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GOVERNMENT-IMPOSED PRICE CEILINGS AND RETAIL MARKET ADJUSTMENT IN GROCERY MARKETS

DRŽAVNO OGRANIČAVANJE CIJENA I PRILAGODBA MALOPRODAJNOG TRŽIŠTA PREHRAMBENIH PROIZVODA

ABSTRACT: This paper examines how a selective price-cap government intervention was associated with changes in observed retail prices, sales volumes, and revenues in the selected staple food categories. Using monthly SKU-level retail data from January 2020 to December 2025, we analyze selected products that were subject to government-protected prices in Croatia. The results show heterogeneous post-intervention patterns across different product groups. Flour shows the clearest decrease in observed average unit prices and the strongest increase in sales volumes, while UHT milk shows more limited adjustment and sunflower oil shows a price decrease without volume increase. These findings suggest that the effects of price ceilings depend on the effective bindingness of the cap and on category-specific demand conditions. The paper contributes to research on retail pricing and public policy by showing that formally uniform price-cap measures can generate uneven market responses across regulated grocery categories.

KEY WORDS: price caps, food inflation, retail markets, regulated products

JEL CLASSIFICATION: M31, M38

SAŽETAK: Rad analizira povezanost intervencije ograničavanja cijena s promjenama maloprodajnih cijena, količinom prodaje i prihoda u kategorijama osnovnih prehrambenih proizvoda. Koristeći mjesečne maloprodajne podatke na razini SKU-a od siječnja

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2020. do prosinca 2025. godine, analiziraju se odabrani proizvodi obuhvaćeni državnim ograničenjem cijena u Hrvatskoj. Rezultati pokazuju heterogene obrasce nakon uvođenja intervencije među kategorijama. Brašno pokazuje najveći pad promatranih prosječnih jediničnih cijena i najsnažniji rast količina prodaje, dok trajno mlijeko pokazuje ograničeniju prilagodbu, a suncokretovo ulje pad cijena bez rasta prodanih količina. Rezultati ukazuju da učinci ograničenja cijena ovise o stvarnoj obvezujućoj snazi cjenovnog ograničenja i o specifičnim uvjetima potražnje određene kategorije. Rad doprinosi istraživanjima maloprodajnog formiranja cijena i javnih politika pokazujući da formalno jedinstvene mjere ograničavanja cijena mogu dovesti do neujednačenih tržišnih prilagodbi među reguliranim kategorijama prehrambenih proizvoda.

KLJUČNE RIJEČI: ograničenje cijena, inflacija hrane, maloprodajna tržišta, regulirani proizvodi

JEL KLASIFIKACIJA: M31, M38

1. INTRODUCTION

High food inflation has made the pricing of essential grocery products a central concern for consumers, policymakers and retailers**.** Price changes in staple food categories are important as these products are purchased frequently and occupy a central place in everyday household spending (Pallotti et al., 2024). Inflationary episodes also reshape retailers' pricing, promotion, and assortment decisions, further increasing the strategic importance of these categories for firms as well as for policymakers (Cavallo & Kryvtsov, 2024; Dekimpe & van Heerde, 2023). These features make essential grocery products a particularly relevant setting for examining policy interventions in retail markets.

Governments often respond with temporary price ceilings to protect household purchasing power, especially for lower-income consumers. Yet the effects of such measures remain theoretically and empirically ambiguous. A binding price cap can lower observed retail prices and improve affordability, but it can also compress margins and induce adjustment through whole supply chain and managerial decisions, including assortment, product variety, and within-category pricing (Aparicio & Cavallo, 2021; Barahona et al., 2023). Existing evidence further suggests that such effects are unlikely to be uniform across products, as retailers and consumers may adjust differently depending on the characteristics of the regulated category and the brand in the category (Aparicio et al., 2024; Cavallo & Kryvtsov, 2024). The key issue is therefore not simply whether price caps reduce prices, but how strongly they constrain retail pricing and how retailers and consumers adjust across regulated categories.

This paper examines the Croatian food retail market, where maximum retail prices were introduced for selected staple products in September 2022, including sunflower oil, UHT milk, and flour. The regulation defined a legal price ceiling rather than a mandatory selling price, meaning that retailers could sell regulated products at or below the maximum price. This distinction is important because the same policy may have been more restrictive for some products than for others, depending on their pre-intervention price levels.

The main research question of this paper is: How is the introduction of government-imposed price ceilings associated with observed retail prices, sales volumes, and sales

revenues across regulated staple-food categories? To address this question, the paper uses confidential monthly consumer and SKU-level retail sales data obtained through a research collaboration with a national grocery retailer in Croatia. The data cover the period from 2020 to 2025 and allow a descriptive comparison of average unit prices, units sold, and sales revenues before and after the September 2022 intervention.

The paper contributes to the literature on retail price regulation and food inflation by showing why category-level heterogeneity matters when evaluating selective price ceilings. Rather than treating the regulation as a uniform market shock, the analysis focuses on whether observed retail outcomes differ across regulated staple categories.

