"The Role of Industrial Competition in Driving the Frequency of Price Change"
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[1]The views expressed here represent my own, and are not necessarily those of Sveriges Riksbank, the European Central Bank or the Eurosystem

This paper

Connects two well known patterns in the data

- Large disconnect between inflation and business cycles over the past 30 years
  - (Pre-covid) US inflation stable since 1990.
  - Wide fluctuations in output and unemployment.
  - A flatter Phillips curve.
- Shift in the industrial composition of the economy
  - From primary/secondary toward service industries.
- **Question**
  - Can the shift in industrial composition explain the flattening of the curve?

In a nutshell

- **Why?**
  - Frequency of price change one of the key determinants of the Phillips curve.
  - Goods prices more flexible than those of services.
- **Methodology**
  - Construct an algorithm to match industry shares into product shares.
    - Document a decline in median frequency of price changes due to shifts in industrial composition.
  - Translate such a decline into a Phillips curve slope
    - Calibrate and simulate a multi-sector menu cost model on three different years: 1947, 1983, 2019,.
- **Main result**
  - The shift in industrial composition and resulting increase in price rigidities flatted the Phillips curve by 28.5%.

Comments (1): The Algorithm

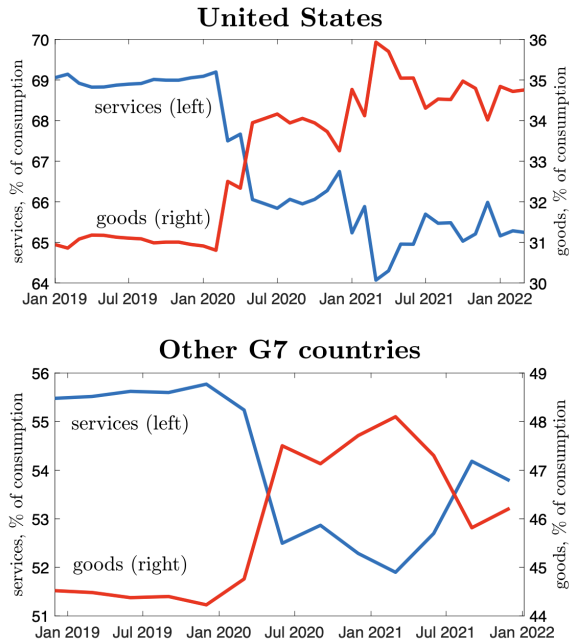
- The data
  - *Annual* data 1947-2019 (BEA, World KLEMS)
  - *Static* data on frequency of price changes (Nakamura and Steinsson, 2008)
- Counterfactual exercise: frequency of price change *within* sector kept fix.
  - In the data, some evidence it moves over time. ▸ NS (2008)
  - How important is this?
- Value added shares as a measure of industry size (standard)
  - Might underestimate the importance of a sector in a production network (Hoynck, 2020).

Comments (2): The Model

Frequency of price change **one** of the key determinants of the Phillips curve.

- In menu cost models, level of monetary non-neutrality related also to variance of the idiosyncratic shock.
  - Stronger "selection effects" when smaller idiosyncratic shocks.
- Two estimated parameters related to this: menu costs and idiosyncratic volatility.
  - How well identified are these two parameters with the chosen TGT moments?
  - In US data, service sector displays smaller TFP volatility. Could this counteract the effects of infrequent changes?
- Changes in network structure could also be an important determinant of inflation dynamics.
  - Shifted centrality towards sectors with higher nominal rigidities. ▸ Networks
  - Strategic complementarities.
  - In this paper, taking into account intermediate products does not play an important role. Why?

Comments (3): Inflation after covid-19



Source: Fornari and Romei, 2022

- This paper: even with a flat Phillips curve, persistent or small demand shocks can bring high inflation
- Ferrante et al., (2002): Demand reallocation from services to goods can cause inflationary pressures amplified by good price flexibility.
- ... Wouldn't a similar story be more in line with the paper narrative?

Comments (4): Smaller comments

- Alternative explanations for the flattening:
  - Globalization, production networks, consumption patterns...
  - Do you have any sense about how these factors might influence or are connected to your results?
- Tremendous computational progress in the HANK literature in the last years
  - Consider a more efficient solution method.

Final thoughts and conclusions

- Topical paper on a key issue for monetary policy.
- A novel explanation for the observed disconnect between inflation and real activity.
- It could be useful to think more about the interaction between the shift in industrial composition and other proposed explanations for the flattening of the Phillips curve.

