

Consumer prices in light of the COVID-19 crisis

H. Zimmer
J. Jonckheere¹

Introduction

The particularity of the COVID-19 pandemic is that it caused huge shocks to both demand and supply of goods and services, which could trigger, respectively, deflationary and inflationary pressures. Along with the lockdown, losses of income, deep uncertainty among the population and risk-avoidance behaviour, it has also resulted in a dramatic shift in consumption patterns. This article analyses inflation developments in Belgium during these exceptional times and is structured as follows.

Chapter 1 examines the principles which have been applied to ensure the continuity of the consumer price index. Indeed, some transactions became impossible for a certain time and the absence of price listings has posed unusual challenges.

Chapter 2 takes a closer look at the general inflation trends in 2020 (section 2.1) and then at the different categories. While energy developments have shaped headline inflation, we focus our attention on food price changes (section 2.2), since this essential component has gained importance in a strongly altered consumption pattern during the crisis.

Were inflation developments different in our three main neighbouring countries? Chapter 3 answers this question, by decomposing the inflation gap between its main components among other things. While some trends went in the same direction, the level of inflation differed, notably due to some specificities in Belgium.

We take a closer look at the changes in spending patterns during the pandemic in chapter 4. Data on debit card transactions capture these changes: section 4.1 is devoted to estimating their impact on total measured inflation. Households may differ in many respects, such as their level of income, and they may have been affected diversely by the dispersion of price changes for commonly purchased goods. This assumption is investigated in section 4.2, in which inflation rates are computed with differing weights according to income level.

Finally, in chapter 5, we look at consumers' qualitative opinions on inflation developments in the recent period. Since the emergence of the COVID-19 pandemic, perceptions and expectations seem to have been moving in opposite directions. This may reflect households' uncertainty about overall inflationary pressures, and the fact that their expenditure patterns have greatly changed.

¹ The authors thank Ken Van Loon (Statbel) for his valuable comments and suggestions.

Throughout most of the article, the harmonised index of consumer prices (HICP) is used. The national consumer price index (NCPI) is used in chapter 4 only, for the purposes of the analysis. The methodological differences between both are mentioned where necessary.

The cut-off date for completing this article was 16 October 2020. In the meantime, new measures to fight the pandemic have been implemented, which are not taken into account in the article.

1. Price measurement in the COVID-19 crisis

The measures undertaken to fight the pandemic led to restrictions in the movements of people and to the closure of so-called non-essential stores and services, which had an impact on the measurement of the consumer price index (CPI). On the one hand, consumption patterns were forced to change (see chapter 4) and, on the other, the prices could not be quoted normally in order to construct the CPI, as transactions in some goods and services were made impossible.

The goal of the CPI is to measure the relative change in the price of a representative basket of goods and services from one month to the next. The prices of the detailed items are aggregated to form elementary indices. These are then aggregated to gradually higher levels using expenditure weights to get to the “headline” level. In Belgium, the expenditure weights used for the national consumer price index (NCPI) and the harmonised index of consumer prices (HICP) are based on survey data collected from a representative sample of households (the Household Budget Survey – HBS) and the spending reported in the national accounts. The weights should reflect the annual expenditure of an average household on each item included in the basket.

One of the key foundations of the CPI is that it anchors itself to representativity and normality (Reinsdorf *et al.*, 2020). In the same way that the CPI is built for an average household, it is also designed to measure price change during normal economic conditions. Every year, the weight of the CPI components is based on the estimated average consumption expenditure of the previous year. These weights are kept constant throughout the year, that is, monthly fluctuations in the consumption patterns are never taken into account (Statbel, 2020). Under normal circumstances, certain months are marked by very low or inexistent consumption of some goods or services (for instance, amusement parks during the winter months).

In the context of the COVID-19 pandemic and the ensuing price measurement problems (mainly for the months of April and May 2020)¹, Eurostat (2020) has drawn up guidelines² in consultation with the national statistical institutes (Statbel in Belgium), to guarantee comparability. The general principles – for the HICP and the NCPI – can be summarised as follows: the weights of the published indices should remain stable; indices for all product groups should continue to be published; the number of imputed (estimated) prices should be kept to a minimum, meaning that, whenever possible, missing price observations should be replaced by price quotes obtained from other sources (e.g. outlets’ websites, telephone and e-mail enquiries).