2. LITERATURE REVIEW

2.1. Consumer response to price changes in grocery markets

Consumer response to price changes in grocery markets depends not only on the size of the price change, but also on category-specific demand sensitivity. Research in marketing has long shown that price changes affect several consumer decisions at the same time, including whether to buy the category, which brand to choose, when to buy, and how much to buy. In grocery settings, lower prices and promotions can induce brand switching, purchase acceleration, stockpiling, and, in some cases, category expansion, even when underlying consumption needs remain relatively stable (Bell & Bucklin, 1999; Bell et al., 1999; Gupta, 1988; Pauwels et al., 2002; Van Heerde et al., 2004).

These responses are unlikely to be uniform across categories. Prior research shows that price and promotional elasticities vary systematically with market and category characteristics, including category penetration, purchase frequency, interpurchase time, storability, stockpiling potential, price level, promotion intensity, and competitive conditions (Bijmolt et al., 2005; Bolton et al., 2015; Hoch et al., 1994; Hoch et al., 1995; Narasimhan et al., 1996; Nijs et al., 2014; Nijs et al., 2001). This variation is especially relevant in grocery markets, where staple categories differ in how frequently they are bought, how easily households can store them, and how important they are to the household budget (Gordon et al., 2013; Pallotti et al., 2024). A common price-cap policy should therefore not be expected to generate uniform consumer responses across regulated staple products.

In the context of price ceilings, heterogeneity can arise from two mechanisms. The first is policy bindingness. A ceiling should have a stronger price effect when the pre-intervention price was above, or close to, the legal maximum, and a weaker effect when the product was already sold at or below the ceiling price. The second is category responsiveness. Even when the ceiling reduces the observed price, quantity responses may differ depending on a category's purchase frequency, storability, substitutability, and importance within the shopping basket. This distinction is important because a decline in observed prices does not necessarily imply a proportional change in sales volumes or revenues.

Basket-level price evaluation provides an additional reason why responses may differ across regulated staple categories. Grocery shoppers do not evaluate individual prices in isolation, but in relation to expected basket costs, retailer price formats, and the perceived value of the shopping trip. Research on everyday low pricing and Hi-Lo pricing shows that

shopping behavior and store choice depend on expected basket value, basket size, and the price format offered by the retailer (Aparicio & Cavallo, 2021; Bell & Lattin, 1998; Hoch et al., 1994). In a price-cap setting, lower prices for more important staple products may therefore affect not only the focal SKU, but also consumers' perception of the affordability of a basket containing essential goods.

Finally, a price ceiling differs from a short-lived promotion because it creates a sustained change in the pricing environment. Promotions often generate strong short-run effects, but their long-run effects on category demand are usually limited (Nijs et al., 2001; Pauwels et al., 2002). A policy intervention lasting several months or years gives consumers and retailers more time to adjust purchase quantities, substitution patterns, and pricing strategies. Recent work on retailing during inflation similarly emphasizes that persistent price shocks can trigger broader adjustments across brands, categories, and retailer strategies (Dekimpe & van Heerde, 2023). Consistent with this view, recent evidence from Croatia shows that selective price controls substantially reduced regulated milk prices, while effects on availability and substitutes need to be evaluated separately (Mužić & Žilić, 2025). Therefore, the effects of price ceilings should not be inferred from prices alone. They should also be assessed through changes in sales volumes and revenues, and these adjustments are expected to differ across regulated categories.

This leads to the first two research questions:

RQ1: *How did observed average unit prices of regulated staple-food products evolve after the introduction of government price ceilings?*

RQ2**:** *Did price changes differ across categories depending on the pre-intervention bindingness of the price ceiling?*

2.2. Why category characteristics matter

Price reductions do not translate mechanically into identical sales-volume responses. Consumers evaluate prices relative to internal reference prices and recent price expectations. Reference-price research shows that consumers compare current prices with expected or previously observed prices when making purchase decisions (Kalyanaram & Winer, 1995). Therefore, a regulated price may be perceived differently across categories depending on the usual price level, recent inflation, and the visible gap between the previous price and the new price.

Consumer response also depends on whether the policy-induced price change is substantial. If consumers notice that a staple product has become cheaper or is now price-regulated, they may update their expectations and adjust purchase timing or quantity. Prior research on price salience shows that consumers respond more strongly when price-related information is visible and cognitively accessible (Chetty et al., 2009). In the context of regulated staple foods, this means that lower prices may affect behavior not only through affordability, but also through consumer awareness that the price has changed.

Sales-volume responses may reflect stockpiling or substitution rather than higher underlying consumption. Sales-promotion research shows that price reductions can increase sales through brand switching, purchase acceleration, and larger purchase quantities (Gupta, 1988). Similarly, research on consumer inventory behavior shows that temporary price reductions

can lead consumers to stockpile, especially in storable categories (Hendel & Nevo, 2006). In the present setting, an increase in unit sales after the price cap does not necessarily imply that households consume more flour, oil, or milk. It may instead reflect earlier purchases, larger inventories, or substitution from non-regulated products toward regulated SKUs.

