Where has all the skewness gone? The decline of high growth (young) firms in the U.S.

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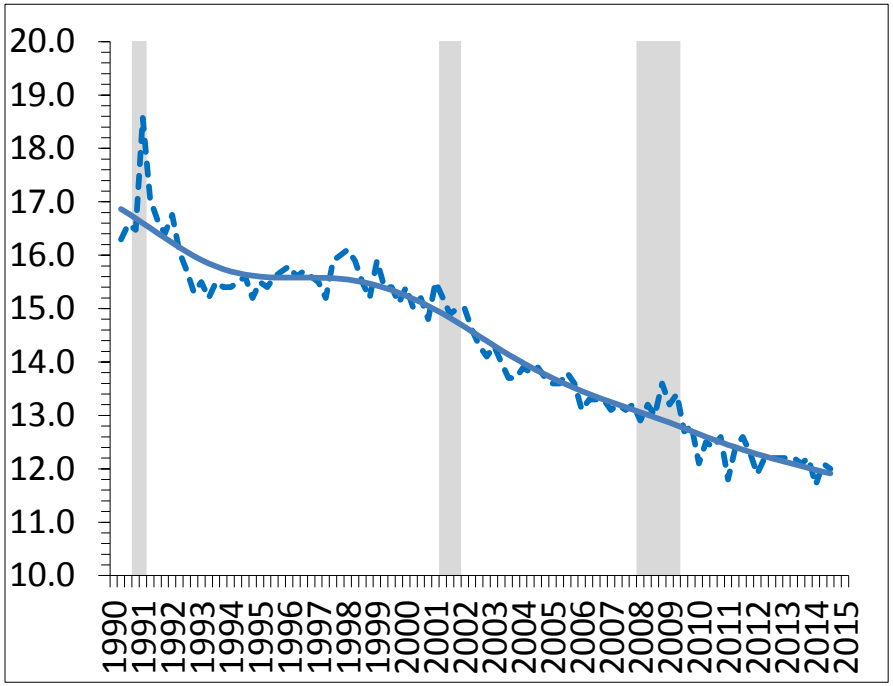
Declining Business Dynamism is Evident from Multiple Data Sources

Job Reallocation Rate, U.S. Private Non-Farm (Quarterly)

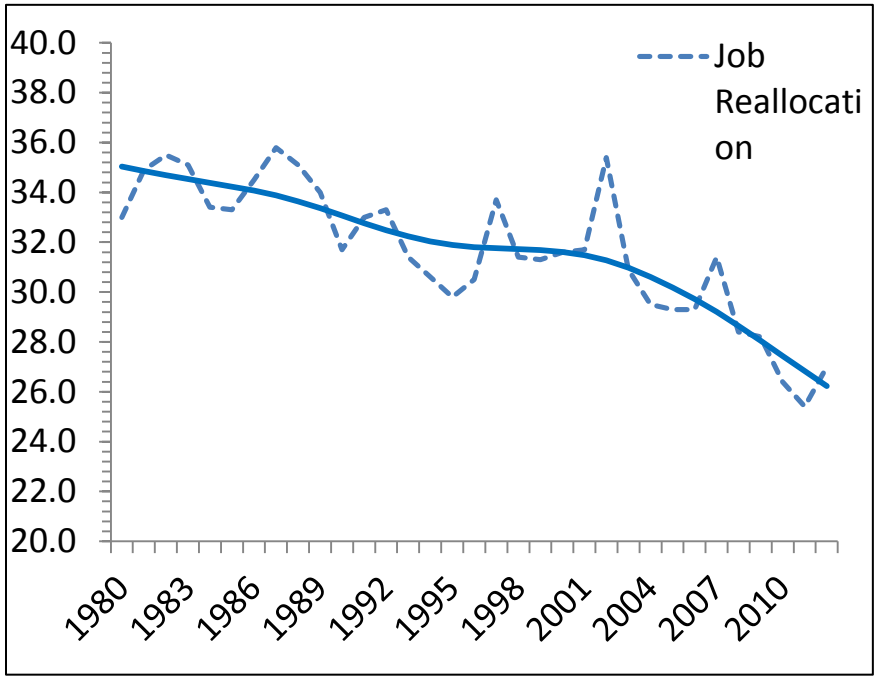


Source: BED

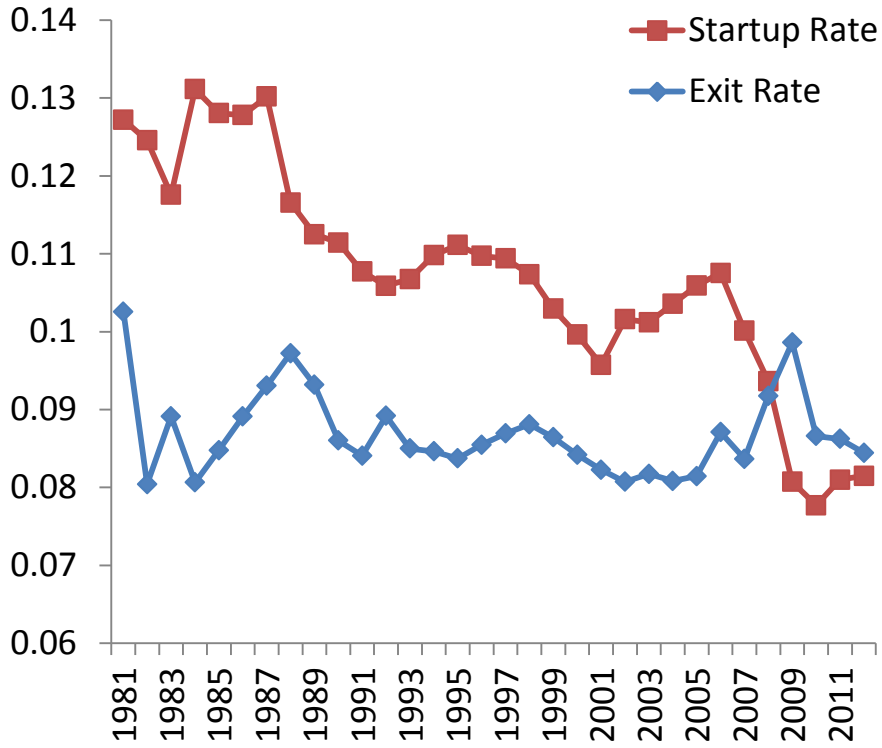
Solid lines are Hodrick-Prescott Trends

Declining Trend in Job Reallocation Accelerated in Post-2000 Period. Trend decline continues in post Great Recession period.

