Entry, Innovation and Productivity Growth in the U.S. Economy: Facts and Open Questions (i.e., Puzzles)

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Dynamics of Entry, Productivity dispersion and Productivity growth

Changes in Productivity Dispersion and Growth from a 1% (one time) Increase in Entry Rate (Years 1-3), High Tech
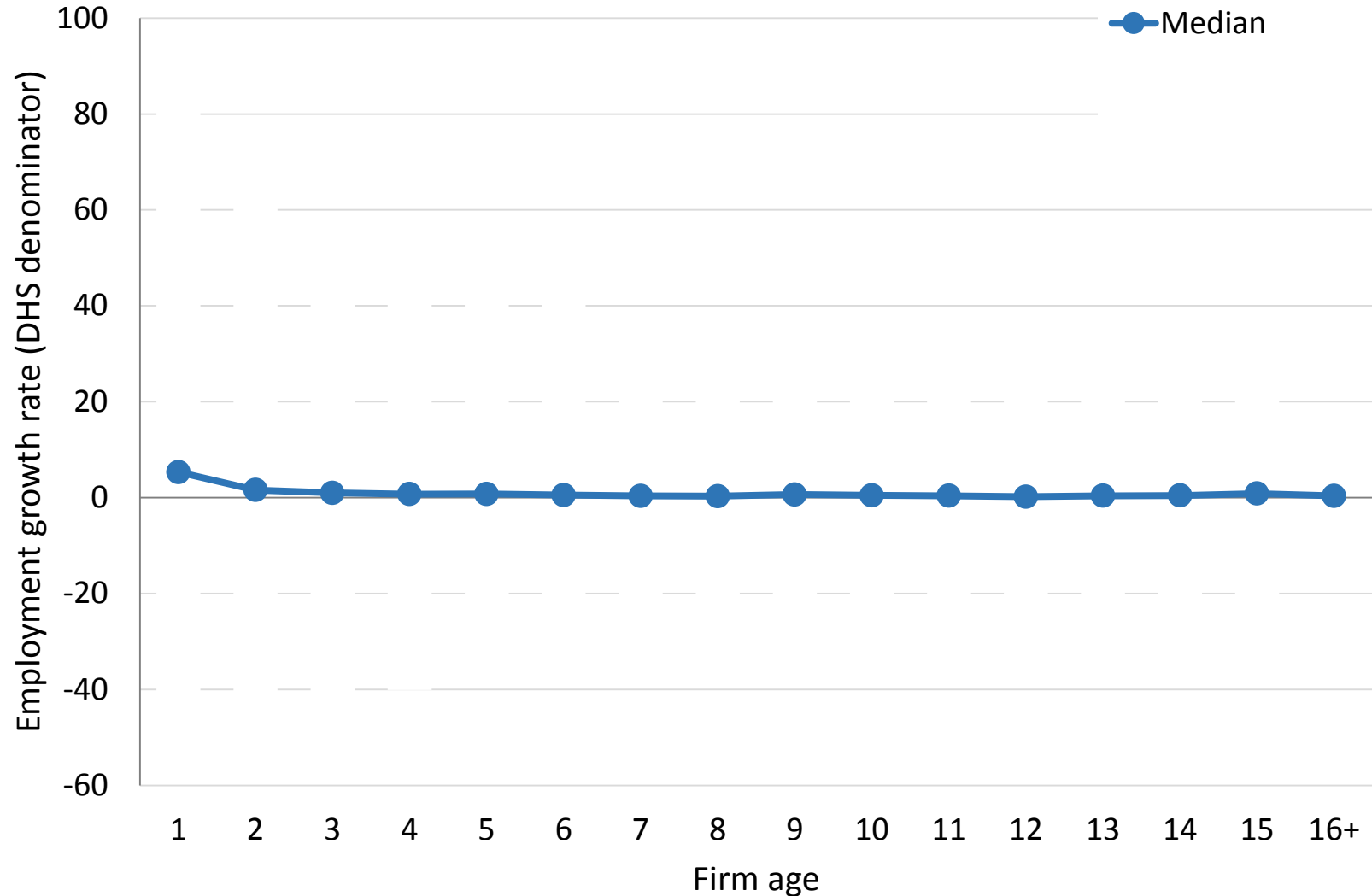

Surge in entry in a given 3-year period leads to:
- Rise in within industry productivity dispersion and decline in industry productivity growth in next 3-year Period
- Decline in within industry productivity dispersion and rise in industry in subsequent 3-year period
- Surge in reallocation following surge in entry as well (not depicted).
- Similar, dampened patterns for Non-Tech

Source: Foster et. al. (2018)

Using 4-digit NAICS data for High Tech sectors (ICT in mfg and non-mfg plus sectors such as Bio Tech)
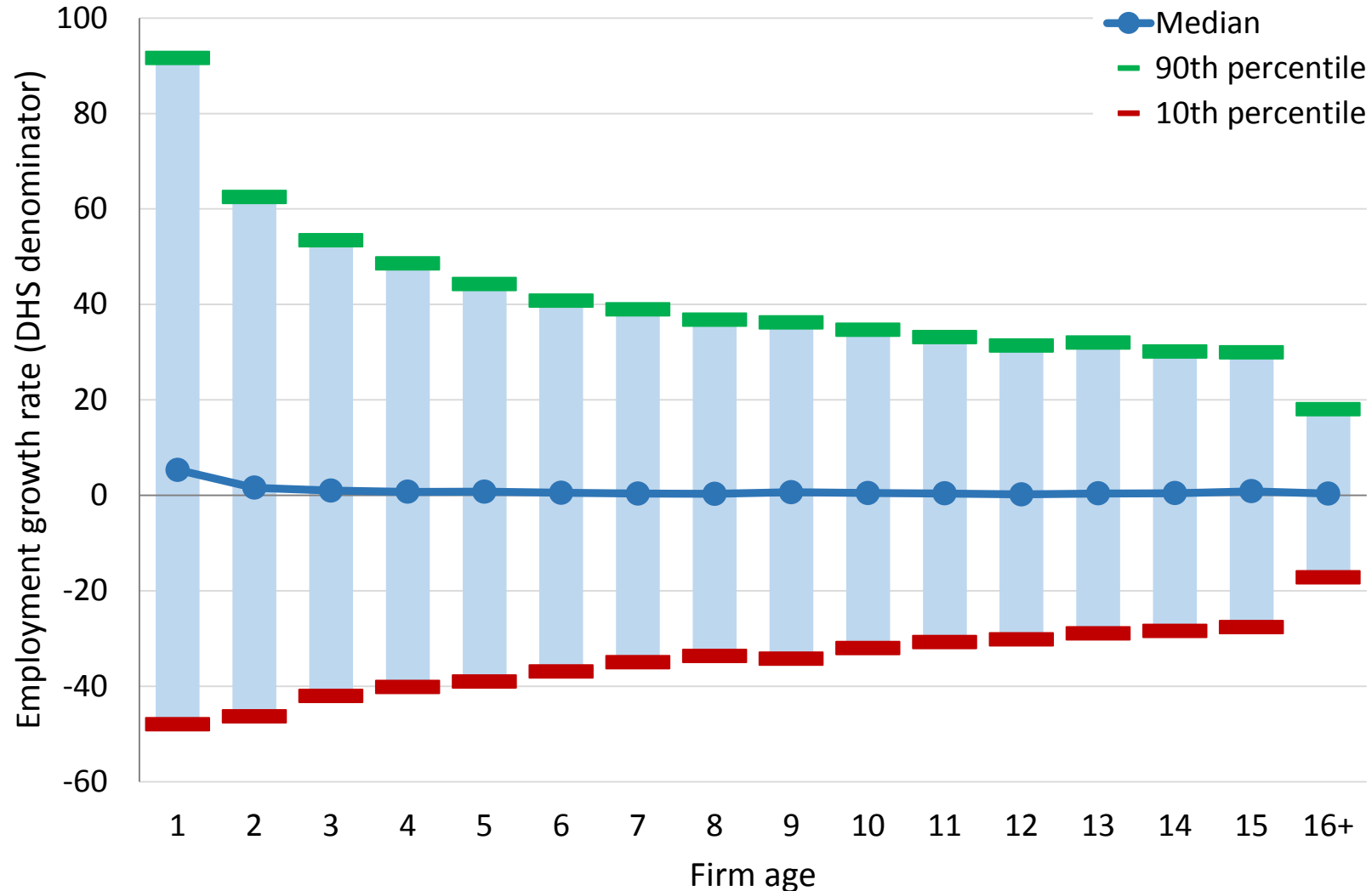
Up or out!

