WORKING PAPER

EXAMINING CHEAPFLATION IN SERBIA IN THE 2022-2024 PERIOD

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Examining cheapflation in Serbia in the 2022-2024 period

Dragan Dživdžanović

Abstract: This paper examines a phenomenon known as cheapflation on the example of Serbia in the 2022-2024 period. Cheapflation is the tendency of prices of cheaper brands to rise at a higher rate than those of more expensive brands of the same products during the periods of increased inflationary pressures. For research purposes, we used monthly microdata on the prices of various brands of a wide range of food and beverage products. Based on this data, brands within products were classified into quartile groups, from the cheapest to the most expensive ones. Synthetic consumer price indices were then created, consisting only of the cheapest and most expensive brands. The results show that Serbia experienced cheapflation, as the prices of the cheapest brands rose 4.5 pp faster than the the prices of the most expensive brands, on average, over the three-year period. The paper also confirmed an accompanying tendency: in the beginning, significant inflationary pressures are dominantly driven by the price increases of the cheapest brands, while the gap between the prices of cheaper and more expensive brands widens the most during the period of the strongest inflationary pressures. Examining this phenomenon is important because of the redistributive effects of inflation, as well as because of the impact that public perception of price increases can have on monetary policy through the expectations channel.

Key words: cheapflation, inflation, demand elasticity, quartile, brands, cumulative growth
[JEL Code]: F21, G15, G24

Non-Technical Summary

Cheapflation is a phenomenon which occurs during periods of high inflation and is characterised by the tendency of the prices of cheaper brands to rise at a higher rate than those of the more expensive brands of the same products. These price differences are generally the most pronounced during periods of the strongest inflationary pressures. The study of this phenomenon is significant as it affects the redistributive effects of inflation, as well as monetary policy, albeit indirectly. The greater price growth of cheaper brands relative to that of more expensive ones particularly impacts the most vulnerable segments of the population. Furthermore, such price movements may also influence the perception of economic agents regarding the intensity of inflation, which, through the expectations channel, further makes it difficult for monetary policymakers to combat inflation successfully. This phenomenon has already been established empirically in numerous countries worldwide in the post-pandemic period, and this paper examines empirically the existence of cheapflation in Serbia.

The analysis used monthly data on the prices of brands for 58 products from the food and beverage category between 2022 and 2024, which constitues a representative sample since these products account for a half of the total weight of these categories or around 17% of the total CPI compiled by the Statistical Office of Serbia (SORS). In the food products group, the focus was placed on processed food, primarily for methodological reasons, given that stores typically do not display multiple different options when it comes to fresh fruits, vegetables, and meat.

Brands of a product were classified into quartile groups based on the unit prices recorded in the base month – January 2022. The unit price of a product is the price of the product for a standardised quantity, taken as the measure, and in this study, that measure is one kilogramme, litre, or piece. Finally, synthetic price indices were formed, consisting only of the cheapest and most expensive brands, with their dynamics illustrated through indices representing cumulative price increases relative to January 2022.

The results of the analysis showed that the CPI composed of the cheapest products, i.e. products from the first quartile – CPI (Q1) increased cumulatively by 39.6% by end-2024 compared to January 2022, while the most expensive brands – CPI (Q4) increased by 35.1%, on average. This means that the prices of cheaper brands, on average, grew faster than those of more expensive brands – by 4.5 pp, thereby confirming the presence of cheapflation in Serbia over the past three years. Additionally, the analysis confirmed **an accompanying tendency of this phenomenon: initially, stronger inflationary pressures are dominantly driven by the price growth of the cheapest brands, while the gap between the price movements of cheaper and more expensive brands widens the most during the period of the strongest inflationary pressures**.

Additionally, an overall CPI was created encompassing all brands of these 58 products that were the subject of the analysis, which showed an average overall price increase of 37.7%. This result indicates the representativeness of the scope, given that the figure obtained is close to the cumulative inflation rate in the processed food and non-alcoholic beverages group based on official data of the SORS.

Contents

1 Introduction

During the phase of economic recovery from the negative consequences of the COVID-19 pandemic, many countries worldwide faced inflation that exceeded the defined bands based on the publicly stated goals of central banks. Initially, inflation was associated with transitory factors: savings assets and changed preferences during the pandemic on the demand side, global supply-chain disruptions and bottlenecks, and overburdened waterborne transport on the supply side. The expectation that the price increase was temporary and that it would return within the target band already in 2022 did not materialise, while the energy crisis, further exacerbated by the escalation of the Ukraine conflict, made inflation higher and persistent.

The multi-year episode of high inflation globally increased the need to examine its consequences on different social groups' welfare. Though it is indisputable that continuously high inflation negatively impacts the purchasing power of the population, this effect can certainly vary significantly depending on income and social groups. Given that food and energy prices rocketed the most, it is only natural to expect that more vulnerable groups were those with lower income, who spend a significant part of their income for satisfying these needs, as shown for advanced economies (Causa, Soldani, Luu & Soriolo, 2022). During periods of heightened inflationary pressures, price increases are not equally distributed across all types of products that make up the CPI. Research indicates that variations in price movements occur even for the same product, when observing different brands of products available to buyers (Kaplan & Menzio, 2015).

Considering that the analysis of price movements of different brands of the same products, in addition to providing a better understanding of inflation trends due to its granular approach, can also offer responses to the distributive effects of actual inflation, growing interest in this area of research comes as no surprise. From the perspective of central banks, observing differences in the price movement of a product can be valuable, as it influences inflation perception, which in turn, through the expectations channels, can facilitate or hinder monetary policy conduct.