First of all, due to the lockdown that began on 18 March 2020, field price collection by pollsters in outlets became problematic (both due to shutting down of the non-essential stores, and the health-precautionary measures of pollsters). However, the need for local price collection has been greatly reduced in Belgium since the switch to big data (scanner data, web scraping, administrative data). Since 2014, the share of field price collection has fallen from about 64% of the basket weight to about 32% in 2020. In addition, local price collectors follow prices that do not systematically change every month (typically, restaurants and cafés, hairdressers, etc.). For the above reasons, it has been decided to temporarily suspend the field price collection. For shops that were

1 The prices for the March index had already been mostly quoted when the lockdown started.

2 https://ec.europa.eu/eurostat/documents/10186/10693286/HICP_guidance.pdf.

still open and where “digital” prices could not be used (mainly bakers and butchers), prices were collected by telephone or online by Statbel.

For products whose consumption could no longer take place in physical outlets, but still online (e.g. clothes, toys, electronic goods, etc.), prices were collected online, in an attempt to keep the number of missing prices to a minimum.

As regards goods and services that could no longer be bought, prices could not be observed. If no seasonal pattern is usually observed in the monthly pricing (e.g. restaurants, hairdressers, electricians, etc.), the last available prices were carried forward. This imputation was considered as appropriate since these prices are fairly stable from month to month¹.

When monthly price changes are characterised by a seasonal pattern (e.g. hotels, travel, flowers, etc.), prices could not be simply rolled over, because this would cause a break in the index series and thus bias the year-on-year inflation rate. Imputed prices have been obtained by applying the same monthly price change of the previous year.

In April, price imputations were necessary for 24% of the consumption basket. In May, this was the case for 17%, while in June, only 4% of prices were imputed.

Table 1

Price collection and imputation rules during the lockdown

	Method	Example
Transactions possible		
Physical outlets open	Scanner data, web, telephone	Food, pharmacy
Physical outlets closed	Web	Clothes, electronics, toys
Transactions impossible		
No seasonal pattern	Carry forward	Purchase of cars, jewellery, restaurants, hairdressers
Seasonal pattern	Carry forward based on previous year	Hotels, travel, airline tickets

Source: Statbel.

2. Inflation developments in Belgium

2.1 Main developments

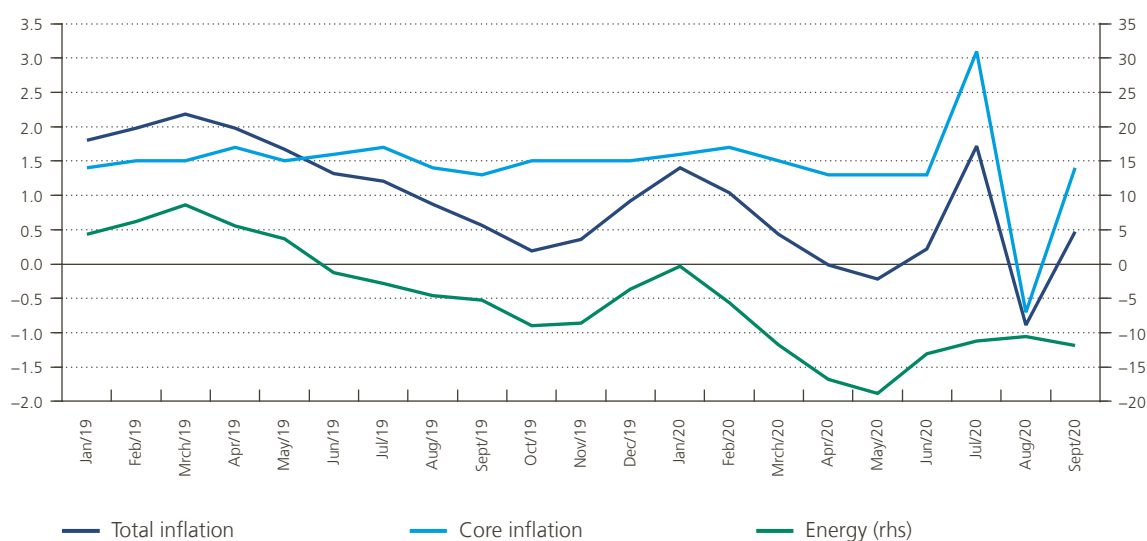
Just as in 2019, Belgian total inflation movements were mainly driven by energy price developments in 2020. This can mainly be traced back to declining Brent oil prices, which caused inflation from motor fuels and liquid fuels to drop sharply. At the same time, gas prices in 2019 and 2020 were also significantly below their level the year before, reflecting a more ample global supply. Along with the outbreak of the COVID-19 crisis, oil prices collapsed in March and April 2020, causing total inflation to fall into negative territory in May. In comparison, core inflation – which excludes the volatile components and aggregates of non-energy industrial goods and

¹ According to Statbel, this method is also used in normal times, for instance at the end of the football season, prices are rolled over until the start of the new season.