Source: Decker et al. (2014)
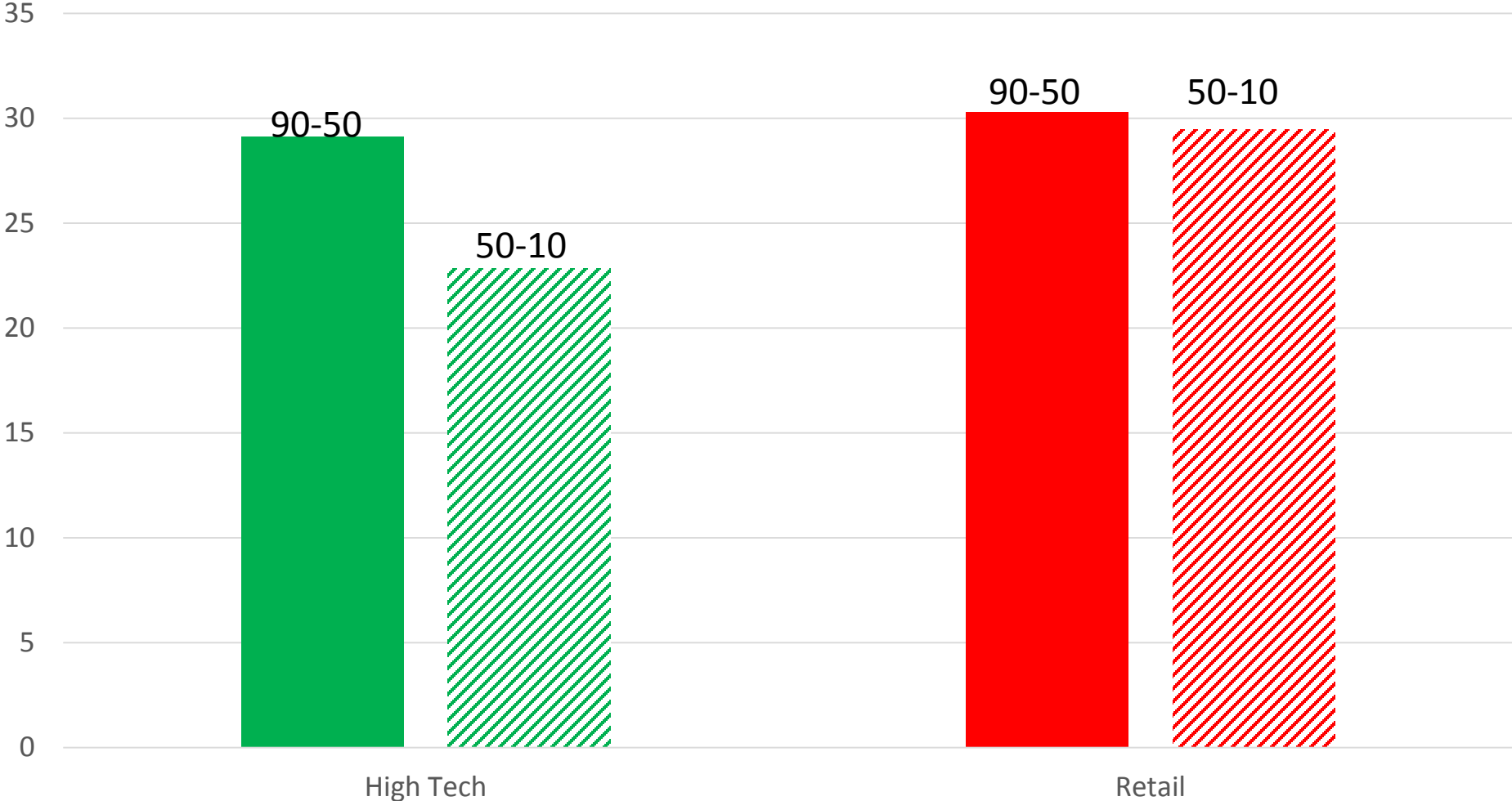
A view of the skew

Source: Decker et al. (2014). Employment-weighted distributions.

# A view of the skew – High Growth Firms are Disproportionately Young Firms

Source: Decker et al. (2014). Employment-weighted distributions.