One way to draw conclusions about the various effects of inflation using microdata on prices is to classify brands of a product into quartile groups based on their cost price, from the first quartile representing the cheapest brands for each product to the fourth quartile consisting of "premium" brands with the highest prices. The biggest obstacle to this type of research is the availability of microdata on prices itself. However, in recent years, thanks to the development of the internet's role in retail sale and data management techniques, the possibility has opened up for the systematic collection of prices of a large number of product brands of all types in various stores. The first major study on this topic revealed that in countries facing inflation worldwide, the phenomenon called cheapflation is widespread: it stands for a situation where the prices of cheaper brands rise at a higher rate than those of more expensive products (Cavallo & Kryvtsov, 2024).

Using a sismilar methodology as in the mentioned research, this paper focuses on examining the existence of the cheapflation effect in the Serbian retail market, making use of data on product prices of several major retail chains, obtained from their online catalogues in the period from 2022, concluding with 2024. By constructing consumer price indices made up

of the same products but different brands based on their cost prices, the analysis confirmed the presence of cheapflation in Serbia as well, with the prices of cheaper brands increasing on average 4.5 pp faster than those of more expensive brands for the same products. The second, accompanying finding of the abovementioned study was also confirmed. Namely, the gap between the price growth of the cheapest and most expensive brands widened during periods of the strongest inflationary pressures.

The paper is structured as follows: the first part introduces and explains the cheapflation phenomenon – inflation of cheaper variations of products – and the theoretical background of its emergence in times of inflationary pressures. The second part presents the analysis procedure for examining the existence of this phenomenon in Serbia. The third part of the paper presents the results of the examination and a broader analysis of the time dynamics of price movements for the cheapest and the most expensive brands, with an overview of their relationship, not only through general price indices but also in the defined product groups. The final part of the paper sets outconcluding considerations.

2 The concept of cheapflation and the contributing factors

The concept of cheapflation originated from the observation of variation in price changes for one and the same product, i.e. for different brands of the same product. The starting point of research is the fact that for a given product, there are cheaper and more expensive brands available for purchase. It does not mean that during inflation periods, the prices of all brands of the same product will increase at the same rate. Therefore, cheapflation occurs when the prices of cheaper brands rise at a higher rate than the prices of more expensive brands.

This price movement further intensifies the adverse consequences of inflation, both in terms of social welfare and monetary policy conduct. Stronger inflationary pressures on cheaper brands directly threaten the standard of living of the population, especially of the most vulnerable groups. Lower-income groups were already asymmetrically affected by inflation, considering its nature, i.e. the fact that it was driven by the food and energy prices. For this reason these groups were forced to spend larger shares of their income on meeting the basic needs. The existence of cheapflation further exacerbates their situation, as these groups, expectedly, tend to opt for cheaper brands when purchasing certain products. On the other hand, the asymmetric pressure on the prices of cheaper food and beverage brands adversely affects inflation perception and expectations of households, as these expectations are mainly created based on the most representative goods encountered daily. Consumers' views on actual and future inflation indirectly influence the monetary policy through the expectations channel, which is why cheapflation can make central banks's fight against inflation harder.

The reasons for the emergence of this phenomenon are numerous and can be considered from the perspective of both supply- and demand-side factors, as well as those conditioned by market structure specifics.

2.1 Supply-side and demand-side factors

The difference in prices between brands often reflects various business strategies and supply chain structures, which can significantly influence the level of price sensitivity to be heterogenous across companies, causing them to respond differently to cost-push pressures. Globally, cheaper brands are often associated with highly optimised production chains, and hence more reliant on global supply chains. During the COVID-19 pandemic, they were more susceptible to inventory management issues, which have been shown to have an inflationary effect (Cavallo & Kryvtsov, 2023). In case of Serbia, a country with a tradition in processed food production, it is difficult to observe such differentiation between brands in the processed food market. Many cheap brands are produced locally, while imported products include both those considered cheap substitutes and those deemed premium products, and therefore more expensive.

Looking at companies that market premium brands, which are the most expensive, it is evident that they rely more on branding and research and development costs. These companies are often more productive and rely less on economies of scale (Faber & Fally, 2021). Such a business strategy makes them less susceptible to supply chain disruptions and other cost shocks, thereby creating more space for maneuvre so the companies do not have to pass the current cost-push pressures on to customers to the full extent.

All the aforementioned factors may indicate that the shocks caused by the pandemic led to a reconfiguration of production costs, making them relatively higher for cheaper brands compared to more expensive ones (Kopytov, Mishra, Nimark & Taschereau-Dumouchel, 2021). As a result, the narrower gap between their prices is more persistent.

Cheapflation can also be influenced by consumer behaviour, which shapes the demand for goods. Two key tendencies that indirectly create the environment for the cheapflation are lower elasticity of demand for food products among cheaper brands and the shifting habits of a certain number of consumers, where rising prices lead to a switch from more expensive to cheaper brands.

