

Stylized Facts of the Price-Setting Behavior in the Albanian Economy



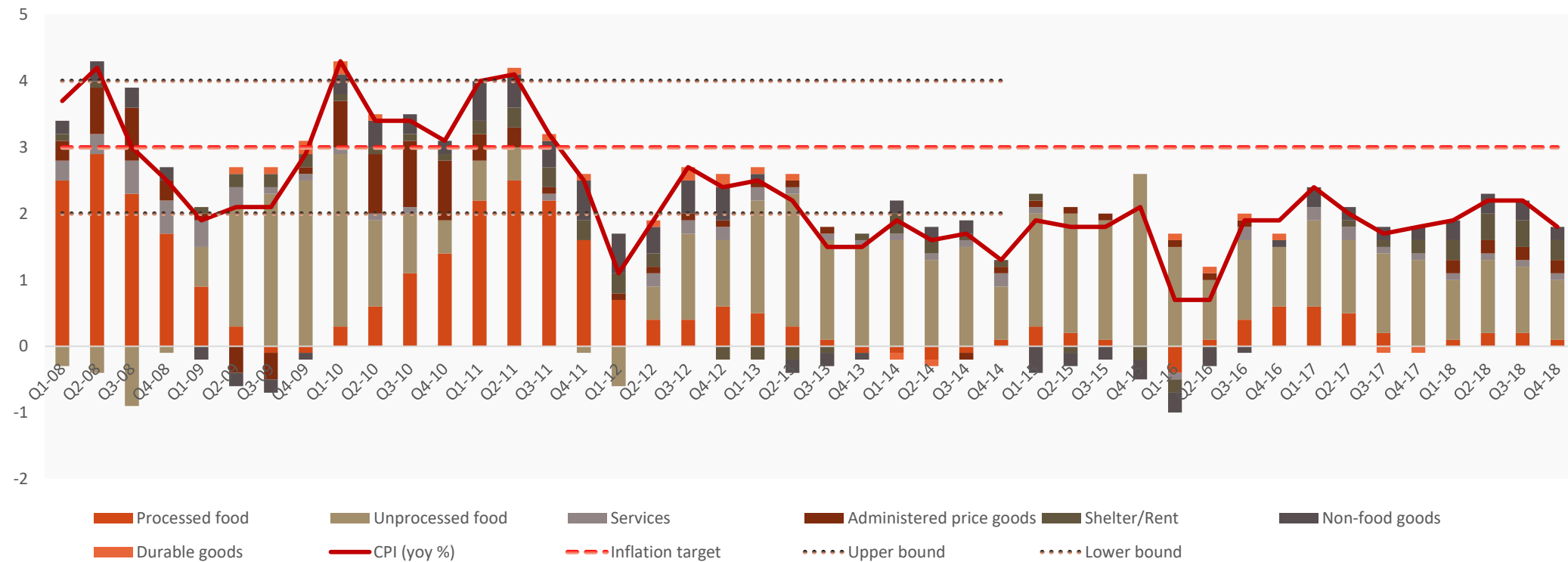
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MOTIVATION

- Frequency of price changes varies widely across sectors.
- Prices that are changed at different frequencies may provide information about the inflation process.
- According to New Keynesian macroeconomic theory, prices are determined both by the current economic situation and by expectations about the future.
- Prices that change less often contain more information about firms' inflation expectations than prices that are changed more often (Bryan and Meyer, 2010).
- For a central bank with an inflation target, it is useful to find indicators that contain information about inflation expectations.

INFLATION DEVELOPMENTS IN ALBANIA 2008-2019

The contribution of the basket components on inflation



Source: Monetary Policy Reports, BoA (2008-2019)

OBJECTIVE

This paper examines **how frequently consumer prices change** in Albania, by exploiting the **micro prices** underlying the **CPI** measure.