Large Differences in Skewness Across Sectors – High 90-50 in High Tech Driven by Young Firms
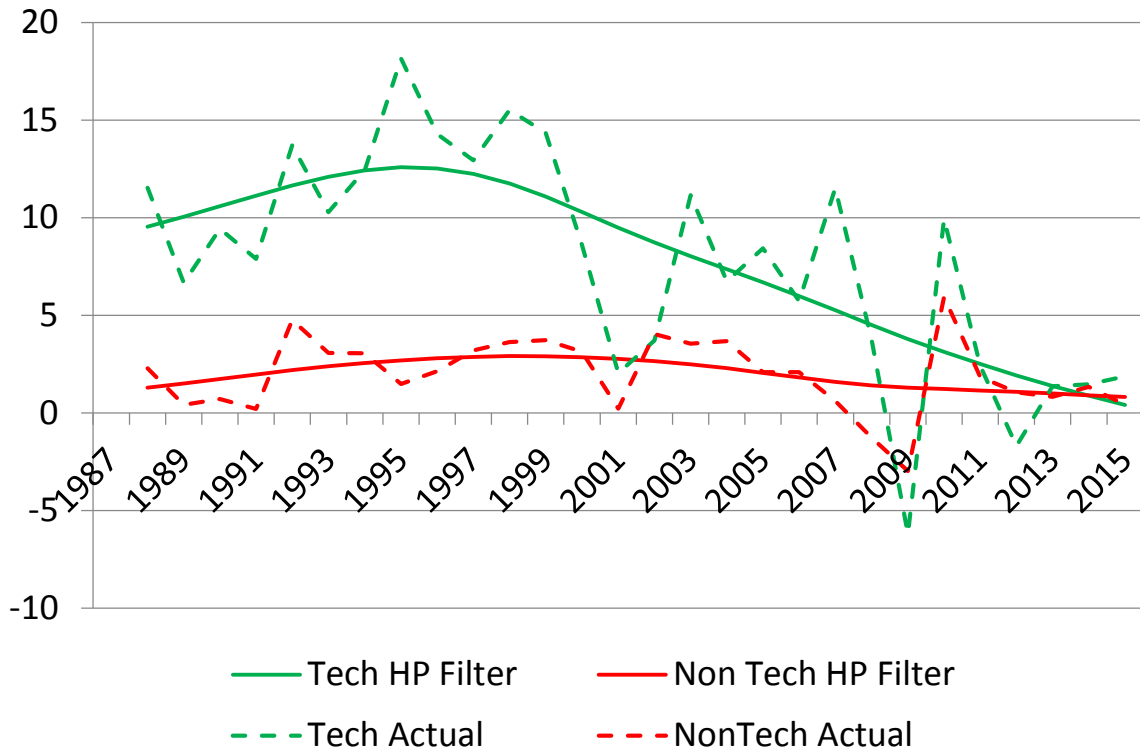

Source: Decker et. al. (2016)

Young Businesses Exhibit More (Labor) Productivity Dispersion and Greater Responsiveness to Productivity Differentials
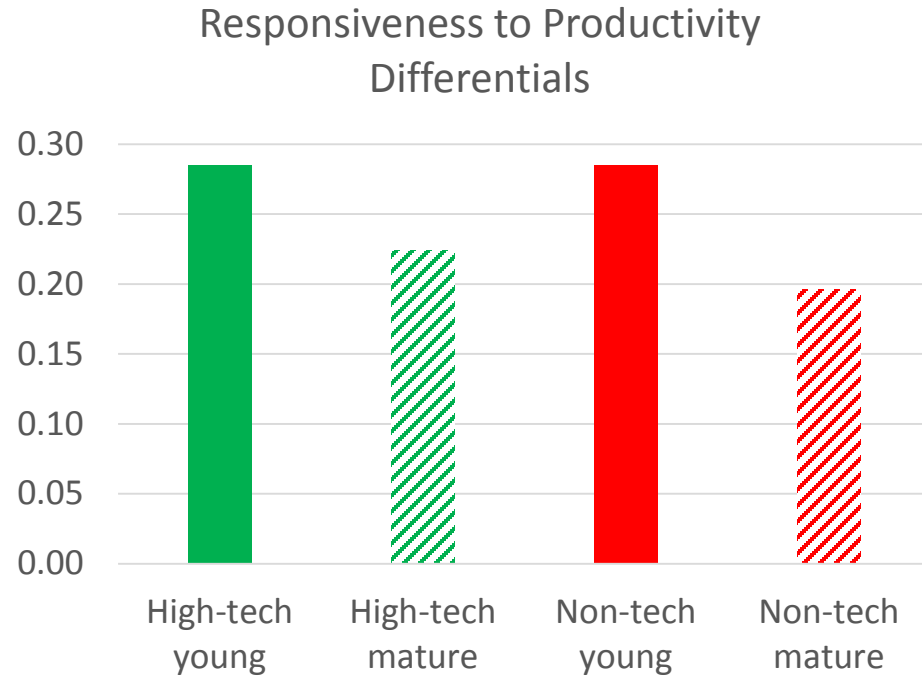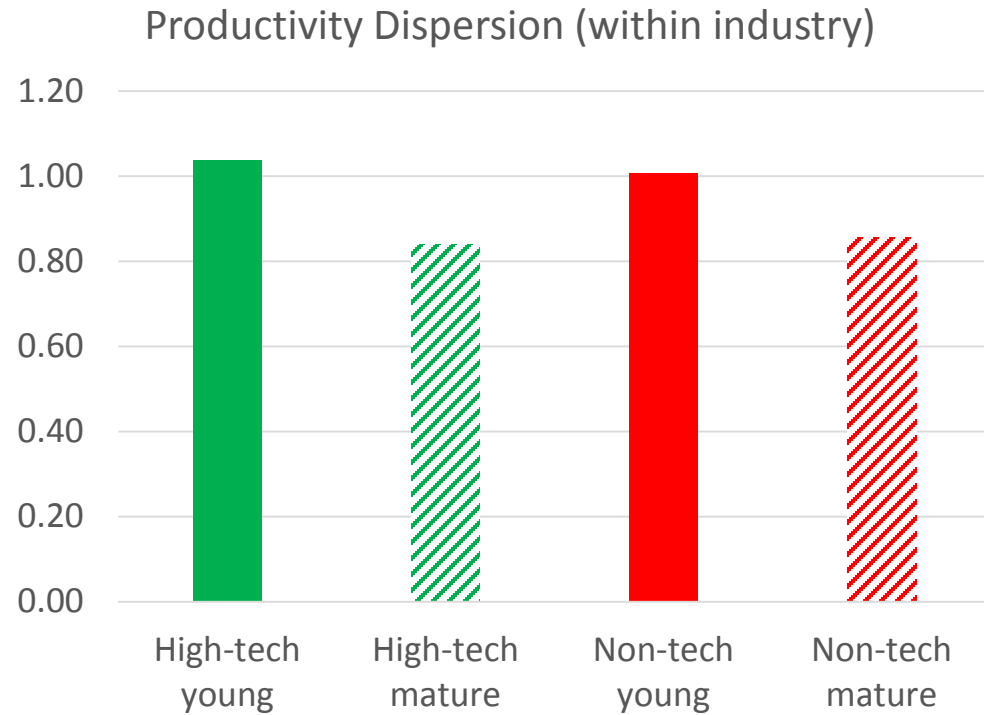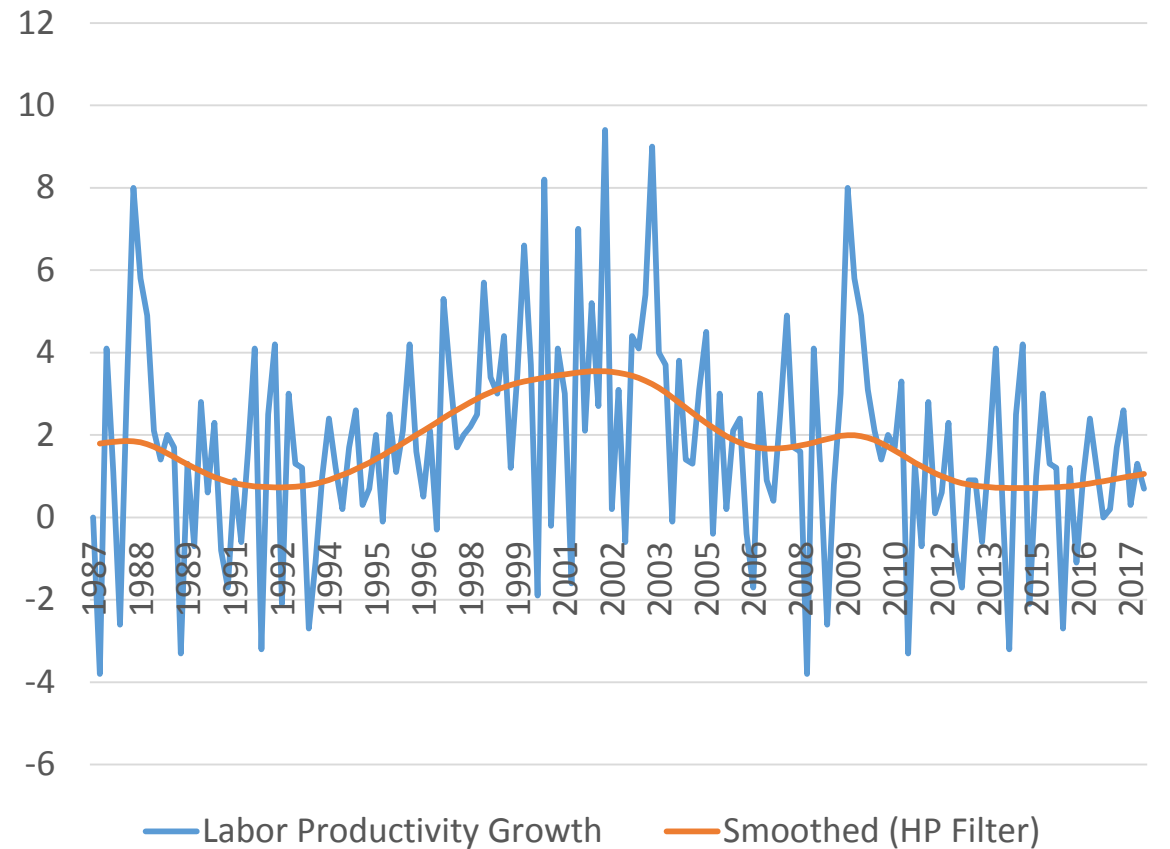

