The Great Micro Moderation

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Motivation

Income inequality: Well known rising dispersion in income *levels*

Income volatility: What about dispersion in income *growth?*

Motivation

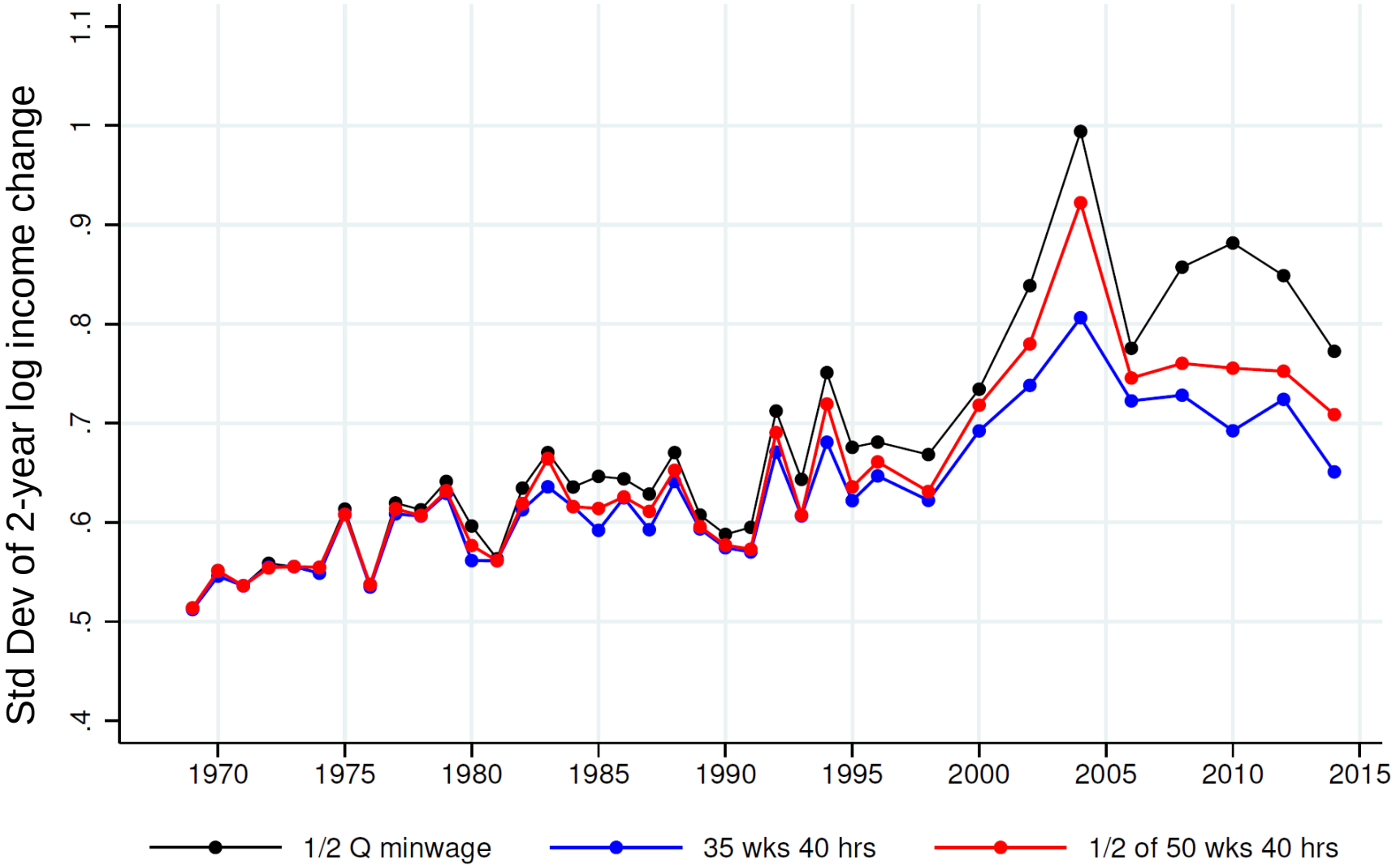
- Gottschalk and Moffit (1994) is a key early paper: reported increased US income volatility from 1970 to 1988

- Followed by dozens of papers with broadly similar results:

  – Dynan, Elmendorf and Sichel (2012): surveyed 30 papers, 27 find rising earnings volatility (2 finds flat,1 declining vol)

  – These papers mostly use survey data (PSID, SIPP, CPS)

Typical result: earnings variation up 1/3 in the PSID



Notes: Panel Survey of Income Dynamics (PSID): Ages 25 to 60, SRC sample only, all sectors except public and education, total labor income, only employed (not self-employed). 2 year SD of log earnings, calculated weighting up using sampling weights

The evidence is also taken as a stylized fact in parts of the economics literature – for example

Opening quote from Ljunqvist and Sargent (2008, ECMA):

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

Our Findings

1. Individual earnings volatility *declined* by ~1/3 since 1980

2. Firms' employment volatility *declined* by ~1/3 since 1980

3. These two trends are tightly linked – worker earnings volatility and firm employment volatility strongly related

4. One hypothesis: both possibly correlated with macro volatility
   – Great micro moderation linked to great macro moderation?

Data

Declining Worker and Firm Volatility

The Macro vs Micro Volatility Moderation

Volatility vs Inequality

Social Security Administration Data

- Use the Master Earnings File of the SSA
- From 1978 to 2013: contains the earnings record of every person that has ever been issued an SSN.
- Includes basic demographics (sex, date of birth, place of birth, death record, etc.)
- Includes a firm identifier – the Employer Identification Number (EIN) for each job.
- Later: supplement it with 1% sample from 1957 to 2013.

Sample selection

- Ages 25-64
- Must have earnings above one quarter of full-time work (13 weeks at 40 hours) as minimum wage
- Drop workers in education and the public sector

Data

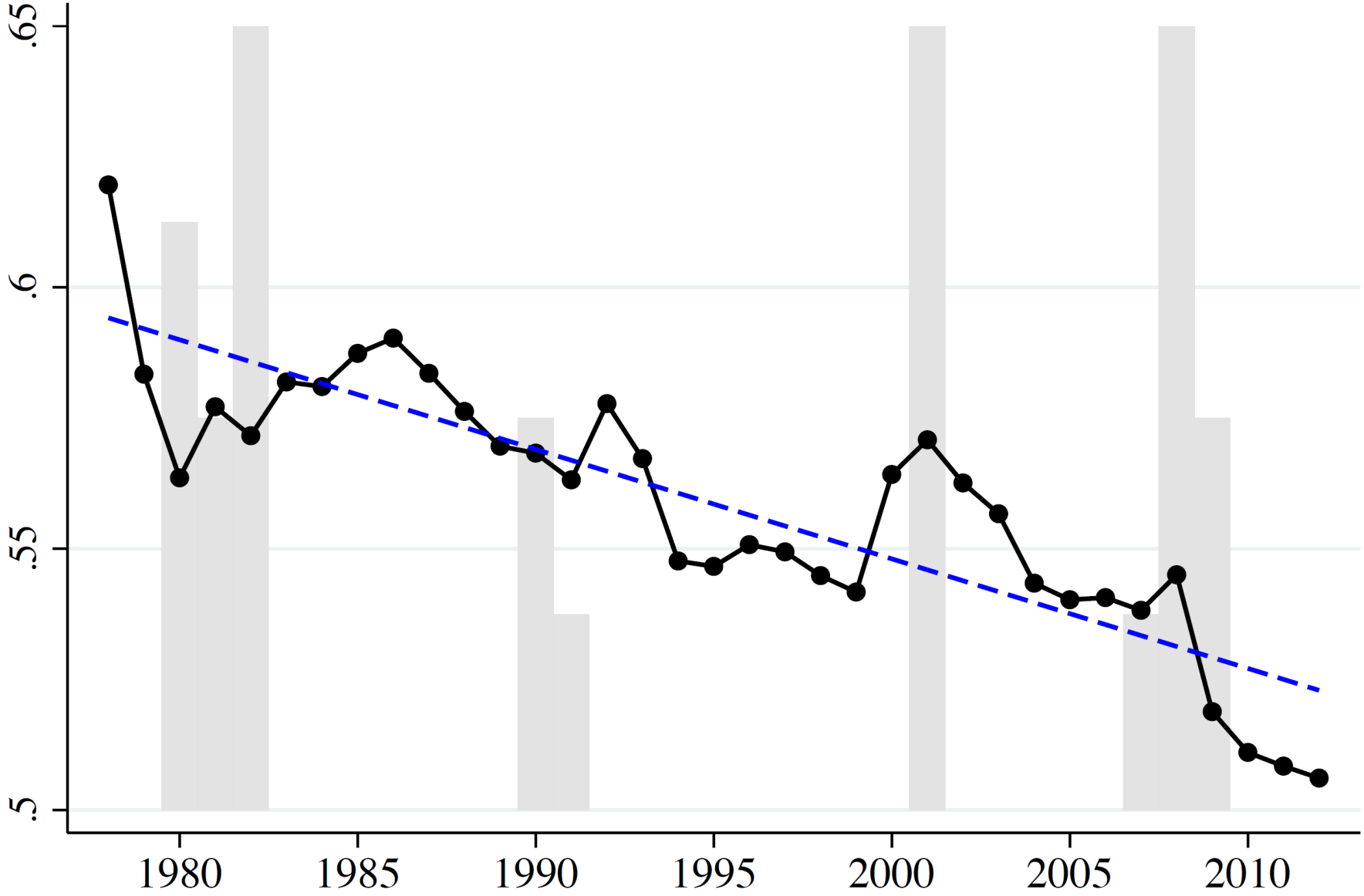
Declining Worker and Firm Volatility

- **Workers**
- Firms

Extensions and Questions

The Macro vs Micro Moderation

SD of 1-year log earnings changes



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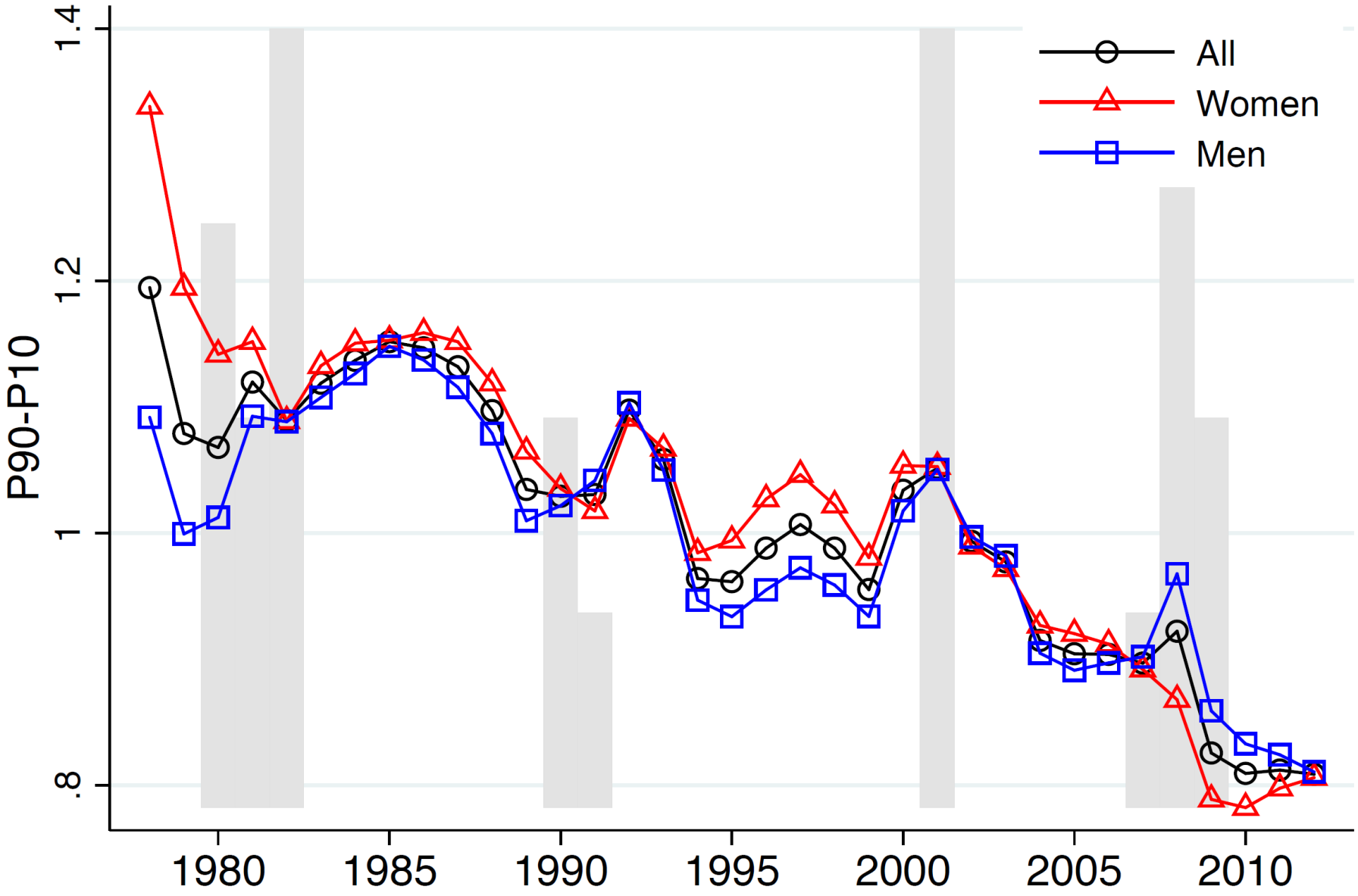
Measure robust to outliers: 90-10 diff. of log annual earnings change drops by about 1/3



Why do surveys and SSA data show such different results?

Most prior work uses the PSID. Great dataset used by 4000+ papers, but for long-run earnings volatility some issues:

1) *Representativeness*: tracks households sampled in 1968

2) *Large cumulative attrition rate.* Of the 1968 families:
   - 37.5% had dropped by 1981
   - 51% had dropped by 1989

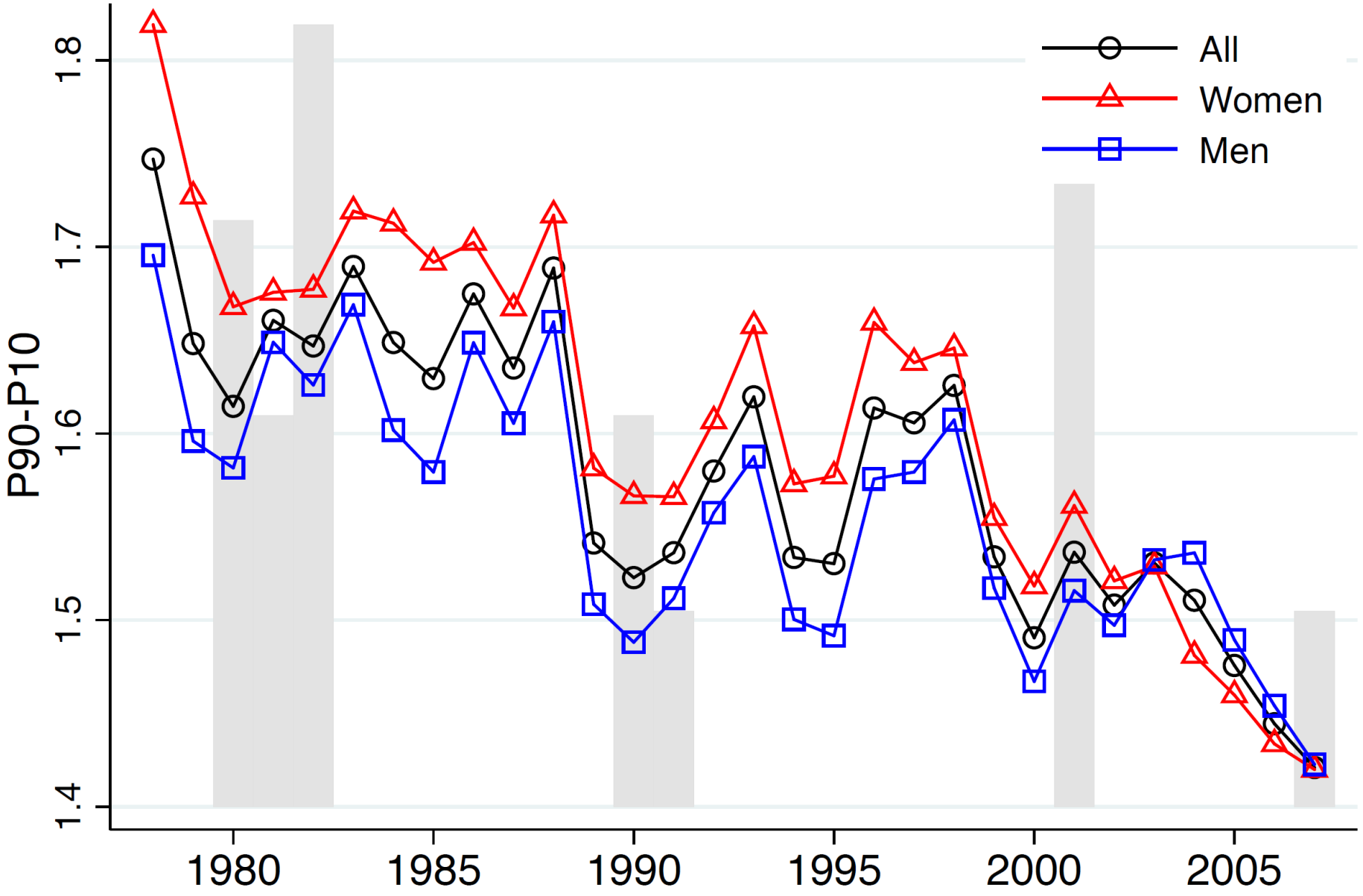
3) Sample attrition was systematic

What about Heterogeneity and Robustness?

