
# New Facts on Consumer Price Rigidity in the Euro Area

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# New Facts on Consumer Price Rigidity in the Euro Area

## This is a very important paper.

- Histrically: it updates the "Dhyne et al" paper of 2006 which reflected the Eurosystem collaboration named the "Inflation Persistence Network".

- Updates and *improves*. More products, finer detail, covers more of HICP (60%).

- 11 countries: includes big 4 (Germany, France, Italy, Spain) plus others. Period is 2010-2019, although longer series for some countries. This covers the GFC, the Eurozone sovereign debt crisis and its aftermath. A period of near zero nominal interest rates, unconventional monetary policy.

- Very large "dense" data set: 135 million price quotes (over 1 million per month). Much bigger than single country series including US economy (The BLS collects 85k prices per month: the UK ONS 100k).

- So, we can learn a lot from this project and should take the findings very seriously. It is not "just another" study….

## What are the main findings?

- The monthly frequency of price changes is around 12-14% in the Euro area including sales, and 9-10% excluding sales (consistent approach to Sales across the countries).

- There is considerable sectoral heterogeneity within all economies, but not so much difference between economies. Excluding sales leads to less variation across countries. Also, less difference with the US data.

- Explaining sectoral heterogeneity: use input-output framework to calculate product specific cost-shares, along with labour share and concentration. Cross-sectional approach shows these are important.

- Changes in inflation are largely driven by changes in the size of changes rather than frequency. Shown by the inflation "remix" with the constant frequency counterfactual being closer to actual inflation that the constant price change.

# Implications.

1. **Prices are sticky: Very Sticky**.

The distribution of price spells has a mean that equals the reciprocal of the average frequency (think of the average frequency as a Bernoulli Probability). 13% frequency with sales implies 7.7 months average price spell duration. 10% without spells, 10 months.

However, the mean duration across products is much longer. The spell distribution includes lots of short price spells for some products (unprocessed food) and not so many for others (services). The cross-sectional distribution can be two or more times the mean spell (longer spells get a bigger weight).

Greece: 11 months for average spell, 34 months average across products.

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Two products: 12 months.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Product 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Product 2 | 12 | | | | | | | | | | | |

Spells: 13 spells,

**average spell duration 1.9** = $\frac{12.1+1.12}{13}=\frac{24}{13}=1.9$

**Frequency** (average over 12 months): **0.54** $\frac{1*1+11*0.5}{12}=\frac{6.5}{12}=\frac{13}{24}=0.54$

And of course, 1.9=1/0.54 (rounding). Exact in fractions (24/13) = $(13/24)^{-1}$

**Average duration across two products** 6.5 = (12+1)/2

Average across products is more than three times the average spell! We find the same in the CPI data due to great heterogeneity. The two are only the same if all spells have the same length.

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## 2: **Most prices don't change each month (87% on average).**

Challenges for many "New Keynesian" theories: these require prices to change every period.

- Sticky information
- Calvo with indexation
- Rational Inattention.

Need to develop these theories to be consistent with the Facts on Consumer price Rigidity. Can be done (Yang JME 2022 Rational inattention; Knotek REStat 2010 Sticky information), should be done.

This new study with "dense" dataset should really renew the challenge of researchers to come up with theories that reflect the price-data. And journal editors should take notice…

## 3. Limitations of CPI data.

Studies with price-quote data do not have “firm specific” or product specific cost information.

This study does have product specific information about energy costs, labour costs, import costs down to COICOP 5 using input-output. This is a big plus. However it is cross-sectional.

Time-series data with product/firm specific data would provide a link between costs and prices.

e.g. Carlsson and Skans 2012: Swedish firm panel. Lein 2010.

With this data you can test different pricing theories (relating current prices to current and future marginal costs). Evidence of both time and state dependence: need both to explain data.

Limit to what you can extract from CPI data unless you can link it to product specific monthly cost data.

## 4. Time dependence and state dependence.

This paper concludes that:

"Overall, these findings are ***all consistent with the predictions of a menu cost model in a low inflation regime where idiosyncratic shocks appear as a much more important driver of price changes than aggregate shocks.*** Aggregate shocks are transmitted via slow movements in the relative share of price increases and decreases."

But, the studies with firm-level data indicate that you need both state and time-dependence or possibly a combination with time-dependent menu costs (e.g. Nakamura and Steinsson Calvo Plus).