Source: Decker et. al. (2018)

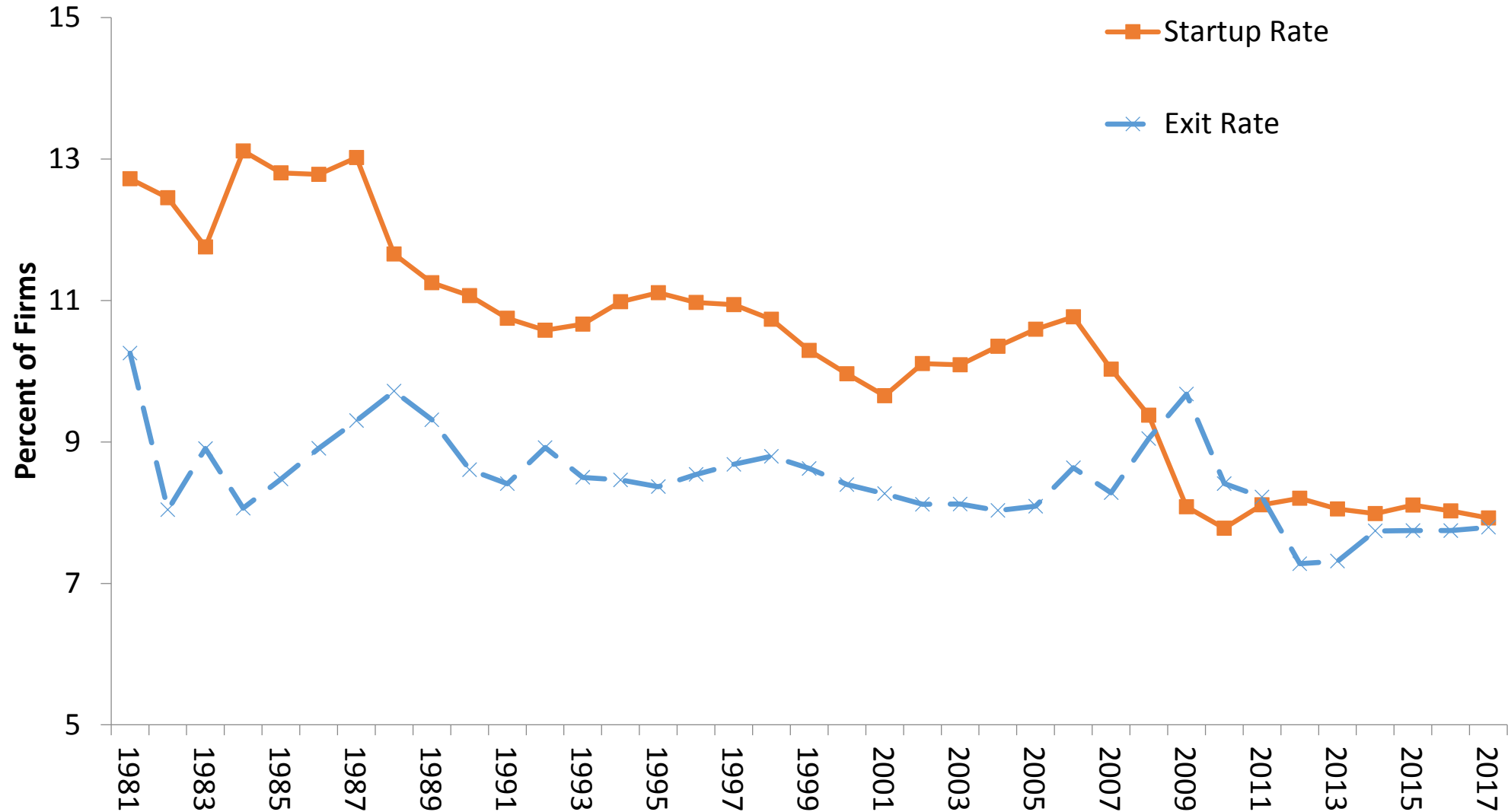# Annual Labor Productivity Growth, High Tech/Non Tech, 1987-2015

Legend: Tech HP Filter, Non Tech HP Filter, Tech Actual, NonTech Actual

Annualized Labor Productivity Growth, Quarterly, 1987:1 to 2018:1, U.S. Private Non Farm