Job Reallocation Rate, U.S. Private Non-Farm (Annual)
Source: BDS

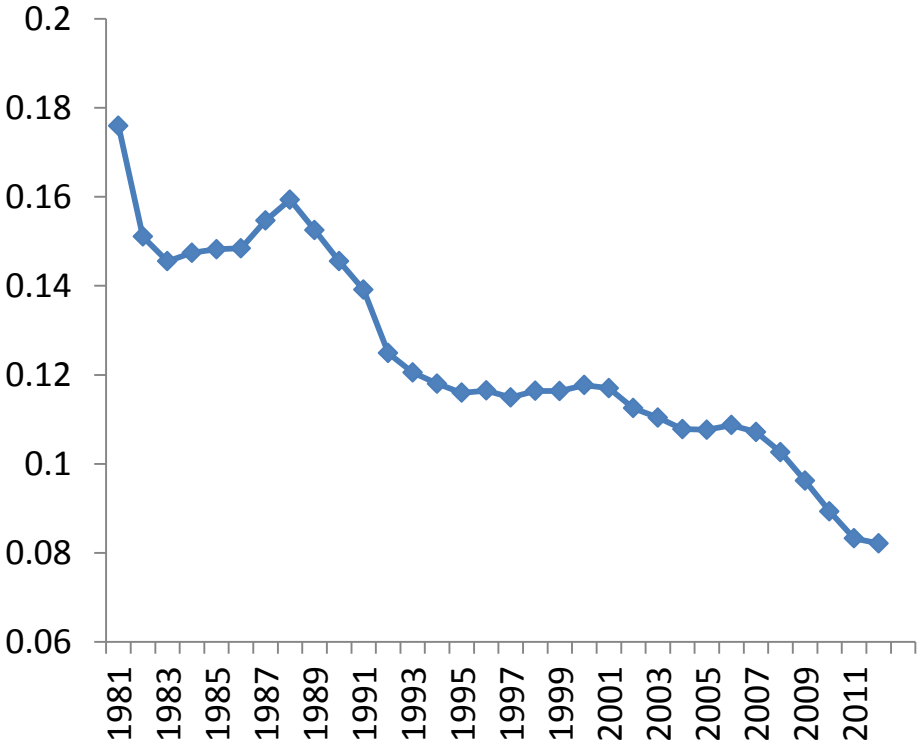


Startup Rate in Nonfarm Private Sector, 1981-2012



Declining Entrepreneurship Accompanies and "Accounts" for Substantial Fraction of the Decline in Measures of Business Dynamism

Share of Employment for Young Firms, 1981-2012, Nonfarm Private Sector



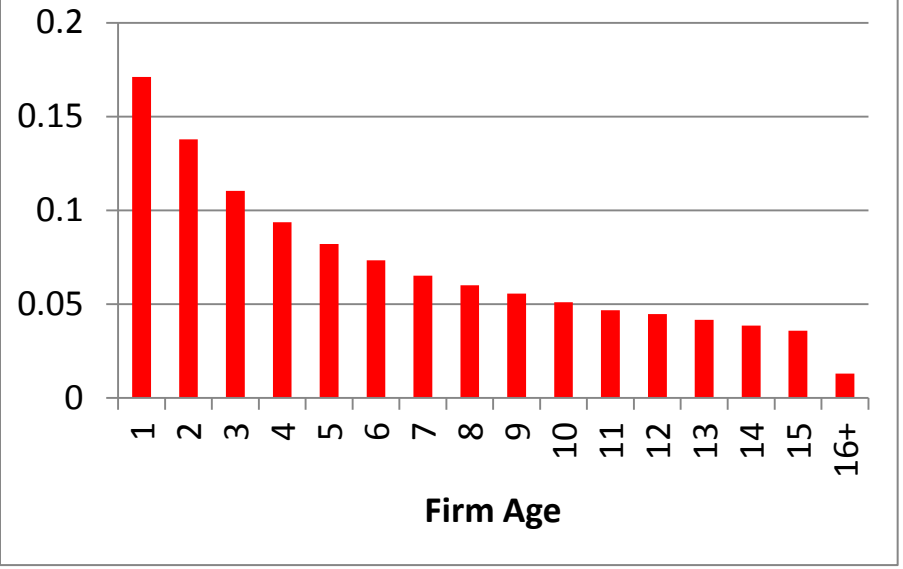
Background and Motivation

- Decline in business dynamism and entrepreneurship raise a variety of questions:
  - Adverse implications for productivity and job growth?
    - Reallocation is productivity enhancing. Startups and high growth young firms disproportionately contribute to job creation
    - Has the U.S. become more sclerotic?
  - Benign factors such as change in business model?
    - Decline in "Mom and Pop" or Hurst and Pugsley (2012,2014) "Be Your Own Boss" Entrepreneurs?
    - Don't need as much churning of firms and jobs and workers with changes in business model?
- In this paper, we explore what type of businesses have exhibited a decline by examining evolution of 90-50 vs. 50-10 differentials in distribution of firm growth rates.
    - Roughly analogous to similar exercises in wage inequality literature.
    - 90-50 provides insights on contribution of high growth firms.

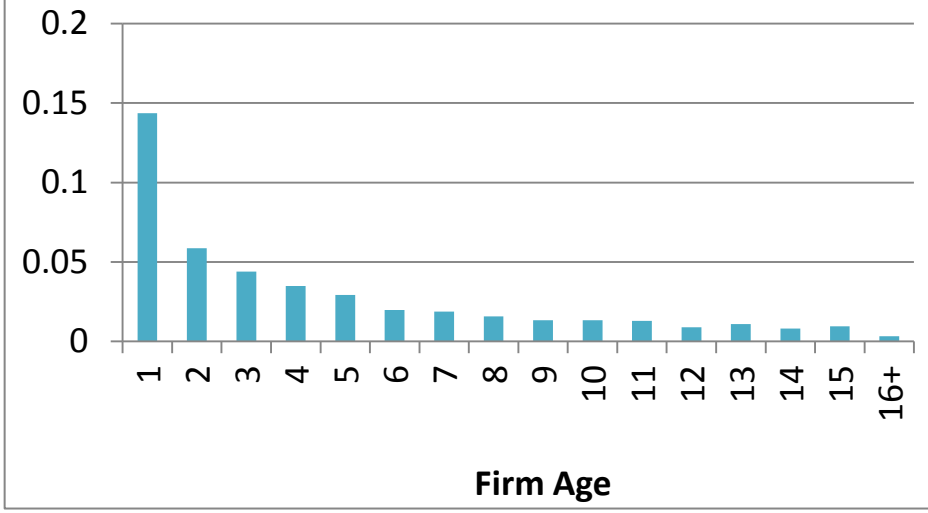
Why Might Positive Skewness be Important?

- Post-entry dynamics:
  - Most young firms fail or don't grow
  - But a small fraction of young firms grow very fast
  - Young firms have high positive skewness
  - These high growth (young) firms are high in innovation/productivity distribution
    - Especially in innovative intensive sectors
- Consistent with skewed productivity distribution (e.g., pareto) and learning/selection dynamics of young firms
- Or alternatively young firms being more capable of transformational innovations (e.g., Acemoglu et. al. (2013)).