- Obtain a quantitative measure of the unconditional degree of price stickiness.
- Gain more insight into:
 - The qualitative nature of the price setting process.
 - The typical pattern of price changes at the micro level.

DATA AND APPROACH

- Provide evidence on the **frequency and size of price adjustments** and the duration of price spells distinguishing between **price increases** and **price decreases**.
- Document **differences** in the general features of price setting behaviour across **types and groups of products**.
- The analysis presented in this paper is of a **descriptive nature**.
- Results have been presented in the form of **four basic facts** from the data.
- Methodological **approach** based on Erlandsen (2014) & Alvares, Fernando (2004)

Data

- Official **CPI data** for a total of over **13000 prices** during the **period 2008-2019**.
- Information on **135 CPI basket components** accounting for 85% of the consumers basket.
- They are easily aggregable and grouped using expenditure **weights**.

[APPENDIX ECOICOP CLASSIFICATION](#)

CONCEPTS (1): FREQUENCY AND SIZE OF PRICE ADJUSTMENTS

- **Frequency** of price changes is defined as **the proportion of non-zero price change observations** divided by the total number of observations.
- The **sticky** and **flexible** price indices were developed in two steps.
 - (1) Product sectors of the CPI basket were **classified** as being either sticky or flexible with the **median** chosen as the dividing line.
 - (2) The **aggregate sticky and flexible price indices** were constructed by using the sectors' corresponding CPI indices and weights.
- Compute a measure of the size of price changes (ΔP), which is the logarithmic change.
- In the cases of the frequency and the size of price changes, we use just one weighting procedure.

CONCEPTS (2): DURATION OF PRICE SPELLS

Assuming **stationarity** and **homogeneity** of price change behaviour **in the cross-sectional dimension**, the inverse of the frequency of price changes converges, in a large sample, to the mean duration (Baudry et al., 2004).

$$T^F = \frac{1}{F}$$

Where T^F average duration of price spells and F the frequency of price changes derived under the implicit assumption of **discrete time**.

If we assume that prices **can be changed at any moment**, with the probability of a price change being constant within a given month:

$$T^F = -\frac{1}{\ln(1-F)}$$

FACT 1 : “Consumer prices are moderately sticky”

Tab 1. Duration of price spells by product types

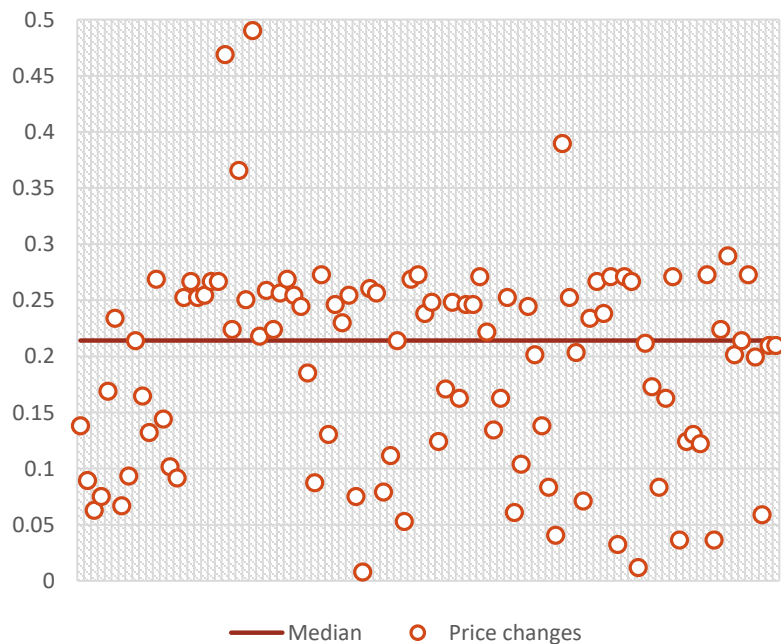
	<i>Frequen cy of price changes</i>	<i>Duration of price spells</i>	<i>Frequenc y of price increases</i>	<i>Duration of Price Increases</i>	<i>Frequenc y of price decrease</i>	<i>Duration of Price Decreases</i>
All items	0.214	4.671	0.139	7.21	0.251	3.987
All items after Q12012	0.169	5.885	0.107	9.309	0.434	2.303
All items before Q12012	0.218	4.594	0.135	7.396	0.243	4.117