The elasticity of demand for a product basically shows how essential that good is to buyers and how unique it is in fulfilling their needs. There are two measures of demand elasticity: price elasticity and income elasticity. The former measures changes in the quantity demanded. The changes result from the changes in the price of the product. The latter measures changes in demand caused by the changes in income. Essential goods, such as basic foodstuffs (bread, milk and dairy products, certain types of meat, fruits, and vegetables), generally have low price elasticity of demand, according to research papers done for individual countries (Okrent & Alston 2012) as well as globally (Cornelsen et al. 2014). This means that price hikes will not lower turnover significantly, as long as the purchasing power is not severely compromised. In this regard, a certain asymmetry of power arises in the market between sellers and buyers, which can be further exacerbated by the affinity of buyers to shop at nearby stores, thereby reducing their options. Sellers can take advantage of this asymmetry to raise prices more significantly while maintaining turnover, since buyers are more likely to give up on other, less essential products or services.

From the perspective of cheaper and more expensive brands, it can be said that the demand elasticity for cheaper products is the lowest, as they are the most affordable way to fulfill a need and are primarily purchased by people with lower purchasing power. These buyers cannot easily substitute such products and are therefore compelled to continue purchasing them. As a result, manufacturers and retailers can pass a larger share of cost-push pressures on to consumers and continue raising retail prices for such products without significantly jeopardising sales volume. On the other hand, more expensive brands have higher elasticity, as they can be replaced with cheaper alternatives. This substitution of expensive products with cheaper ones occurs during episodes of high inflation and declining real incomes (Jaimovich, Rebelo & Wong, 2019). However, this very tendency of substitution among higher-income households negatively impacts the prices of cheaper products in a feedback loop, as the number of people using them grows, driving up the quantity of demand. In the post-COVID period, manufacturers of cheaper brands faced both higher demand for their products and supply-side challenges, including disruptions in supply chains. These two-dimensional pressures can be seen as reasons for more intense price hikes.

2.2 Imperfect market structures

Undoubtedly, the asymmetry in market power between supply and demand can for sure influence how cost-push pressures spill over, and to what extent they spill over to corporate profits and on to consumers through higher prices. However, in addition to consumers and their demand elasticity for products, market structure is also a crucial factor in determining the distribution of power between supply and demand. In highly competitive markets, sellers will not be able to exploit the low demand elasticity of consumers through higher margins and, consequently, higher prices, due to the fierce competition for the market share. Nevertheless, the more concentrated the market, the more likely companies are to respond to rising costs by increasing prices to maintain profitability. This goal can be achieved through formal types of non-competitive behaviour, as more clearly outlined in the Law on Protection of Competition, such as abuse of dominant position or restrictive agreements (RS Official Gazette, Nos 51/09 and 95/13), as well as implicit agreements on price hikes when companies can increase prices, relying on other firms following suit and refrain from differing pricing strategies as a form of competitive rivalry, counting on other companies to pursue similar strategies (Weber & Wasner, 2023). In concentrated markets, consumers with the least purchasing power have the least bargaining power: therefore, if there is a tendency of companies to pass on costs to prices to a greater degree, it will be more pronounced for the brands these consumers buy, and these are cheaper brands.

When it comes to the formation of final consumer goods prices, the answer to the question of market power distribution can be sought indirectly, by analysing data on the profitability of the wholesale and retail trade sectors, that is by establishing whether they remained stable or even improved despite cost-push pressures. As for Serbia, data from the Serbian Business Registers Agency, also used by the NBS to analyse the overall profitability of the Serbian economy in the period between the pre-crisis 2019 and 2022, show that significant nominal growth in margins was also coupled with an increase in relative profitability indicators, such as the trade margin rate and the net profit margin (2023).

3 Data collection and processing

Examining the phenomenon of cheapflation in Serbia required access to micro data on the prices of individual brands with an uninterrupted and sufficiently representative time series. For these purposes, we relied on the NBS's internal database, also used for the monthly inflation nowcasting model. Due to limitations of the database, the starting point for the analysis is January 2022, which is justified given that, although inflationary pressures began in 2021, it was only in the following year, with the escalation of the conflict in Ukraine, that a more significant and persistent rise in prices across all categories of goods occurred. The analysis calculated the cumulative monthly price growth from January 2022, taken as the base period, for both individual brands and at the aggregate level, with the endpoint of the time horizon being December 2024.

3.1 Product coverage

The selection of food products primarily focused on items from the food and beverage categories, classified under the CPI by the SORS, according to the COICOP classification. A more detailed analysis of these categories is particularly useful given that, collectively, the weight for food and beverages makes up slightly more than a third of the total CPI. Moreover, for much of the past three years, food and energy price increases, have been the main drivers of inflationary pressures.

The analysis of food prices focused on processed food, while excluding fresh meat, fruits and vegetables primarily for methodological reasons. The specificity of these items in retail trade is that stores typically offer only one choice for a given product (such as fresh pork ham, potatoes, bananas, etc.), making it impossible to classify different brands of the same product by price. In addition to methodological limitations, there are also economic specificities of these products that justify their exclusion. Unprocessed food is a step lower down the value chain, making it structurally more vulnerable to shocks that may come from energy and raw material markets (such as fertilizers), where monetary policy has much less influence. Similarly, the price movements of these products are more volatile, especially in the case of fruits and vegetables, due to exogenous climate shocks, such as droughts or floods, as well as challenges in inventory management and greater dependence on external influences, particularly from the European market and beyond.

A necessary step in the examination of the cheapflation phenomenon is to define a clear demarcation between the cheapest and the most expensive brands, where there must be a noticeable gap in retail prices. With this in mind, for each product, brands were further classified into quartiles and sorted according to the level of the unit retail price, from the first quartile (Q1), comprising the cheapest brands, to the fourth quartile (Q4), the most expensive one. For this process, at least four different brands of the same product are required in the database, with an uninterrupted time series from January 2022 to December 2024. Unfortunately, this criterion could not always be met, due to the relatively small size of the domestic market and fluctuations within product brands during this period, which is a common case, especially in times of price volatility.