These mechanisms are especially relevant for staple foods. Although flour, sunflower oil, and UHT milk are all essential goods, they differ in storability, purchase frequency, visibility in the shopping basket, and possibility of substitution. Flour and sunflower oil are relatively storable, making stockpiling or purchase acceleration more feasible. UHT milk is also storable, but household consumption may follow more regular routines, which may limit short-term quantity responses. Therefore, quantity effects are expected to vary across categories rather than increase uniformly after the intervention. This leads to the third research question:

RQ3: *How do sales volumes change after the introduction of government price ceilings, and do these changes differ across regulated staple-food categories?*

2.3. A price cap as a sustained pricing shock

A government-imposed price cap is not equivalent to a short price promotion. Much of the classic evidence on grocery price response comes from temporary discounts and promotional campaigns, where consumer responses are measured over relatively short periods of time. Price promotions can affect category incidence, brand choice, and purchase quantity, but their long-term effects are often limited (Pauwels et al., 2002). By contrast, a price ceiling is a sustained and externally imposed pricing constraint. Consumers and retailers have more time to observe the policy, adjust expectations, and modify behavior.

This distinction matters because a sustained price cap can affect several market outcomes at once. Retailers may comply with the legal ceiling while adjusting quantities, assortment, product availability, or the pricing of related products. Evidence from targeted price controls in Argentina shows that regulated prices may fall, while retailers can also adjust through availability, entry and exit, price dispersion, and the introduction of new varieties (Aparicio & Cavallo, 2021). This suggests that price-cap policies should not be evaluated only by asking whether regulated prices declined. They should also be examined in relation to quantities sold and total sales revenue.

Consumer adjustment may also occur at the basket level. Grocery shoppers evaluate prices not only SKU by SKU, but also in relation to expected basket value, basket size, and the perceived attractiveness of the store's price format. Research on *Every Day Low Pricing* and Hi-Lo pricing shows that store choice and shopping behavior depend on how consumers evaluate the value of the overall shopping trip, not only the price of a single item (Bell & Lattin, 1998; Hoch et al., 1994; Tang et al., 2001). In a price-cap setting, regulated staple products may therefore influence perceived basket affordability, especially when they are frequently purchased and visible within the household shopping basket. These findings are relevant because selective price caps operate in the same broader environment of inflation, budget pressure, and within-category price adjustment. The revenue effect of a price cap is therefore theoretically ambiguous. A lower unit price mechanically reduces revenue per unit sold, but total sales revenue may remain stable if unit sales increase enough to offset

the price decline. On the other hand, if quantities do not rise sufficiently, the same price cap may reduce sales revenue. This ambiguity is central to the present study because prices, quantities, and revenues capture different parts of the market response. The fourth research question is therefore:

RQ4: *How do sales revenues change after the introduction of government price ceilings, and do these changes differ across regulated staple-food categories?*

Taken together, the literature suggests several mechanisms through which a sustained price cap may be associated with observed retail outcomes, but the present data can only test these mechanisms indirectly. First, prior research on promotions and consumer inventory behavior suggests that lower prices may increase sales through stockpiling, purchase acceleration, or substitution from alternative products (Gupta, 1988; Hendel & Nevo, 2006; Pauwels et al., 2002). In this study, such mechanisms can be observed only as changes in monthly SKU-level sales volumes, because the data do not identify households, inventories, consumption, or substitution from unregulated SKUs. Second, reference-price research suggests that consumers may respond when current prices differ from recently observed or expected prices (Bell & Bucklin, 1999; Kalyanaram & Winer, 1995). The analysis can capture whether observed average unit prices changed after the cap, but it cannot directly measure consumers' internal reference prices or expectations. Third, research on price salience suggests that visible price changes may affect consumer attention and purchase decisions (Chetty et al., 2009). In the present setting, salience is inferred only indirectly from the timing and magnitude of observed price and quantity changes, because the data do not include consumer awareness, communication exposure, or household-level choice processes. Therefore, the empirical analysis uses these mechanisms as interpretive channels rather than as directly testable behavioral hypotheses. This distinction is important because the study observes a sustained government price ceiling at the SKU-retailer level, not short-lived promotions or household-panel responses.

3. METHODOLOGY

This study uses confidential monthly SKU-level retail sales data obtained through a research collaboration with a national grocery retailer in Croatia. Due to a data-sharing agreement, the retailer is not identified, and commercially sensitive information is reported only at an aggregated or anonymized level. The partner retailer operates a broad multi-format store network across Croatia, which makes the data suitable for examining observed retail-level price, quantity, and revenue patterns. However, the data should not be interpreted as fully representative of the entire Croatian grocery market.

The analysis covers the period from January 2020 to October 2025, allowing market outcomes to be observed before and after the government price-cap intervention introduced in September 2022. The unit of analysis is the SKU-month. The sample follows regulated SKU–supplier combinations in three staple-food groups: wheat flour, UHT milk, and sunflower oil. Flour is separated into two regulated product categories: smooth flour and sharp flour. The regulated products are defined using comparable package sizes: 1 kg for flour and 1 L for UHT milk and sunflower oil. This makes SKU-level comparisons of prices and unit sales transparent.