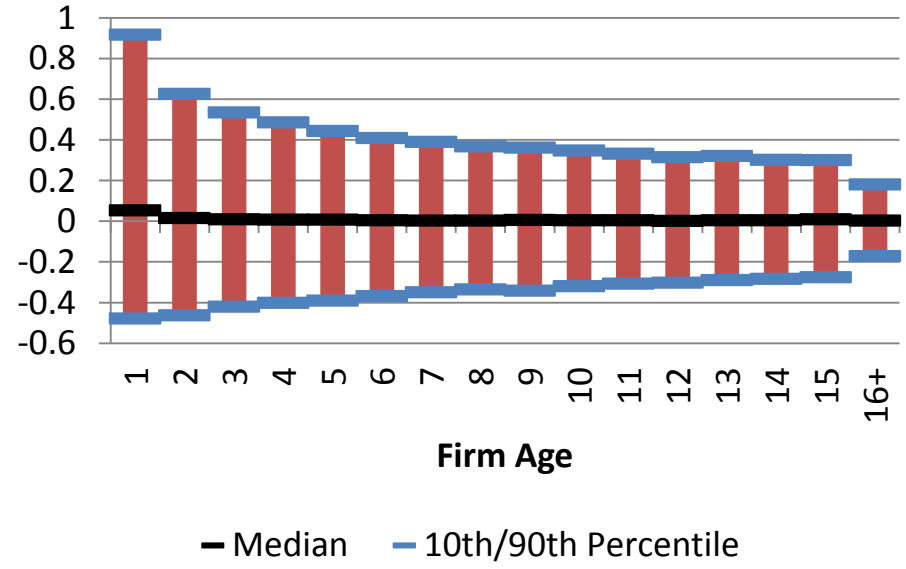
High Exit Rates of Young Firms



High Mean Net Growth of Surviving Young Firms



Distribution of Continuing Firm Growth Rates



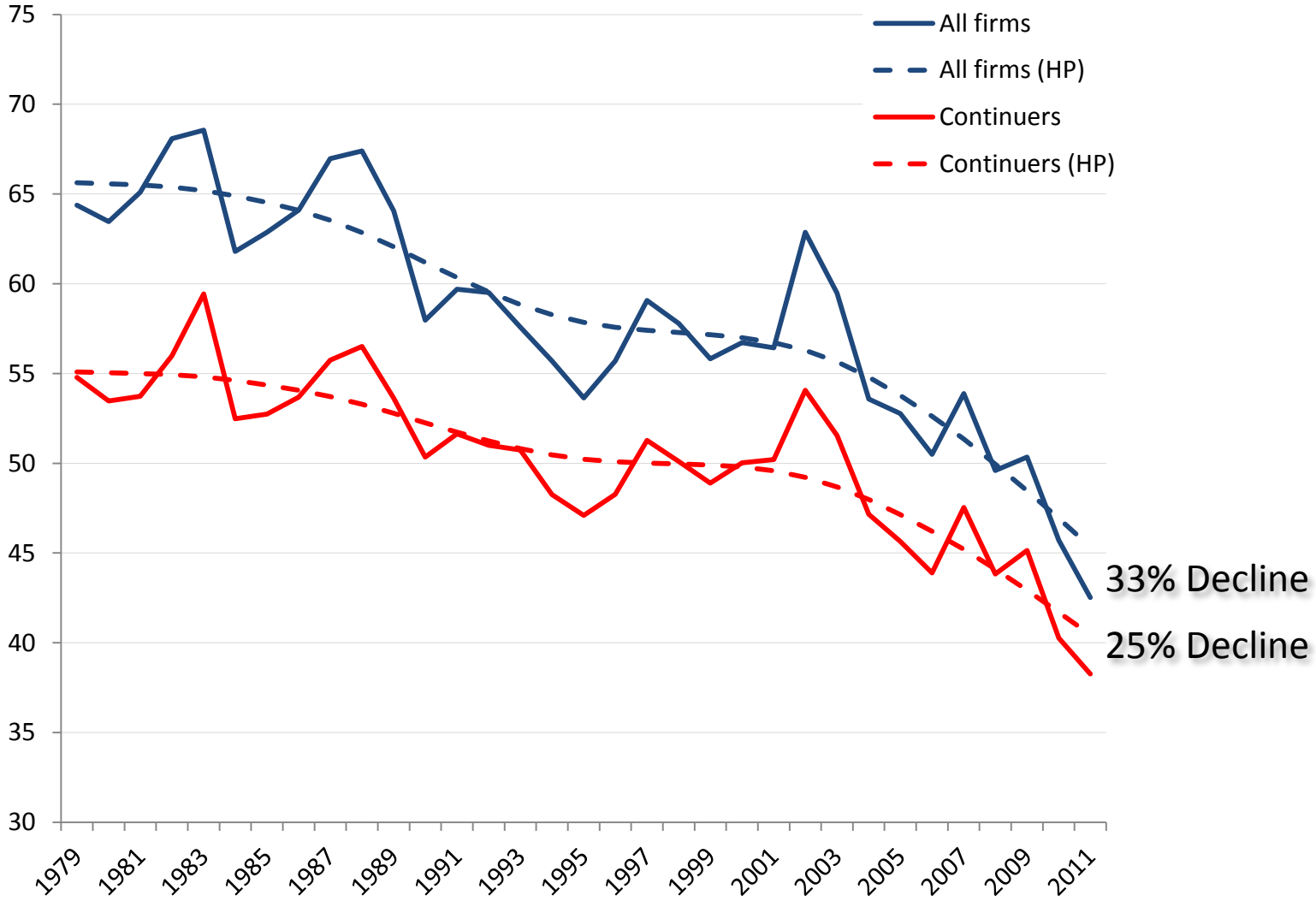
- **Strong Up or Out Dynamics and High Dispersion/Skewness of Young Firms**
- **A small fraction of high growth young firms contribute substantially to job creation.**

Source: Decker, Haltiwanger, Jarmin and Miranda (2014), LBD

Current Paper

- Examine time series evolution of distribution of employment weighted firm growth rates for firms in private, non-farm sector with at least one paid employee.
  - Source: Longitudinal Business Database (CES)
- Firms defined on basis of all activities under common operational control.
  - Taxpayer IDs are insufficient for defining firms.
- Organic firm growth only taking advantage of underlying establishment-level growth dynamics
  - Startups: New legal entities with all new establishments.
  - Exits: Legal entity ceases to exist and all establishments shut down
  - Firm growth is employment-weighted average of underlying establishment-level growth
- Explore 90-10, 90-50, 50-10 of employment-weighted growth distributions:
  - All firms, continuing firms, by firm age, by sector