Legend: Labor Productivity Growth, Smoothed (HP Filter)
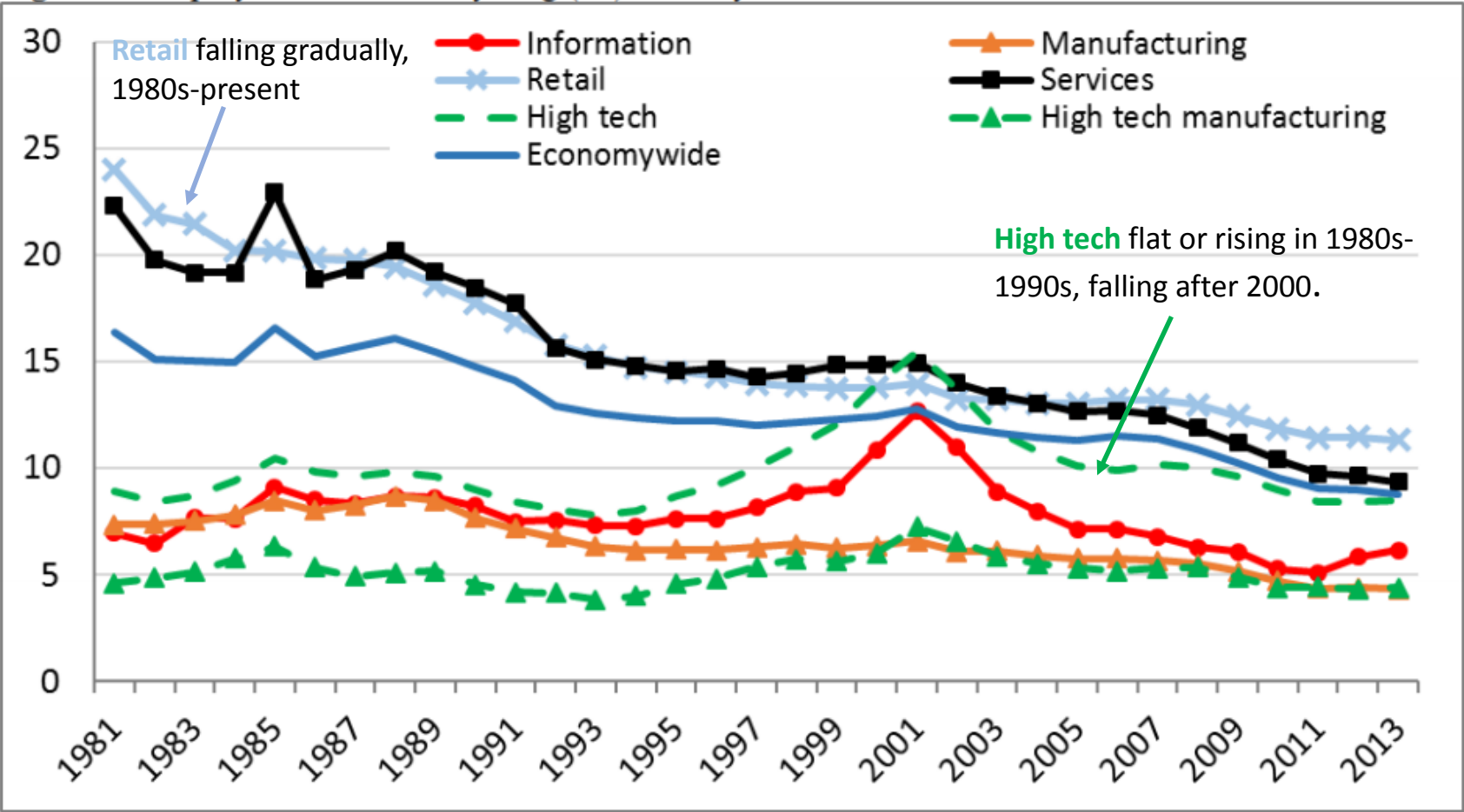
Source: BLS

Startup and Exit Rates in U.S. Private Sector, 1981-2017

Source: Business Dynamic Statistics (Census) Spliced with Business Employment Dynamics (BLS)

Entrepreneurship by industry

Figure 2: Employment shares for young (<5) firms by broad sector

Note: Young firms have age less than 5. Industries are defined on a consistent NAICS basis; high tech is defined as in Hecker (2005). Data include all firms (new entrants, exiters, and continuers). Author calculations from the LBD.
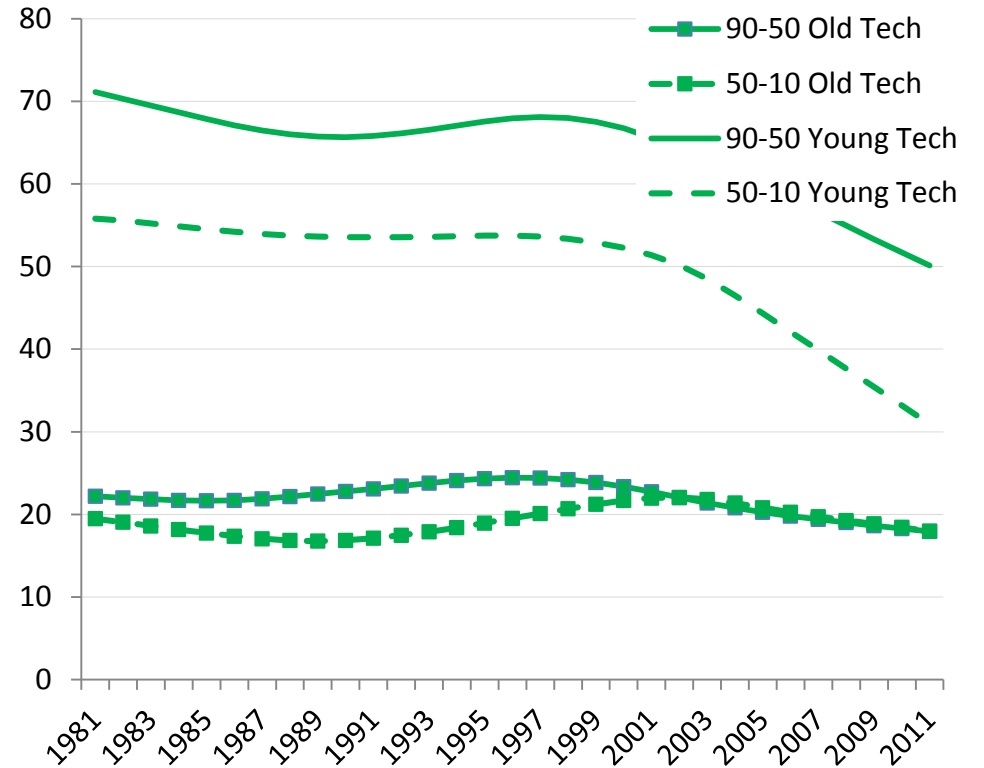
Source: Decker et al. (2018)