The study focuses on three directly observed retail outcomes: average unit price, sales volume, and sales revenue. Average unit price is calculated as monthly sales revenue divided by monthly units sold for each SKU. Sales volume is measured as the number of units sold in a given month. Sales revenue is measured as the total monthly revenue generated by each SKU.

These three outcomes correspond to the study's research questions. Average unit price captures the observed pricing response after the introduction of the price cap. Sales volume captures changes in quantities purchased. Sales revenue captures the combined effect of price and quantity changes. Revenue is interpreted as observed sales revenue, not profit, because the data do not include costs, wholesale prices, or margins.

To examine whether the ceiling was more restrictive for some products than for others, the analysis measures the bindingness of the price cap immediately before the intervention. For each SKU, the absolute price-cap gap is calculated as:

$$Gap_i = Price_i\ August\ 2022 - Ceiling_i$$

and, for comparability across products, as a relative measure:

$$Bindingness_i = (Price_i,\ August\ 2022 - Ceiling_i) / Price_i\ August\ 2022$$

A positive value means that the observed August 2022 price was above the regulated ceiling, indicating that the cap was potentially binding. A value close to zero means that the pre-intervention price was close to the ceiling. A negative value means that the observed price was already below the ceiling, suggesting that the cap was less binding for that SKU.

The empirical analysis proceeds in three steps. First, it assesses the pre-intervention bindingness of the regulated ceiling for each SKU. Second, it compares observed monthly average unit prices before and after September 2022. Third, it examines whether post-intervention patterns in sales volumes and sales revenues differ across regulated categories.

The analysis is descriptive and comparative. It does not estimate a structural demand model or identify causal effects relative to untreated products. Instead, it uses monthly SKU-level time series to document how regulated products evolved before and after the intervention. September 2022 is used as the intervention date in all figures.

Category participation is used as a substantive analytical dimension. The analysis compares flour, UHT milk, and sunflower oil because these categories differ in the bindingness of the cap and in demand-related characteristics such as storability, purchase frequency, and scope for quantity adjustment. As the category differences and bindingness are closely related in this setting, the analysis interprets them jointly rather than attempting to fully separate category effects from treatment-intensity effects.

Additional indicators, such as estimated consumer savings or break-even quantities, are used only as supplementary descriptive measures where relevant. The main results rely on the three directly observed outcomes: average unit price, units sold, and sales revenue.

Table 1. Sample description table

Product group	Regulated category	Number of SKUs	Pack size
Wheat flour	Smooth flour, T-550	4	1 kg
Wheat flour	Sharp flour, T-400	4	1 kg
UHT milk	UHT cow's milk, 2.8%	4	1 L
Sunflower oil	Sunflower oil	2	1 L
Total		**14**	

4. ANALYSIS AND RESULTS

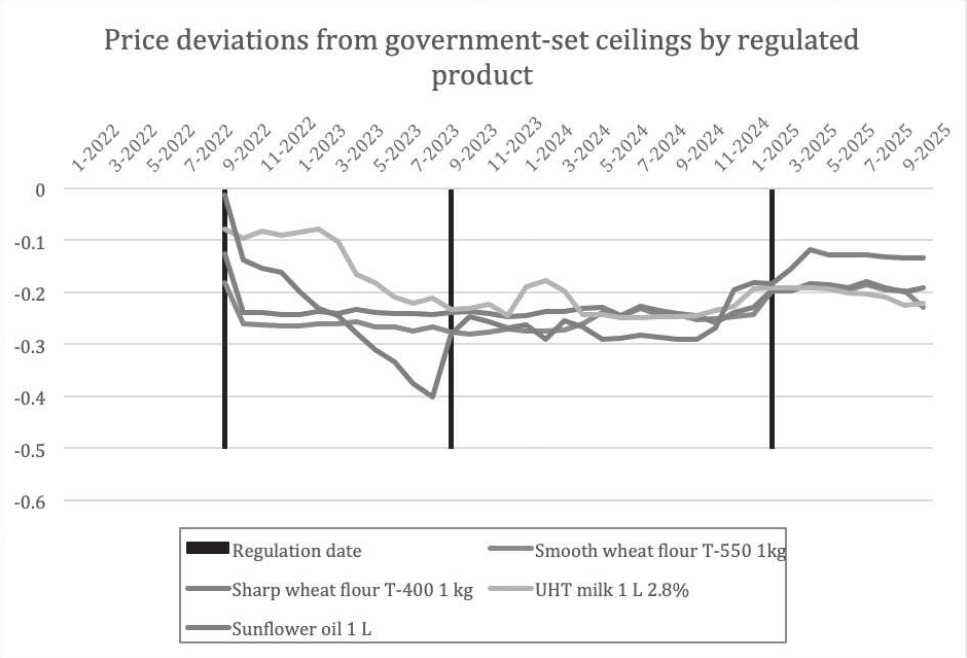
The results are organized following the study's four research questions. Section 4.1 examines whether the price ceiling represented the same effective constraint across regulated categories. Section 4.2 then presents the observed price patterns after the September 2022 intervention. The following figures focus on the observed price patterns, while sales-volume and sales-revenue patterns are discussed in relation to the category-level results.

