Discussion:

Optimal Trend Inflation

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Adam and Weber [AW] in a nutshell

- **NK model with heterogeneous firm-level productivity trends**

  - ▶ Two types of innovation/price changes:

	(Un)Creative destruction	Incremental innovation
Agents	Entrants	Incumbents
Price Adjustment Rate	δ	$(1 - \delta)(1 - \alpha)$
Price Adjustment Size	$\left(\frac{q}{g}\right)^{\text{exiting product age}}$	$\left(\frac{g}{q}\right)^{\text{price age}}$

  - ▶ If $g > q$: less productive entrants charge higher relative prices

    - • Positive inflation reflects differences in productivity, not a distortion

  - ▶ If $g < q$: more productive entrants charge lower relative prices

- **Optimal trend inflation Π^*:**

  - ▶ depends positively on ratio $\frac{g}{q}$
  - ▶ In US: Π^* is positive ($g > q$), but declining ($g - q \to 0$)

1 **New and interesting mechanism**

2 **Very elegant model**: smooth aggregation, lots of analytical results

3 **Key new insights:**

- Price dynamics may depend on productivity trends

- Efficient inflation fluctuations respond to productivity disturbances:

$$\pi_t^* = (1 - \delta)\pi_{t-1}^* + \delta\left(\frac{g_t}{q_t} - 1\right)$$

- Optimal trend inflation Π^* is independent of turnover rate δ

- Steady state growth (aq^ϕ) is not informative about optimal inflation

4 **Room for improvement:** Connection with empirical evidence

(My view on) How to connect with empirical evidence?

A) Strengthen link with innovation literature and data

B) Interpretation as product entry/exit

C) Implications for micro-pricing data

D) Food for thought

A) Strengthen link with innovation literature and data

- Huge theoretical literature on innovation

- New methodologies/data for detailed measurement

  - Bils (2009): higher prices for new goods, quality vs. inflation

  - Aghion, et al. (2017): measurement bias in growth and inflation

- Key aspect: Innovation and aggregate growth

  - Garcia-Macia, Hsieh, Klenow (2016) with Census LBD data

Sources of Aggregate Growth	1976–1986	2003–2013	AW
Own-product improvements by incumbents	65%	77% ↑	g
Creative destruction by entrants + incumbents	27%	19% ↓	q
New varieties	8%	4% ↓	–

  - Indeed, average g is larger than q... but difference has widened!

- Tighter connection with these findings:

    ▶ Include references to this literature

    ▶ In the model, allow for separate dimensions:

        (i) incumbents vs. entrants

        (ii) creative destruction vs. improvements vs. new varieties (not in AW)

    ▶ In empirics, report average estimated trends

B) Interpretation as product entry/exit

- For application, AW mechanism is interpreted as **<u>firm turnover</u>**

- Sectoral trends are estimated w/ firm-level employment trends

  - ▶ **Pros:** covers the entire private sector

  - ▶ **Cons:** indirect, endogeneity, sensitive to elasticity of substitution

- Alternative: Interpret as **<u>product turnover</u>** + focus on retail sector

  - ▶ **Pros**

    - Direct fine-level measurement

    - Most creative destruction in retail and services (Aghion, et al, 2017)

    - Little firm turnover in retail (Argente, et al, 2017)

  - ▶ **Cons:** not comprehensive of entire private sector

B) Interpretation as product entry/exit (cont...)

- Availability of joint firm productivity, product, and pricing data

    - Test implications, aid modeling choices

- Product reallocation using Nielsen Retail Data + Compustat
  (Argente, Lee, Moreira, 2017)

    - reallocation δ driven by incumbent firms that add or drop products

        - AW: Multi-product firms instead of multi-sector?

    - new products have higher exit rates

        - AW: Make δ age dependent?

    - reallocation declined in 30% during Great Recession

        - AW: Reason behind decline in Π^*?

C) Implications for pricing micro-data

- Many implications for micro-pricing behavior remain unexplored

- Implications for price-change distribution

  - In US data: symmetric, very dispersed and leptokurtic

  - In the model? My intuition is that g/q introduces asymmetry

- Pricing behavior varies over product's life-cycle

  - Evidence from IRI scanner data (Argente and Yeh, 2017)

    - Price adjustment by **entering products** is **twice as frequent** and **50% larger** than the average

    - Adjustment through **both price increases and decreases**

- Extension with idiosyncratic shocks y_{it} might not be enough

  - Evidence suggests learning/experimentation mechanisms as well (Baley and Blanco, 2017)

D) Food for thought

- **Interaction of R&D subsidies with optimal inflation?**

    - Subsidize incumbents' innovation, higher optimal inflation

    - Subsidize entrants' innovation, lower optimal inflation

- **Optimal monetary policy and productivity trends?**

    - Higher inflation targets may achieve quality-adjusted price stability

References

1. Aghion et al (2017)

   Missing Growth from Creative Destruction

2. Argente and Yeh (2017)

   Product's Life Cycle, Learning, and Monetary Shocks

3. Argente, Lee, and Moreira (2017)

   Innovation and Product Reallocation in the Great Recession

4. Baley and Blanco (2017)

   Firm Uncertainty Cycles and the Propagation of Nominal Shocks

5. Bils (2009)

   Do Higher Prices for New Goods Reflect Quality Growth or Inflation?

6. Garcia-Macia, Hsieh, Klenow (2016)

   How Destructive is Innovation?