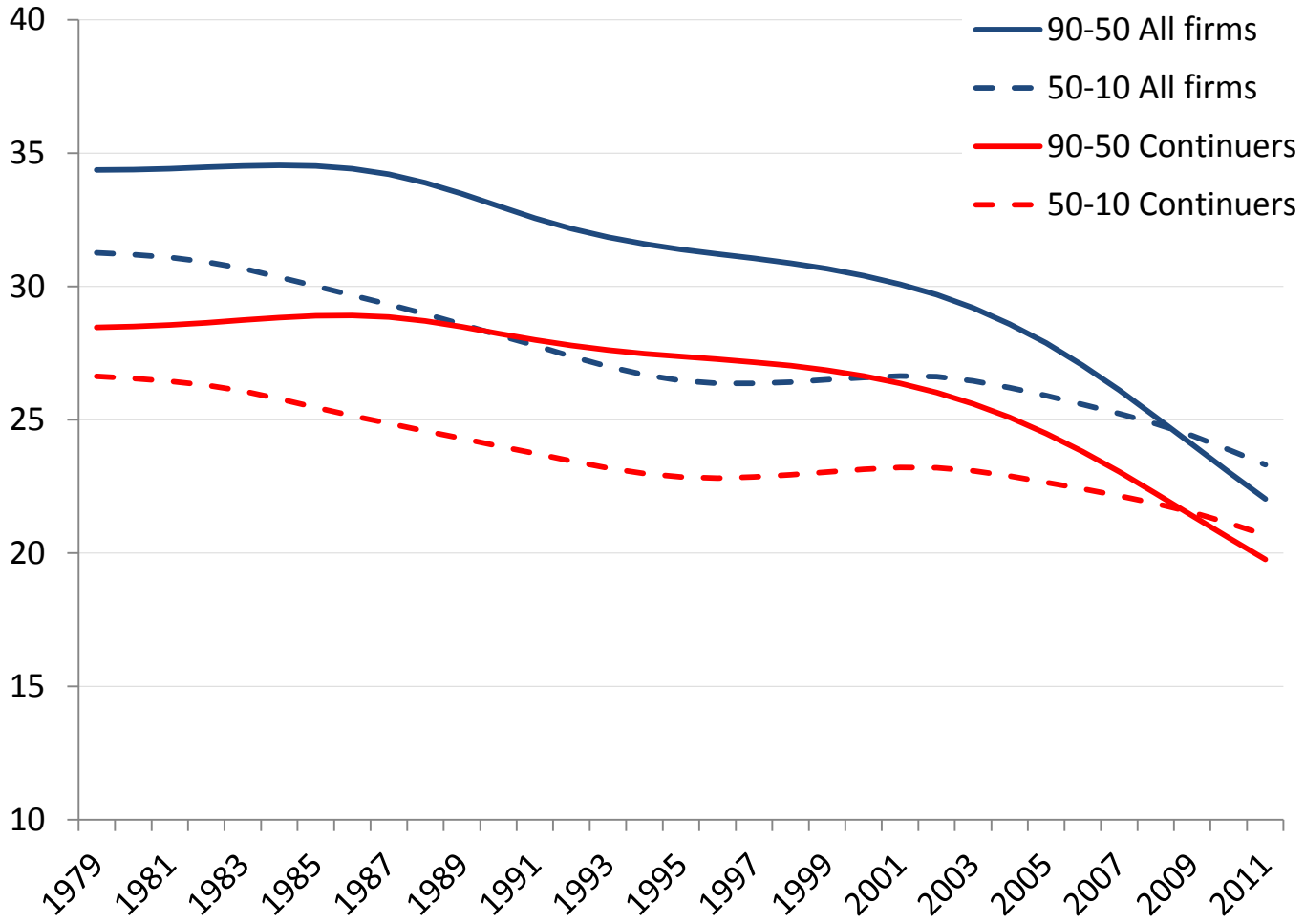
Declining Dispersion (90-10 differential)



Source: Census LBD Data

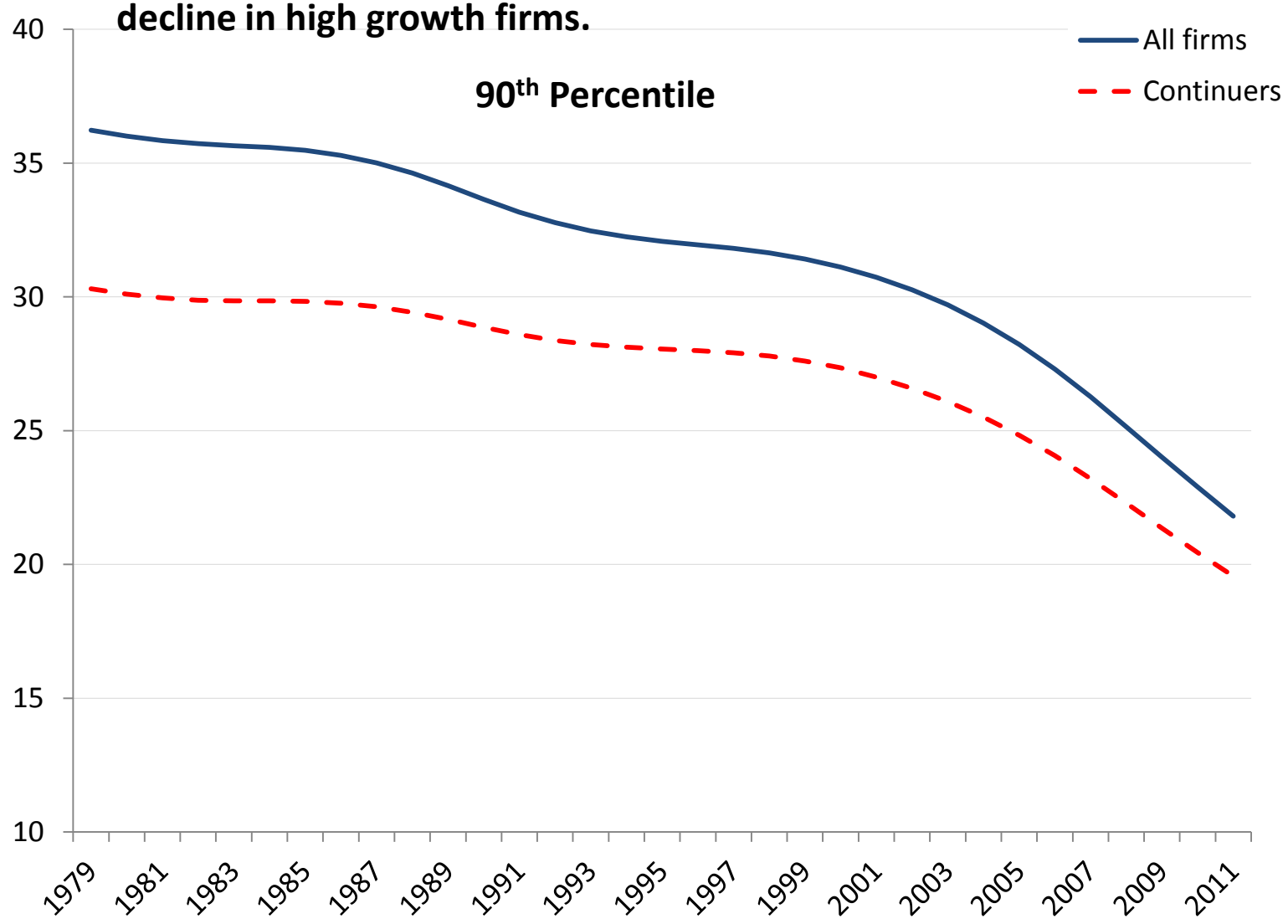
Employment-weighted Distribution of Firm Net Employment Growth Rates