To capture time-dependence you need to look at hazard functions, which capture the probability of a price change as the duration of the price spell increases. Kaplin-Meyer non-parametric or Cox Proportional hazard semi-parametric with explanatory cost/demand variables.

# Summary.

## 4 main points and 4 implications.

Great paper: huge dense dataset - “Quantity has a quality all its own”.

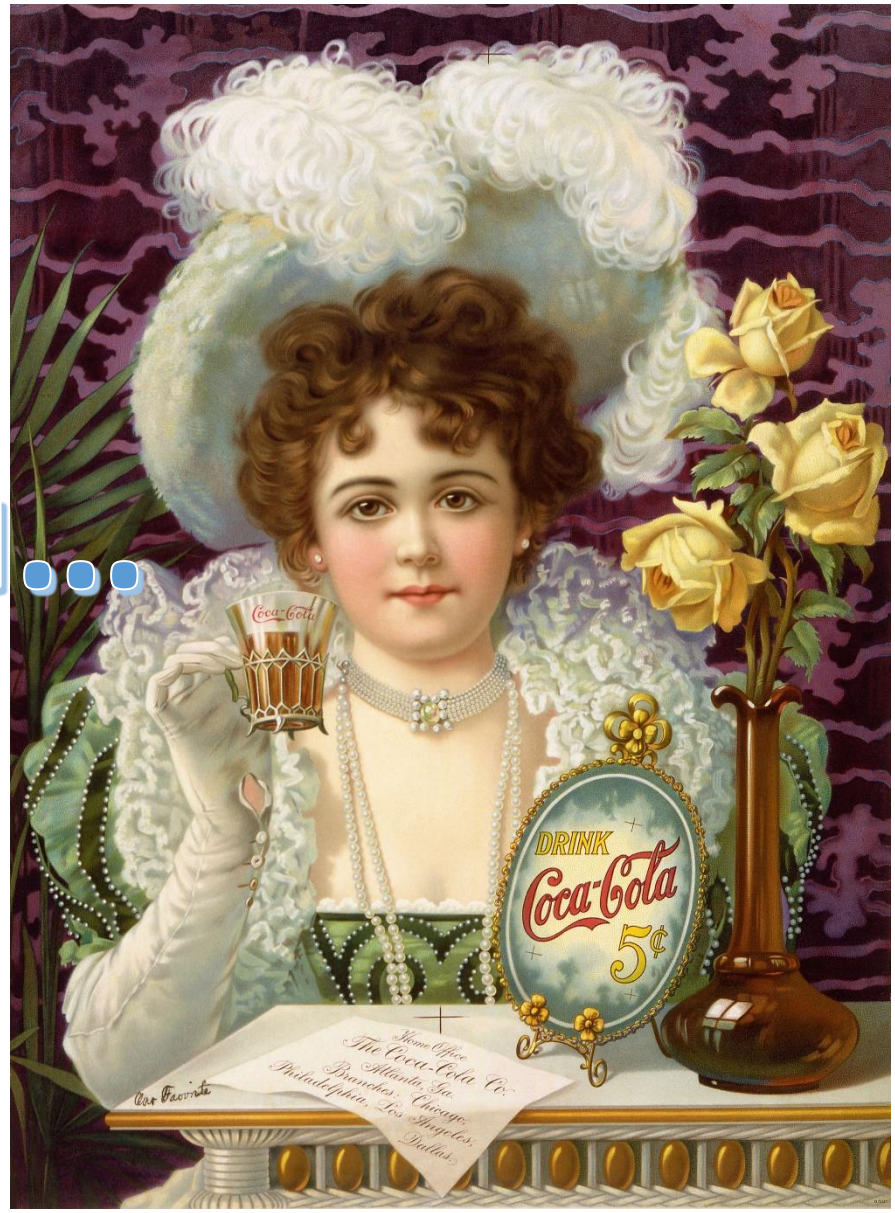
Prices in Europe are very, very sticky. The average spells is 8-10 months, the average across products could be as high as 24-30 months.

Inflation varies primarily due to changes in the size of price increases and decreases. Counterfactual remix: new method.

Theorists need to catch up (referees and journal editors). Most prices change rarely, and there is no monthly “updating” except for a small proportion of prices found in certain sectors.

My own view: we need time-dependence in our theories and find it in the data. Need to combine with state-dependence.

# Thank You…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