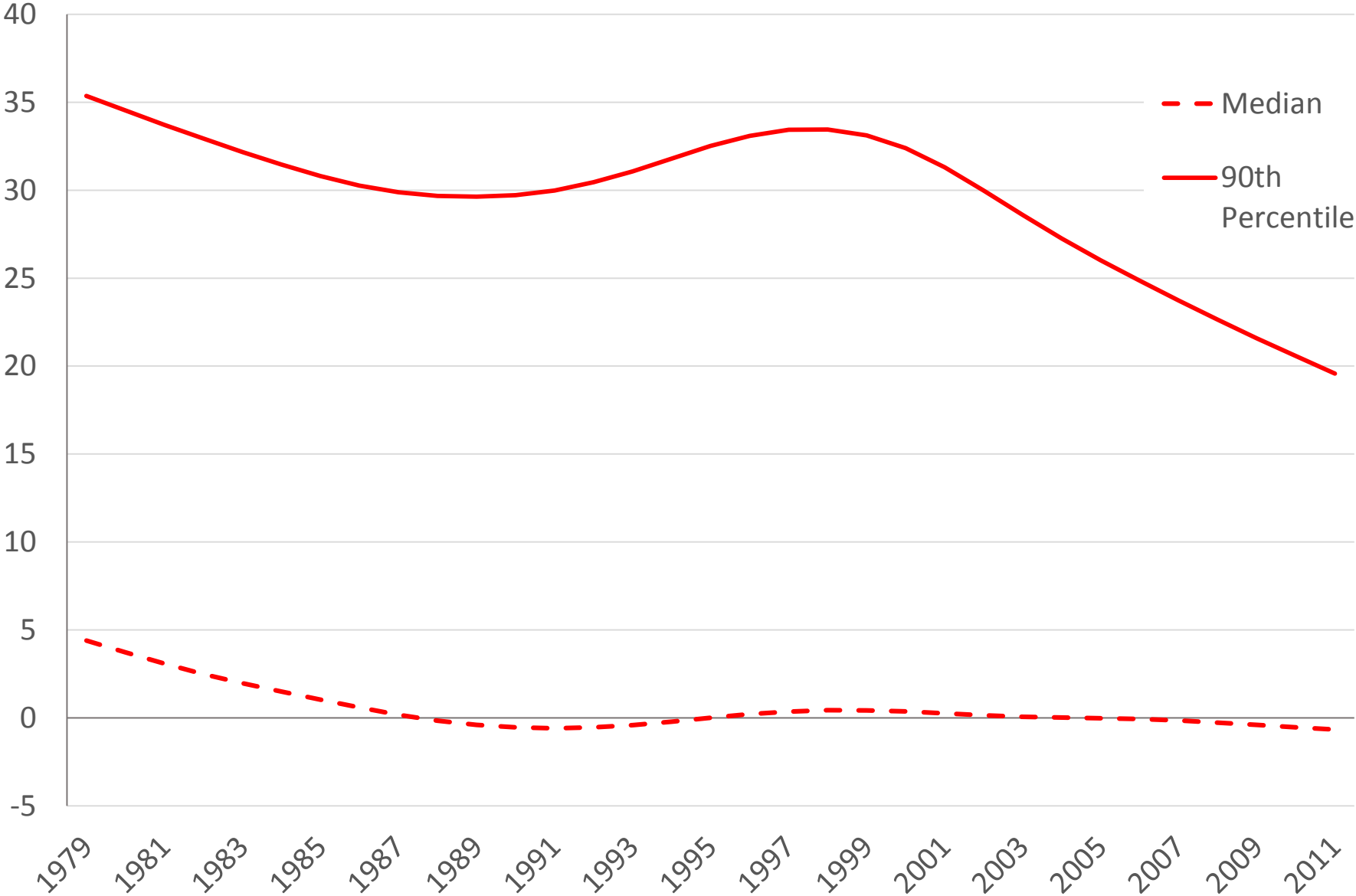Times series patterns of skewness (high growth) vary dramatically across sectors
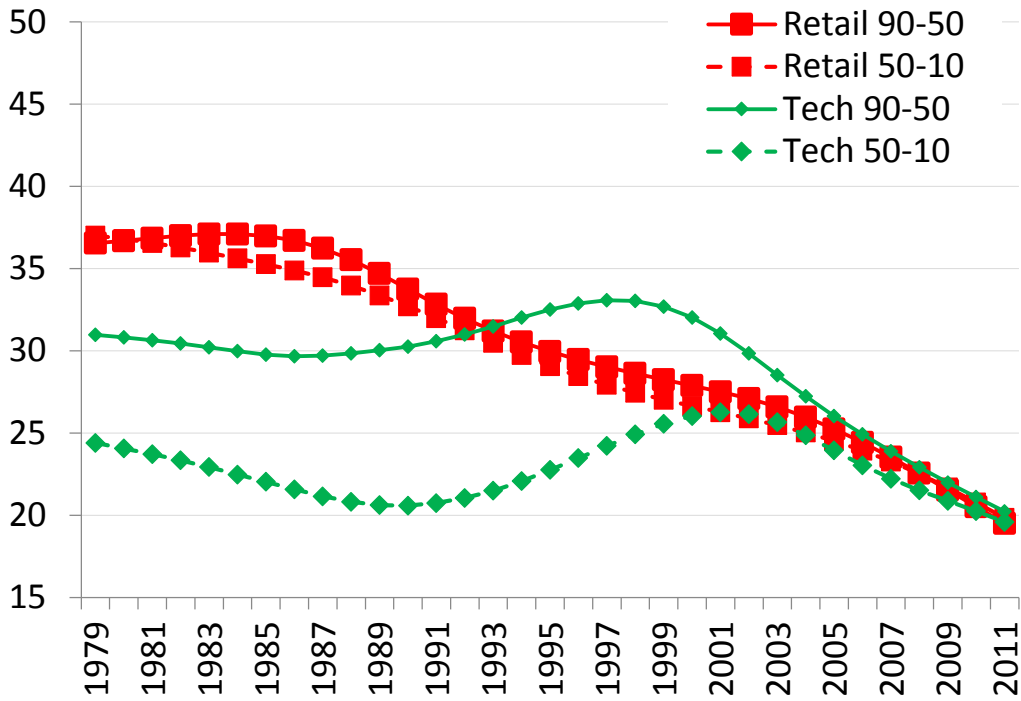
High Tech includes (most of) Information but also High Tech Mfg and Services. Source: Decker et. al. (2016)
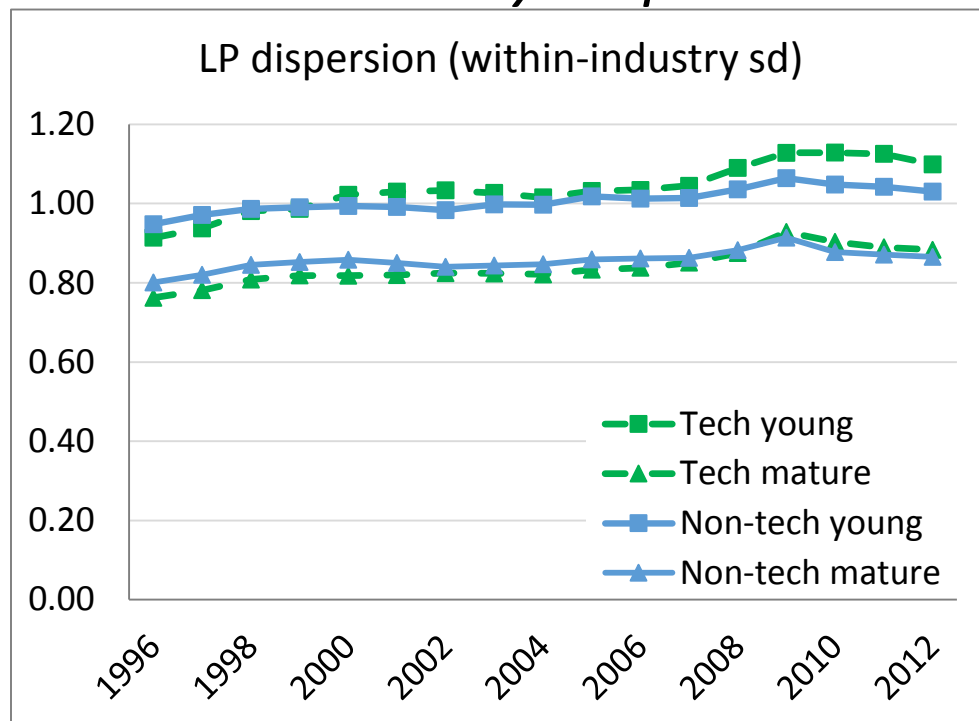
High Growth vs. Median Growth Firms in High-Tech (Employment-Weighted Distribution)
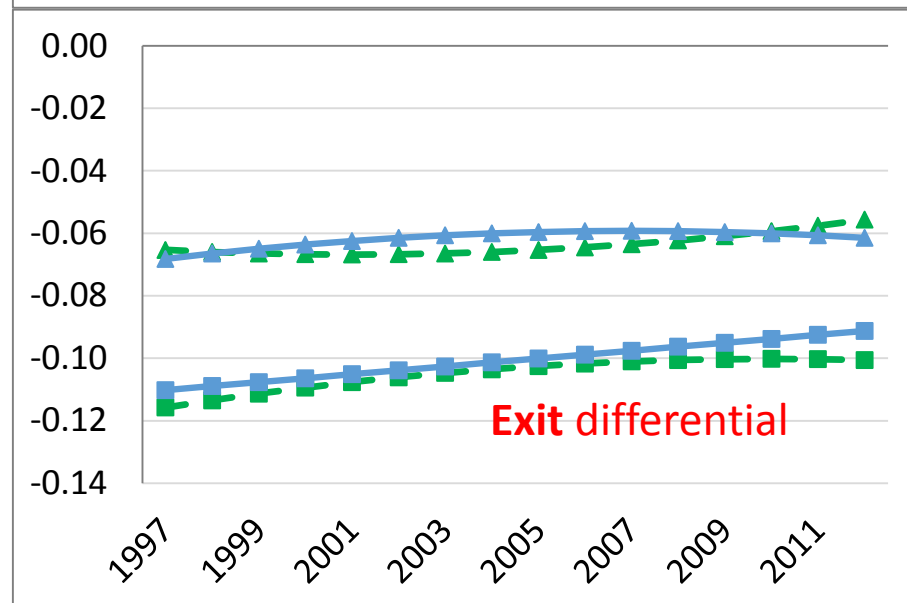