Results are remarkably robust across many breakdowns (so rules out many purely compositional stories):

- 5-year growth rates
- Positive and negative shocks
- By income level
- Industry
- Geography
- Employee Age
- Firm age
- Firm size
- Job stayer/switcher

Long-run earning volatility: look at 5-year changes



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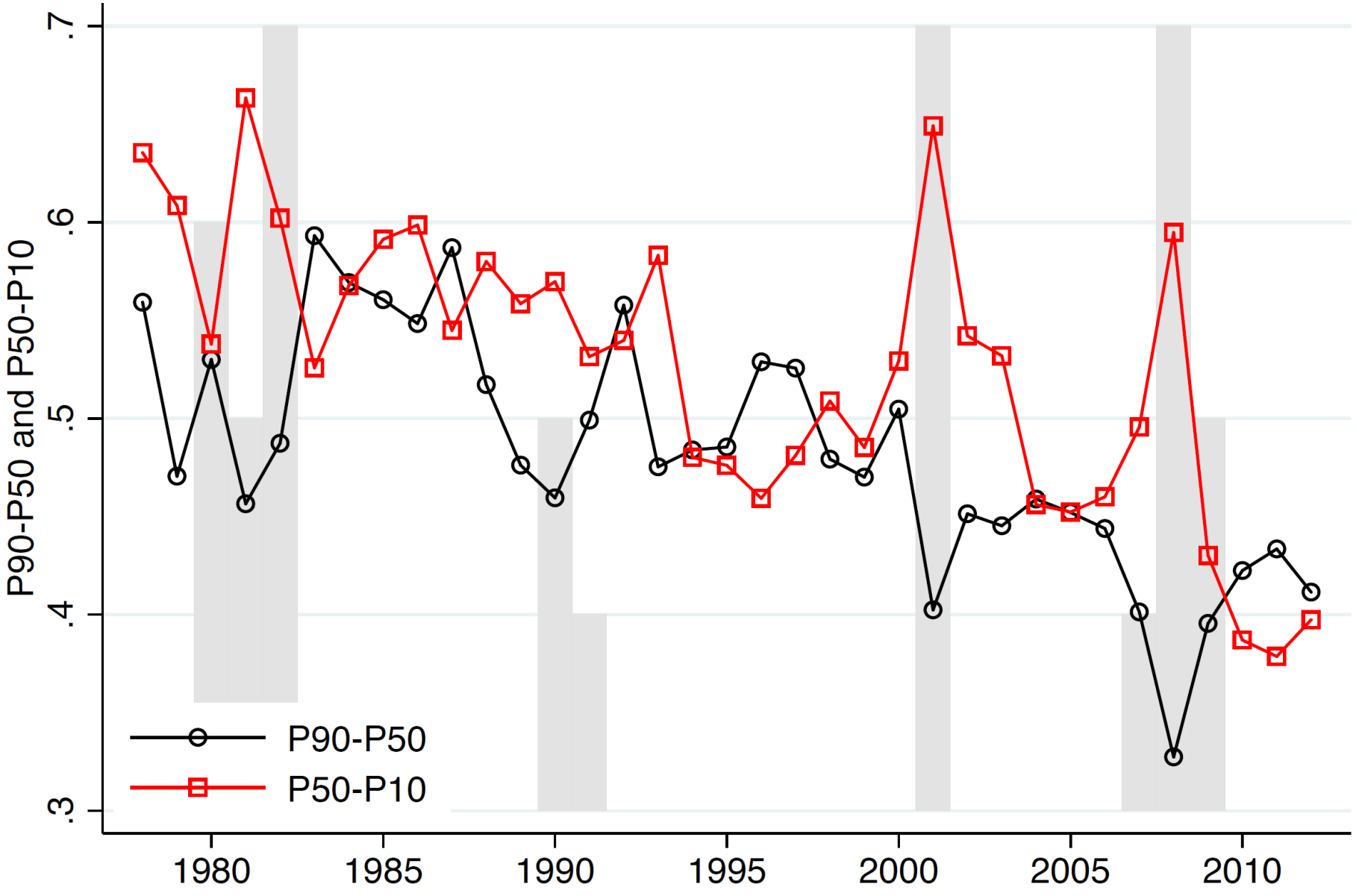
Upside and downside risk: examine both sides



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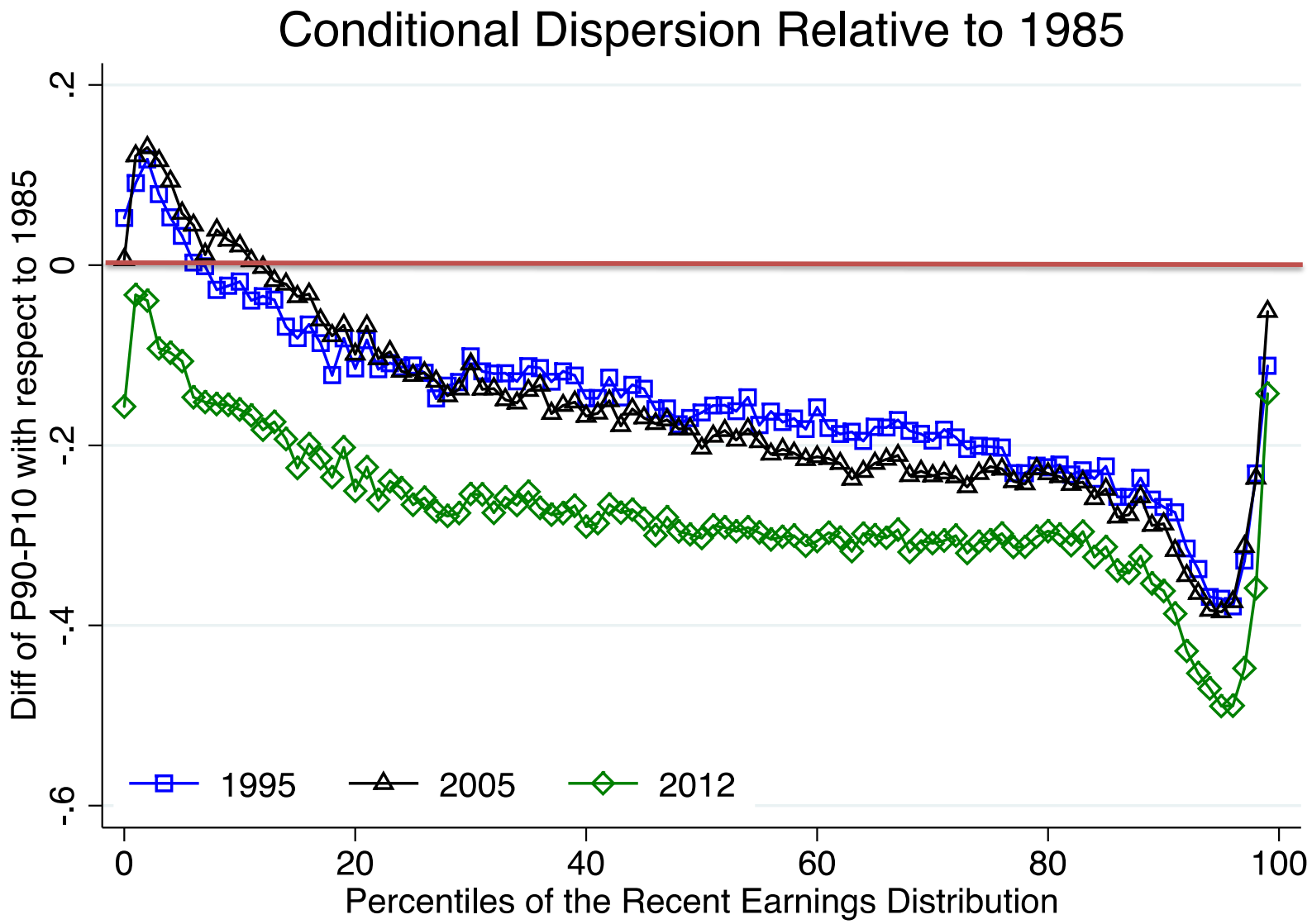
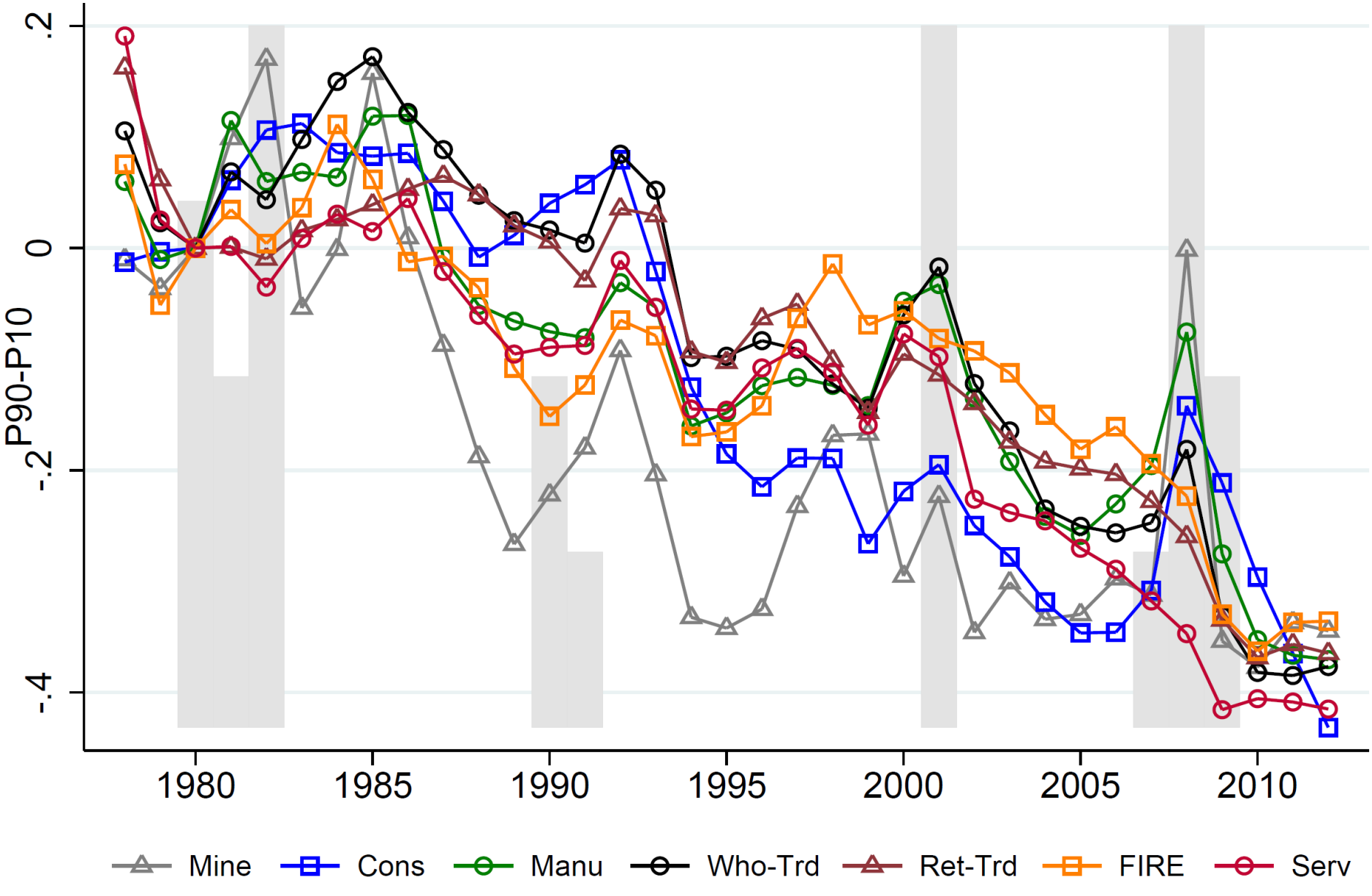
Earnings volatility declined for all earnings groups: relative to 1985



By Broad Industry



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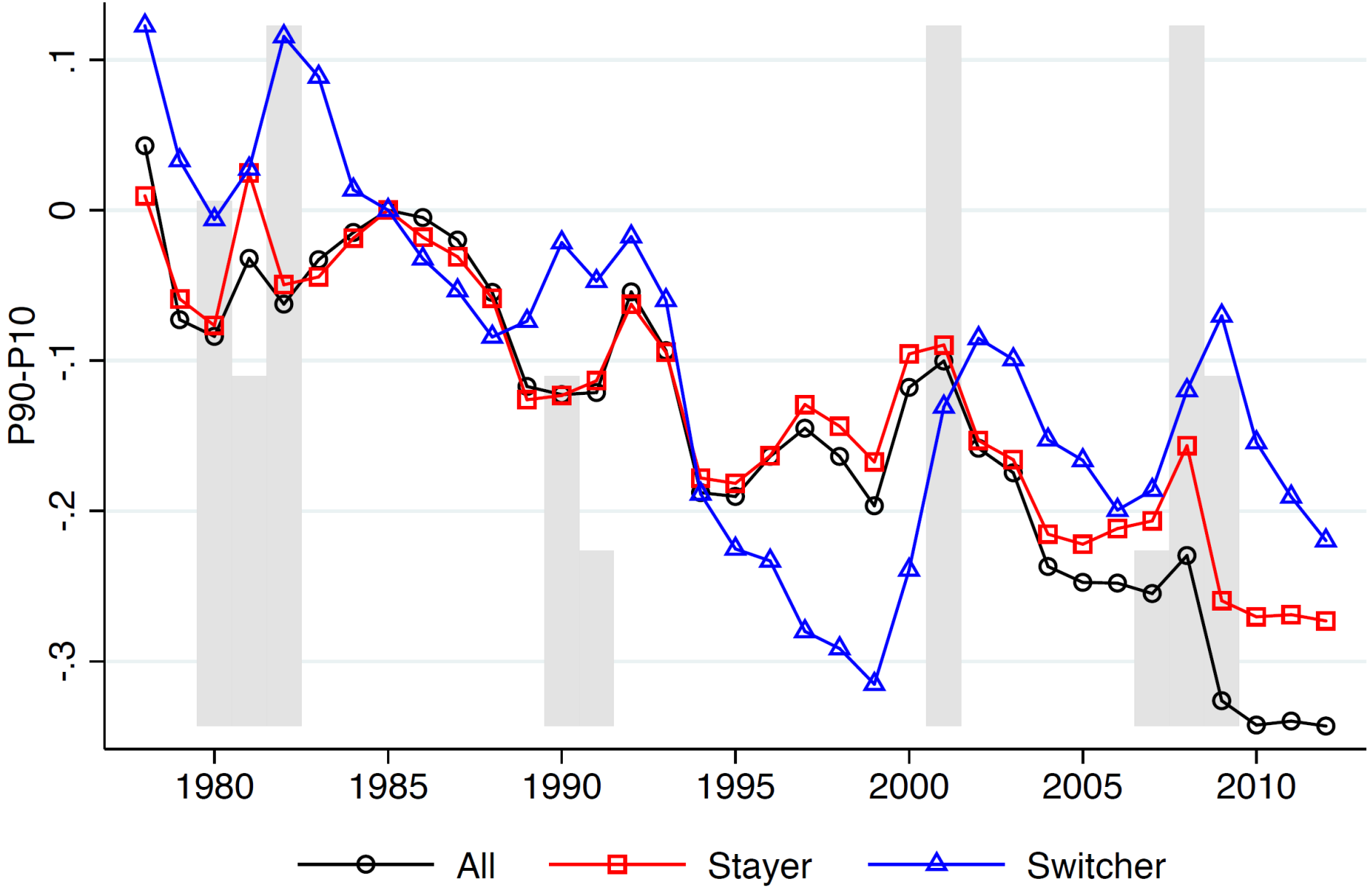
By Stayer/Switcher Employee