Chart 1

Main inflation developments in Belgium

(year-on-year changes in the HICP, in %)



Source: Eurostat.

services – remained flat throughout 2019 and the first half of 2020. Only when the summer sales were postponed from July to August did yearly core inflation jump and crash in the corresponding months.

The broad picture hides some specificities among the other sub-components of the price index in 2020, namely unprocessed and processed food.

2.2 Food price developments

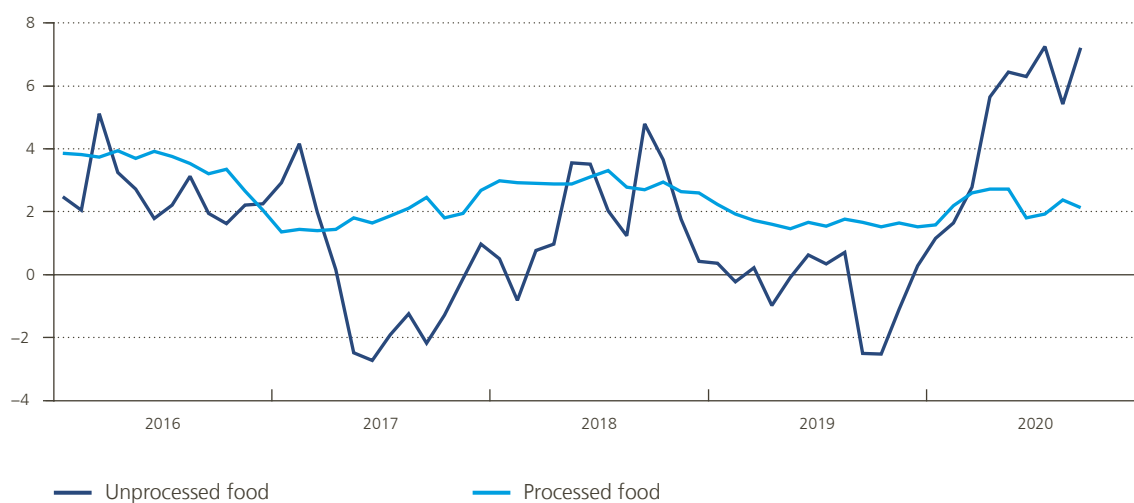
Since the end of 2019, food inflation has started to accelerate; a process that continued during the Spring lockdown and the following months. This movement can be explained by both COVID and non-COVID related factors. As regards the first, it was caused by the higher costs for health precautionary measures (such as the required distance between workers), the high rate of illness amongst workers that had to be replaced by more expensive interim workers, more difficult transportation due to, for instance, cancelled flights of food products from foreign countries, or (road) cargo trade of goods coming from countries severely affected by the crisis, etc. In addition, in order to discourage hoarding behaviour, the government decided to impose a ban on special offers in supermarkets, starting on 18 March. This decision was partially reversed from 3 April onwards, by allowing promotions that were decided before 18 March. Finally, new offers were allowed again from 4 May onwards. The special offer ban mostly had an upward impact on the inflation rate for April, although it continued to affect prices in May: once supermarkets were allowed to have promotions again, it took some time to adapt their flyers and other merchandise. Non-COVID-related factors include the particularly low food price growth in 2019 and – regarding unprocessed food – high pork prices due to swine fever¹, meteorological factors that mostly affected fruit prices in early 2020, etc.

¹ The African swine fever started in 2019. The result of it was higher demand by notably China for European pork, which pushed up prices considerably.

Chart 2

Inflation rate of food in Belgium

(year-on-year change in the HICP, in %)



Source: Eurostat.

Since unprocessed food prices are more volatile than processed food in general, the former has again shown larger inflation swings: downwards in 2019; and upwards in 2020. Besides high pork prices, some specific goods have shown particularly sharply rising inflation rates. For instance, as Spain has been hit hard by the coronavirus crisis, citrus fruit has shown very high inflation rates. Due to workers' illness, the fruit could not be harvested, and transport to other countries has been more difficult. Shrimps that are often peeled in Morocco could not easily be transported to and from that country either and illness among workers also disrupted the peeling itself.