Finally, brands for 58 different products, which are part of the Consumer Price Index (CPI), were analysed. Collectively, these products account for a half of the total weight for food and beverages, or approximately 17% of the overall CPI. Additionally, almost all products that are frequently used by the majority of the population were covered, ensuring a high level of representativeness. Data on the prices of brands included in the database were taken from online catalogues of the largest retail chains in Serbia.

3.2 Methodology for creating the Consumer Price Index

Competing brands often differ not only in price but also in appearance and packaging, which can result in varying weights and volumes. Therefore, it is incorrect to compare the prices of these brands without previous adjustments to arrive at their unit price. The unit price of a product is the retail price of the product for a standardised quantity, taken as the measure, which in this study is one kilogramme, litre, or piece. The adjustment method is illustrated in the following chart on a hypothetical example:

Table 1. **Graphical overview of unit retail price calculation**

	Store price	Quantity	**Unit value**
Brand A - *Sausages*	359.99	500 g (0.5 kg)	**359.99*(1/0.5) = 719.98/kg**
Brand A - *Sparkling water*	44.99	1.25 l	**44.99*(1/1.25) = 35.99/l**
Brand A - *Eggs*	189.99	10 pc	**189.99*(1/10) = 19/pc**

Once data for different brands were compared, a time series was created for each product, with brands within each product classified from the cheapest (the first quartile – Q1) to the most expensive ones (the fourth quartile – Q4) based on the initial data from January 2022. The original data series consisted of unit prices, but indexation was needed for further harmonisation of products, and the initial data point became the base index (January 2022 = 100), with subsequent monthly growth rates cumulatively applied, resulting in the total price growth over three years for each brand.

The final step entailed the aggregation of brands from all products belonging to the same quartile and creating an aggregate CPI, with the reweighting of the share of each brand in accordance with the methodology of the Statistical Office of the Republic of Serbia (SORS). This resulted in the CPI for brands in the first and fourth quartiles. Indices could also be created for the second and third quartiles, but having in mind that the price differences between brands in the middle quartiles are often minimal due to the limitations of a smaller market, drawing clear conclusions from their analysis would be more challenging. In addition to quartile indices, a general CPI was created, covering brands from all four quartiles, with the aim of comparing the results with official SORS data.

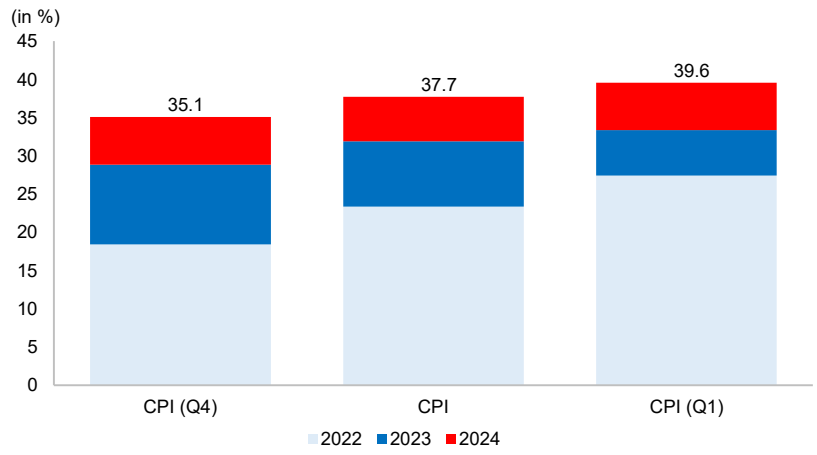
4 Assessment of the cheapflation phenomenon for Serbia

4.1 Results

The results of the analysis showed that the CPI composed of the cheapest products, i.e. products from the first quartile – CPI (Q1), increased cumulatively by 39.6% by the end of 2024 compared to January 2022, while the most expensive brands – CPI (Q4) increased by 35.1% on average. This means that the prices of cheaper brands grew faster by 4.5 pp, on average. Additionally, a CPI that included all brands of the 58 products analysed was created, showing an average total price increase of 37.7% and demonstrating representativeness, as this figure is close to the cumulative inflation rate in the processed food sector based on official SORS data (38.9%). This figure should be adjusted downward, as it does not include the prices of non-alcoholic beverages, which grew more slowly (33.3%), according to SORS.

Looking at the dynamics of these indices over the three-year period, it is evident that the bulk of price increases occurred in the first year, 2022, which is logical given that this was the year when the impact of external shocks and subsequent inflationary pressures was the strongest. By the end of that year, the prices of the 58 products (including all brands of the same product) were 23.4% higher, on average, than in January, driven by the growth in the prices of the cheapest brands, which increased by 27.4%, compared to the most expensive brands, which rose by an average of 18.4% (Chart 1). In addition to the higher total cumulative price increase over the entire 2022–2024 period for cheaper brands, this increase was also differently distributed across years. Around two-thirds of the total cumulative price rise for cheaper brands (69.3%) was recorded in 2022, while for more expensive brands, this percentage was significantly lower (52.5%). However, in 2023, the situation reversed, as the prices of the most expensive brands continued to rise, contributing nearly 30% to the total increase, compared to the cheapest brands, where only 15% of the total increase was recorded in that year. Owing to such movements the remaining contribution, realised in 2024, was similar for both groups of brands.