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Data

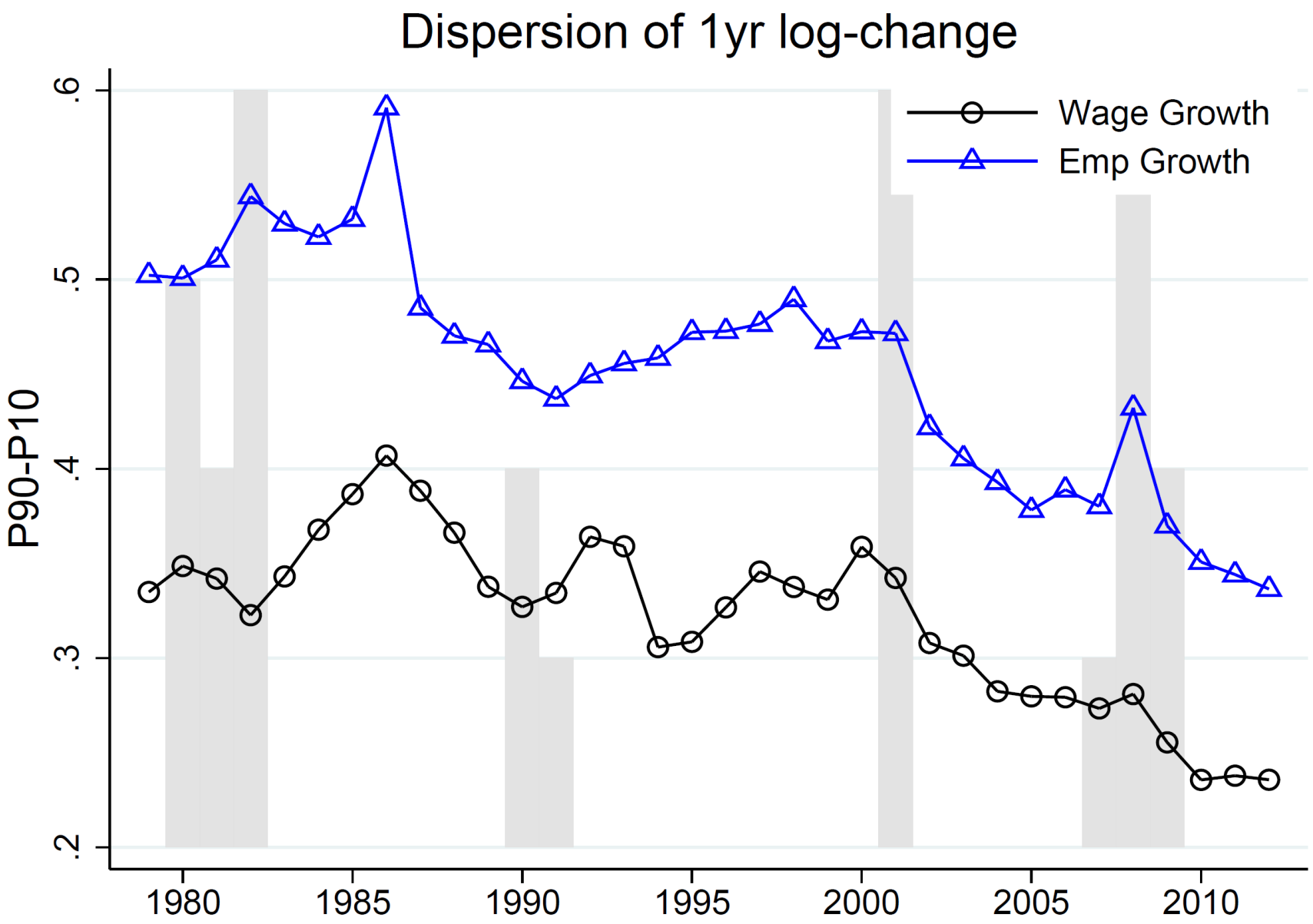
Declining Worker and Firm Volatility

- Workers
- **Firms**

The Macro vs Micro Moderation

Volatility and Inequality

We show a similar result – falling firm volatility



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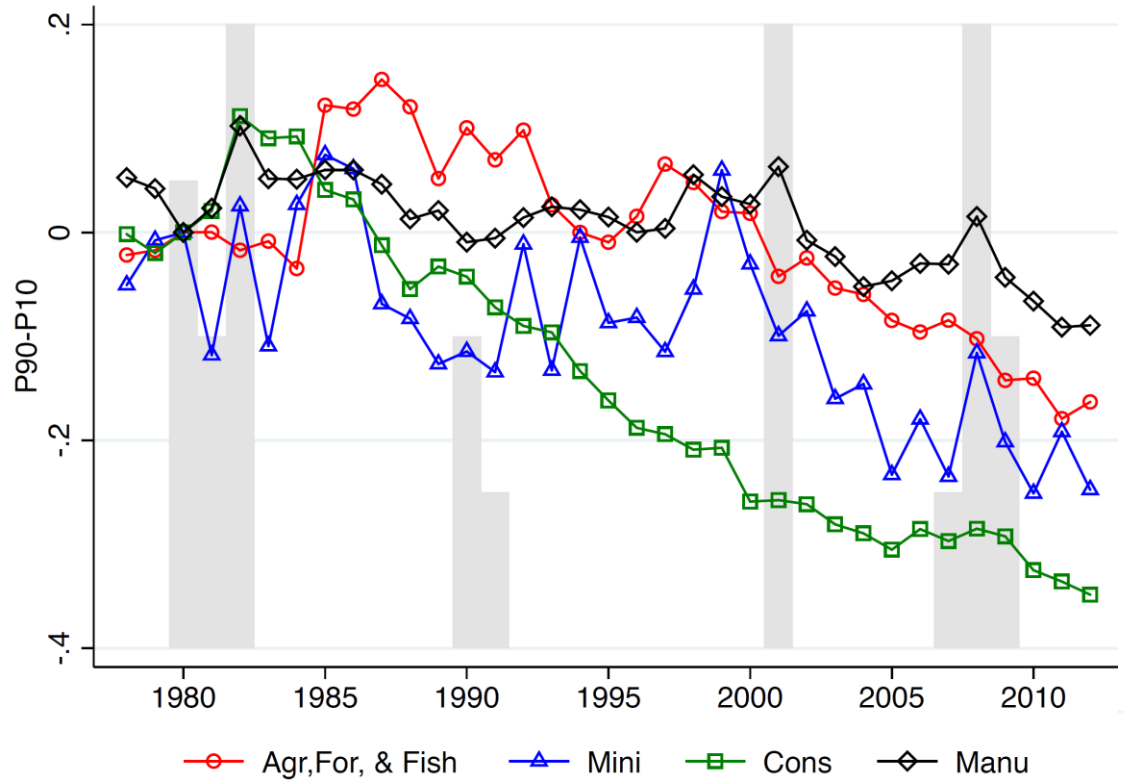
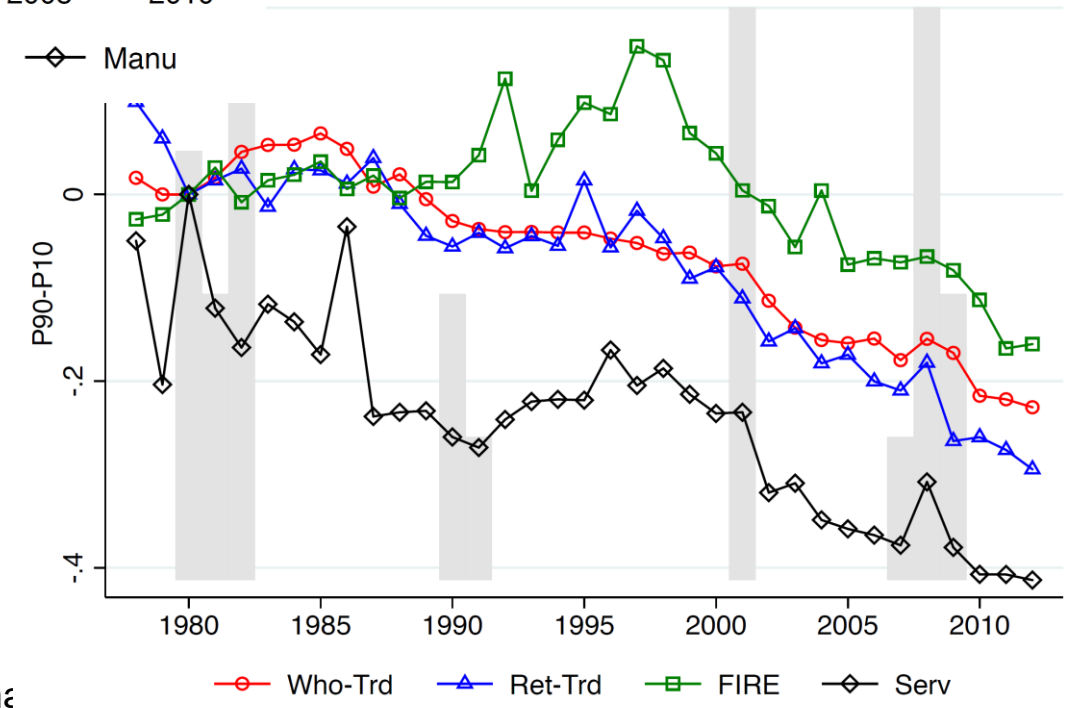


Broadly true across industries

(manuf and fire partial exceptions)



Bloom, Guvenen, Pistaferri, Salgado, Sabelha

Data

Main Results on Workers and Firms

Extensions and Questions

Volatility and Inequality

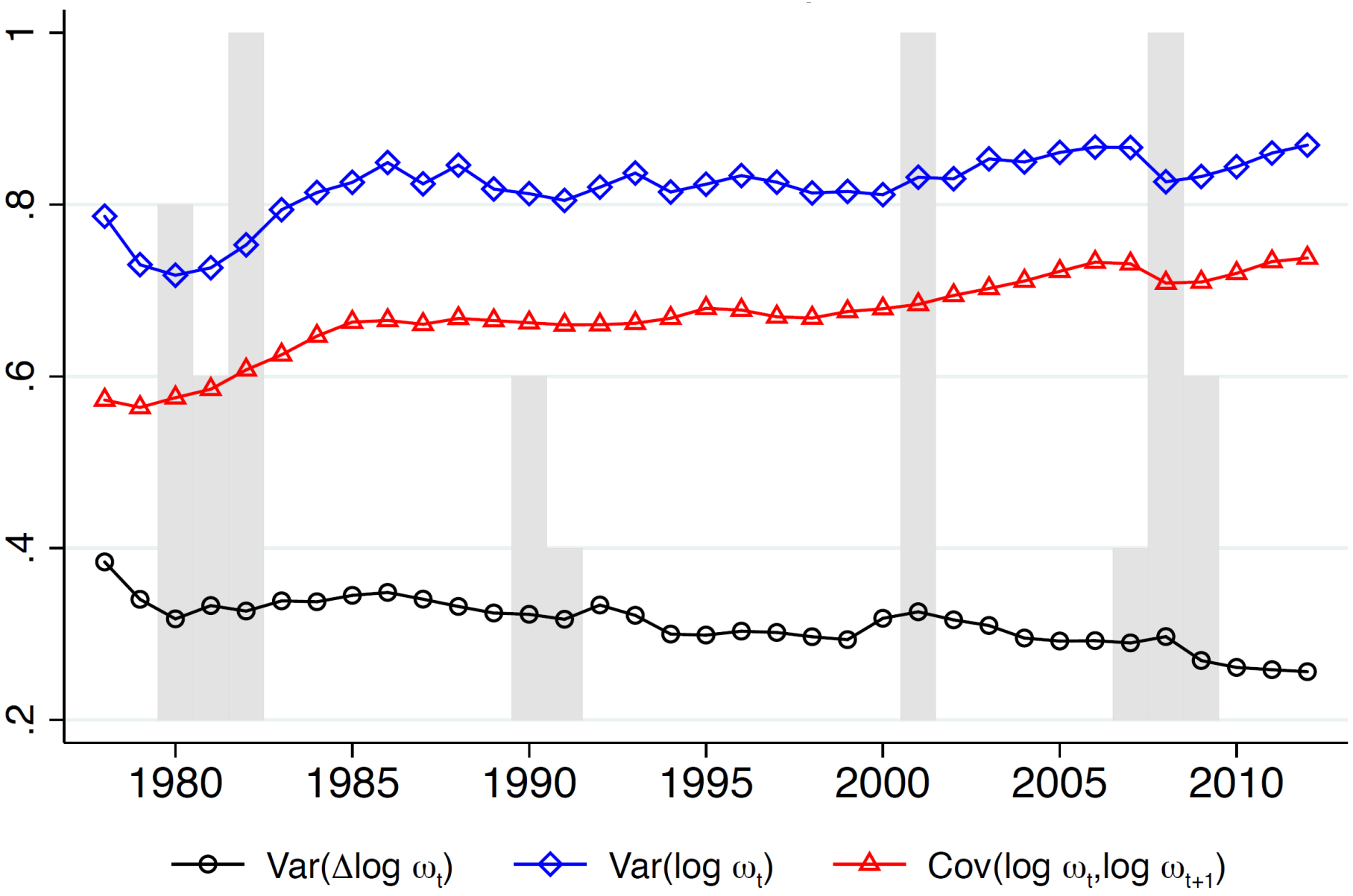
How come inequality is rising while earnings volatility is falling?

$$\underbrace{var\left(\Delta \log w_{it+1}\right)}_{\text{Volatility}} = \underbrace{var\left(\log w_{it+1}\right) + var\left(\log w_{it}\right)}_{\text{Inequality (next and current period)}} - \underbrace{2cov\left(\log w_{it+1}, \log w_{it}\right)}_{\text{Persistence}}$$

Volatility ⬇ **Inequality (next and current period)** ⬆ **Persistence** ⬆

Bloom, Guvenen, Pistaferri, Salgado, Sabelhaus and Song. "The Great Micro Moderation"