All figures report observed monthly levels rather than percentage changes, unless explicitly stated otherwise. Average unit prices are reported in euros per comparable package unit: 1 kg for flour and 1 L for UHT milk and sunflower oil. Sales volumes are reported as monthly units sold, and sales revenues are reported as monthly retail sales revenue in euros. September 2022 is marked with a vertical line to indicate the introduction of the price-cap intervention.

4.1. Pre-intervention bindingness of the price ceiling

The first step is to assess whether the price ceiling represented the same effective constraint across regulated categories. The regulation imposed a maximum legal price, but retailers could sell regulated products below that ceiling. Therefore, the cap was more restrictive for products whose August 2022 prices were above, or close to, the regulated ceiling, and less restrictive for products whose prices were already below the ceiling. Figure 1 shows that the intervention was not equally binding across categories. The cap was most restrictive for flour, especially sharp flour, and least restrictive for UHT milk. This difference in pre-intervention bindingness provides an important context for interpreting the subsequent price patterns.

Figure 1: Pre-intervention bindingness of the price ceiling

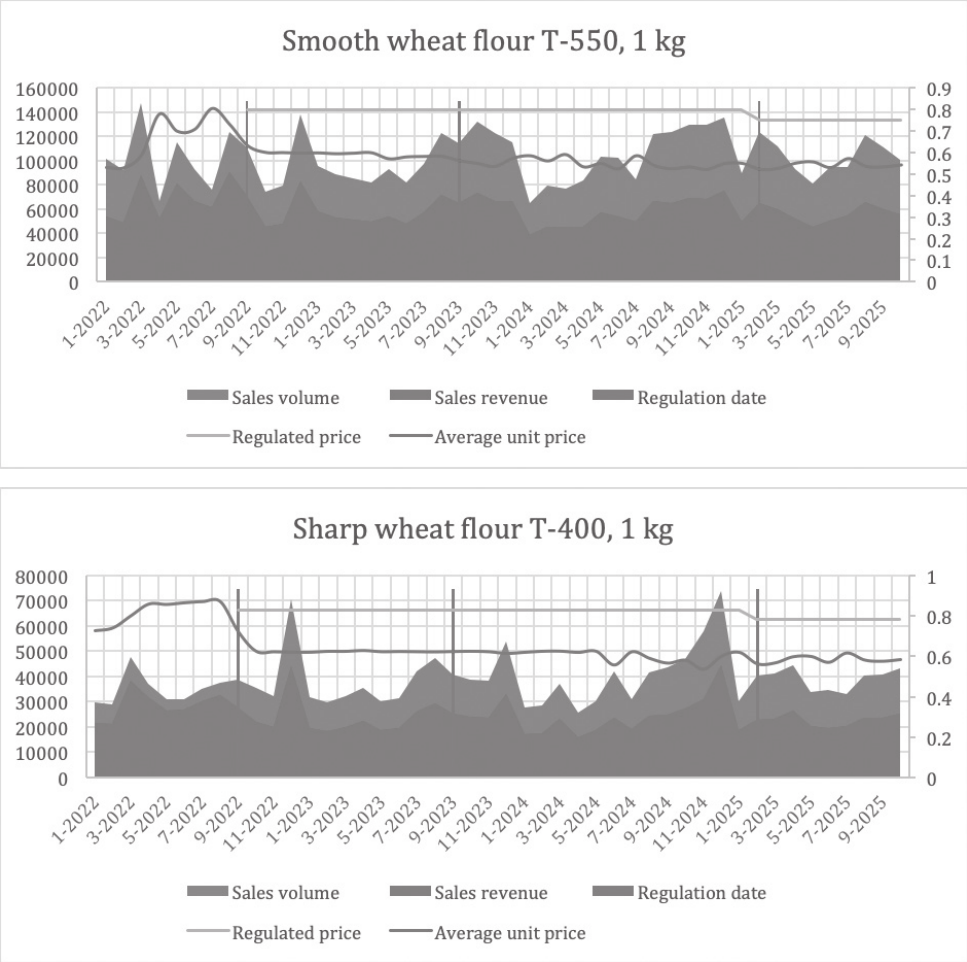


Note: *The figure reports relative pre-intervention bindingness by category. Bindingness is calculated as the difference between the observed average unit price in August 2022 and the regulated ceiling, divided by the observed average unit price in August 2022. Values are expressed as percentages. Positive values indicate that the observed August 2022 price was above the regulated ceiling; values close to zero indicate that the price was close to the ceiling; negative values indicate that the observed price was already below the ceiling.*

Price effects

The first research question asks how observed average unit prices evolved after the introduction of government price ceilings. Figures 2–4 present monthly average unit prices for regulated SKUs before and after September 2022. The y-axis reports observed average unit prices in euros per comparable package unit, not percentage changes.