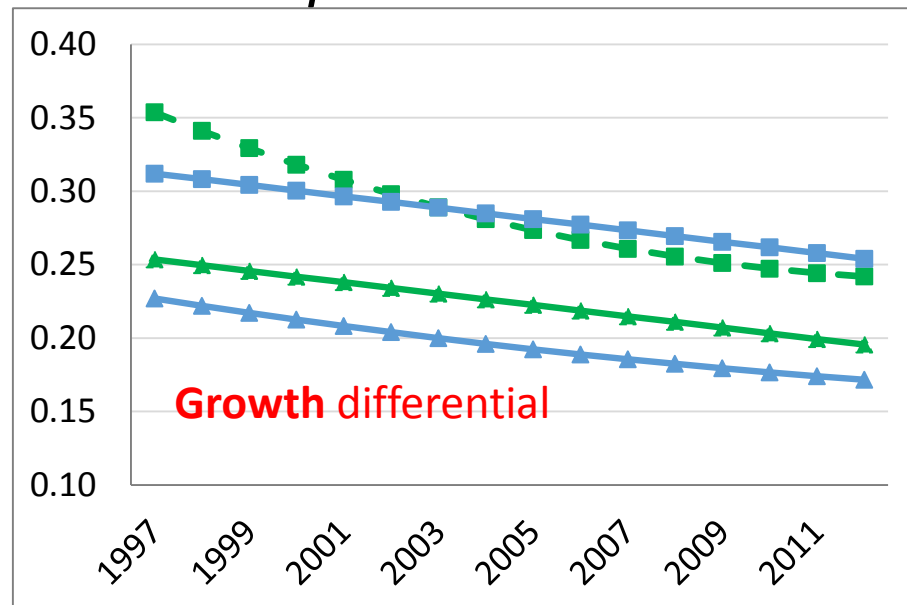
Source: Tabulations from the Longitudinal Business Database (Census). HP Trends depicted

Rising Productivity Dispersion and Declining Responsiveness

Productivity Dispersion

LP dispersion (within-industry sd)

Legend:
- Tech young
- Tech mature
- Non-tech young
- Non-tech mature

"Responsiveness"