Pre-2000, decline in 90-10 due to decline in 90-50 and 50-10. Post 2000, sharp decline in 90-50 relative to 50-10.

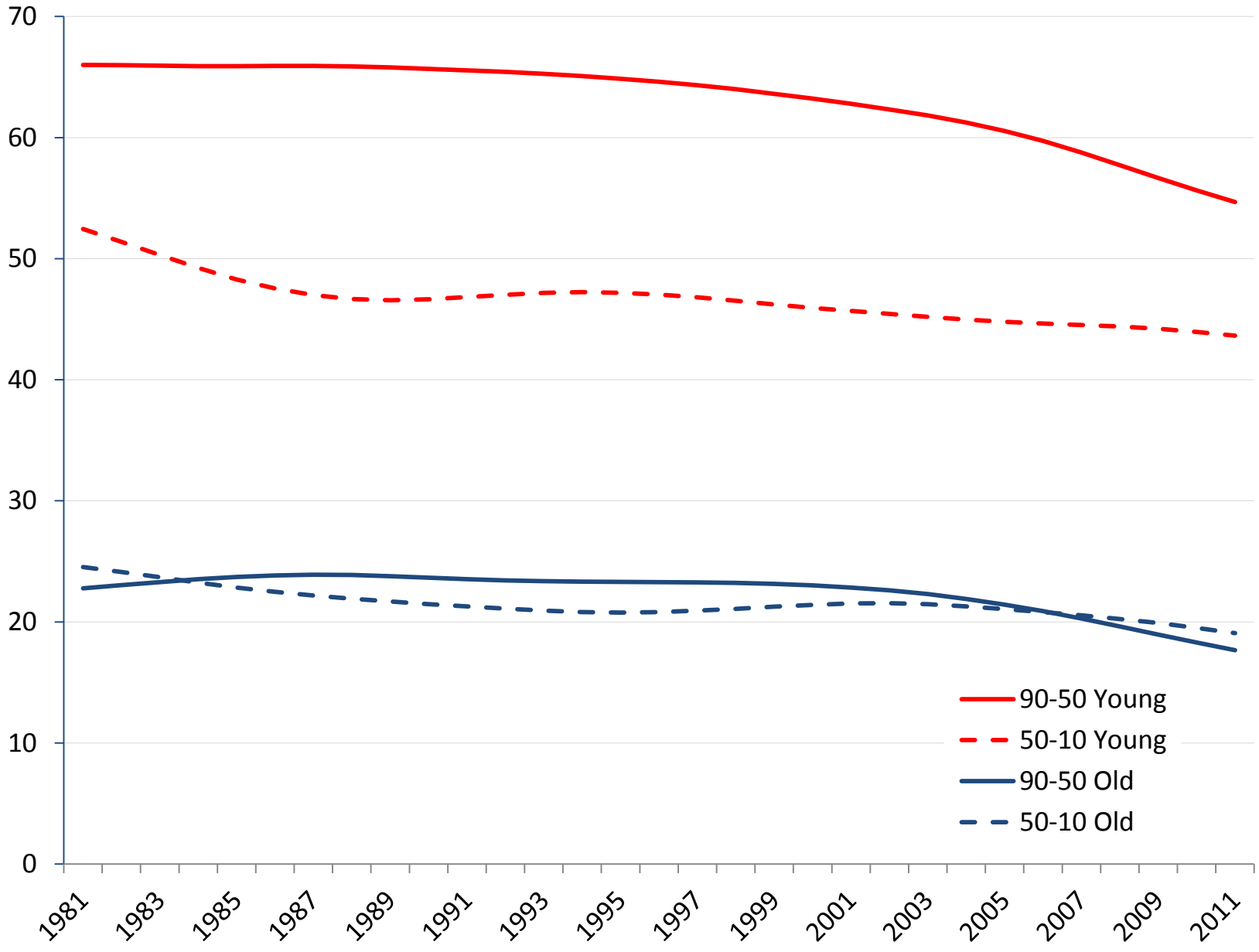


Showing HP Trends

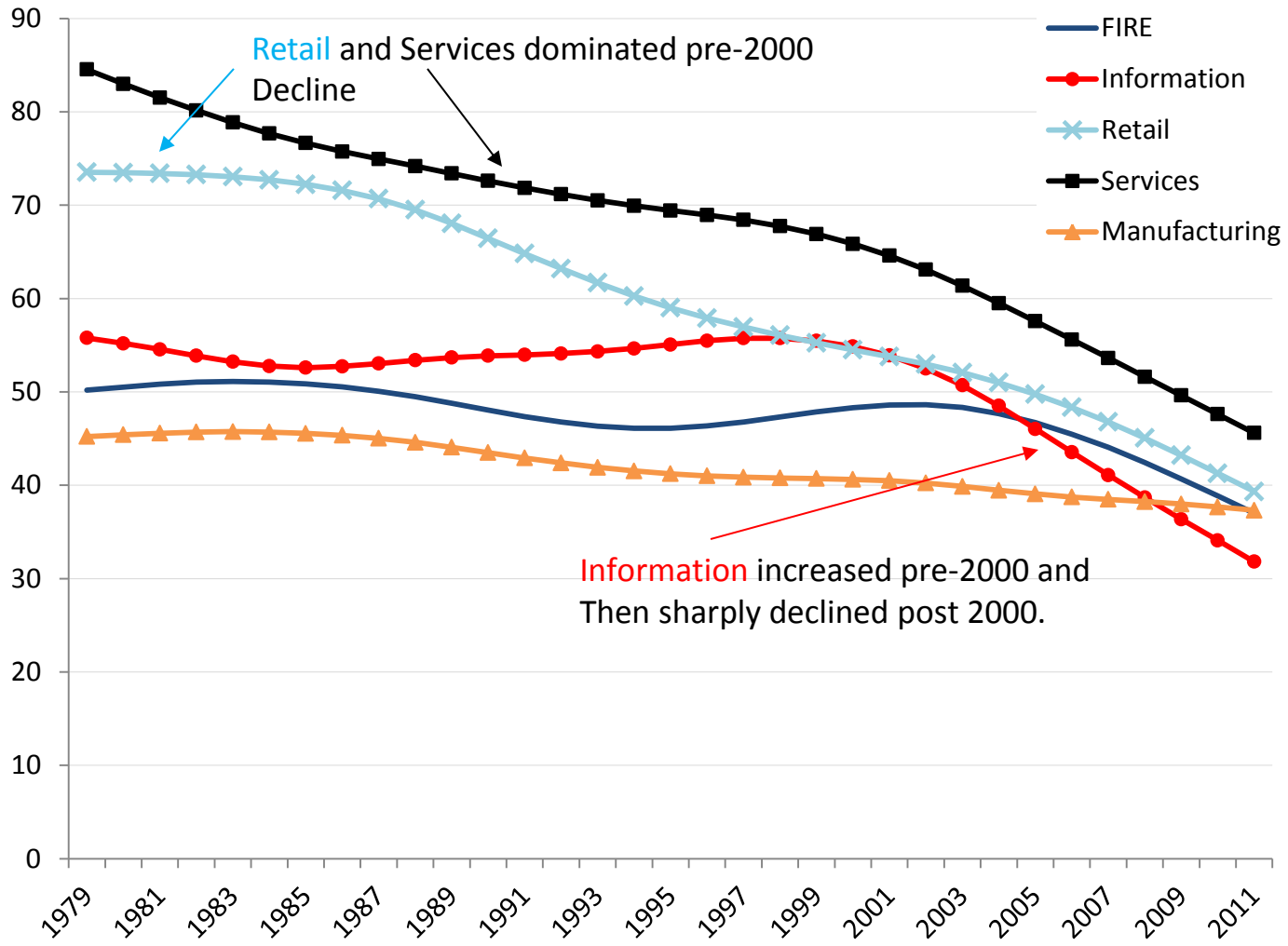
Decline in 90-50 is mimicked by decline in 90th percentile given 50th percentile is