- The **average monthly frequency** of price changes is **0.214**, so that prices **change on average once every 4 or 5 months**.
- This is **consistent** with results across the **EU**.
- Flexible prices account for **60%** of total prices.
- Price decreases are **more frequent** than price increases particularly after 2012.
- Prices in Albania **show a decrease in downward price rigidity** after 2012.

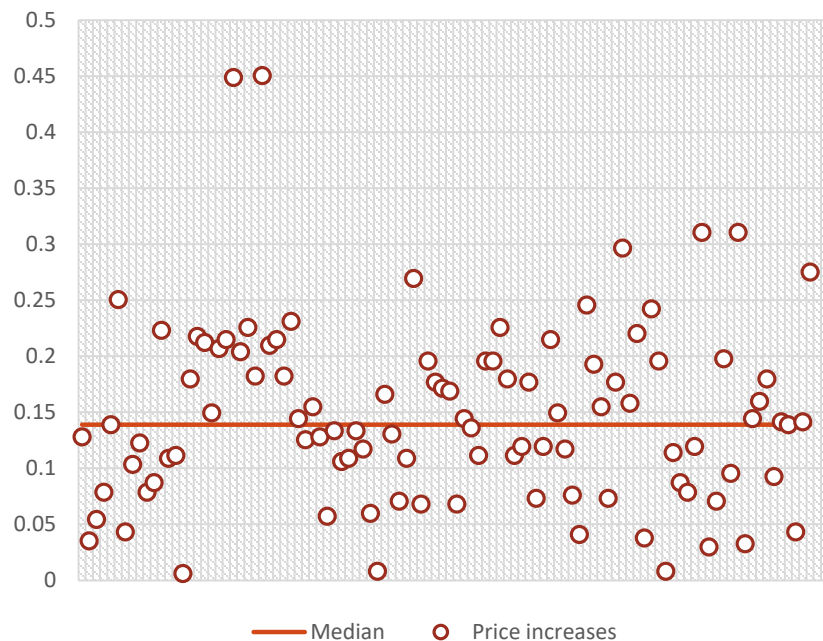
FACT 2: “There is heterogeneity in the frequency of price adjustments”

The flexibility of prices is greatest for unprocessed food prices (and goods in general) and the highest degree of price stickiness is observed for services.

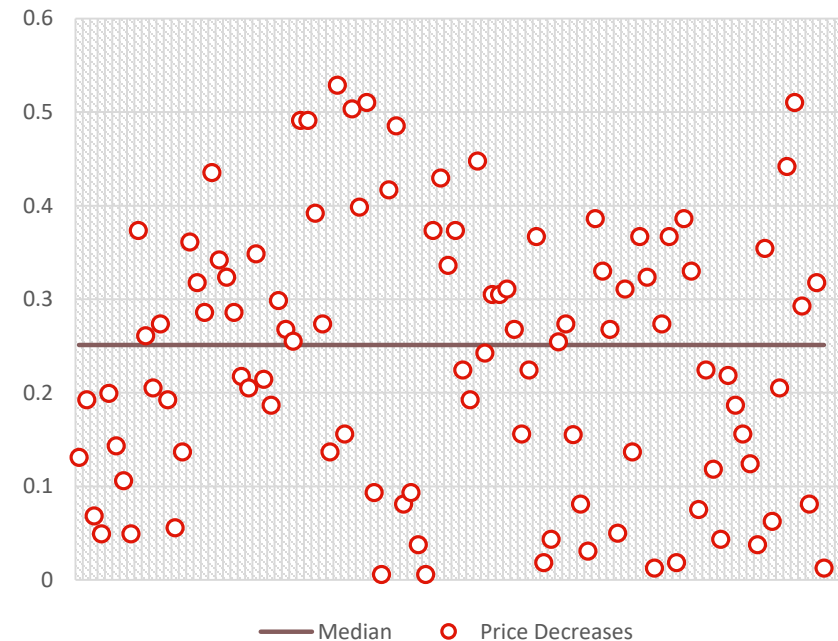
Graph 1: Frequency of price changes (total)