Extra Slides

Nakamura and Steinsson, 2008

Table 12: Frequency of Price Change by Major Group for the Finished Goods PPI

Category Name	Weight	Med. Freq. Price Ch.	Med. Freq. Substitions	Frac. Up
Panel A: 1988-1997				
Farm Products	1.6	82.3	3.2	45.9
Processed Foods and Feeds	22.4	11.3	2.4	60.8
Textile Products and Apparel	3.6	4.1	2.7	76.3
Hides, Skins, Leather, and Related Products	0.3	7.4	2.3	73.6
Fuels and Related Products and Power	20.8	36.0	1.2	53.3
Chemicals and Allied Products	2.8	7.4	1.9	65.8
Rubber and Plastic Products	1.8	4.6	2.0	82.2
Lumber and Wood Products	0.1	10.5	2.5	75.0
Pulp, Paper and Allied Products	3.0	5.7	2.0	87.1
Metals and Metal Products	1.1	5.0	2.2	77.5
Machinery and Equipment	13.0	4.7	2.4	85.6
Furniture and Household Durables	5.6	6.0	2.1	82.9
Nonmetallic Mineral Products	0.1	5.9	2.0	86.3
Transportation Equipment	16.8	30.4	1.8	58.2
Miscellaneous Products	6.9	10.6	2.3	85.8
Panel B: 1998-2005				
Farm Products	1.6	87.5	2.2	48.6
Processed Foods and Feeds	22.4	26.3	2.6	57.8
Textile Products and Apparel	3.6	2.3	2.9	49.7
Hides, Skins, Leather, and Related Products	0.3	3.8	2.9	80.0
Fuels and Related Products and Power	20.8	48.7	2.3	54.1
Chemicals and Allied Products	2.8	6.1	2.9	61.6
Rubber and Plastic Products	1.8	3.2	2.9	83.8
Lumber and Wood Products	0.1	1.3	3.0	86.6
Pulp, Paper and Allied Products	3.0	4.4	2.5	74.9
Metals and Metal Products	1.1	3.8	2.5	72.2
Machinery and Equipment	13.0	3.7	2.7	71.0
Furniture and Household Durables	5.6	5.1	2.4	78.6
Nonmetallic Mineral Products	0.1	4.1	2.3	67.0
Transportation Equipment	16.8	27.3	3.0	53.7
Miscellaneous Products	6.9	16.5	1.8	81.3

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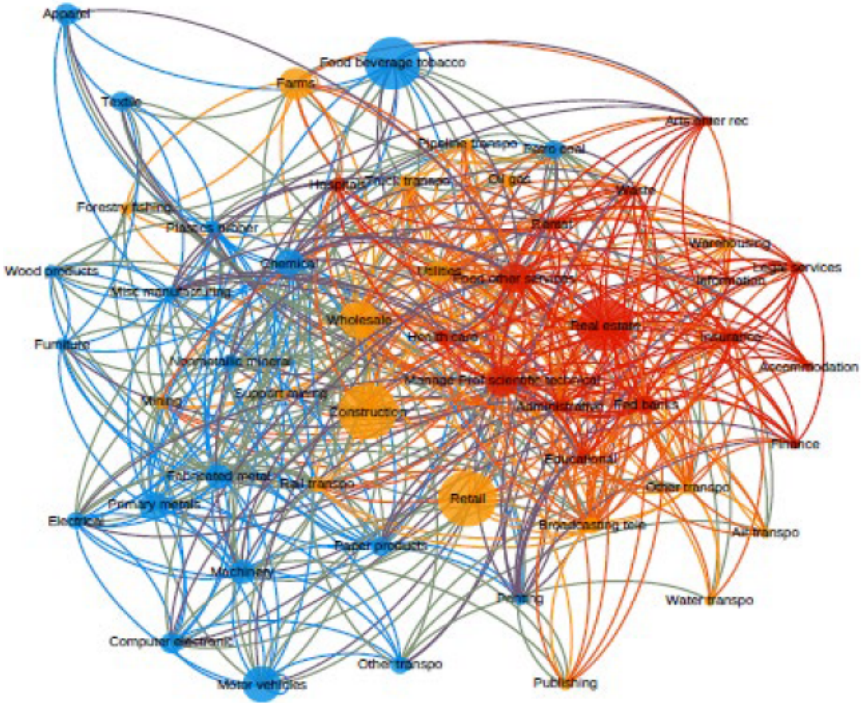
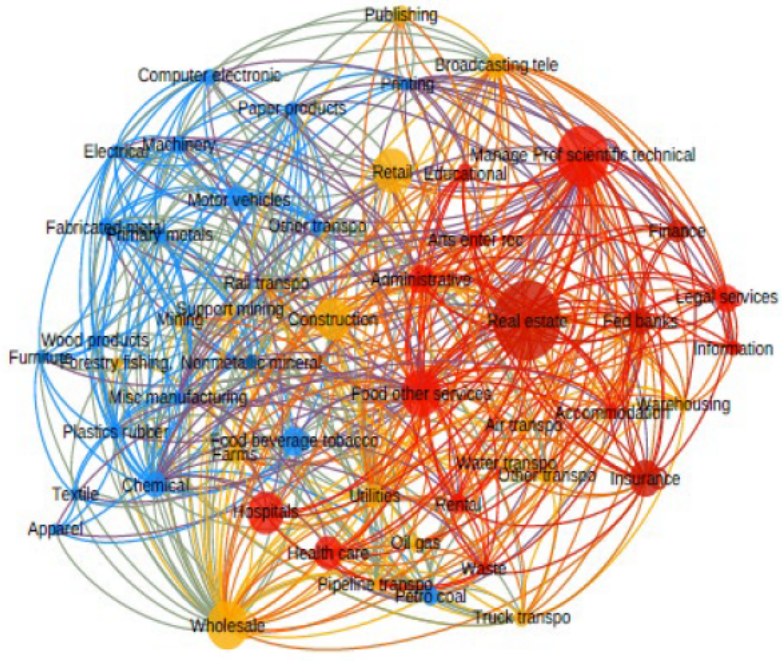
Production Networks: 1963 vs 2017





Hoynck, 2020

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