approximately zero – in other words, decline in 90-50 implies decline in high growth firms.



Decline in Overall Skewness is Both Composition Effect and Decline in Skewness Among Age Groups (Young < 5 years old).

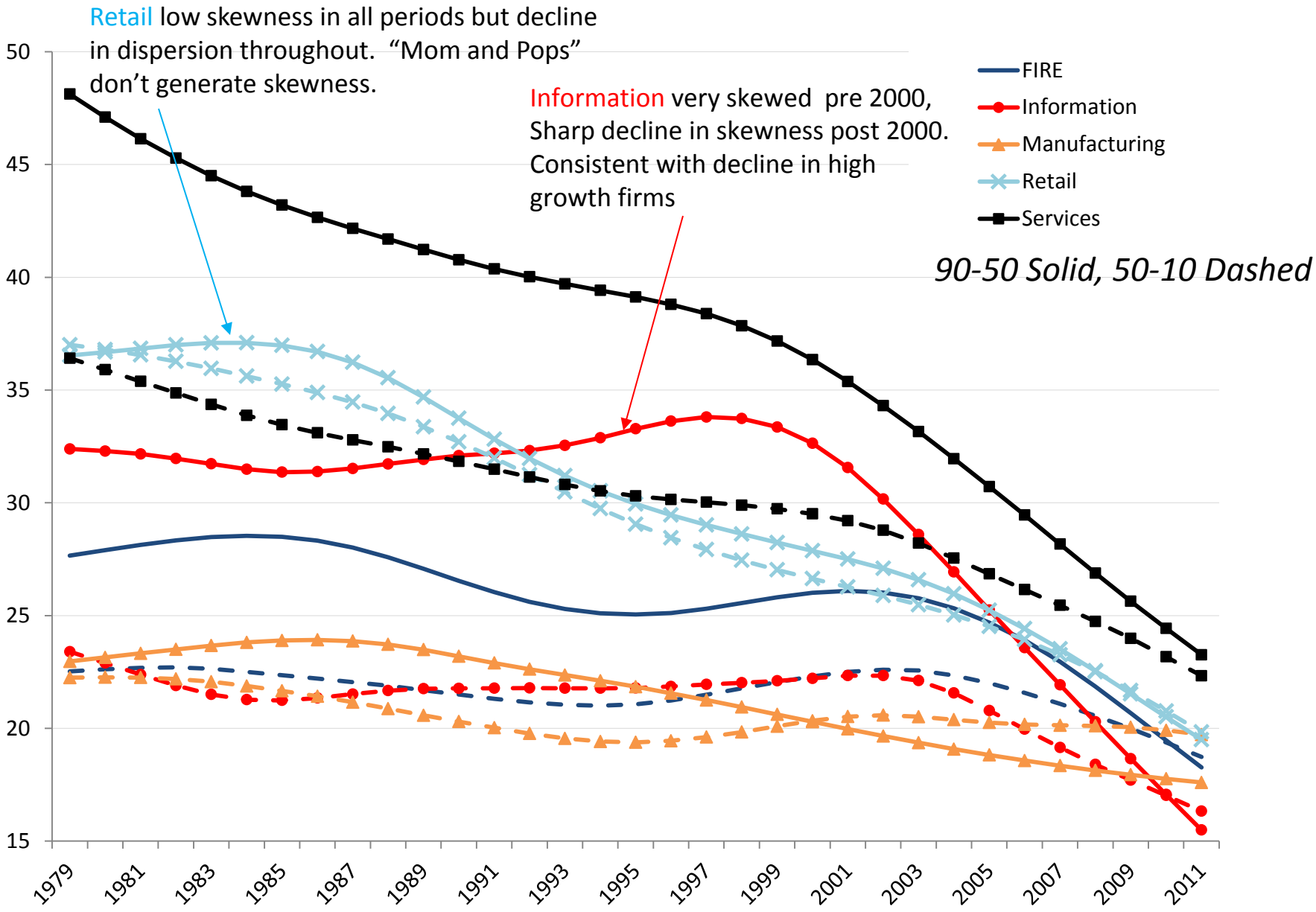


Sectoral Differences in Decline in Dispersion (90-10)