Chart 1 **Cumulative average price growth of 58 product types from January 2022 to December 2024 (total, the cheapest, and the most expensive)**

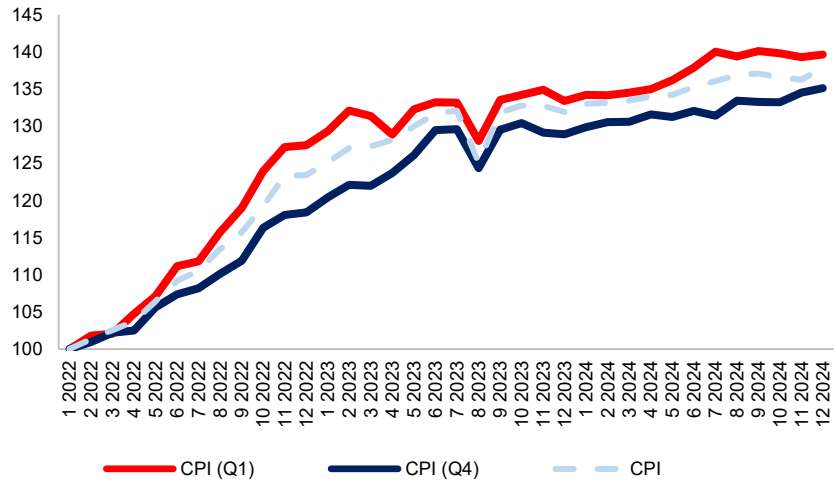


Source: NBS.

The above distribution of price increases suggests that the second, accompanying tendency of cheapflation registered in other countries was also confirmed. This tendency indicates that during periods of the highest inflationary pressures, the prices of cheaper brands grow significantly faster, while as inflation slows, the gap between the growth rates of cheaper and more expensive brands narrows. Such dynamics can be illustrated with monthly data and the movement of both indices (Chart 2).

From June 2022 onwards, a growing gap between the price movements of brands in the first and fourth quartiles began to be observed. Over these five months, the CPI for brands in the first quartile increased cumulatively by 11.2%, while for the fourth quartile, the cumulative increase was 7.4%, so the difference in cumulative growth rates in June was 3.8 pp, representing a significant increase compared to the previous month, where the difference was 1.5 pp. In the second half of the year, the cheapest brands continued to grow at significantly higher monthly rates compared to the most expensive brands, and the overall gap continued to widen. The largest difference was recorded in Q4 2022 and Q1 2023, ranging from 7.6 pp to 10 pp, before a very rapid reduction in relative prices occurred, and by June 2023, the gap began to stabilise at around 4.2 pp, which remained the average until June 2024.

Chart 2 **Monthly dynamics of CPI for all, most expensive, and cheapest brands** (January 2022 = 100)

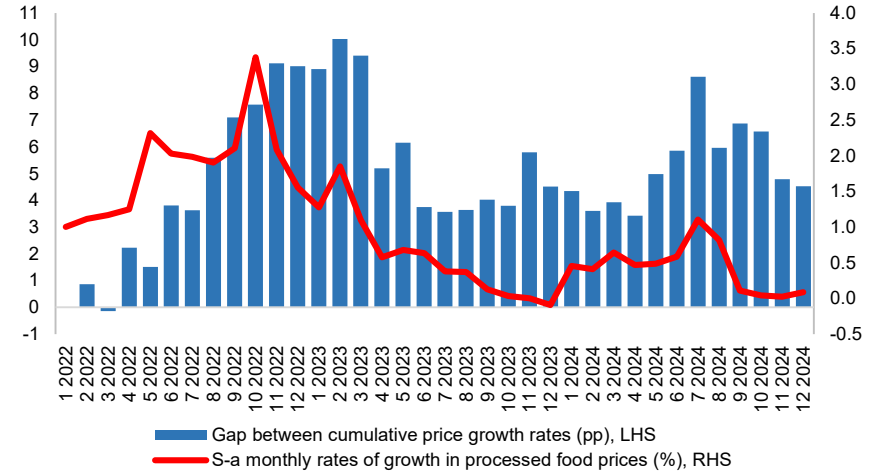


Source: NBS.

Comparing the gap in cumulative growth rates between the cheapest and the most expensive brands with data on the seasonally adjusted monthly growth rates of processed food (Chart 3), it can be observed that high monthly inflation rates coincide with the widening of the gap. It is evident from the observation of the aforementioned period of gap widening, from June 2022 to March 2023, that the then monthly seasonally adjusted inflation rates were exceptionally high (averaging 1.9%), having peaked in October 2022 (3.4%), which later spilled over onto the price gap. The monthly growth rate decreased significantly in a few months during the period from June 2023 to 2024, as well. This period saw a narrower gap which moved around the average of 0.35%. The gap narrowing was driven by the changed dynamics of price movements for the cheapest brands which recorded a significant growth slowdown, as well as stagnation in case of many products. On the other hand, the prices of the

most expensive brands continued to rise at a similar pace, and only towards the end of 2023 did their price growth decelerate significantly.

Chart 3 **Comparison of the gap between cumulative growth rates of the cheapest and the most expensive brands with seasonally adjusted monthly growth rates of processed food prices**



Source: NBS.

