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 Ljungqvist 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

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

Upside and downside risk: examine both sides
Earnings volatility declined for all earnings groups: relative to 1985

Conditional Dispersion Relative to 1985

Diff of P90-P10 with respect to 1985

Percentiles of the Recent Earnings Distribution
By Broad Industry

Data

Declining Worker and Firm Volatility
- Workers
- Firms

The Macro vs Micro Moderation

Volatility and Inequality

We show a similar result – falling firm volatility
Broadly true across industries
(manuf and fire partial exceptions)
Data

Main Results on Workers and Firms

Extensions and Questions

Volatility and Inequality
How come inequality is rising while earnings volatility is falling?

\[
\text{Volatility} \downarrow \quad \text{Inequality (next and current period)} \uparrow \quad \text{Persistence} \uparrow
\]

\[
\text{var (Δ log } w_{it+1}) = \text{var (log } w_{it+1}) + \text{var (log } w_{it}) - 2 \text{cov (log } w_{it+1}, \text{log } w_{it})
\]
Earnings persistence has been rising steadily

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!

Job Reallocation Rate


SSA
BDS

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

Dispersion of the Growth Rate of Employment

Bloom, Guvenen, Pistaterri, Salgado, Sabelhaus and Song. “The Great Micro Moderation”
P9010 of Wage Growth Distribution

Dispersion of Growth Rate of Earnings

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<sup>a</sup>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Permanent variance</th>
<th>Transitory variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log weekly wage</td>
<td>0.171 0.230</td>
<td>0.059 35</td>
</tr>
<tr>
<td>Log of weeks worked</td>
<td>0.014 0.020</td>
<td>0.006 43</td>
</tr>
<tr>
<td>Number of weeks worked</td>
<td>15.8 17.8</td>
<td>2.0 13</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations from the PSID.
<sup>a</sup> Earnings data are deflated to 1988 dollars.
CPS variance of earnings

Source: Ziliak, Hardy and Bollinger (2011, Labor Economics)
With and without Public and Education

Dispersion of Wage Growth -- P9010

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of returns</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross income less deficit</td>
<td>147,351,299</td>
<td>9,093,628,703</td>
</tr>
<tr>
<td>Income</td>
<td>146,879,226</td>
<td>9,233,510,773</td>
</tr>
<tr>
<td>Wages and salaries</td>
<td>122,189,100</td>
<td>6,475,380,882</td>
</tr>
<tr>
<td>Rental interest</td>
<td>44,920,763</td>
<td>100,648,711</td>
</tr>
<tr>
<td>Exempt interest [1]</td>
<td>5,987,263</td>
<td>68,099,984</td>
</tr>
<tr>
<td>Ordinary dividends</td>
<td>27,688,374</td>
<td>214,972,683</td>
</tr>
<tr>
<td>Exempted dividends [1]</td>
<td>25,493,503</td>
<td>158,069,115</td>
</tr>
<tr>
<td>Income tax refunds</td>
<td>21,309,106</td>
<td>27,850,899</td>
</tr>
<tr>
<td>Dividends received</td>
<td>436,667</td>
<td>9,229,979</td>
</tr>
<tr>
<td>Business or profession net income</td>
<td>17,969,165</td>
<td>357,363,490</td>
</tr>
<tr>
<td>Business or profession net loss</td>
<td>5,560,747</td>
<td>55,290,946</td>
</tr>
<tr>
<td>Share of total</td>
<td></td>
<td>16.0% / 3.3%</td>
</tr>
<tr>
<td>of capital assets net gain in AGI</td>
<td>14,984,798</td>
<td>510,529,891</td>
</tr>
<tr>
<td>of capital assets net loss in AGI</td>
<td>9,006,579</td>
<td>20,909,110</td>
</tr>
<tr>
<td>of property other than capital assets, net gain less loss</td>
<td>2,138,829</td>
<td>1,029,266</td>
</tr>
<tr>
<td>IRA distributions</td>
<td>16,234,478</td>
<td>340,290,250</td>
</tr>
</tbody>
</table>

IRS Statistics of income

And as with earnings see a rise in left skew in recessions in firm employment growth.
PSID attrition hazard (no new entrants), Fitzgerald, Gottschalk and Moffit (1997)

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

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
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.
P9010 of 1-year Earnings Growth - by Number of EINs

Total Number of EINs in 1-year

PSID rising variance heavily driven by tails

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

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