3. Situation in Belgium compared to the neighbouring countries

Comparing Belgian inflation rates with those in its three main neighbouring countries (Germany, France, the Netherlands) reveals a common trend in the first few months of 2020, namely a falling inflation rate between February and April, as the coronavirus crisis led to a sharp fall in the price of oil. Inflation in the three main neighbouring countries and in the euro area rose marginally in June as the strongly negative impact of the year-on-year fall in oil prices started tapering out. However, this oil price decline during the crisis hides opposite trend in food prices; food inflation increased in the course of 2020, particularly for unprocessed food which was as much as 10% in April in the three neighbouring countries on average. According to the EC (2020), all over the EU, this category of goods has been affected by supply chain disruptions, shortages of seasonal workers in the agriculture sector and also by demand substitution.

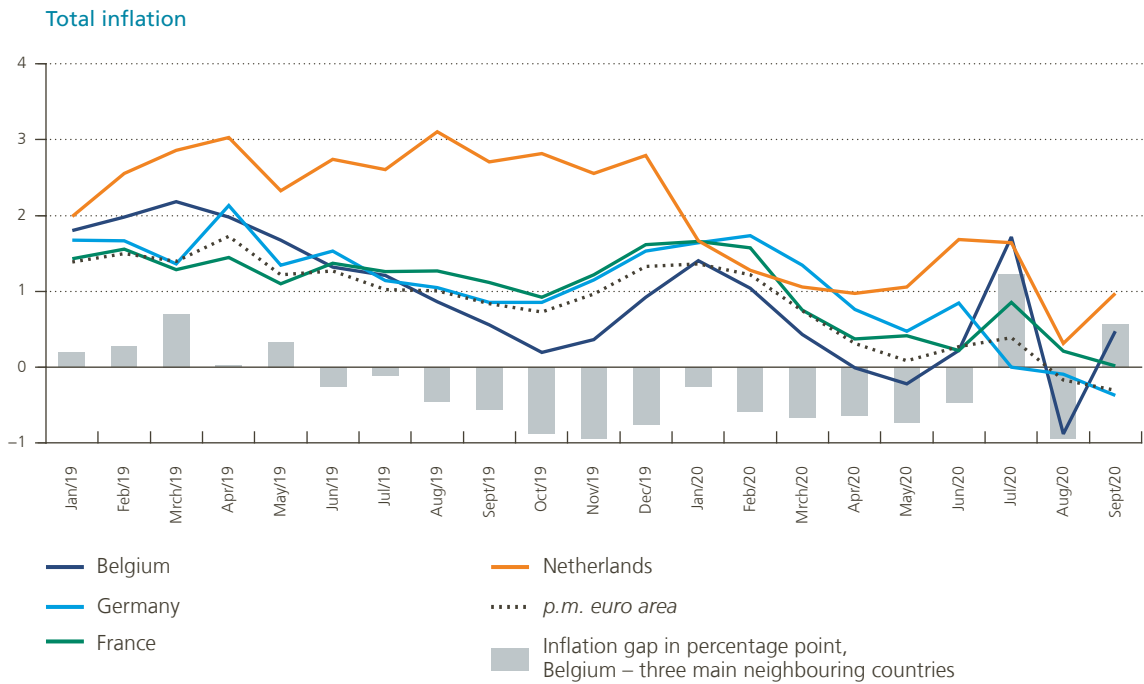
In the context of the post-lockdown period, some countries decided to postpone the summer sales¹. Such was the case in Belgium, France and Italy, for example. This explains the year-on-year pick-up of inflation in July in the

¹ In some countries, the period of sales has also been shortened or prolonged.

