“Optimal Trend Inflation”
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Optimal inflation rate with heterogeneous firms

Typical policy aim: neutralize distortions in \textit{relative} prices driven by price adjustment frictions:

- straightforward to achieve with a representative firm
- less clear what to do with heterogeneous productivity dynamics (for which there is ample evidence in the data)

Contribution of this paper:

- Design a parsimonious NK firm dynamics model which captures some important trends in the data, within and across cohorts of firms
- Present highly intuitive formulas for the optimal inflation rate
- Apply to the United States: optimal inflation rate declined from 1.5\% to 1\%
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Key mechanism

1. Firm productivity grows over the life cycle \((g)\)
   - calls for downward adjustment of incumbent firms’ prices (relative to entrants) they age
     - relative price of non-adjusters too high
   - distortion can be alleviated by creating inflation
     - lowers the relative price of non-adjusters

2. Upward cohort-trend in productivity of new entrants \((q)\)
   - calls for an upward adjustment in the relative price of incumbents \(\rightarrow\) relative price of non-adjusters too low
   - distortion can be alleviated by creating deflation, which increases the relative price of non-adjusters

Optimal steady-state inflation rate strikes a balance: \(\Pi^* = g/q\). Positive if \(g > q\).
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Positive optimal inflation rate ($g > q$)?

Source: Pugsley, Sedlacek and Sterk (2017)

Figure 11: Flattening of the average size profile in the data (firms)

Note: The left panel plots, by year, average firm employment in different age bins: 0-5 years, 6-10 years, 11-15 years, 16-20 years, and 21-25 years. The right panel plots the same data, but now by overlapping 5-year cohorts, grouped by the birth year of the youngest firm in each cohort. Source: Business Dynamics Statistics.
Monetary Policy & Productivity

What if the inflation rate set is too low (high)?

- relative prices of older firms too high (low)
- **misallocation**: older, more productive firms too small (large)
- lower aggregate TFP

![Diagram showing aggregate productivity distortion](image)

**Figure 3**: Aggregate productivity for different inflation rates (optimal rate is 2%)
Labour pledges to boost Bank of England role with productivity target

UK opposition plans to expand central bank remit via 3% output growth target

Labour has said it will set the Bank of England a new 3 per cent target for productivity growth but refused to specify when this should be achieved.
Paper offers guidance for (future) empirical work:

- profiles and cohort trends of productivity and markups
- effects of monetary policy shocks on:
  - aggregate productivity
  - measures of misallocation
    - productivity dispersion (\(\text{var}(\varphi)\))
    - components of aggregate productivity (Olley-Pakes):
      \[ \Phi = \bar{\varphi} + \text{cov}(\text{size}, \varphi) \]
  - the size of incumbents relative to entrants (can be done with quarterly data from the Business Employment Dynamics)
Interesting model extensions:

- model price setting frictions faced by entrants

- endogenous entry/exit
  - smaller price setting distortions $\rightarrow$ higher entry $\rightarrow$ higher output ?
  - idiosyncratic risk, endogenous exit; age-size profile in the data partly due to selection
Comments: zero lower bound

- Model supports lower inflation target

- Conflicts with recent calls for a higher inflation target, in light of the ZLB

- What are the costs of misallocation versus an increased change of hitting the ZLB?
  - could use the model to investigate this explicitly
Conclusions

- Great paper!
- Novel mechanism, connects naturally with empirical observations
- Very elegant model, highly intuitive results
- Meets demand for models to think about the effect of monetary policy on productivity