Graph 2: Frequency of price increases



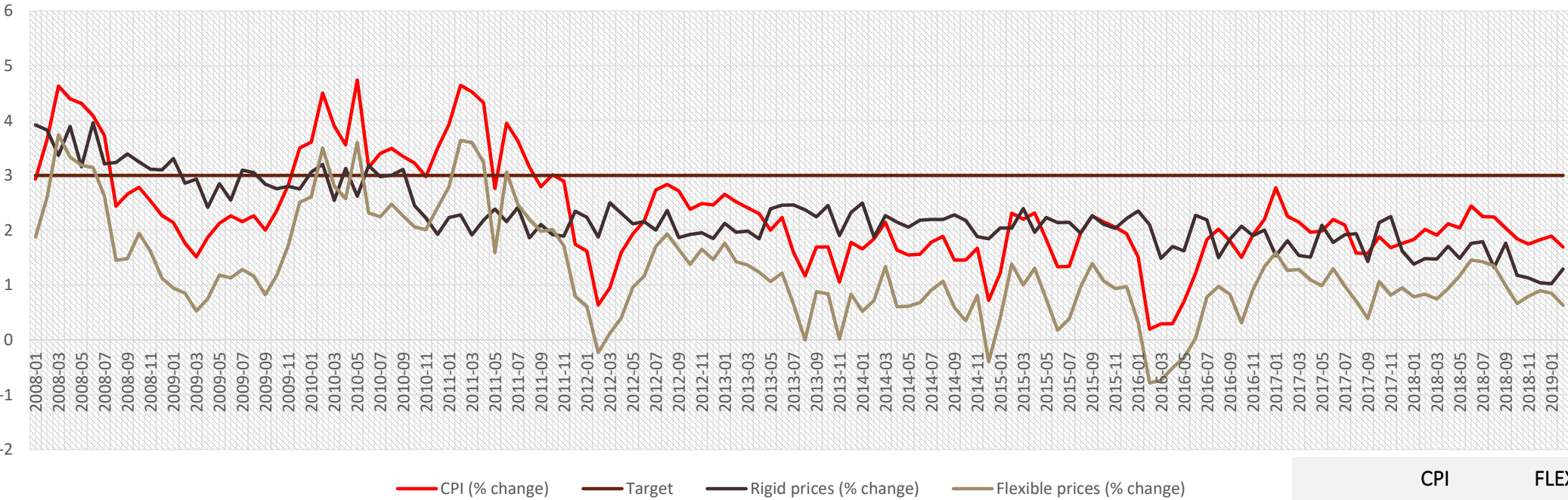
Graph 3: Frequency of price decreases



Source: Authors calculations

FACT 3: “Flexible price inflation has a strong correlation to overall inflation”

Graph 4: Rigid and Flexible Price Inflation



Source: Authors calculations

	CPI	FLEXIBLE	RIGID
CPI	1	0.9922	0.4665
FLEXIBLE	0.9922	1	0.4598
RIGID	0.4665		1

FACT 4: “Price changes are higher than the prevailing inflation rate”