Showing HP Trends

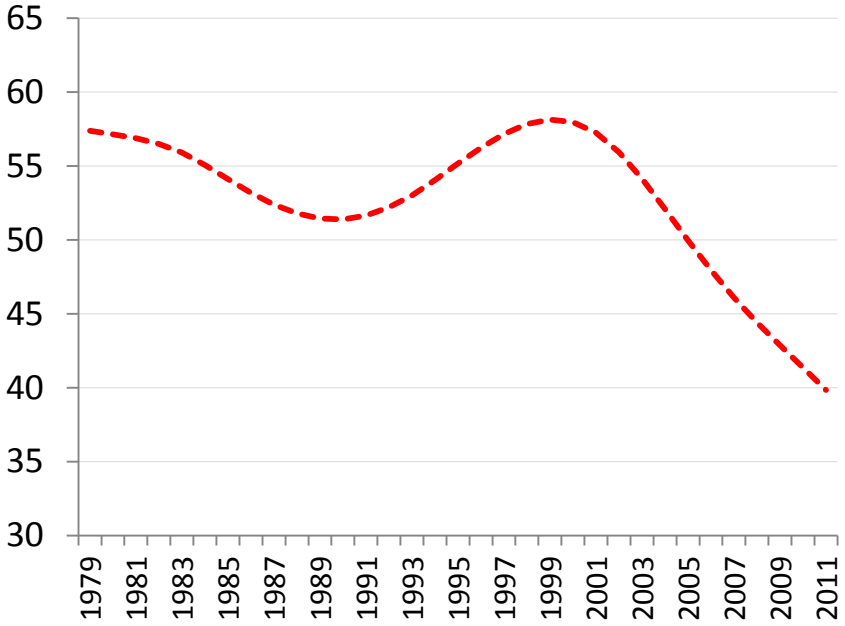
Large Sectoral Differences in Skewness in the Cross Section and Over Time



Differences for Information Sector Striking. But High Tech is Spread Across Numerous Broad Sectors including Information, Services and Manufacturing.

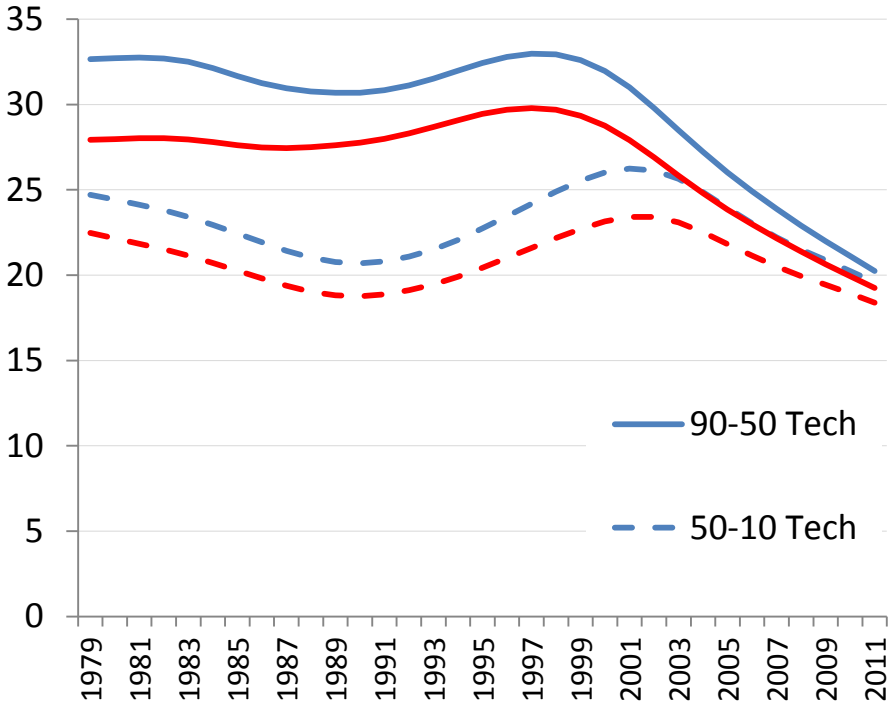
NAICS Code	Industry
Information and Communications Technology (ICT) High-Tech	
3341	Computer and peripheral equipment manufacturing
3342	Communications equipment manufacturing
3344	Semiconductor and other electronic component manufacturing
3345	Navigational, measuring, electromedical, and control instruments manufacturing
5112	Software publishers
5161	Internet publishing and broadcasting
5179	Other telecommunications
5181	Internet service providers and Web search portals
5182	Data processing, hosting, and related services
5415	Computer systems design and related services
Miscellaneous High-Tech	
3254	Pharmaceutical and medicine manufacturing
3364	Aerospace product and parts manufacturing
5413	Architectural, engineering, and related services
5417	Scientific research-and-development services

90-10 Gap for High Tech shows sharp decline post 2000



High Tech Sector Exhibits Rising Dispersion and Skewness in 1990s and then Sharp Declines Post 2000.

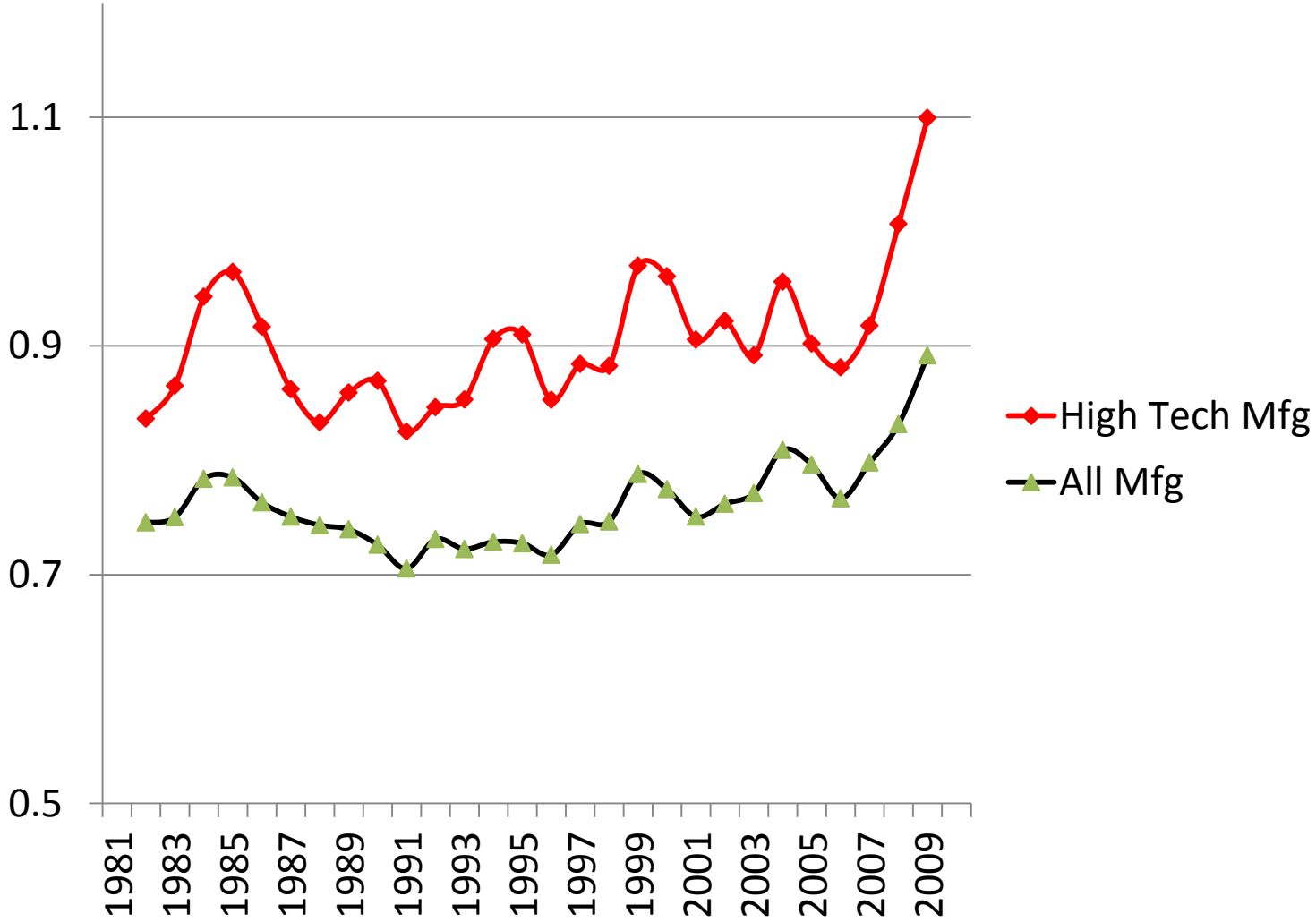
Sharp Decline in 90-50 vs. 50-10 post 2000