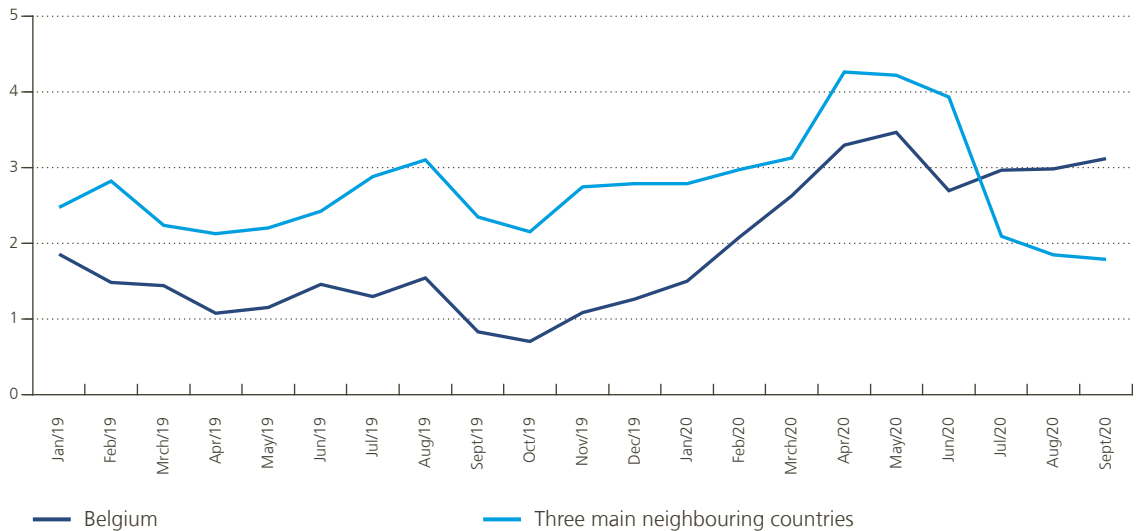
Chart 3

Inflation rate in Belgium and its three main neighbouring countries

(year-on-year changes of the HICP, in %, unless otherwise stated)



Food inflation



Source: Eurostat.

countries concerned followed by a drop in August¹. Nonetheless, the falling inflation in July on average in the three main neighbouring countries is caused by the economy-wide temporary cut of VAT rates from 1 July to 31 December in Germany (regular rate cut from 19% to 16% and reduced rate cut from 7% to 5%). While the pass-through to consumer prices is visible in some sectors in Germany (almost full for food), the VAT rate cut decided in Belgium

¹ In the HICP, sales are processed in the month where they take place. Hence, with this postponement, a trough (July 2019) is compared to a normal level (July 2020) and a normal level (August 2019) is compared to a trough (August 2020). While the Netherlands did not postpone the seasonal sales period, both NEIG inflation and services inflation have dropped, mainly due to respectively cheaper clothing compared to one year before and a fall in the prices of plane tickets and package holidays year on year.

from 8 June to 31 December for the catering sector did not exert any visible impact on the consumer prices in restaurants and cafés (this was not the aim of the measure, rather giving financial breathing room for the sector).

While the inflation gap between Belgium and its three main neighbouring countries has been “in favour” of Belgium throughout the first half of 2020, as a result of the sales being postponed, the gap jumped in July, to 1.2 percentage points, and dropped in August to –0.9 of a percentage point. In September, the Belgian rate returned to a more “normal” level, but the gap moved into positive territory (0.6 of a percentage point), due to the negative rate in Germany. While the role of the sales being postponed is clear from chart 3, looking more closely at the breakdown of the gap, some other specific developments appear.

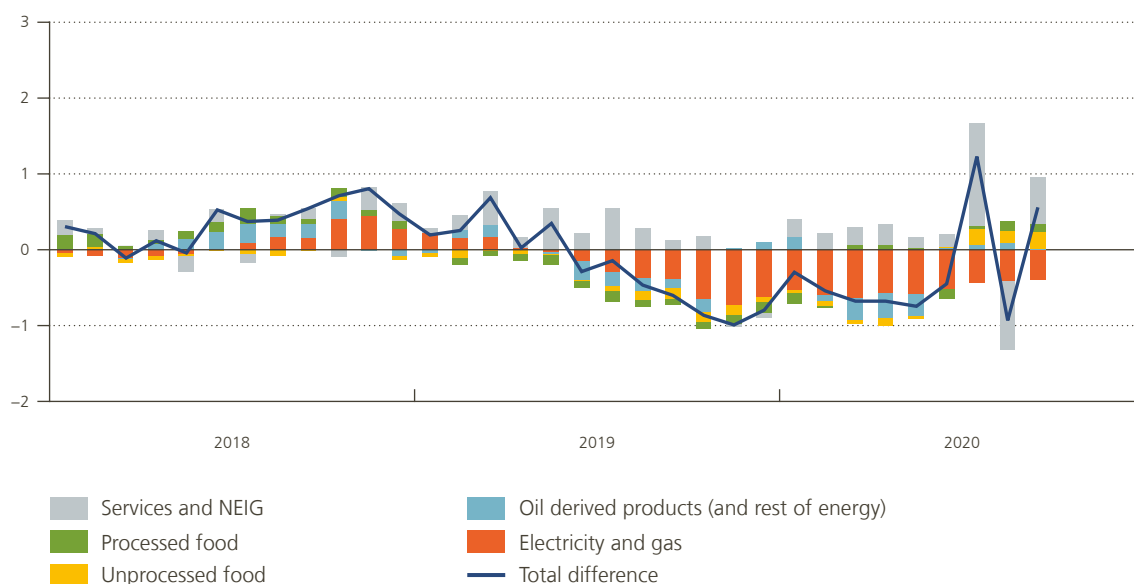
In terms of energy products, gas and electricity made the biggest contribution to reducing the inflation gap between Belgium and its neighbours, with gas prices coming down much more significantly in Belgium. Network charges and non-VAT levies affecting gas prices are quite a bit lower in Belgium, meaning that lower wholesale prices (in the context of more abundant global supply) have a much more significant impact on consumer end prices. In addition, gas contracts are more often variable (with intermediate price changes) in Belgium than in the neighbouring countries (Observatoire des prix, 2020). Finally, Belgian supplies of gas have more diverse origins, as the gas is brought in through the port of Zeebrugge.