Earnings persistence has been rising steadily



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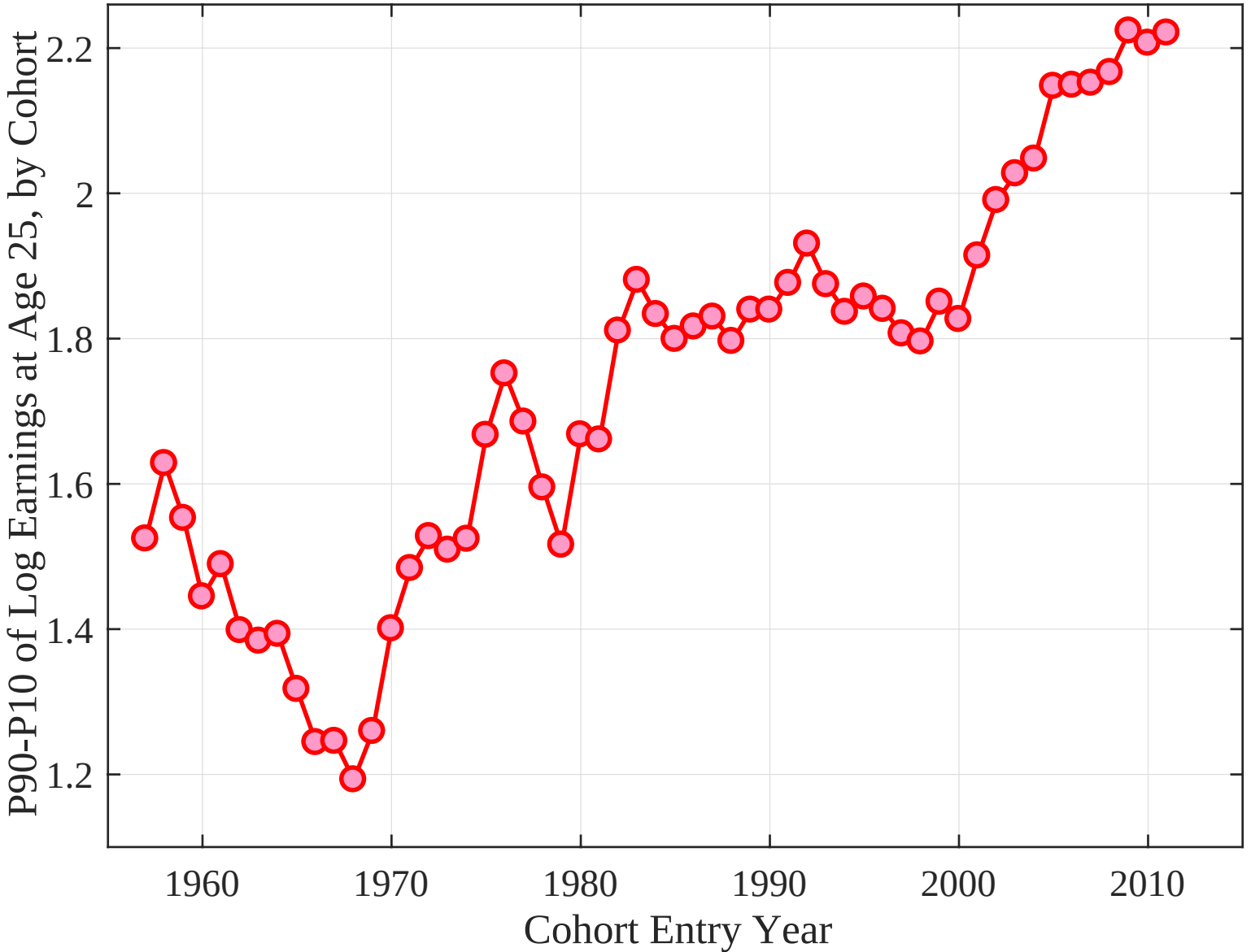
Income inequality among 25-year-old males tripled from 1970 to 2010



Blo

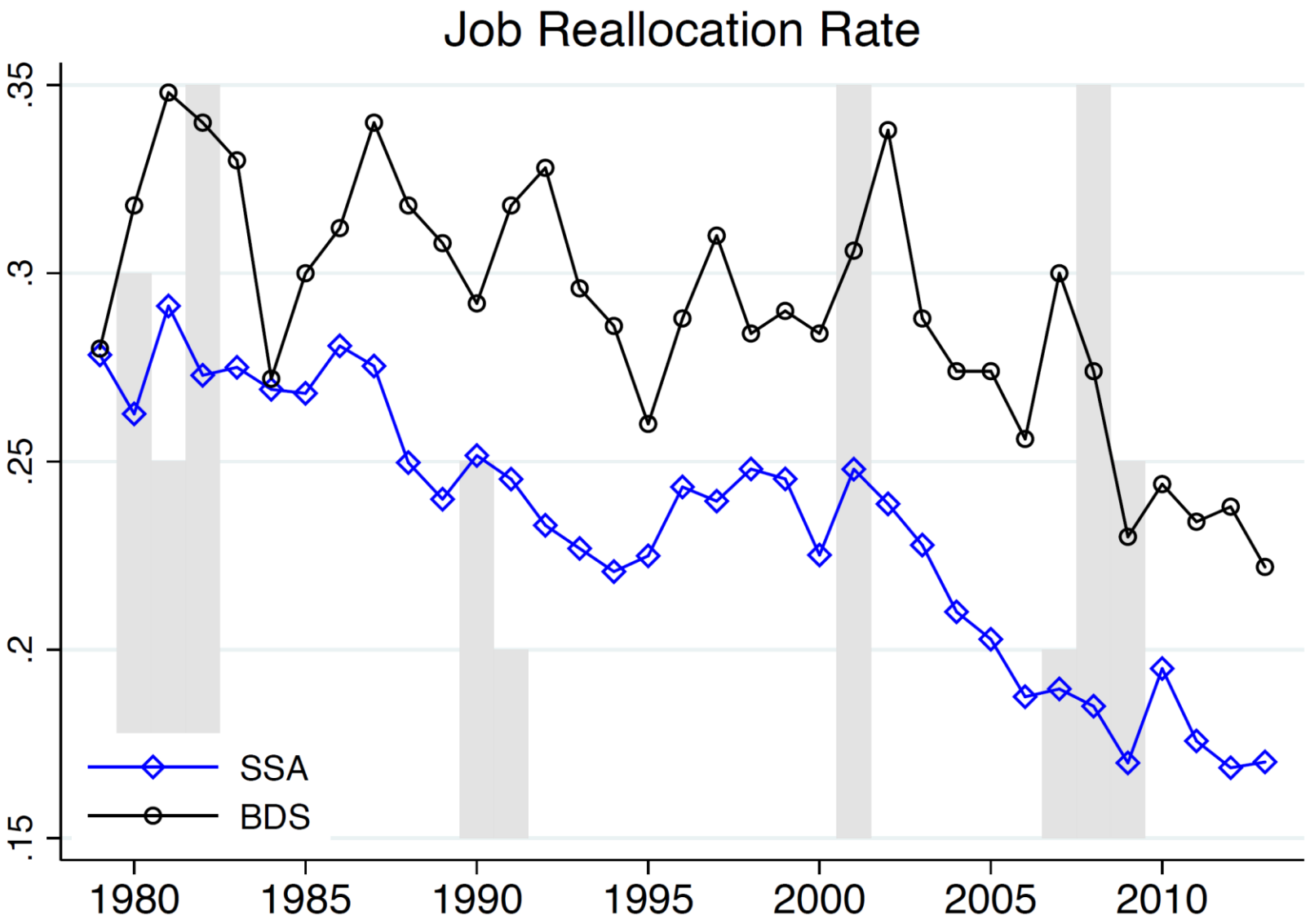
Conclusions

- Evidence of a Great Micro Moderation in the US since 1980
  - Earnings growth variance down about 1/3
  - Firm employment growth variance down about 1/3

- Decline is pervasive: holds true across many subgroups in the economy

- Potentially linked to macro great moderation - if so, declining variance signals lower macro risk pass through

THANKS!



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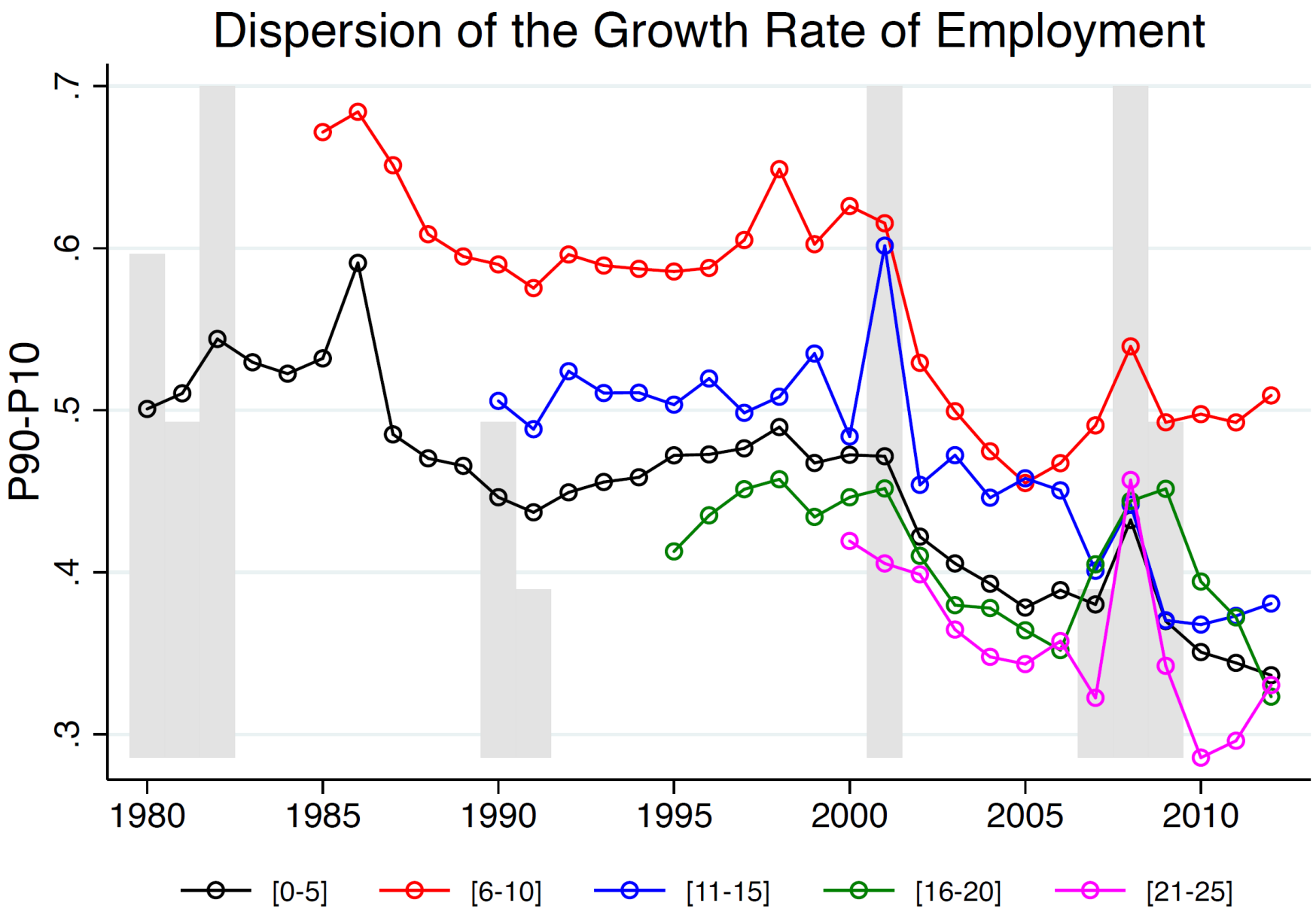
That is robust to the usual checks – e.g. firm age



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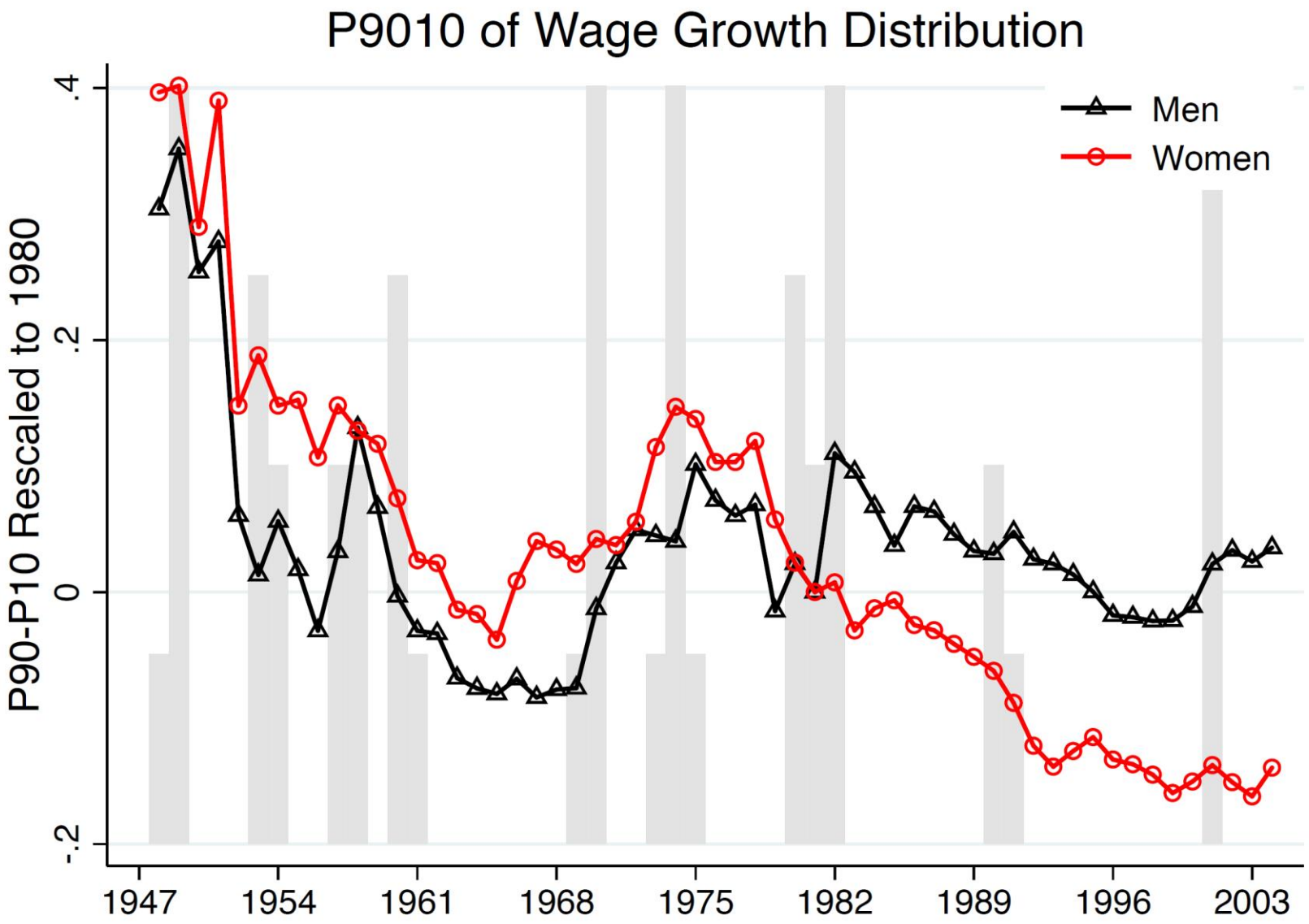