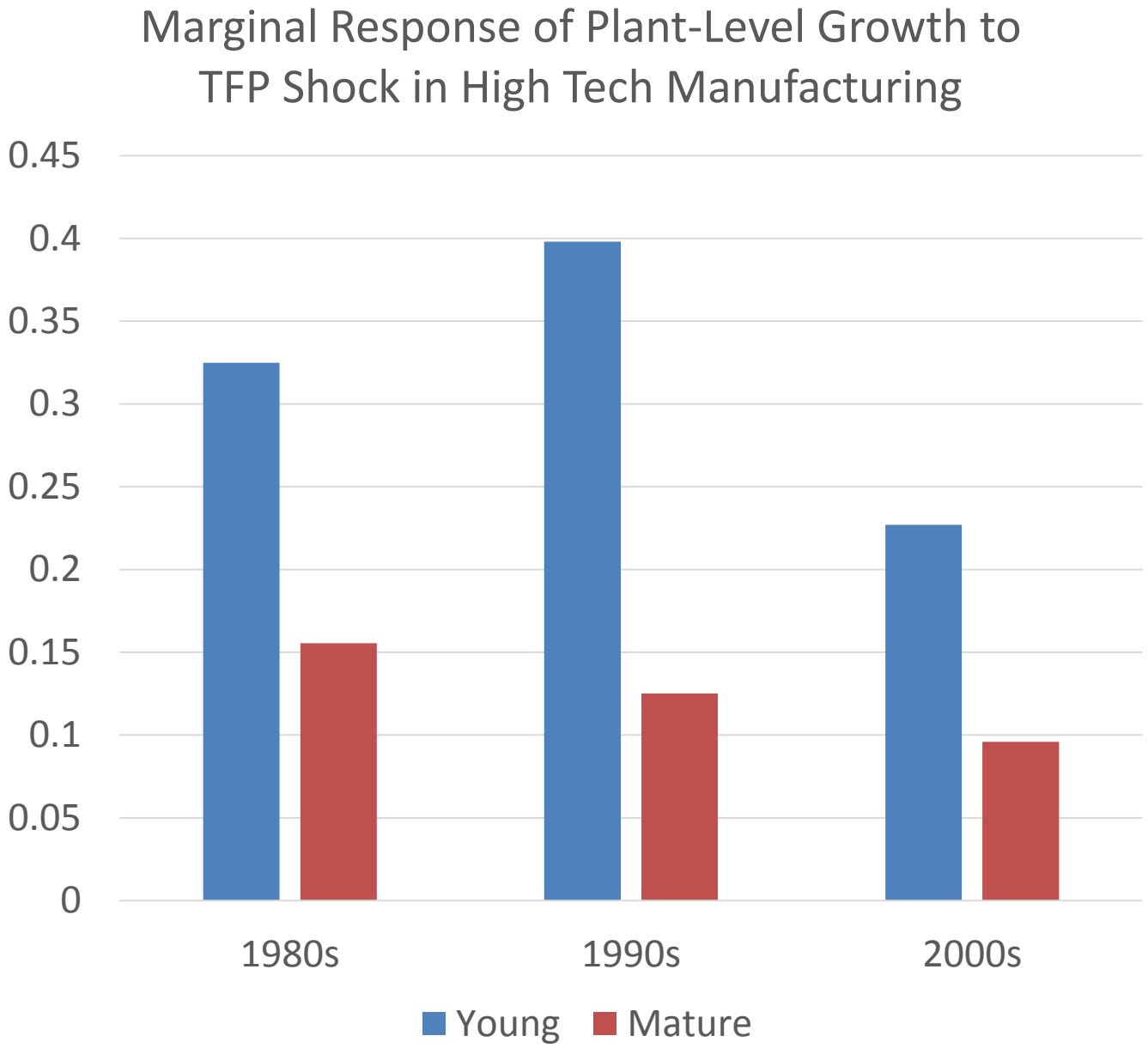


Decline in shocks or decline in responsiveness to shocks?

- Canonical firm dynamic models (e.g., Hopenhayn (1992), Hopenhayn and Rogerson (1993), Ericson and Pakes (1995)) imply decline should be from either:
  - A decline in the volatility of idiosyncratic shocks.
  - A decline in the response to such shocks.
- For high tech (manufacturing sector):
  - We find no evidence of a decline in the volatility of idiosyncratic shocks but a notable decline in the response to such shocks in the post 2000
  - This implies declining contribution of reallocation to productivity growth post 2000.

Within Industry Dispersion in TFP over time in High Tech Mfg vs. All Mfg (3-year MA, 90-10)




Marginal Response of Plant-Level Growth to TFP Shock in High Tech Manufacturing
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1980s
1990s
2000s
Young
Mature

Concluding Remarks

- New findings on decline in dynamism:
  - Pre 2000, decline in 90-50 and 50-10.
  - Post 2000, decline in 90-50 sharper (decline in skewness).
  - Decline in dispersion/skewness in high skewness sectors (e.g., high tech) post 2000
  - Increase in dispersion of TFP, decline in responsiveness to TFP in high tech (mfg) post 2000.
- Distinct patterns across sectors suggests different factors at work
  - Retail Trade: Changing business model (decline of "mom and pop". This story dominated pre-2000.
  - High Tech: Rising dispersion of TFP shocks and declining responsiveness. Latter dominates post-2000.
- Post 2000 decline has more adverse implications for productivity and job growth.