Yet another confirmation that, during periods of inflationary pressures, the prices of cheaper products grow at a faster rate is provided by observing the period from July to October 2024, when, due to the effects of drought on both domestic and global markets, inflation accelerated from 3.8% in June to 4.3% in July, reaching the upper limit of the NBS target band (4.5%) in October. Inflationary pressures were again more pronounced for cheaper brands, as the gap between the cumulative growth rates of prices in the first and fourth quartiles increased sharply to nearly 9 pp in July, and then ranged between 6 pp and 7 pp until the end of October. Additionally, the prices of cheaper products stabilised following their initial significant increase in July, while the prices of the most expensive brands continued to grow, thereby narrowing the gap. Inflation slowed down slightly from October onwards, which was immediately reflected in the gap between the cumulative growth rates of the cheapest and the most expensive brands, which continued to decline and reached 4.5 pp in December.

This confirms the findings of Cavallo and Kryvtsov for nine advanced economies across different regions, which relate to the tendency of the prices of cheaper brands to increase faster and at a higher rate during periods of inflation. In their study, the final difference between the cumulative growth rates of the cheapest and the most expensive products was larger, ranging between 6 pp and 14 pp, depending on the country (2024), compared to 4.5 pp in Serbia at the end of December 2024. However, it should be noted that there are differences in the observation periods, product coverage, and market differences.

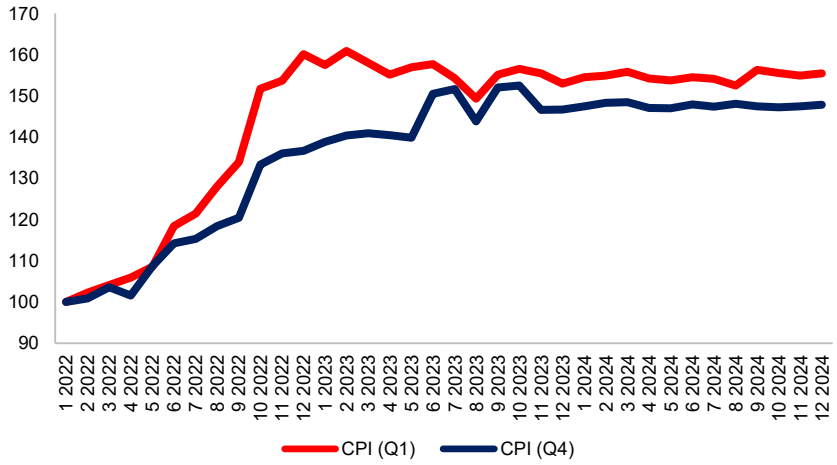
4.2 Analysis by product groups

The approach to inflation research using microdata is also useful because it allows for the analysis of inflation from the perspective of individual products and the grouping of these data. For the purposes of this analysis, four specific product groups were synthesised, which should reflect a certain similarity between products. These four groups are: dairy products, meat

products, coffee and non-alcoholic beverages, as well as confectionery products. When constructing the CPI composed of the cheapest and the most expensive brands for each product group, the same methodology was used, with the reweighting of individual products in the newly created CPIs.

Dairy products recorded the most intensive price growth compared to other groups, especially for the cheapest brands. Over the entire three-year period, these prices rose by 55.5% compared to January 2022 (Chart 4). Unlike other groups, the price pressures for the cheapest brands were fully felt in the first year, while from April 2023 onwards, the pressures eased slightly, remaining stable at the existing level. On the other hand, the prices of the most expensive brands rose at a similar pace as those of the cheapest brands until June 2022, but from then on, the gap in price movements began to widen, peaking at the end of 2022 when the difference was 23.4 pp, as the prices of the cheapest brands were 60.1% higher than in the base period, while the prices of the most expensive brands were 36.7% higher. In mid-2023, the gap narrowed significantly – to single-digit levels, albeit with some volatility. In 2024, the fluctuations were reduced, and the gap ranged mostly between 6 pp and 8 pp, with slight deviations recorded in the August-October period.

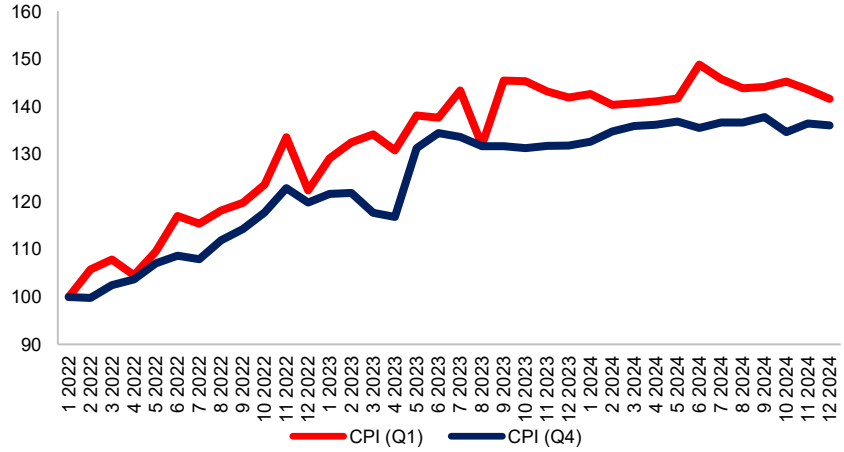
Chart 4 **Monthly CPI dynamics for the cheapest and the most expensive brands of dairy products** (January 2022 = 100)



Source: NBS.

Meat products recorded the second highest growth during most of the observed period. At the end of the three-year observation period, this product group recorded a cumulative average price increase of 41.6% for brands in the first quartile and 36.0% for the fourth quartile (Chart 5).