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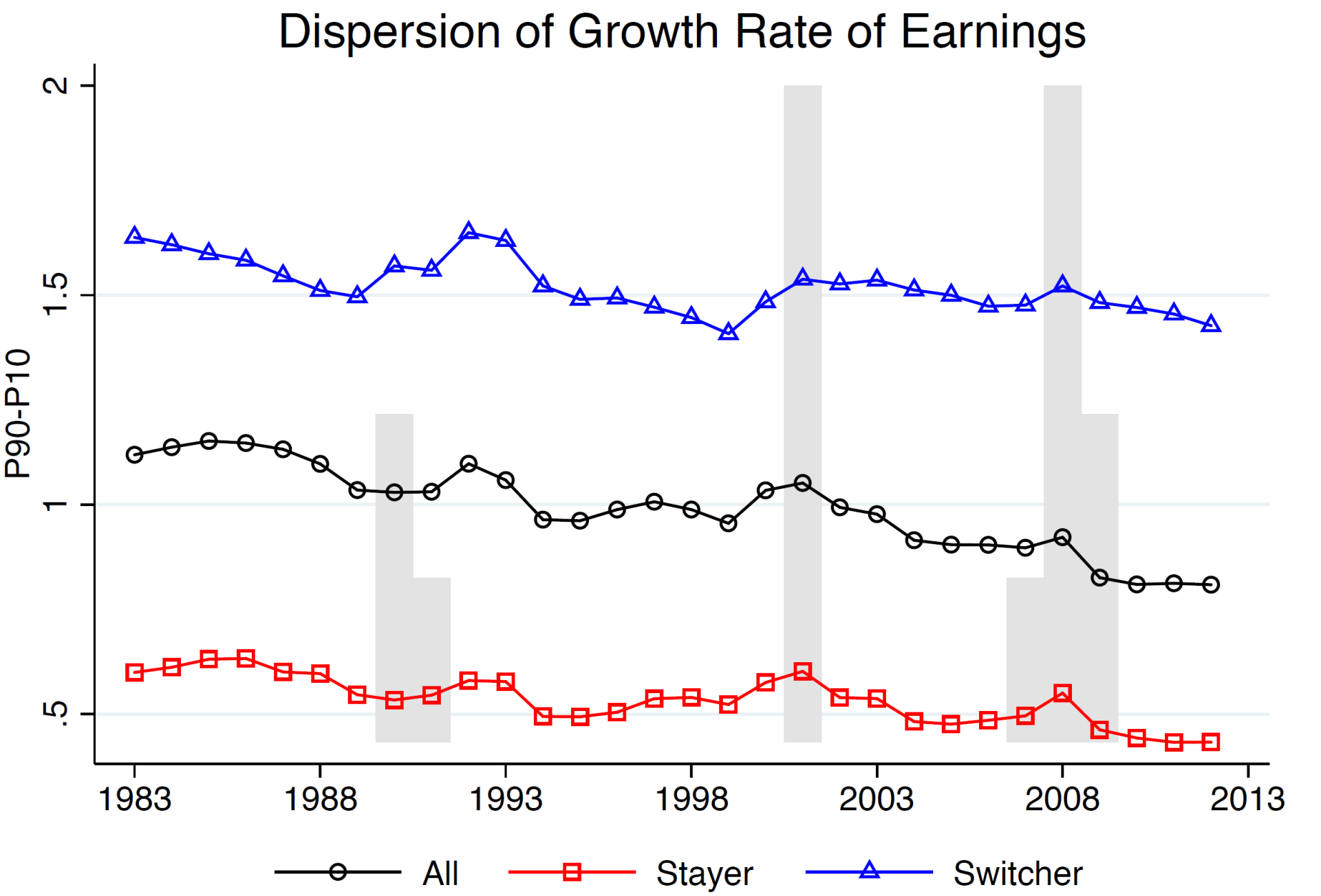

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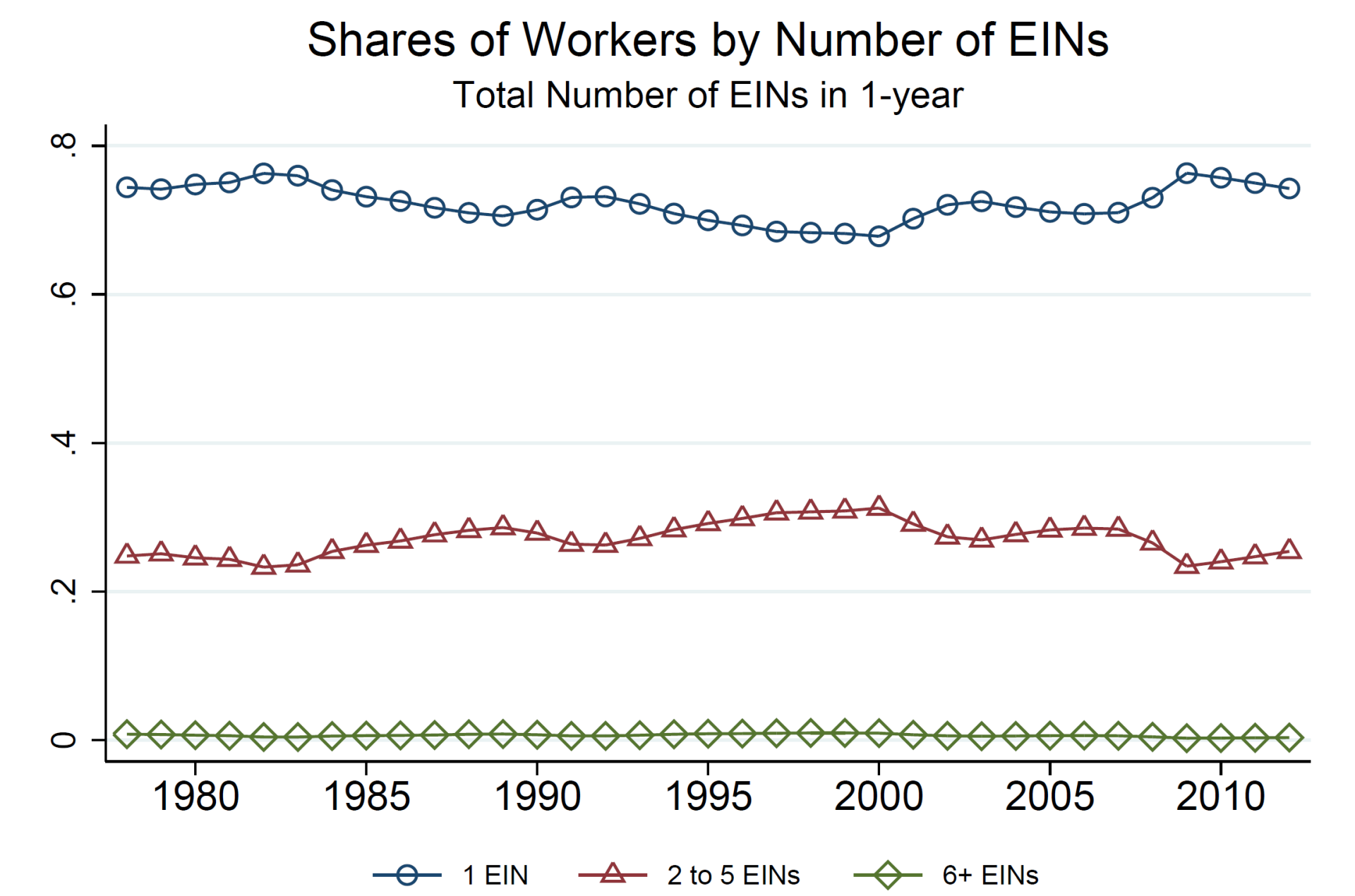

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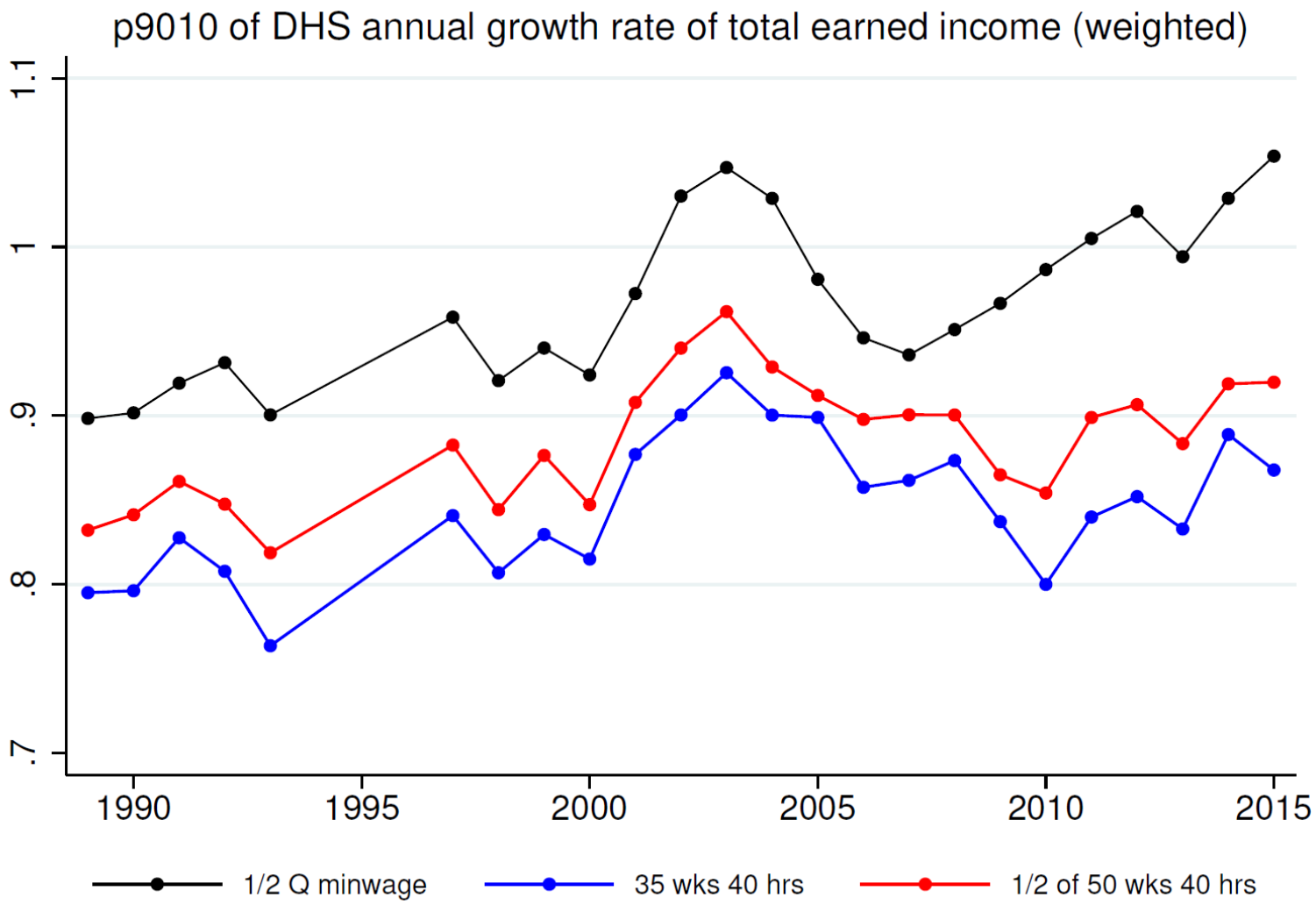
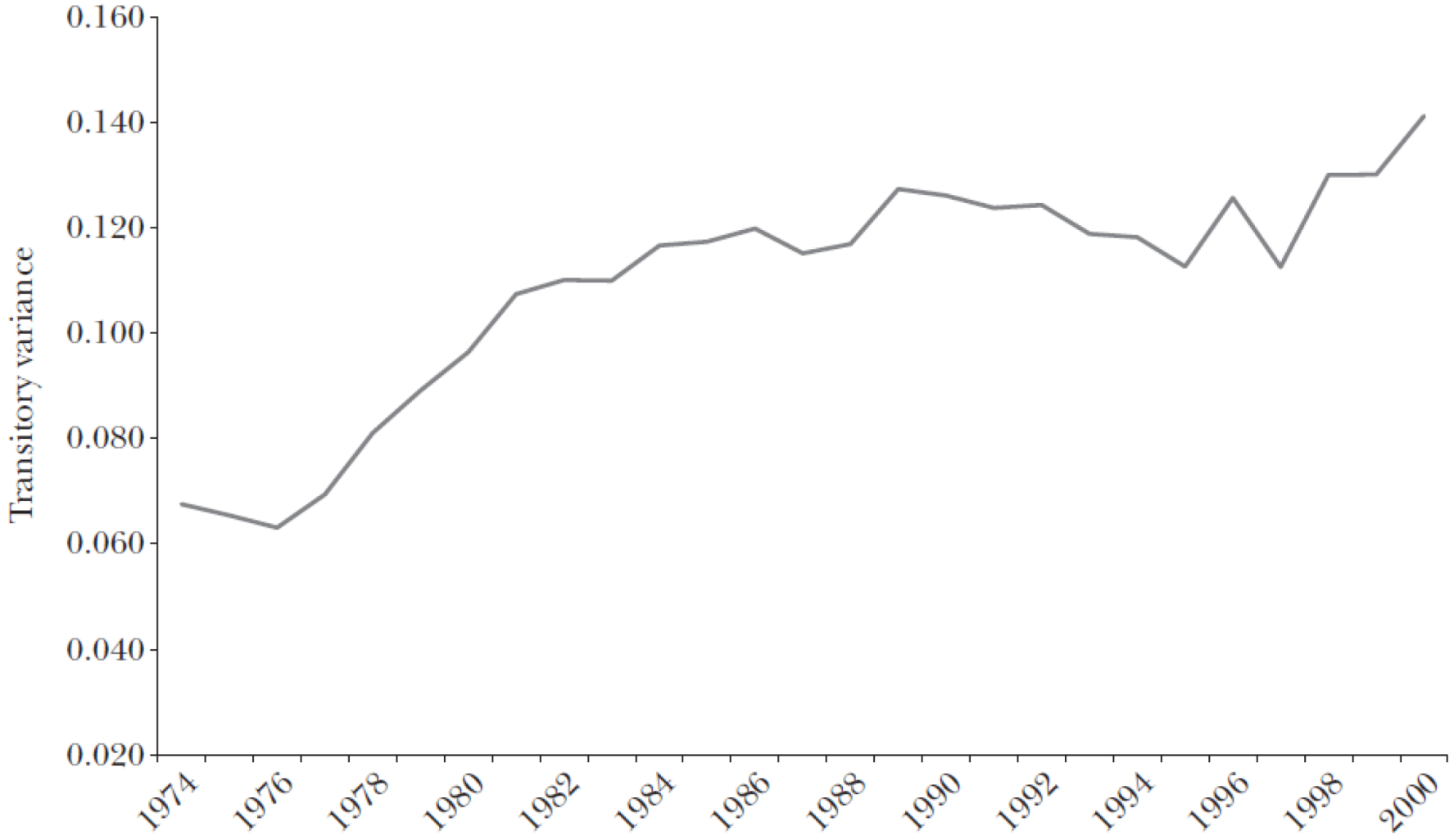
CPS earnings volatility – our calculations



Notes: Ages 25 to 60, drop imputed earnings, all sectors except public and education, total earned income, other those employed, annual growth rates. No data prior to 1989 due to difficulties matching individuals across survey waves (individual IDs are not stable).

PSID earnings volatility trends



Source: Gottshalk and Moffitt (2009)

Gottschalk and Moffit (1994) – equal rise in variance of weeks and wages per week

Table 2. Variances of Permanent and Transitory Real Weekly Wages and Annual Weeks of Work, 1970–87[a]

	Permanent variance				*Transitory variance*			
Variable	*1970–78*	*1979–87*	*Change*	*Percent change*	*1970–78*	*1979–87*	*Change*	*Percent change*
Log weekly wage	0.171	0.230	0.059	35	0.075	0.101	0.026	35
Log of weeks worked	0.014	0.020	0.006	43	0.046	0.063	0.017	37
Number of weeks worked	15.8	17.8	2.0	13	37.8	44.6	6.8	18

Source: Authors' calculations from the PSID.
a. Earnings data are deflated to 1988 dollars.

