Is it all about Amazon?

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What s up (or not) with inflation
Brookings - October 2019

Online competition and Inflation Dynamics

Some recent research

- Gorodnichenko et al (2017, 2018), Goolsbee and Klenow (2018)
- Cavallo (2018) More Amazon Effects: Online Competition and Pricing Behaviors. Jackson Hole Conference Proceedings.

My answer:

- Amazon reducing retail margins → temporary impact
- Amazon effect on *pricing behaviors* → more important/persistent impact

How?

- Algorithmic pricing technologies + uniform (national-level) pricing → more pass-through from aggregate shocks
  - mostly deflationary for core CPI in 2017-18
  - inflationary since then!

The Amazon Effect on Pricing Behaviors

- Algorithmic pricing → more frequent price changes → implied durations for large multi-channel retailers in the U.S. fell from 7 months to 4 months in 10 years

Table 2: Implied Duration of Regular Price Changes by Sector

	Period Averages		
	2008-2010 (months)	2011-2013 (months)	2014-2017 (months)
Food and Non-Alcoholic Beverages	6.4	6.6	6.4
Clothing and Footwear	6.2	5.5	5.3
Furnishings and Household Goods	14.2	12.9	5.9
Health and Medical	12.1	13.6	8.5
Transportation Goods	3.6	2	1.8
Recreation and Electronics	13.1	10.1	5.5
Miscellaneous Goods	13.7	10.4	7.8
All Sectors	6.48	4.47	3.65

Billion Prices Project data → daily prices collected from the largest U.S. multi-channel retailers from 2008 to 2017.

Source: Cavallo (2018). "More Amazon Effects: Online Competition and Pricing Behaviors." *Jackson Hole Economic Symposium Conference Proceedings - Federal Reserve Bank of Kansas City*.

The Amazon Effect on Pricing Behaviors

- Algorithms are not being used extensively for demographic location-based pricing due to transparency + fairness concerns

  →Uniform pricing across locations

Table 4: Evidence of Uniform Pricing in Large US Retailers

	Share of Identical		Average Price Difference	
	Other Retailers	Amazon	Other Retailers (%)	Amazon (%)
Panel A: All Sectors				
Mean	0.78	0.91	5.49	1.61
Standard Deviation	(0.30)	(0.19)	(9.44)	(4.44)
Number of Products	9469	823		
Average Zip Codes	22	80		

Note: Simultaneous price collection for 10 thousand products in 102 zip codes from four large U.S. retailers in March 2018 (Walmart, Bestbuy, Safeway, and Amazon).

Source: Cavallo (2018). "More Amazon Effects: Online Competition and Pricing Behaviors." *Jackson Hole Economic Symposium Conference Proceedings - Federal Reserve Bank of Kansas City*.

