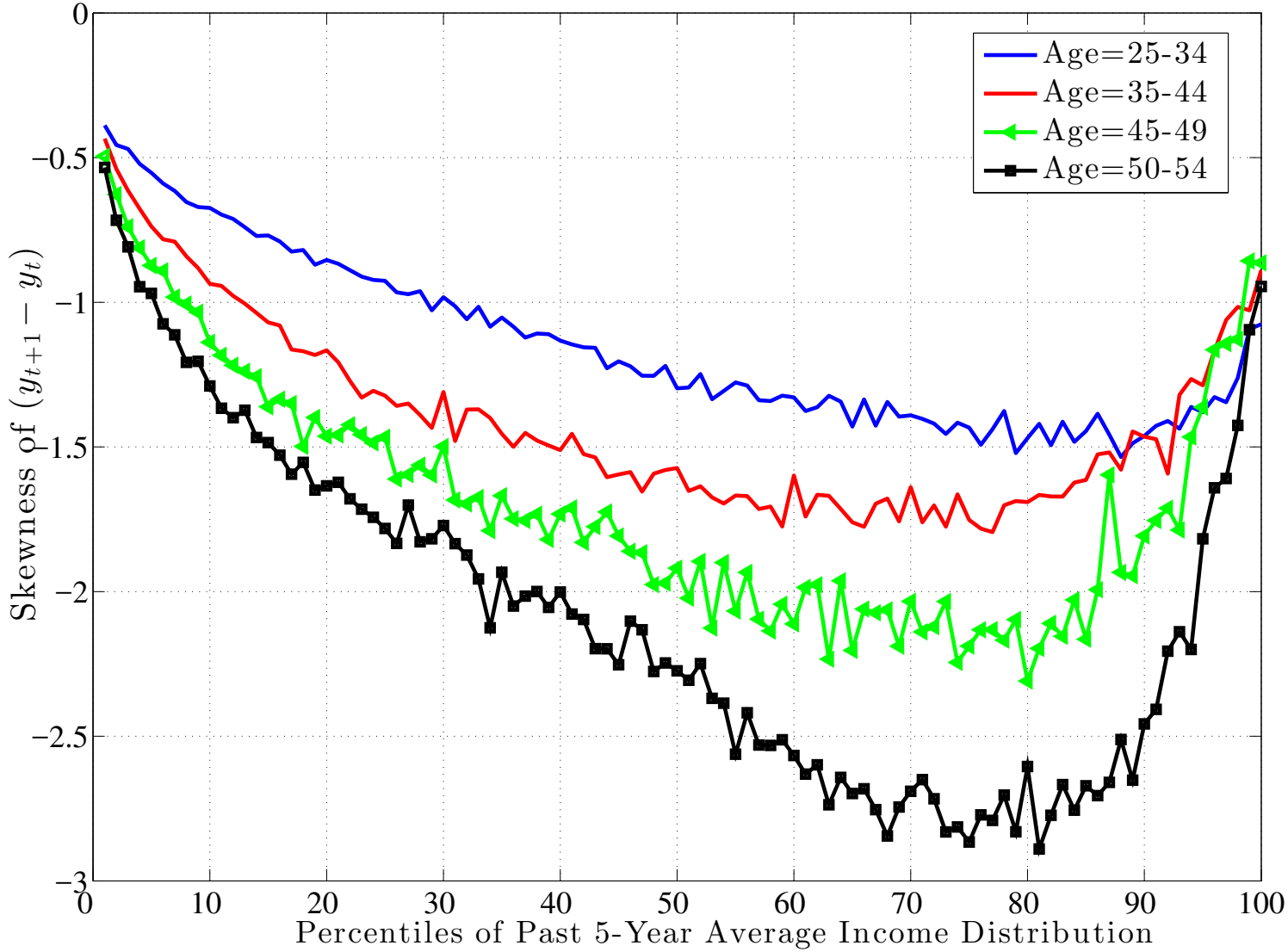
	Prob($\lvert y_{t+1} - y_t \rvert < x$)	
$x \downarrow$	Data	$N(0, 0.43^2)$
0.05	0.39	0.08
0.10	0.57	0.16
0.20	0.70	0.30
0.50	0.80	0.59
1.00	0.93	0.94