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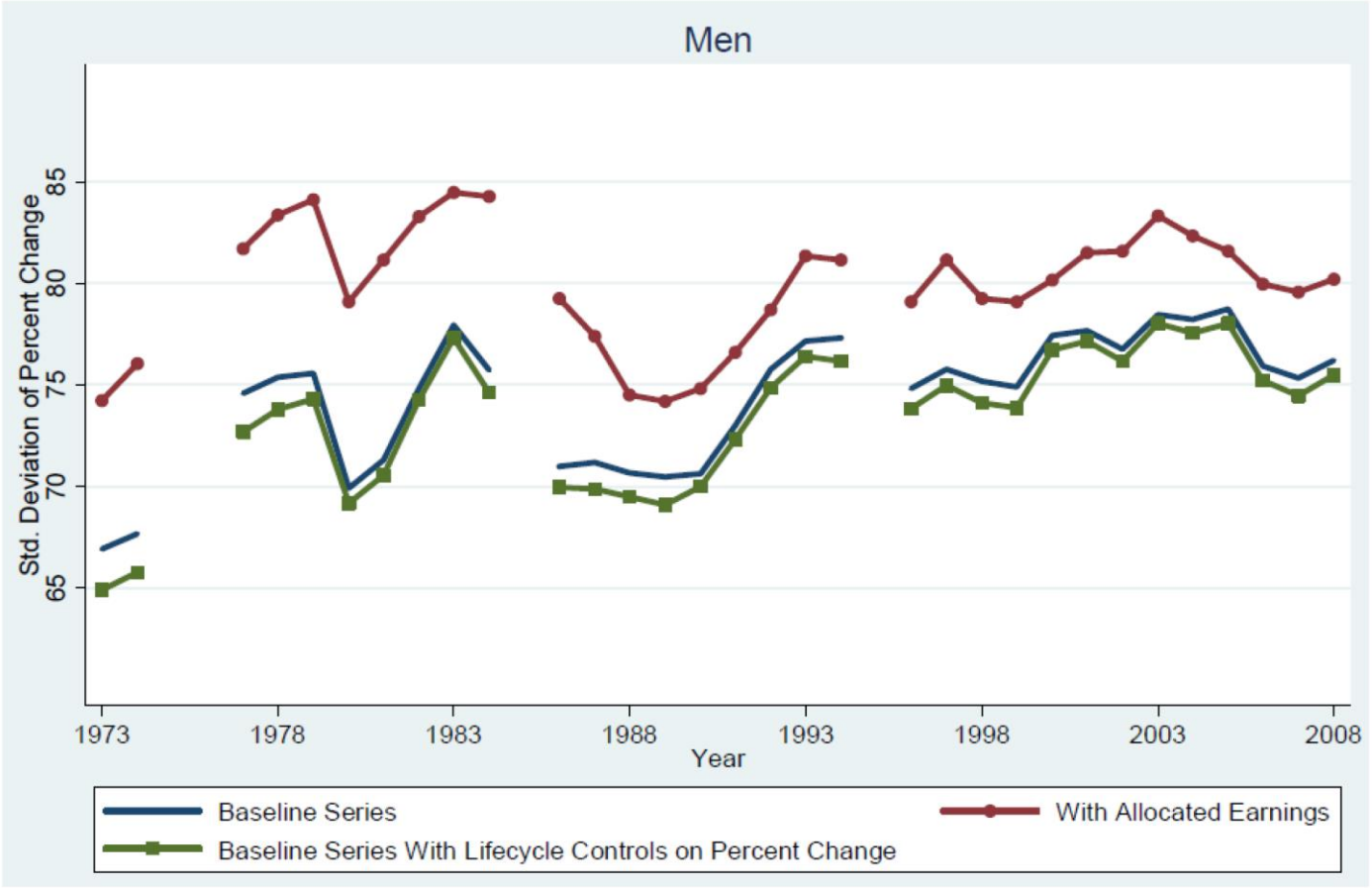
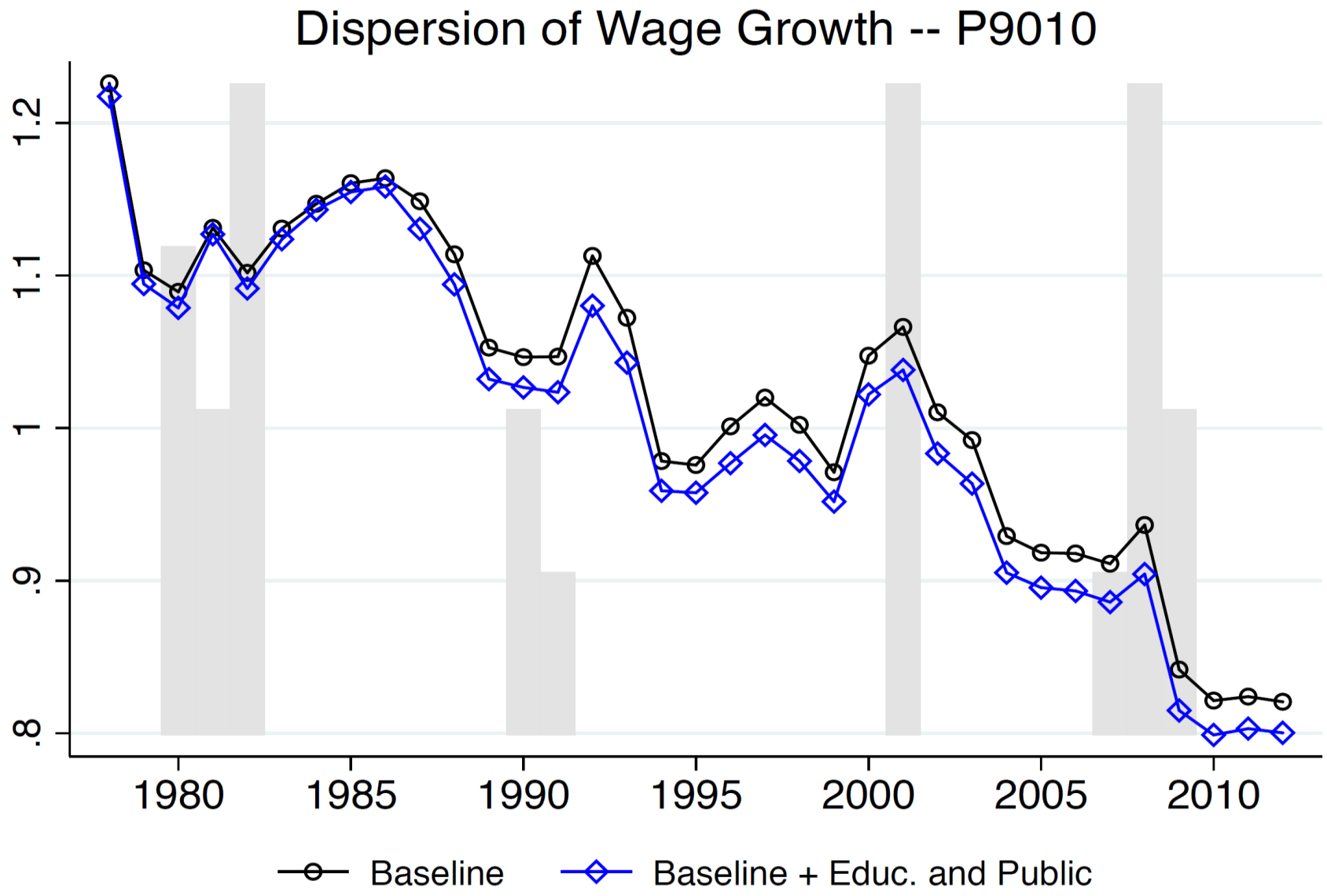
CPS variance of earnings



Source: Ziliak, Hardy and Bollinger (2011, Labor Economics)

With and without Public and Education



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Self employment income – about 3.3% of total (of all individuals, probably much less for firm employees) but 16% of returns

Item	Number of returns	Amount
	(1)	(2)
ted gross income less deficit	147,351,299	9,093,628,703
income	146,879,226	9,233,510,773
ies and wages	122,189,100	6,475,380,882
le interest	44,920,763	100,648,711
xempt interest [1]	5,987,263	68,099,984
ary dividends	27,688,374	214,972,683
fied dividends [1]	25,493,503	158,069,115
income tax refunds	21,309,106	27,850,899
ny received	436,667	9,229,979
ness or profession net income	17,969,165	357,363,490
ness or profession net loss	5,560,747	55,290,946
are of total	16.0%	3.3%
of capital assets net gain in AGI	14,984,798	510,529,891
of capital assets net loss in AGI	9,008,579	20,909,110
of property other than capital assets, net gain less loss	2,138,829	1,029,266

IRS Statistics of income

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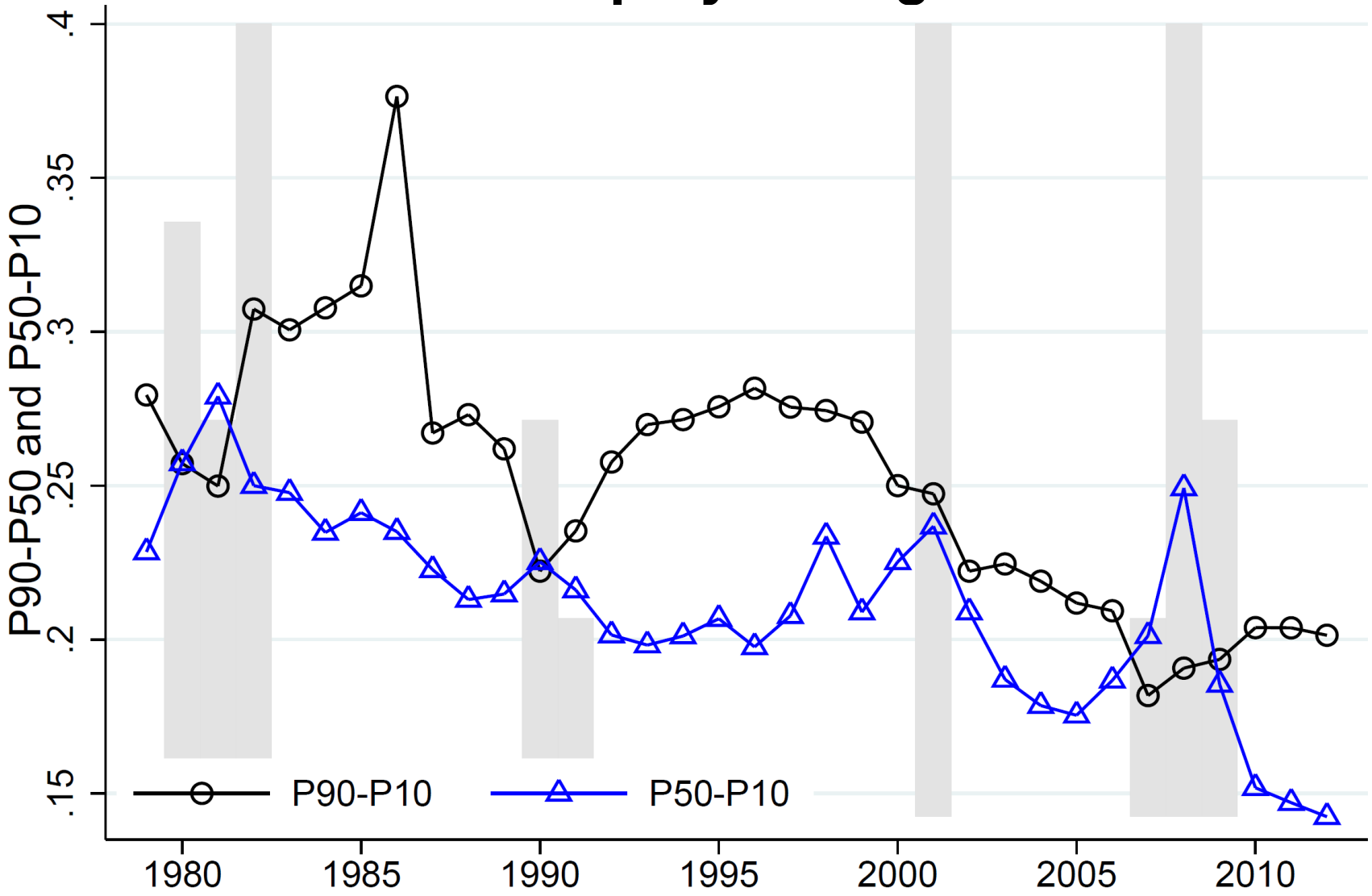
And as with earnings see a rise in left skew in recessions in firm employment growth



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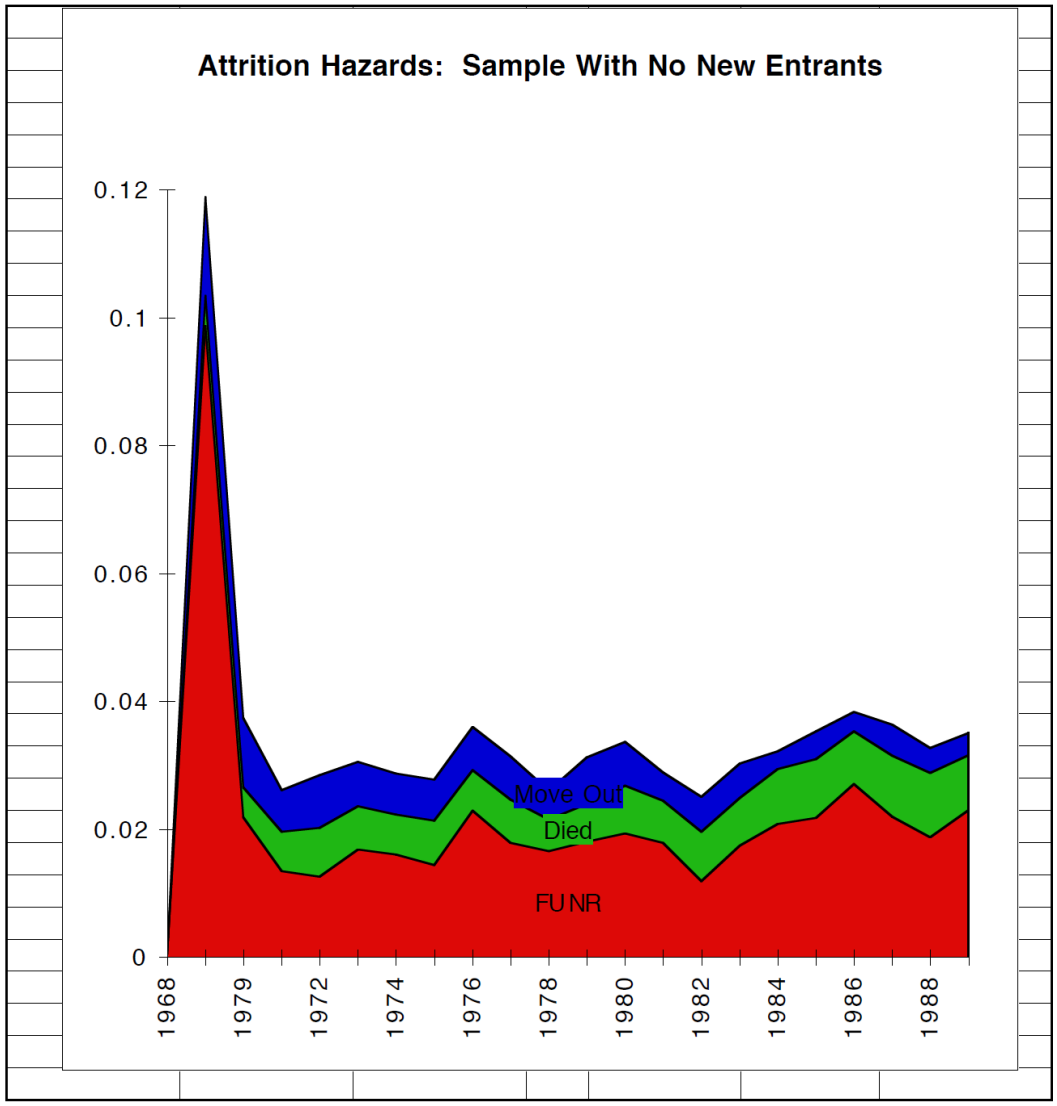
PSID attrition hazard (no new entrants), Fitzgerald, Gottschalk and Moffit (1997)



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Consumption volatility has apparently also increased as measured in both the PSID and CEX (Davis and Kahn, 2008)

American Economic Review 101 (August 2011): 2248–2270
http://www.aeaweb.org/articles.php?doi=10.1257/aer.101.5.2248

Did Household Consumption Become More Volatile?†

By OLGA GORBACHEV*

By now it is well documented that volatility of male earnings increased substantially from the 1970s to early 1980s, was stable in the 1980s to early 1990s, and began to increase again in the mid 1990s.[1] Volatility of family income, both its permanent and transitory components, has also increased since the 1970s.[2]

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What is an EIN (Employer Identification Number)?