The Amazon Effect on Pricing Behaviors

- More frequency + uniformity → more pass-through from aggregate shocks

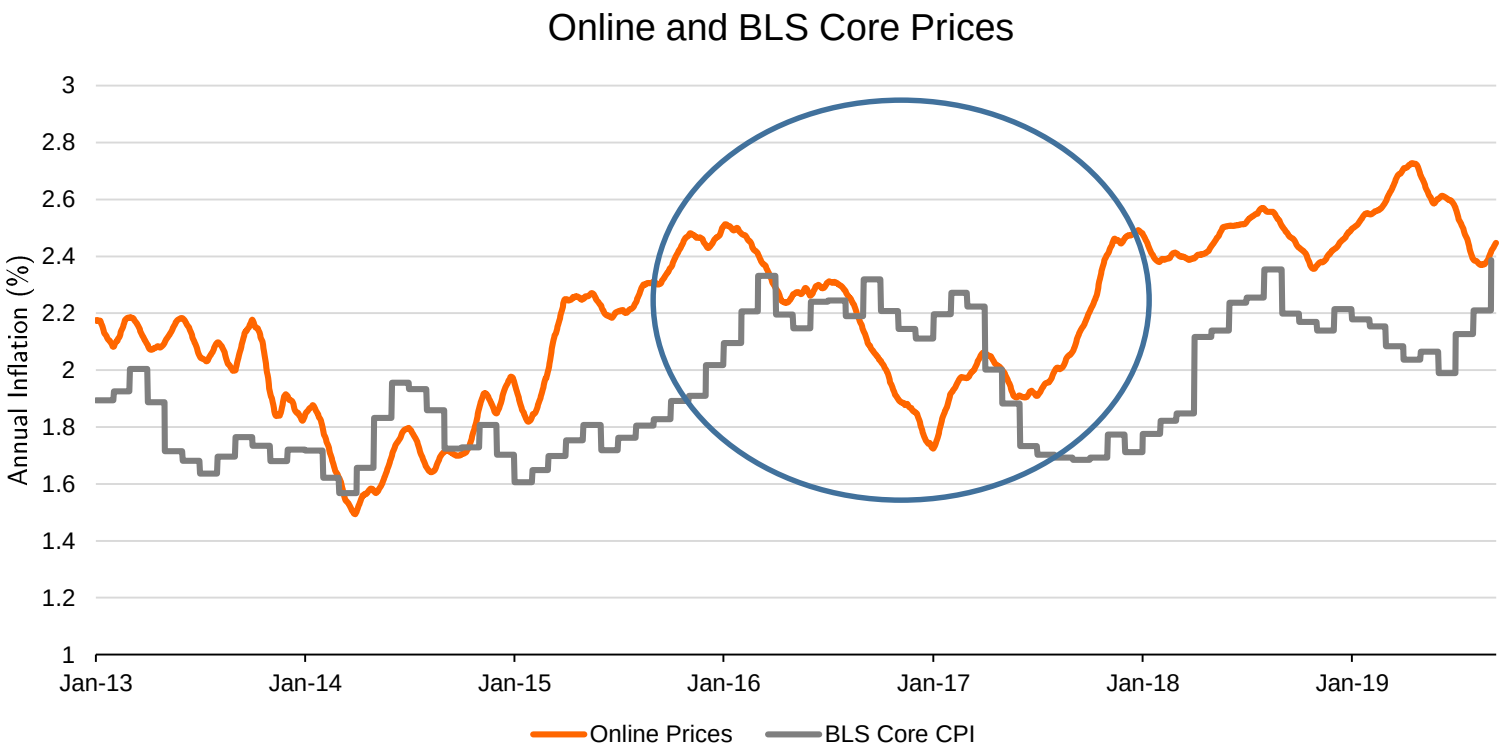
Table 6: Short-Run Pass-through into Walmart's Prices (2016-2018)

		Found on Amazon	
	Full Sample	No	Yes
Gas Prices (1 quarter)	0.22	0.19	0.28
	(0.02)	(0.02)	(0.03)
N	191,690	122,800	68,890
r2	0.17	0.17	0.16
Exchange Rate (2 quarters)	0.32	0.26	0.44
	0.03	0.04	0.05
N	61,340	39,296	22,043
r2	0.17	0.18	0.16

Source: Cavallo, Alberto. 2018. "More Amazon Effects: Online Competition and Pricing Behaviors." *Jackson Hole Economic Symposium Conference Proceedings - Federal Reserve Bank of Kansas City*.

The Amazon Effect on Pricing Behaviors

- Helps explain dynamics of online core prices:
  - Deflationary shocks in 2016 (low gas prices and dollar appreciation)
  - Inflationary shocks in 2017 (rising gas prices and dollar depreciation)



Source: Online Core NSA from PriceStats , CPI "All Items less Food and Energy" NSA from the Bureau of Labor Statistics

- Core CPI has a similar pattern with a lag

Final Thoughts

- Core prices less insulated than before → from both deflationary and inflationary shocks

- Focus on identifying / understanding the shocks
  - What are the variables in pricing algorithms?
  - How the shock is *perceived* by retailers and customers matters

- Technology is also affecting measurement
  - More product entry/exit → downward bias in matched-model price indices