Figure 2. Flour before and after the September 2022 price-cap intervention

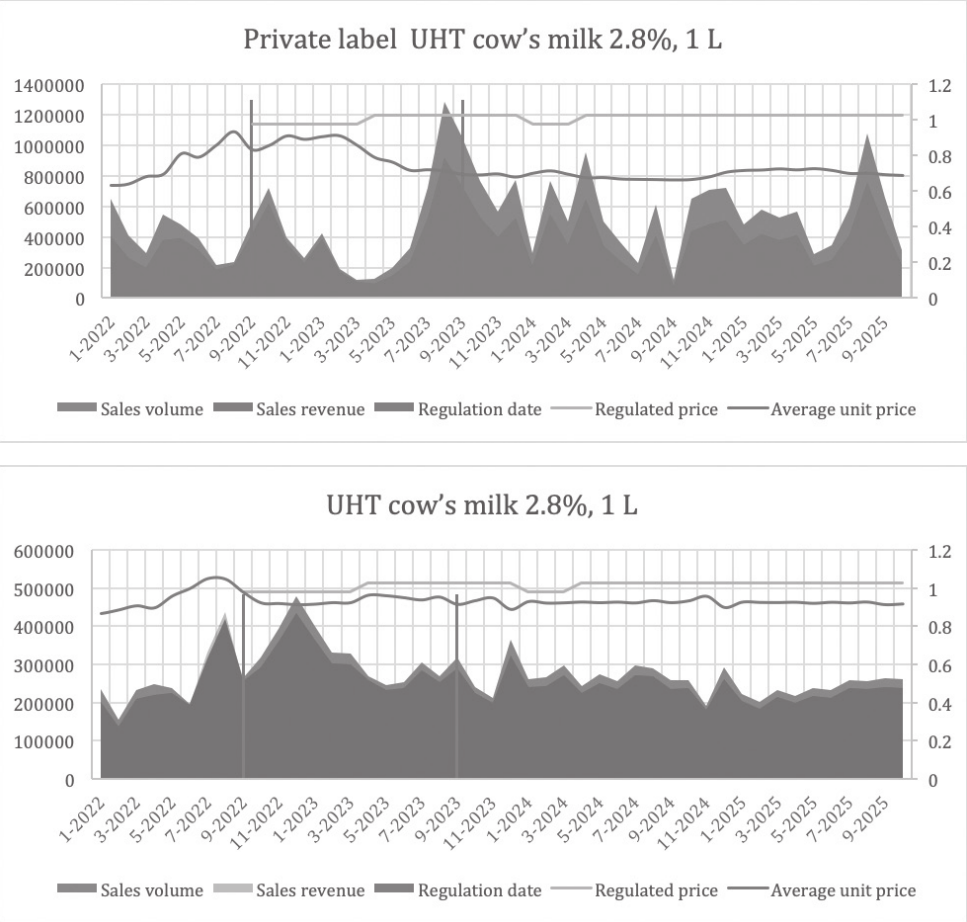


Note: *The figure reports observed monthly average unit prices for regulated flour SKUs, measured in euros per 1 kg package. The vertical line marks September 2022. The regulated ceiling is shown in euros per 1 kg. Values are monthly price levels, not percentage changes.*

The flour SKUs show the clearest price adjustment after the intervention. Observed average unit prices decline around September 2022, especially for products whose pre-intervention prices were above or close to the regulated ceiling. This pattern is consistent with the higher pre-intervention bindingness observed for flour.

By contrast, the milk SKUs show weaker and less discrete price adjustment around September 2022. In these figures, observed prices remain below the legal ceiling, which suggests that the regulation was less binding for these products than for flour. The private-label milk SKU does not display a clear downward break at the policy date, while the brand milk SKU shows only a relatively modest shift. These patterns are consistent with a more limited pricing effect in milk than in flour.

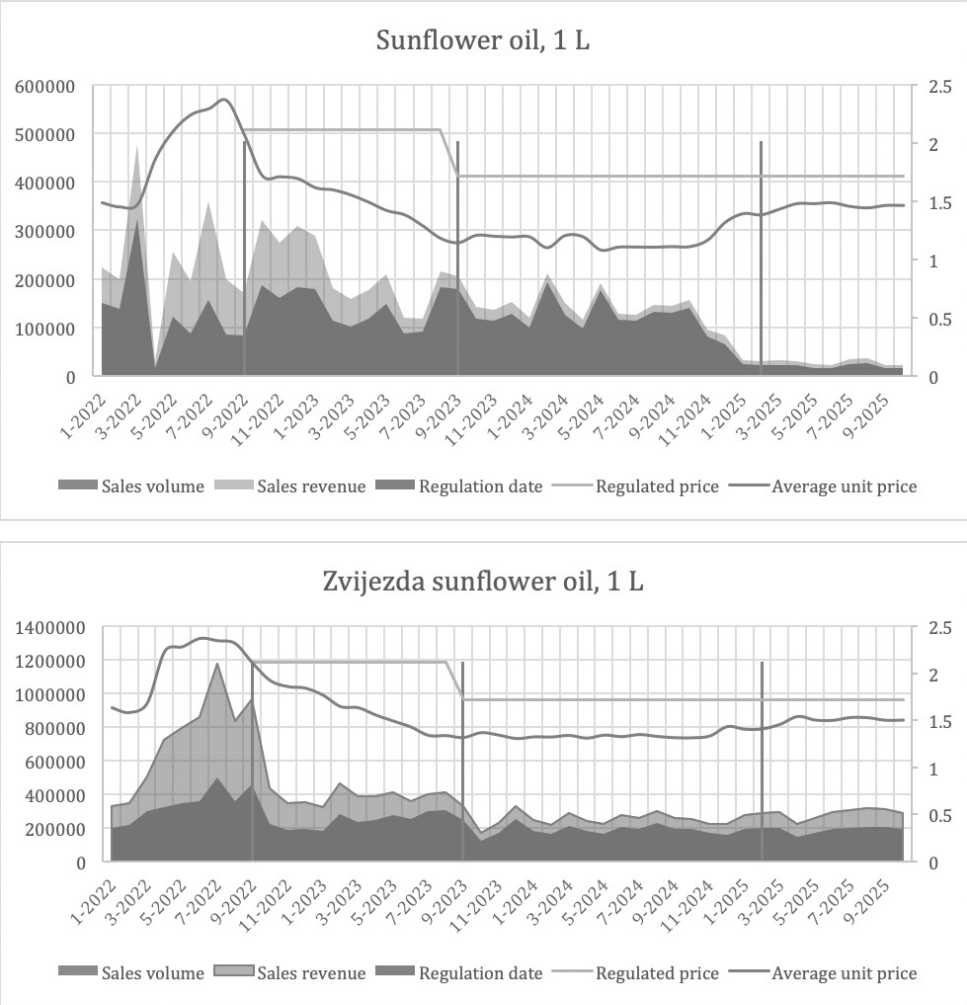
Figure 3. UHT milk before and after the September 2022 price-cap intervention