Any firm with an employee (so issues a W-2) must have an EIN

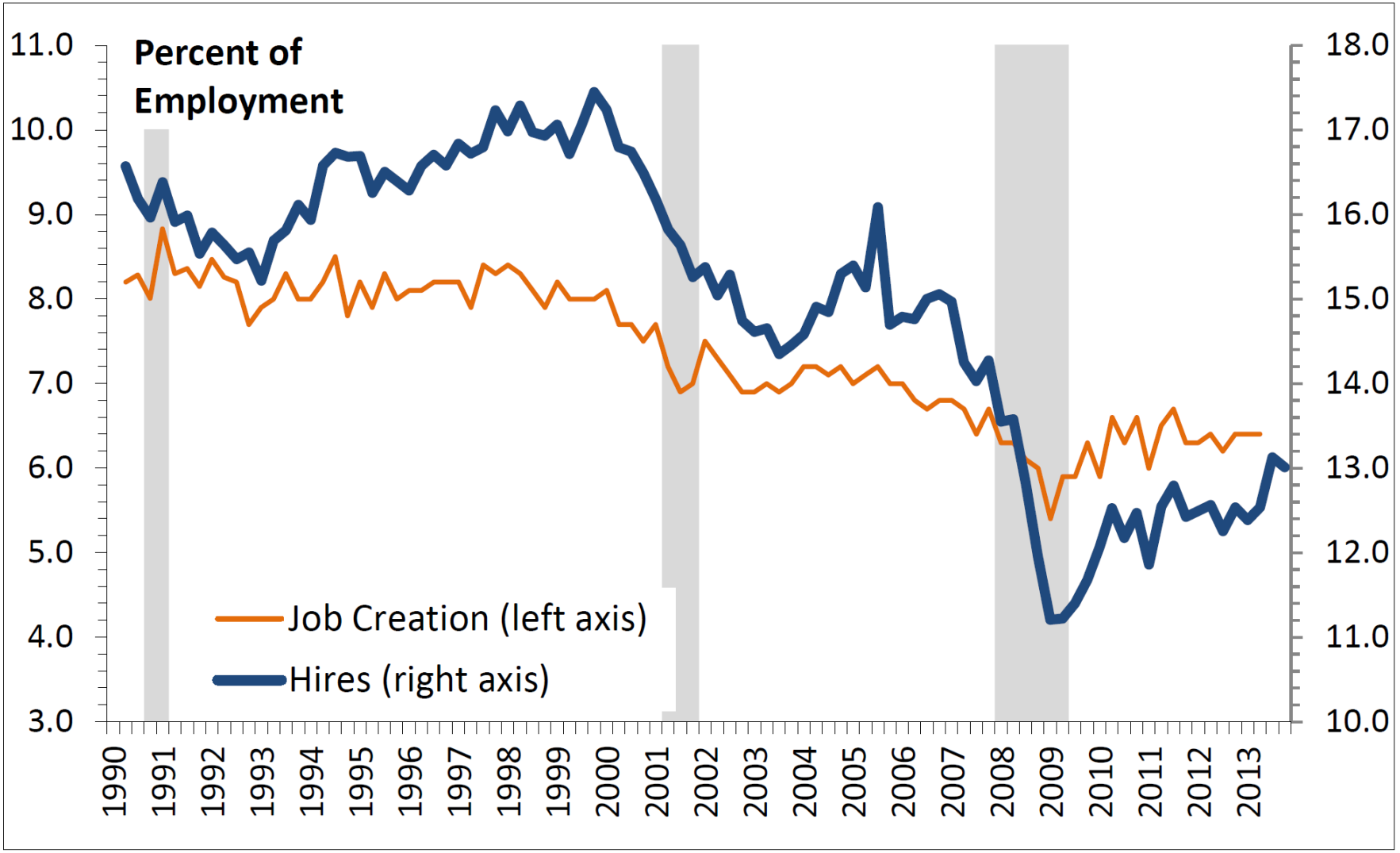
Bureau of Labor Statistics uses the EIN as its definition of a firm

Many organizations have one (e.g. Facebook, Walmart Stores)

Others have many, e.g.

- Stanford has 4 EINs (1 for the university, 1 for each hospital and 1 for the bookstore)
- The 6165 public companies in D&B have 19,969 EINs

Papers show “declining dynamism” (falling firm creation and destruction) – BLS data



Source: Davis and Haltiwanger (2014)

The European Unemployment Dilemma

Lars Ljungqvist

Stockholm School of Economics

Thomas J. Sargent

University of Chicago and Hoover Institution

Post–World War II European welfare states experienced several decades of relatively low unemployment, followed by a plague of persistently high unemployment since the 1980s. We impute the higher unemployment to welfare states' diminished ability to cope with more turbulent economic times, such as the ongoing restructuring from manufacturing to the service industry, adoption of new information technologies, and a rapidly changing international economy. We use a general equilibrium search model in which workers accumulate skills on the job and lose skills during unemployment.

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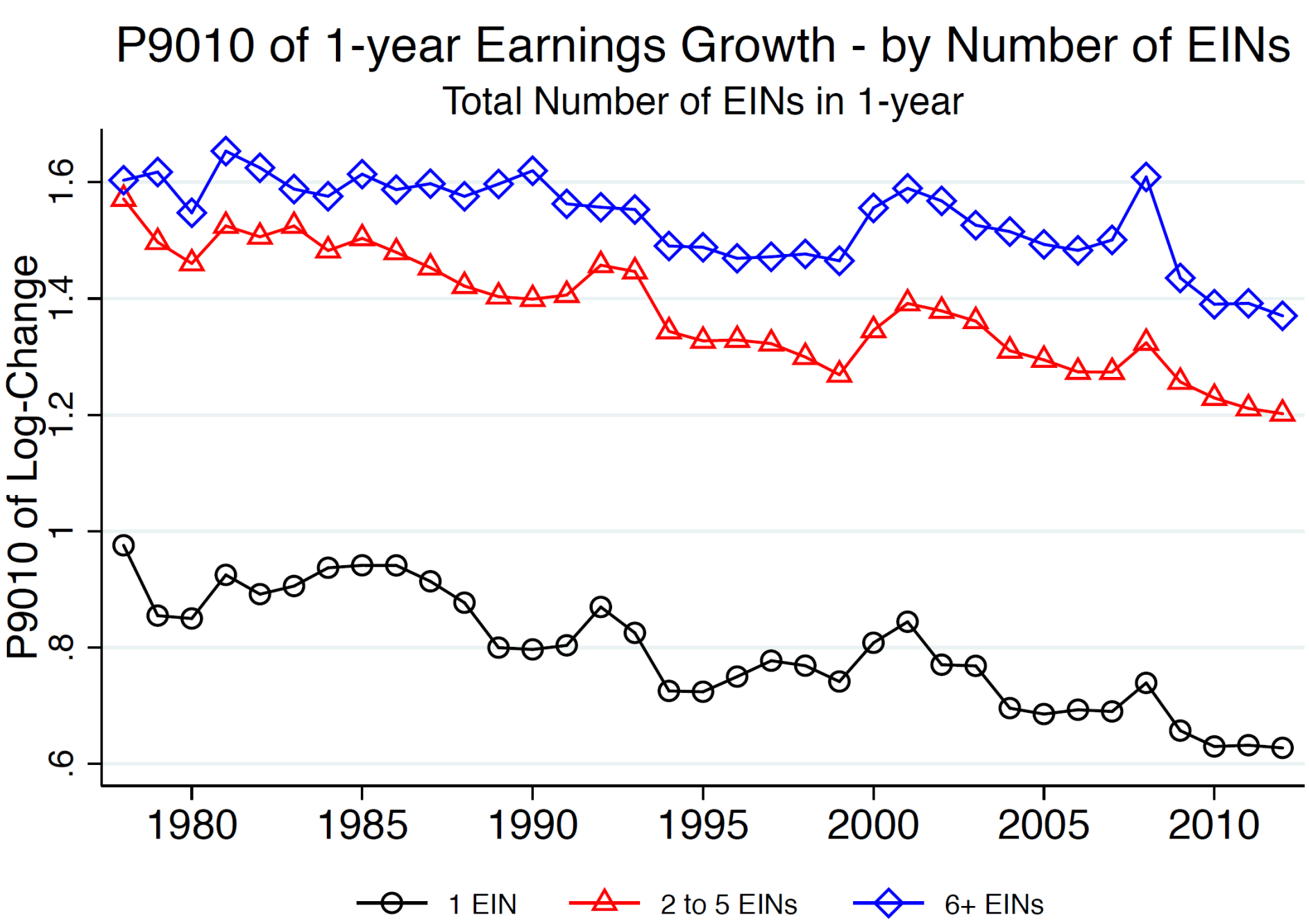

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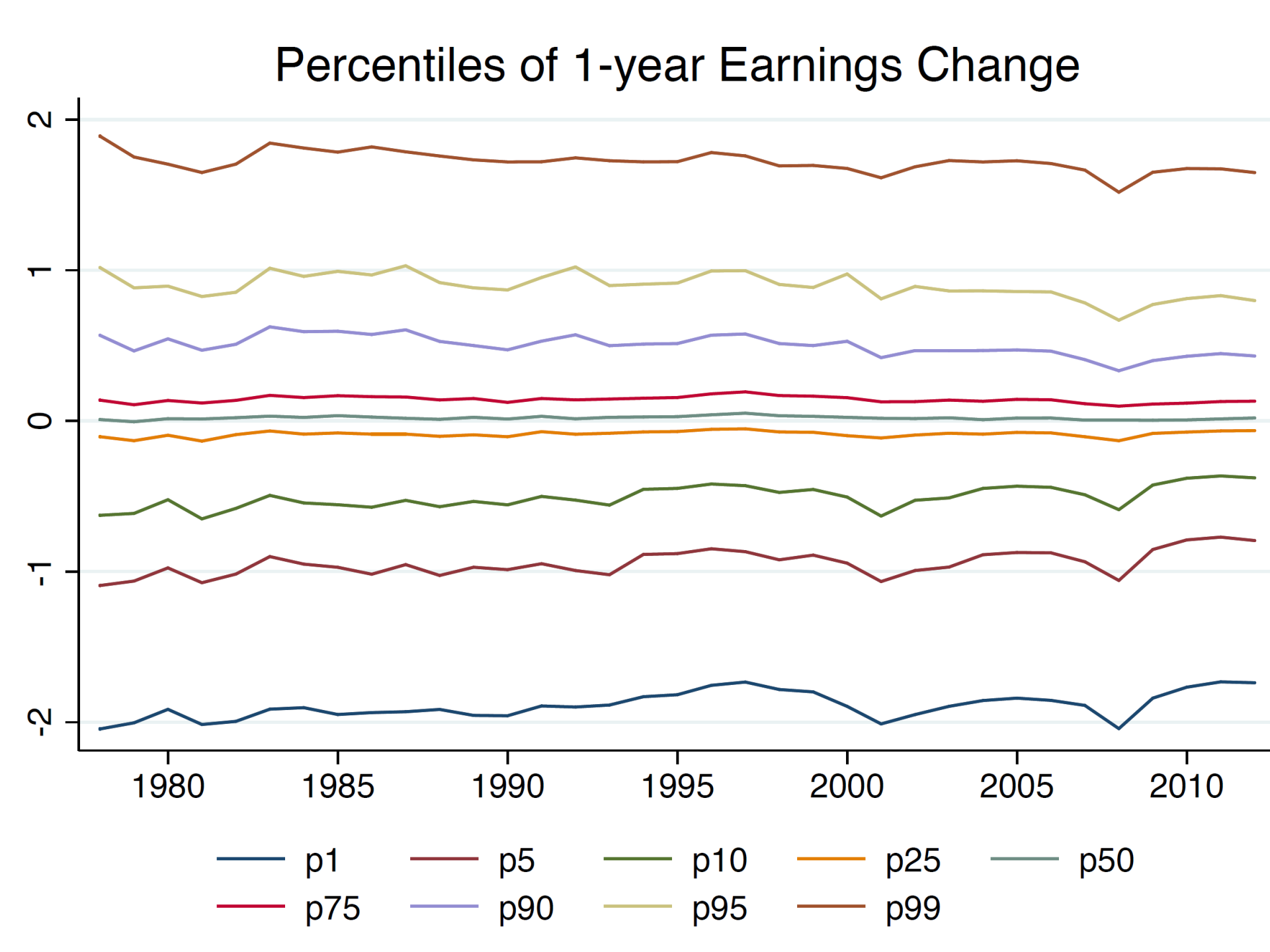
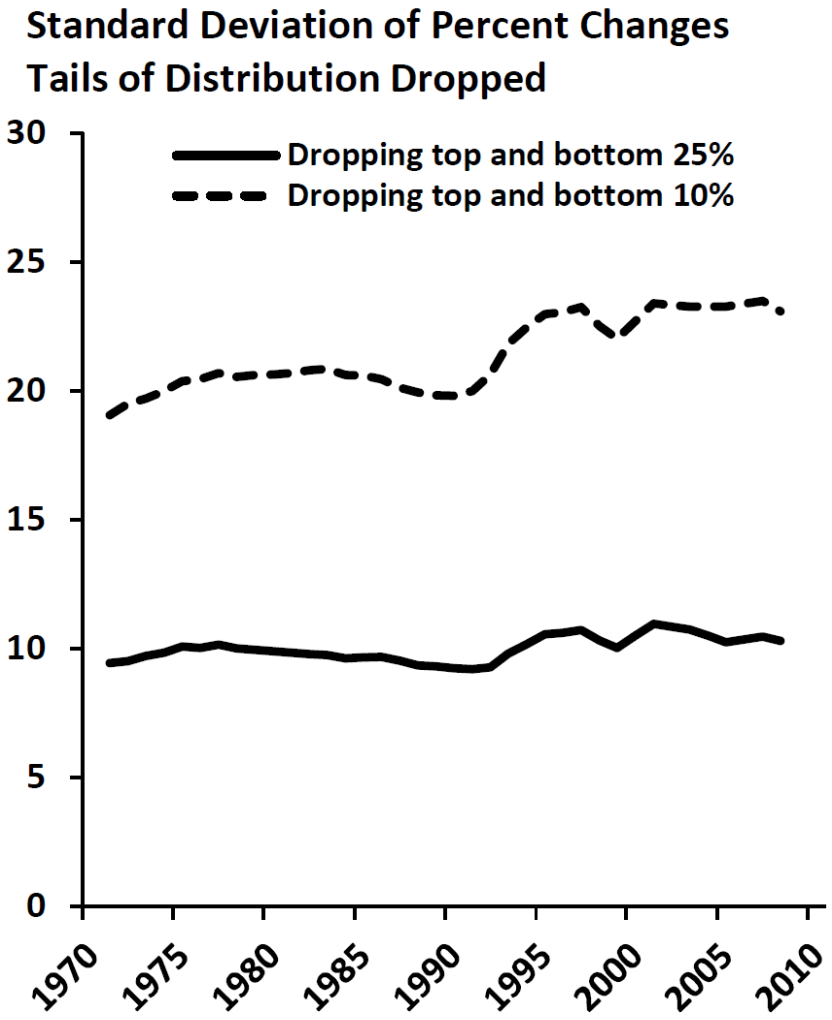
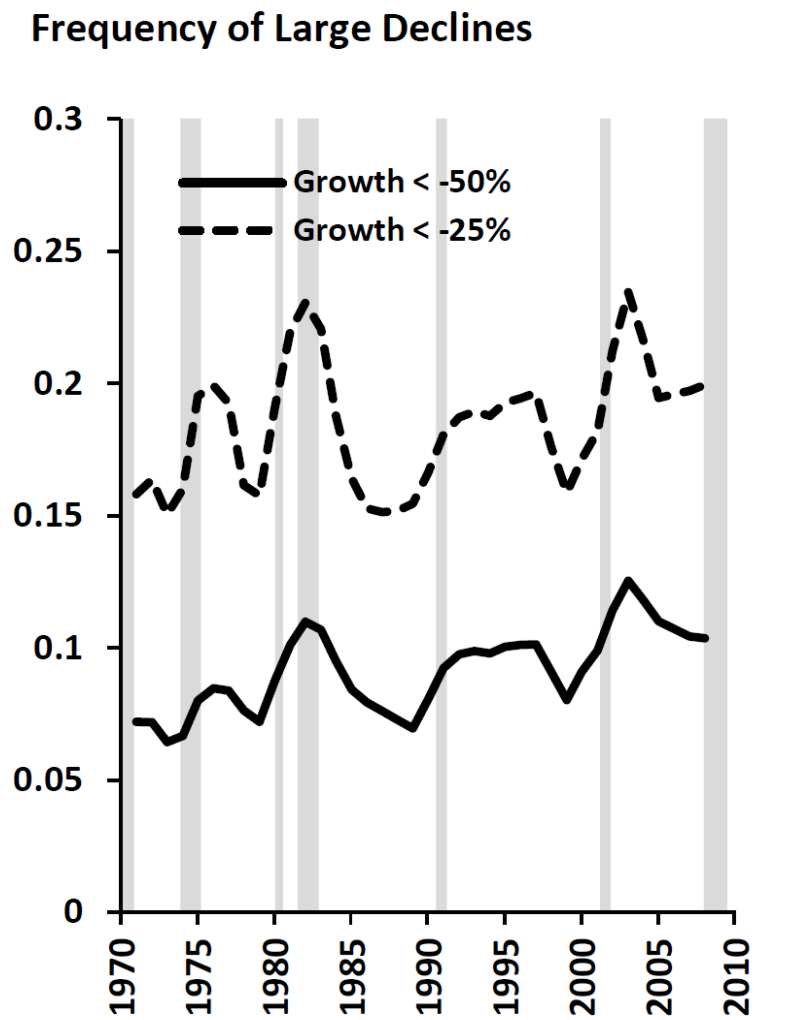