Growth differential

Exit differential
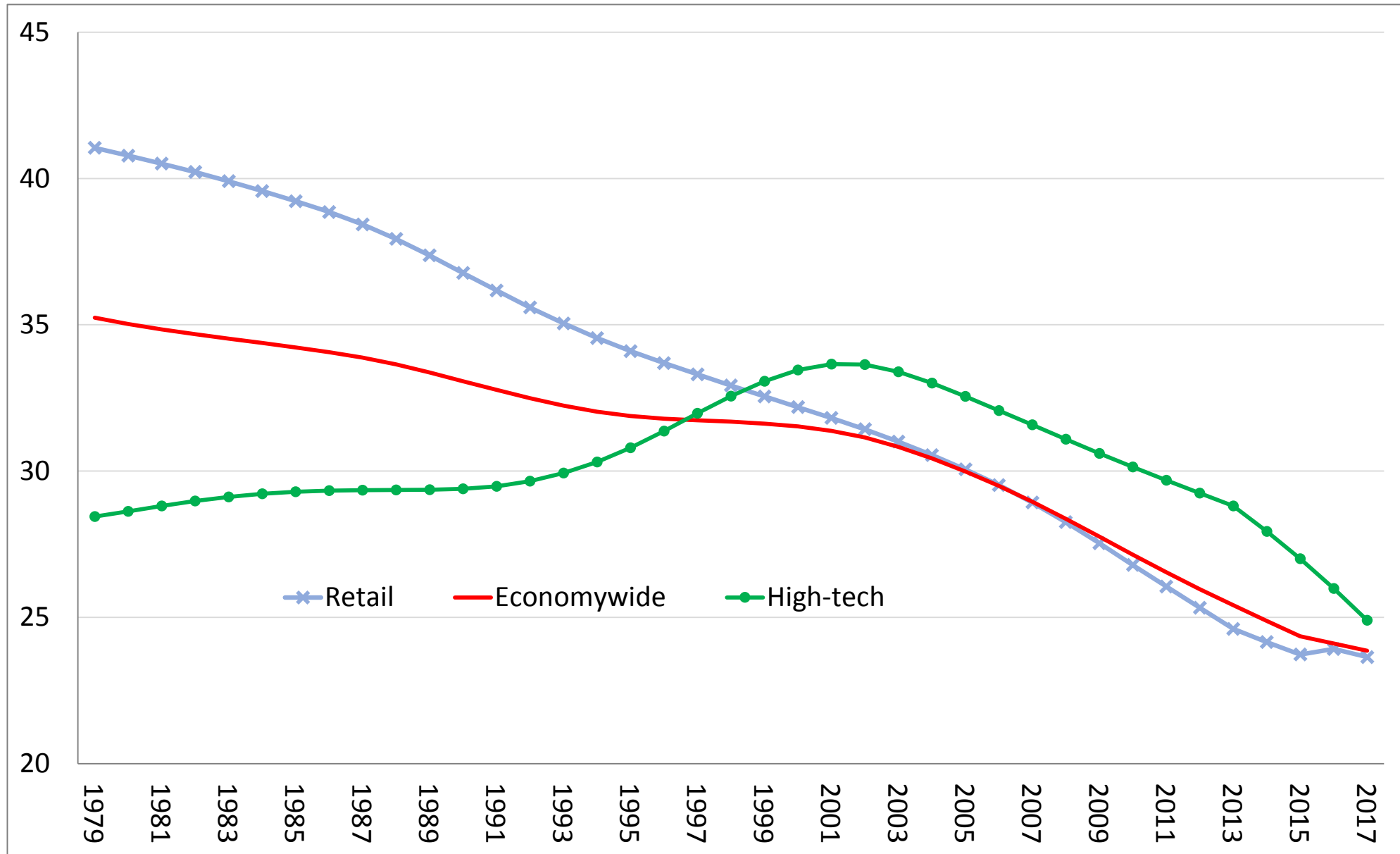
Source; Decker et. al. (2018)

Job Reallocation Rate (Hodrick Prescott Trends) for U.S. Private Sector, High-Tech and Retail Sectors

Source: Tabulations from LBD (Census) by Decker et. al. (2018) spliced with Business Employment Dynamics (BLS)

Declining Entrepreneurship and Business Dynamism Part of Broader Decline in Labor Market Fluidity
High Pace of Fluidity, Dynamism and Entreprenenurship Important for Job Ladders of Young Workers
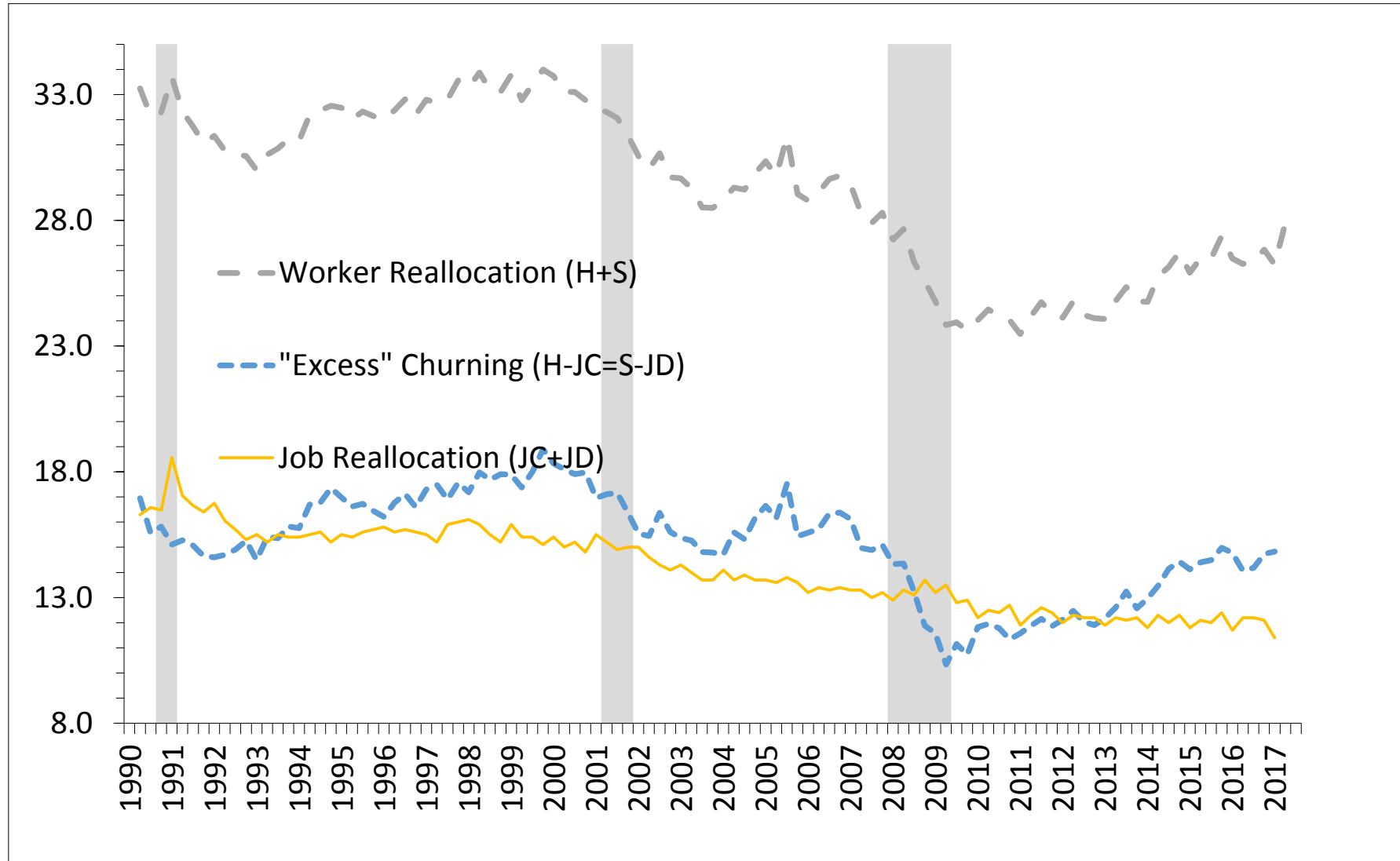
Source: Updated chart from Davis and Haltiwanger (2014)

Facts and Puzzles

- Periods of rapid innovation (especially in innovative intensive industries like High Tech):
  - First surge of entry
  - Then experimentation (dispersion)
  - Then productivity growth
  - Potentially long (and variable) lags
- Both innovative intensive industries (High Tech) and other industries have seen relatively modest entry and productivity growth post 2000.
  - Part of declining entry, dynamism and labor market fluidity post 2000.
- Dispersion in Productivity Growth in High Tech and Non Tech has risen substantially in the post 2000 period
  - Experimentation that has not yet resolved?
  - Diminished Dynamism – Slower diffusion or slower adjustment dynamics