*Note***:** *The figure reports observed monthly average unit prices for regulated UHT milk SKUs, measured in euros per 1 L package. The vertical line marks September 2022. The regulated ceiling is shown in euros per 1 L. Values are monthly price levels, not percentage changes.*

The sunflower-oil SKUs occupy an intermediate position. Their observed prices decline after the intervention, but the price response is less clearly associated with a strong and lasting quantity response than in the flour figures. Taken together, the price evidence supports the view that the same formal policy did not impose the same effective constraint across regulated products.

Figure 4. Sunflower oil before and after the September 2022 price-cap intervention



Note: *The figure reports observed monthly average unit prices for regulated sunflower-oil SKUs, measured in euros per 1 L package. The vertical line marks September 2022. The regulated ceiling is shown in euros per 1 L. Values are monthly price levels, not percentage changes.*

The sales-volume patterns also differ across categories. Flour shows the clearest quantity response, although monthly sales remain variable throughout the observed period. No comparable and persistent change is visible for UHT milk. In the case of sunflower oil, the fall in average unit prices is not followed by a sustained increase in units sold. The figures therefore do not indicate a uniform volume response to the price-cap intervention.

Sales revenues broadly follow the combined movement of prices and quantities. For flour, relatively stronger unit sales appear to offset part of the decline in average prices. Revenues from UHT milk remain comparatively stable, in line with the limited adjustment in both prices and quantities. For sunflower oil, the weaker volume response means that lower

prices are not fully offset by higher unit sales. These results refer only to observed sales revenue and do not provide information about retailer margins or profitability.

5. DISCUSSION

This paper examined how the September 2022 price-cap intervention was associated with observed retail prices, sales volumes, and sales revenues across regulated staple-food categories. The results provide a consistent answer to the main research question: the same formal price-cap policy was not associated with the same market pattern across all regulated products. Flour showed the clearest decrease in observed average unit prices and the strongest increase in sales volumes. UHT milk showed a more limited adjustment, while sunflower oil showed price decrease without an equally strong or persistent quantity response. These patterns suggest that selective price caps should be evaluated as category-contingent interventions rather than as uniform policy shocks.

The price results address the first research question by showing that observed average unit prices declined most clearly where the ceiling appeared more binding before the intervention. A legal ceiling is not necessarily restrictive for every product. If observed prices are already below, or close to, the regulated maximum, the expected price response is limited. This appears to be the case for UHT milk. By contrast, the stronger price adjustment observed for flour is consistent with a more restrictive ceiling and a larger pre-intervention price-cap gap. This finding is in line with prior evidence that targeted price controls can reduce prices of regulated products, while firms may also adjust through other margins such as product variety, within-category pricing, and product availability (Aparicio & Cavallo, 2021).

The sales-volume results address the third research question by showing that lower prices were not accompanied by uniform quantity responses. The stronger quantity response in flour is consistent with marketing research showing that price reductions can affect not only how much consumers pay, but also when they buy, how much they buy, and which products they choose (Bell & Bucklin, 1999; Gupta, 1988; Van Heerde et al., 2004). However, the present data do not allow a direct distinction between higher final consumption, stockpiling, purchase acceleration, or substitution from non-regulated alternatives. The increase in flour sales volumes should therefore be interpreted as an observed retail-level quantity response, not as evidence that households consumed more flour. This is consistent with the empirical scope defined in the literature review: the retailer data allow the study to document price, volume, and revenue adjustment, but not to identify the household-level behavioral mechanism behind that adjustment.