Fact #5: Excess Kurtosis

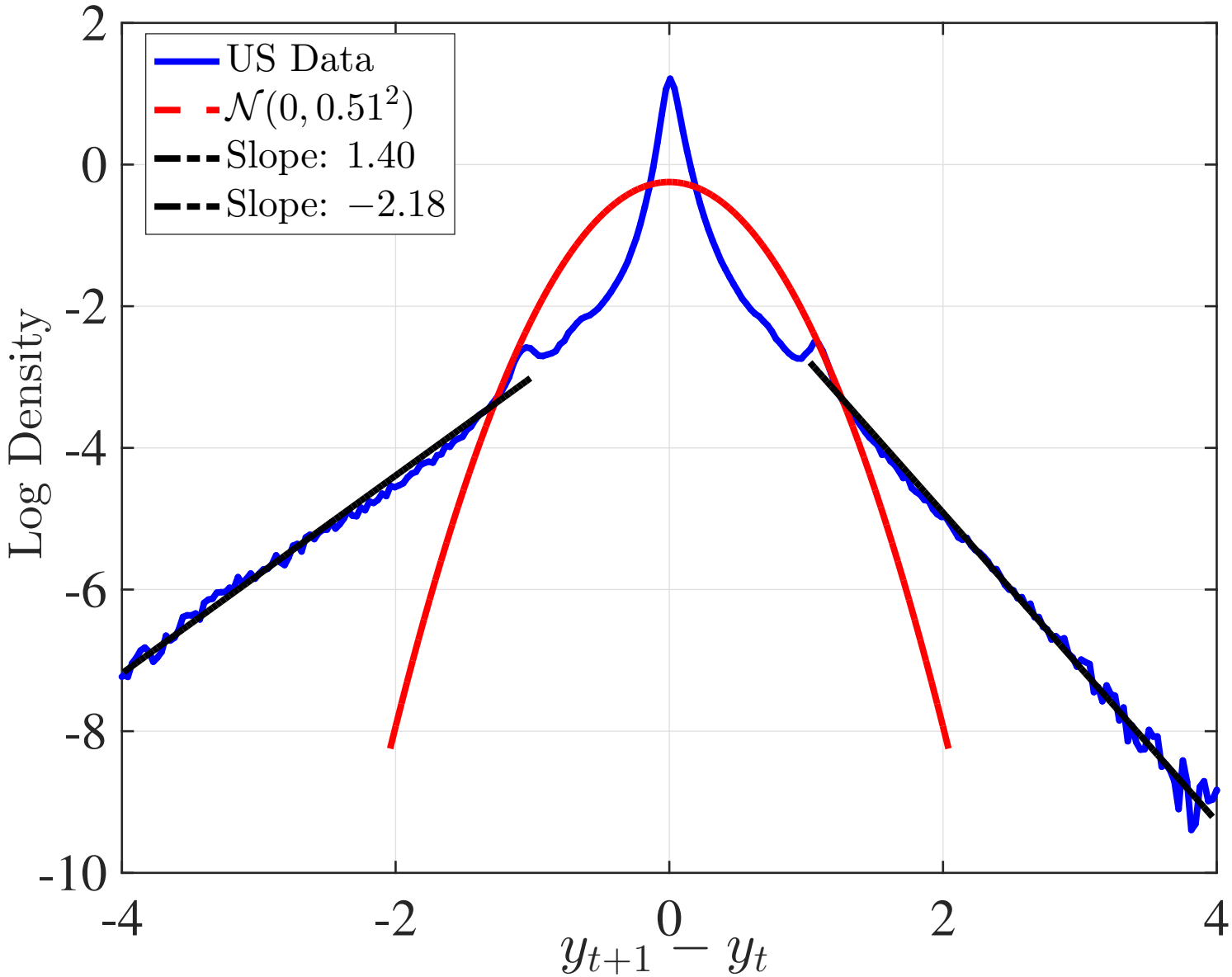


Skewness

Fact #5: Skewness of $y_{t+1} - y_t$



Double Pareto Tails of Earnings Growth



Do Higher-Order Moments Matter?

- Guvenen-Karahan-Ozkan-Song (2016):
  - the welfare costs of idiosyncratic fluctuations are 25-40% of lifetime consumption compared to 10-12% with Gaussian shocks. (RRA=2)

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- Constantinides-Ghosh (2015, JF), Golosov-Troshkin-Tsyvinski (2016, AER), Schmidt (2016), Kaplan-Moll-Violante (2016) find substantially different results when higher-order moments are taken into account.

Recap: Five **Myths** vs Five **Facts**

1. **Long-run trends:**
   -
   -
2.
   -
   -
3.
   -

Recap: Five **Myths** vs Five **Facts**

1. **Long-run trends:**
   - **Myth #1:** Rising income inequality partly (or largely) driven by rising **within-**firm inequality (e.g., CEO pay)
   -
2.
   -
   -
3.
   -

Recap: Five **Myths** vs Five **Facts**

1. **Long-run trends:**
   - **Fact #1:** Rising income inequality **mostly** driven by rising **between-**firm inequality
   -
2.
   -
   -
3.
   -

Recap: Five **Myths** vs Five **Facts**

1. **Long-run trends:**
   - **Fact #1:** Rising income inequality **mostly** driven by rising **between-**firm inequality
   - **Myth #2:** Income risk has been trending **up strongly** in the past 40 years.
2.
   -
   -
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1. **Long-run trends:**
   - **Fact #1:** Rising income inequality **mostly** driven by rising **between-**firm inequality
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1. **Long-run trends:**
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2. **Business cycle:**
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   - **Myth #3:** Business cycles are... mostly about **countercyclical variance** of shocks.
   -
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   - **Fact #4:** Top 1% are **NOT** immune to business cycle risk.
3. **Life-cycle:**
   - **Myth #5:** Income shocks can be modeled fairly well **as Gaussian**

Recap: Five **Myths** vs Five **Facts**

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   - **Fact #3:** Business cycles are... mostly about **procyclical skewness** of shocks.
   - **Fact #4:** Top 1% are **NOT** immune to business cycle risk.
3. **Life-cycle:**
   - **Fact #5:** Income shocks **are very non-Gaussian**

Final Thoughts

- Public funding for collecting micro panel data for research purposes is woefully inadequate.
- To provide perspective:
  - NASA's annual budget: ~20 Billion dollars
  - International Space Station total cost: ~150 Billion dollars.
  - All worthy efforts. Now consider this:
  - US gov't transfer payments in 2014: ~1.9 trillion dollars.
    - For micro research on distributional issues, PSID's annual budget (only US panel with consumption data): ~3 million dollars!
- Increased public funding for good quality data is essential for good quality economic research.

Final Thoughts, cont'd

- We have played the "blind men and the elephant" for too long.

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Final Thoughts, cont'd

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- Challenges: Data on consumption.. still very limited.
  - Still there is hope: Private companies (Mint.com, Credit agencies) and research products (Michigan-Berkeley project) are becoming more useful for researchers.

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  - Still there is hope: Private companies (Mint.com, Credit agencies) and research products (Michigan-Berkeley project) are becoming more useful for researchers.
- I hope these new facts will feed back into theory and policy work.

References

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