Percentiles of 1-year Earnings Change
2
1
0
-1
-2
1980
1985
1990
1995
2000
2005
2010
p1
p5
p10
p25
p50
p75
p90
p95
p99

PSID rising variance heavily driven by tails



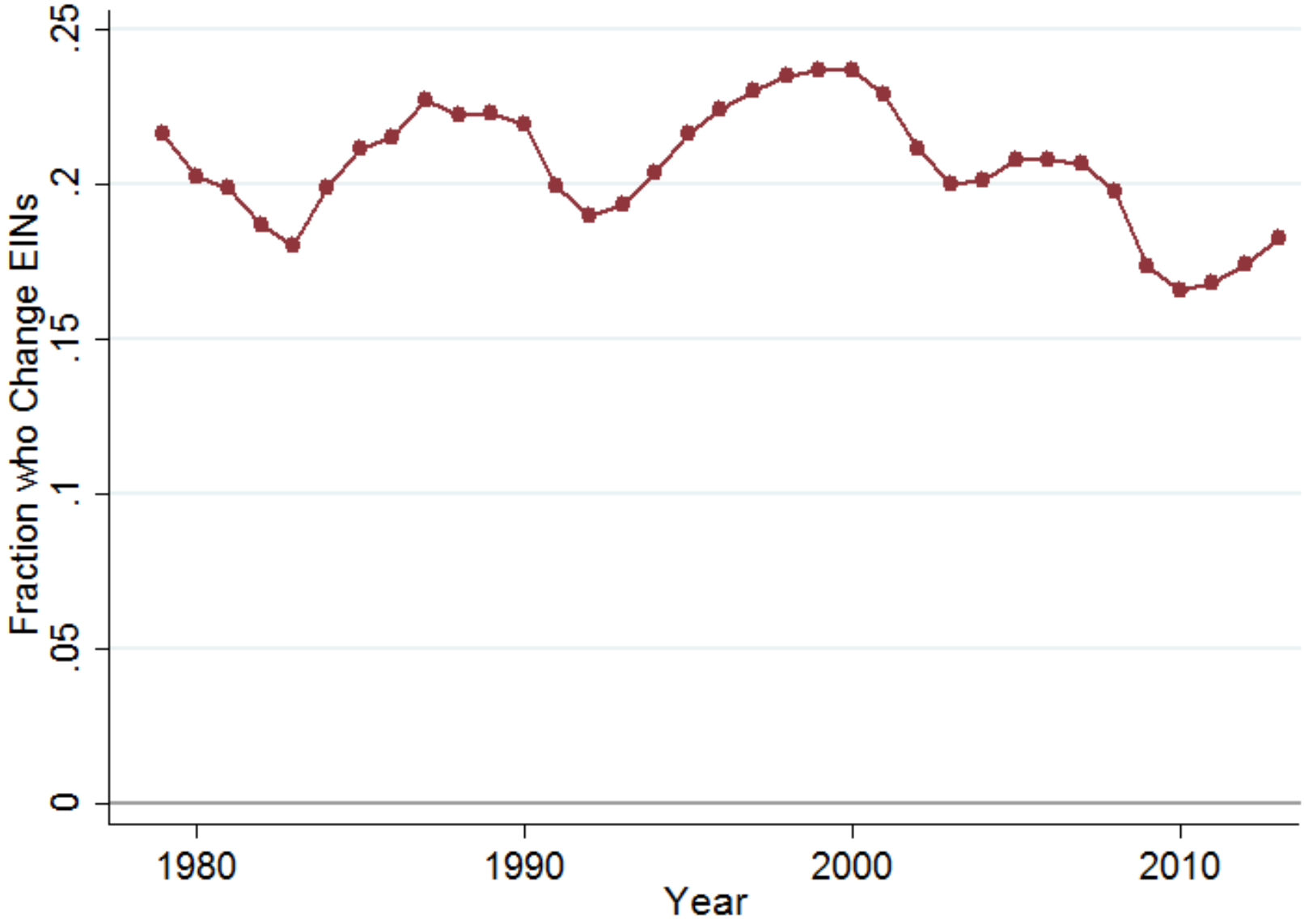
Note. 3-year moving averages of 2-year changes.



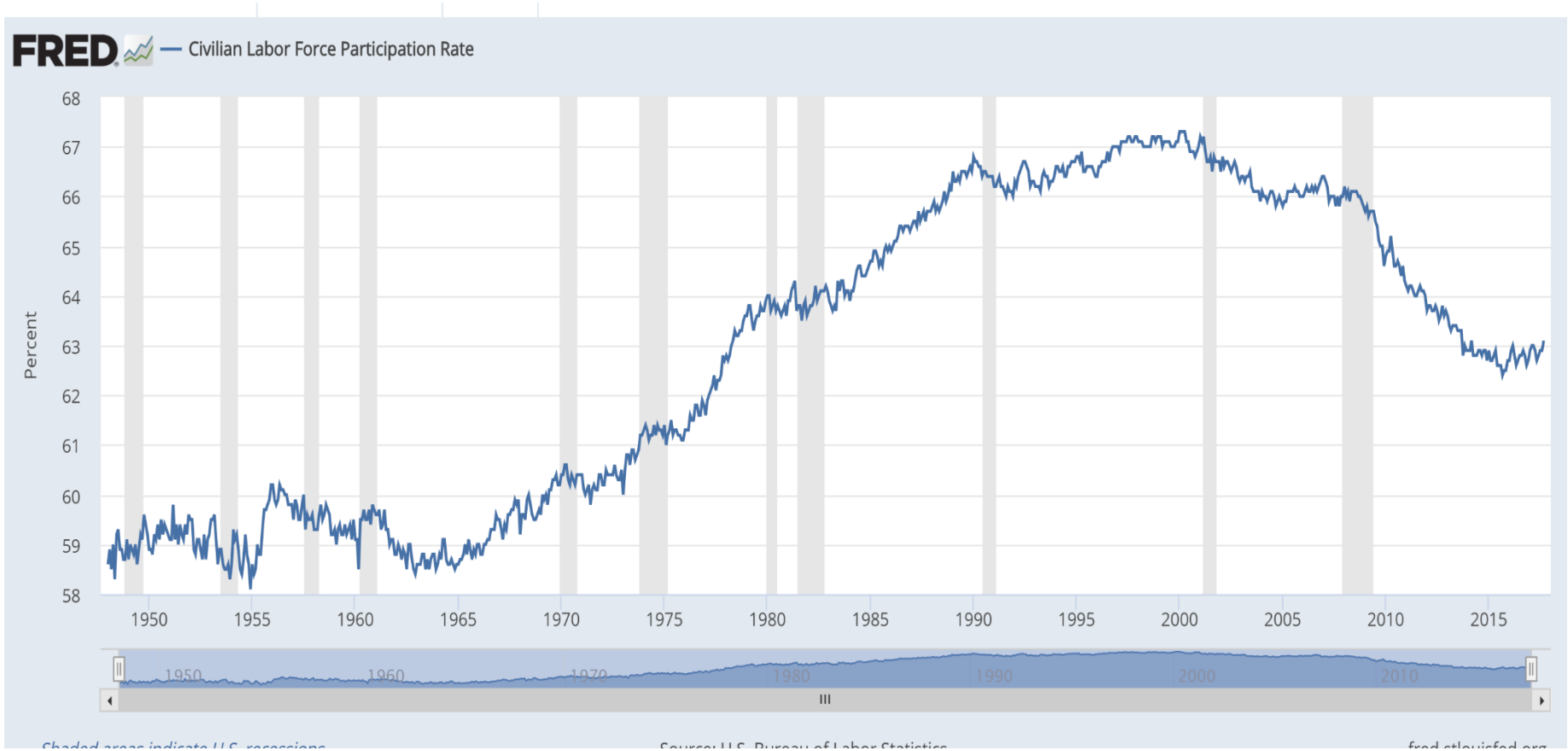
Note. 3-year moving averages of 2-year changes.
Shaded areas denote NBER recessions.

Source: Dynan, Elmendorf and Sichel (2012)

Job churn - SSN-EIN match change - is flat/falling, in the SSA annual data



Labor force participation inverse U-shaped between 1978 and 2013



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The evidence is also taken as a stylized fact in parts of the economics literature – for example

The Evolution of Household Income Volatility*

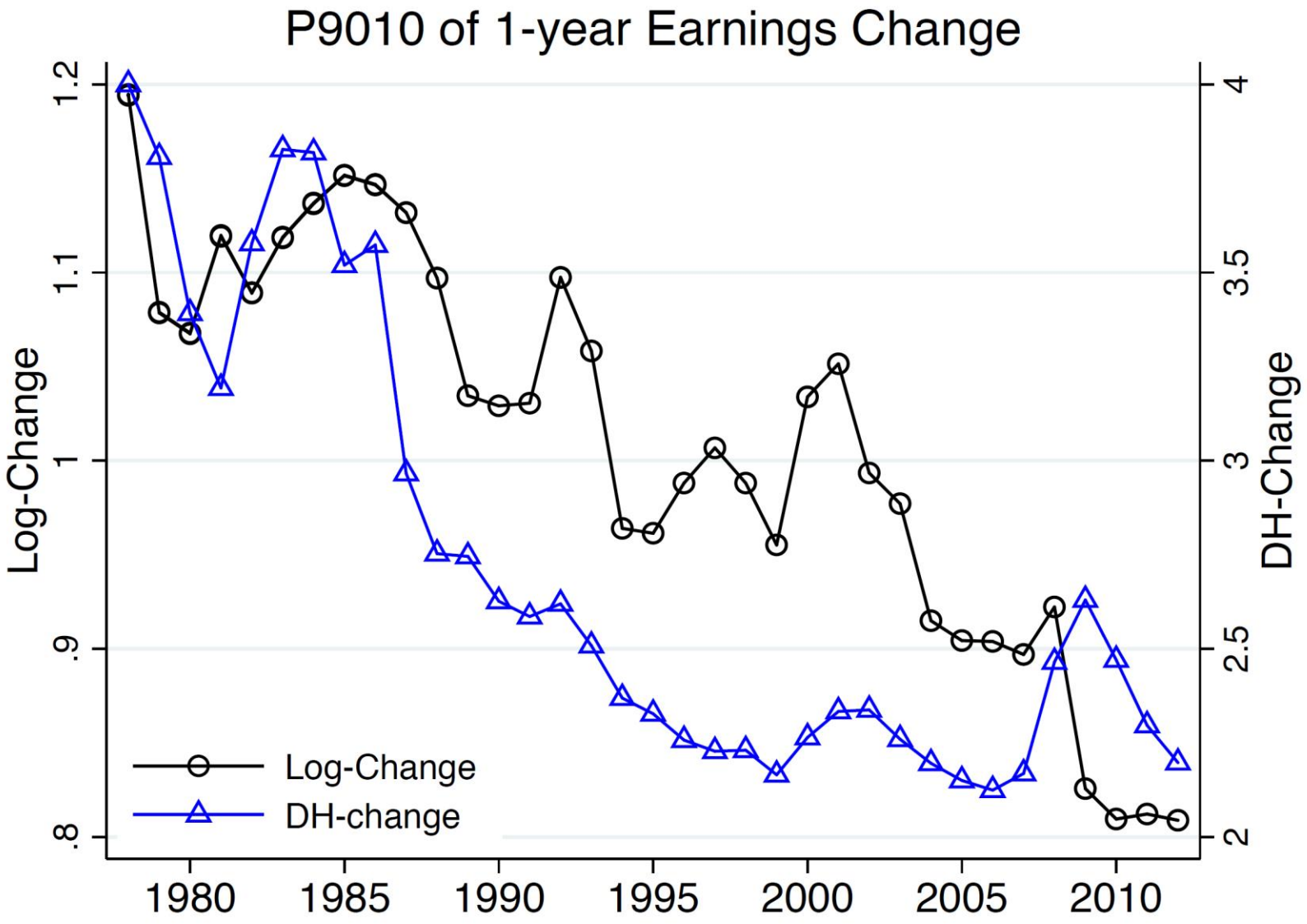
Karen Dynan, Douglas Elmendorf, and Daniel Sichel

Abstract

Using a representative longitudinal survey of U.S. households, we find that household income became noticeably more volatile between the early 1970s and the late 2000s despite the moderation seen in aggregate economic activity during this period. We estimate that the standard deviation of percent changes in household income rose about 30 percent between 1971 and 2008. This widening in the distribution of percent changes was concentrated in the tails. The share of households experiencing a 50 percent plunge in income over a two-year period climbed from about 7 percent in the early 1970s to more than 12 percent in the early 2000s before retreating to 10 percent in the run-up to the Great Recession. Households' labor earnings and transfer payments have both become more volatile over time. As best we can tell, the rise in the volatility of men's earnings appears to owe both to greater volatility in earnings per hour and in hours worked.

Bloom, Guvenen, Pistaferri, Salgado, Sabelhaus and Song. "The Great Micro Moderation"

Allowing movement in/out of employment leads earnings volatility to fall even more (≈50%)



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