Tab 2. Size of price changes by sectors

	<i>Size of Price Changes</i>	<i>Size of Price Increases</i>	<i>Size of Price Decreases</i>
All items	4.509	4.541	-4.191
1. Food and non-alcoholic beverages	6.879	6.881	-0.426
2. Alcoholic beverages	6.181	6.181	0
3. Clothing	4.092	4.989	-3.985
4. Fuel and energy	3.298	4.112	-0.701
5. Housing	1.544	1.701	-0.824
6. Medical Services	2.431	3.461	-1.426
7. Transportation	5.024	6.073	-2.525
8. Communication	0.779	0.893	-0.681
9. Entertainment	2.254	2.379	-1.294
10. Education	2.709	2.898	-2.574
11. Hotels and Restaurants	3.242	3.277	-2.936
12. Other items	1.362	2.110	-0.664

- Price reductions and price increases have a similar order of magnitude, though price reductions are on average smaller.
- This is less pronounced for processed and unprocessed foods.
- Heterogeneity is less marked for the size of price changes.
- Service prices do not change often, but when they do, do so by a large amount.

CONCLUSIONS

- Price setting is very heterogeneous, both across and within product categories. Hence, there is no simple answer to the question whether prices are flexible or sticky, even though according to the findings, 60% of prices are flexible and 40% are sticky.
- Prices do not change often but do so by a large amount, although there is a marked heterogeneity across products.
- The high frequency of price reductions after the crisis suggests that there is no strong downward rigidity.
- Taking into account our results in terms of the frequency of price changes for the components of the CPI, the traditional core inflation measure of the type HICP, excluding unprocessed food and energy, would make a lot of sense in the Albanian context.

NEXT

- Explore and minimize problems regarding specific data issues and data bias, regarding the:
 - frequency of reporting,
 - energy and administered prices,
 - treatment/ non-treatment of outliers.
- Explore empirically how frequency, size and duration is affected by some specific factors:
 - Seasonal patterns,
 - The level of inflation,
 - Changes in direct and indirect taxation,
 - Practice of using attractive prices, psychological and round prices.
- Explore the relationship of rigid prices with consumer expectations

THANK YOU!!!

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APPENDIX

ECOICOP CLASSIFICATION

METHODOLOGY

ECOICOP: breakdown of individual consumption Expenditure of households By division and group	07 transport 07.1 purchase of vehicles 07.2 operation of personal transport equipment 07.3 transport services
01 food and non-alcoholic beverages 01.1 food 01.2 non-alcoholic beverages	08 communication 08.1 postal services 08.2 telephone and telefax equipment 08.3 telephone and telefax services
02 alcoholic beverages, tobacco 02.1 alcoholic beverages 02.2 tobacco 02.3 narcotics	09 recreation and culture 09.1 audio-visual, photographic and information processing equipment 09.2 other major durables for recreation and culture 09.3 other recreational items and equipment, gardens and pets 09.4 recreational and cultural services 09.5 newspapers, books and stationery 09.6 package holidays
03 clothing and footwear 03.1 clothing 03.2 footwear	10 education 10.1 pre-primary and primary education 10.2 secondary education 10.3 post-secondary non-tertiary education 10.4 tertiary education 10.5 education not definable by level
04 housing, water, electricity, gas and other fuels 04.1 actual rentals for housing 04.2 imputed rentals for housing 04.3 maintenance and repair of the dwelling 04.4 water supply and miscellaneous services relating to the dwelling 04.5 electricity, gas and other fuels	11 restaurants and hotels 11.1 catering services 11.2 accommodation services
05 furnishings, household equipment and routine household maintenance 05.1 furniture and furnishings, carpets and other floor coverings 05.2 household textiles 05.3 household appliances 05.4 glassware, tableware and household utensils 05.5 tools and equipment for house and garden 05.6 goods and services for routine household maintenance	12 miscellaneous goods and services 12.1 personal care 12.2 prostitution 12.3 personal effects n.e.c. 12.4 social protection 12.5 insurance 12.6 financial services n.e.c. 12.7 other services n.e.c.
06 health 06.1 medical products, appliances and equipment 06.2 outpatient services 06.3 hospital services	