Chart 5 **Monthly CPI dynamics for the cheapest and the most expensive brands of meat products** (January 2022 = 100)



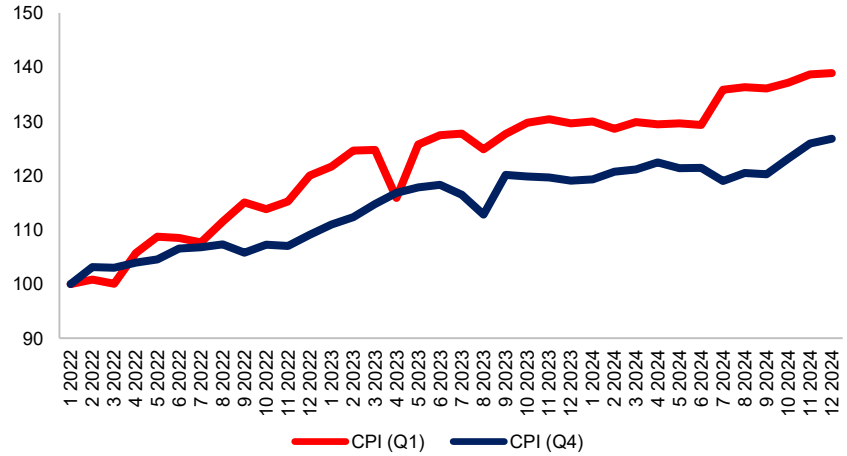
Source: NBS.

Compared to dairy products, the prices of meat products increased to a lesser extent, but it is important to stress the differences in price dynamics between brands in the first and fourth quartiles. In case of dairy products, there was a single continuous period when the gap between the cumulative growth rates of the cheapest and the most expensive brands was at its widest, recording double-digit values (September 2022 – May 2023), while for meat products, there were two shorter periods of a significantly wide gap, from February to April 2023 and from September 2023 to January 2024, when the gap recorded double digit values. Based on such dynamics, it can be concluded that for meat products, the widening of the gap occurred with some delay, and in 2023, greater volatility was observed, with frequent shifts between periods of large and small differences in cumulative price growth rates. Some volatility persisted, into 2024, albeit to a lesser extent, with the last significant widening of the gap occurring in October (10.6 pp), but this gap was quickly reduced, to 5.6 pp by December.

The product group including coffee and non-alcoholic beverages recorded a smaller cumulative price increase over the observed three-year period compared to the overall cumulative increase when all products are considered. The prices of the cheapest brands in this group increased by an average of 38.9% over three years, while the prices of the most expensive brands increased significantly less, by 26.8% (Chart 6). In addition to the fact that this group exhibited the largest difference in cumulative price increases between the cheapest and the most expensive brands, a specific characteristic is the highest stability in price movements, in relative terms, or the gap between brands in the first and fourth quartiles. From September 2022, when the gap in cumulative growth rates first widened significantly, up until July 2024, the gap between the first and the fourth quartiles ranged between approximately 8 pp and 12 pp, with only a few one-time deviations. It is important to note that in the second half of 2024, an exogenous supply-side shock occurred resulting in a drastic increase in global coffee prices, which accounts for a great share of this product group. As a result of this shock, the difference between the cheapest and the most expensive brands in the entire group more than doubled and stood at 16.8 pp already in July, which was also its highest level since the beginning of 2022. The widening of the gap in that month was not affected solely by

significantly higher prices of the cheapest brands (the expected accompanying feature of the cheapflation phenomenon), but also by a mild decline in the prices of the most expensive brands.

Chart 6 **Monthly CPI dynamics for the cheapest and the most expensive brands of coffee and non-alcoholic beverages** (January 2022 = 100)



Source: NBS.

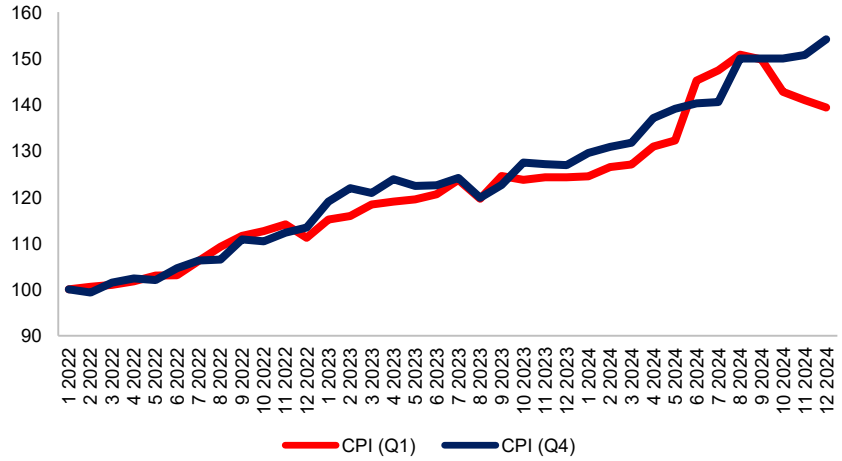
The final product group that was the subject of special research relates to products in the confectionery industry. There are two reasons for the interest in analysing price movements in this group. The first is the fact that, among food products, confectionery products are expected to have a higher level of demand elasticity among consumers, as well as more intense competition between brands, both cheaper and more expensive ones. Given that these are some of the main reasons for the occurrence of cheapflation, it is important to examine whether this phenomenon occurs in this group and to what extent. The second reason for examining this product group is to explore how brands in this group responded to the dramatic increase in global cocoa prices in 2024, as cocoa is one of the key ingredients in the production of these products.