The sales-revenue results address the fourth research question and show why prices and quantities should be examined together. Revenue is mechanically determined by both unit prices and units sold. A price cap may reduce revenue if lower unit prices are not offset by higher sales volumes, but revenue may remain stable if quantity growth is strong enough. The sunflower-oil results illustrate the first pattern: observed prices decline, but the quantity response appears weaker, creating greater pressure on observed sales revenue. Flour illustrates the second pattern: stronger sales volumes appear to partly offset lower unit prices. These findings do not imply that retailers were better or worse off in profitability terms,

because the data do not include costs, wholesale prices, margins, or assortment changes. They only show that observed sales-revenue patterns differed across categories.

The results contribute to the literature on retail price regulation and food inflation by showing why category-level heterogeneity matters. Prior research on targeted price controls shows that regulated prices may fall, but market adjustment can also occur through availability, variety, and pricing of related products (Aparicio & Cavallo, 2021). Research on retailing under inflation similarly emphasizes that persistent price shocks can trigger adjustments across brands, categories, discounting, and retailer strategies (Cavallo & Kryvtsov, 2024; Dekimpe & van Heerde, 2023). The Croatian case is consistent with this broader view. The observed effect of a price cap depends not only on the legal ceiling, but also on how binding the ceiling is, how consumers respond through quantities, and whether higher turnover offsets lower unit prices.

At the same time, the findings should not be interpreted as causal estimates of the welfare effects of price caps. The analysis remains descriptive and does not include a matched retailer-level control group of comparable unregulated products. This limitation reflects the structure of the available retailer data, which cover only regulated SKU–supplier combinations and therefore do not allow directly comparable price, quantity, and revenue trends for untreated staple products. However, this limitation is partly addressed conceptually by relating the findings to studies that explicitly compare regulated and unregulated products in similar price-control settings. Aparicio and Cavallo (2021), for example, show that targeted supermarket price controls can reduce regulated prices relative to comparable unregulated products, while market adjustment may also occur through availability, variety, and pricing of related goods. In the Croatian context, Mužić and Žilić (2025) provide more directly comparable evidence by analysing selective milk-price controls and showing that regulated milk products followed a different price trajectory from unregulated milk products. These studies support the interpretation that the post-September 2022 patterns documented in the present paper should be read against the broader food-inflation environment, while also confirming that the absence of an internal untreated SKU-level control group remains an important limitation.

The policy implication is cautious but important. Selective food price caps may be associated with lower observed prices in some regulated categories, but their broader market consequences depend on category-specific conditions. Policymakers should therefore monitor not only regulated prices, but also quantities sold, product availability, assortment, and potential substitution patterns. For retailers, the results suggest that the commercial impact of price regulation depends less on the nominal ceiling alone and more on whether consumer quantity responses are strong enough to offset lower unit prices.

Overall, the paper shows that grocery price caps should be evaluated through prices, quantities, and revenues jointly. The main empirical contribution is to document that the observed consequences of anti-inflation price regulation differ across regulated staple products and depend jointly on policy bindingness and category-level market response.

6. CONCLUSION

This paper uses the Croatian September 2022 price-cap intervention to examine how selective regulation of staple food prices is reflected in observed retail outcomes. The analysis shows that price caps should not be evaluated through prices alone. Even when the legal form of the intervention is the same, observed outcomes may differ across categories depending on how binding the ceiling is and how quantities respond after the intervention.

The main contribution of the paper is to document category-level heterogeneity in the retail response to price regulation. Flour, UHT milk, and sunflower oil were exposed to the same broad policy logic, but they did not follow the same price, volume, and revenue patterns. This finding is particularly relevant for grocery markets, where staple products differ in storability, purchase frequency, substitutability, and visibility in household shopping baskets.

The study also has several limitations. The analysis is descriptive and does not include a matched retailer-level control group of comparable unregulated products. This limits causal interpretation, although the findings are discussed in relation to prior studies that use unregulated products as comparison groups in targeted price-control settings. The results should therefore be interpreted as before-and-after patterns in regulated products, not as causal estimates of the intervention. The data capture realized prices, units sold, and sales revenues, but do not include retailer costs, margins, wholesale prices, profits, stockouts, product availability, assortment changes, or promotional activity. In addition, the data are observed at the SKU level and do not identify household-level behavior. As a result, increases in sales volumes cannot be separated into higher consumption, stockpiling, purchase acceleration, or substitution from other products.

Future research could extend this analysis by comparing regulated products with similar unregulated products, using household-level purchase data, or incorporating retailer-level information on margins, inventory, assortment, and product availability. Such data would make it possible to better distinguish between consumer adjustment, retailer adjustment, and broader market effects. Comparative studies across countries or multiple price-cap episodes would also help assess whether the Croatian evidence generalizes to other inflationary periods and institutional settings.

Overall, the findings suggest that selective food price caps should be evaluated as category-contingent interventions. For policymakers, this means monitoring not only regulated prices, but also quantities sold, availability, assortment, and possible substitution patterns. For retailers, the results highlight that the commercial consequences of price regulation depend on whether quantity responses are strong enough to offset lower unit prices.

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