The results show that cheapflation can be unequivocally ruled out for this group, as the differences in cumulative growth rates between the cheapest and the most expensive brands over the entire observation period were not significant. The periods of specific quartiles of cumulative price increases alternated, however, towards the end, a clear widening of the gap occurred, in favour of more expensive brands (Chart 7). In addition, disruptions in the global cocoa market clearly influenced the price increases of confectionery products, as this was the only product group where the largest contribution to the total cumulative price increase was recorded in 2024, when most other products experienced a slowdown in price growth.

The continuous price increases, especially in 2024, pushed up the prices of both the cheapest and the most expensive brands cumulatively by approximately 50% by September 2024 compared to January 2022. Nevertheless, from then on, brands in the first and fourth quartiles began to move in opposite directions. First quartile brands began recording negative monthly growth rates, which in turn reduced their cumulative growth over the entire observation period to 39.4%. On the other hand, the average prices of the most expensive

brands continued to rise, especially in December, which pushed up their cumulative growth (reaching 54.2%) widening the gap to 14.8 pp in favour of the most expensive brands. One of the major factors that could cause the opposite tendency in price movements for this product group compared to others is the tendency for cheaper brands to contain less cocoa, resulting in milder cost-pressures on this account.

Chart 7 **Monthly CPI dynamics for the cheapest and the most expensive brands of confectionery products** (January 2022 = 100)



Source: NBS.

5 Conclusion

This paper presented an analysis of the distribution of inflationary pressures across different product brands, specifically the differences in intensity and dynamics of price growth between cheaper and more expensive brands of the same products. The theoretical framework of this research relied on the concept of cheapflation – the inflation of cheaper brands, which refers to the tendency of the prices of cheaper brands to increase faster and at a higher rate compared to the more expensive ones during periods of heightened inflationary pressures. It has already been empirically confirmed that this phenomenon was globally widespread during high inflation that followed the post-pandemic recovery of economic activity.

Unit prices for brands available in the largest retail chains in Serbia from 2022 to 2024 were calculated using adjustments for product size. The sample is representative, given the broad coverage that includes brands for 58 products, accounting for half of the total weight of the food and beverages category and approximately 17% of the overall CPI. The results largely correspond with SORS data on the movement of processed food and beverage prices. Brands of the same product were sorted into quartile groups based on unit prices in January 2022, from the first quartile (Q1), representing the cheapest brands, to the fourth quartile (Q4), representing the most expensive ones. Using unit price data for the entire observation period, indices were calculated representing the cumulative price growth relative to the base period – January 2022. In the final stage, a synthetic CPI was created, covering all products included

in the study, as well as two specific CPIs, one for the cheapest and one for the most expensive brands.

The results reveal clear evidence that the phenomenon of cheapflation was present in Serbia, as the prices of cheaper brands grew at a faster rate, on average, compared to more expensive ones over the entire observation period, with the difference in growth rates most pronounced during periods of the highest inflationary pressures.

Over three years, the average prices of the cheapest brands increased by 39.6%, while those of the most expensive brands increased by 35.1%. The gap in cumulative growth rates at the end of the observation period was 4.5 pp, while during the highest inflationary pressures, the gap ranged from 7.6 pp to 10 pp. The results are somewhat more favourable than those in other countries where similar analyses have been conducted, although some differences should be taken into account, particularly in terms of the observation period. In addition to the general analysis, a sectoral analysis was also conducted, examining specific product groups, including dairy products, meat products, coffee and non-alcoholic beverages, as well as confectionery products. The results confirm the occurrence of cheapflation in all groups except confectionery products, with the phenomenon being most pronounced in dairy products.

This analysis sheds light on the heterogeneous impact of cost-push pressures on price movements, the study of which is of great importance for the successful conduct of monetary policy, both due to the direct distributional effects on the population and the indirect influence of this phenomenon on monetary policy through the expectations channel.

Appendix

Cumulative inflation for the period January 2022–December 2024

	Cumulative inflation for the January 2022 - December 2024 period		Gap in cumulative price grow th rates		
Quartile brand group	The cheapest brands (Q1)	The most expensive brands (Q4)	Difference (in pp)	The greatest gap (month, difference in pp)	
All products	39.6%	35.1%	4.5	February 2023	10.0
Dairy products	55.5%	47.8%	7.6	December 2022	23.4
Meat products	41.6%	36.0%	5.6	March 2023	16.5
Coffee and non-alcoholic beverages	38.9%	26.8%	12.1	July 2024	16.8
Confectionery products	39.4%	54.2%	-14.8	December 2024	-14.8

Share of cumulative inflation over the years

Share in cumulative inflation recorded over years						
Quartile brand group	The cheapest brands (Q1)			The most expensive brands (Q4)		
Year	2022	2023	2024	2022	2023	2024
All products	69.3%	15.0%	15.7%	52.5%	29.8%	17.7%
Dairy products	108.4%	-12.8%	4.5%	76.6%	21.0%	2.4%
Meat products	53.8%	46.7%	-0.5%	54.9%	33.4%	11.7%
Coffee and non-alcoholic beverages	51.4%	24.6%	24.0%	33.8%	37.4%	28.7%
Confectionery products	28.4%	33.3%	38.3%	24.7%	25.1%	50.2%

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