Several events have put downward pressure on electricity prices in Belgium since 2019 (gas developments, increased capacity of power plants and more recently, the fall in demand for electricity due to the pandemic). Changes in electricity prices in the HICP depend on the structure of the final price (network tariffs, VAT rates, energy component), several factors related to supply and domestic production, factors related to demand (economic activity, weather, etc.), the functioning of the market (different switch rates), the types of contracts offered to customers. In this respect, Belgium has shown stronger variations compared to the neighbouring countries, which could be explained by a bigger share of variable contracts (30 %), with a tighter link to the underlying prices of other commodities (Observatoire des prix, 2020). Despite the fall in economic activity,

Chart 4

Breakdown of the inflation gap between Belgium and its three main neighbouring countries

(in percentage points)



Source: Eurostat.

electricity prices rose slightly year-on-year in Germany during the first half of the year, while electricity inflation remained high in France, notably due to the rise in regulated power prices in June 2019, followed by an increase in the tax on final electricity consumption in February 2020. On the contrary, electricity prices have fallen dramatically in the Netherlands because of lower taxation since January 2020.

4. Changing expenditure patterns

4.1 Temporary loss of representativeness

Households' consumption pattern changed drastically as a result of the pandemic, particularly in March and April, and to a lesser extent in the following months. For instance, most cultural activities were cancelled, restaurants and bars had to remain closed between 14 March and 8 June, the closing of non-essential shops (e.g. clothes) was more gradual in March, as well as their re-opening in May. So, consumers were effectively forced to save, and, in relative terms, spent a much larger part of their budget on food.

In the CPI, weightings are updated once a year (with the publication of the January index). Given the particular situation, they were clearly not representative for a couple of months in 2020. This difference in the allocation of spending during the Spring lockdown may have fuelled the perception of higher inflation than that reported by the traditional index (see chapter 5). That is why we have constructed a consumer price index based on the HICP principles, but with weightings more in line with actual consumption. For this, we used a sample of debit card data, giving the total amount of monthly transactions per category of shops. Note that it has some limits. First, the data come from only one payment and transaction services company, so the results might be disrupted by particularities and specific characteristics of that company (over- or under-representation of some sectors and under-coverage of certain demographics, as some segments of the population tend to use cash instead of cards). Second, there is a lack of granularity in the data; the database distinguishes a limited amount of different shop types¹, whereas the COICOP categories² of the HICP are much more detailed. Obviously, the shop types do not correspond perfectly to the COICOP categories, so some assumptions have had to be made in order to reclassify all the COICOP categories (usually at 5-digit level) into the categories of shops. Third, due to the monthly update of the weightings, there is seasonality³ in the spending patterns. There was a sizeable increase of spending in hotels in July 2020 compared to the previous month, which is a yearly phenomenon related to the summer holidays. Lastly, in the official CPI, prices are captured for the month in which the good or service is consumed, even though the transaction might have been earlier. For instance, prices of plane tickets that were booked in January but used in August will appear in the month of August's CPI. By contrast, the debit card data only show the expenditure at the moment of the transaction itself (in the example here, this would be in January). It is worth noting that these limitations with the data not only call for caution in interpreting the results, but also make the data unsuitable for official statistics.

Despite those limits, it is worth looking at a consumer price index with monthly changing weights, in order to gauge the effect of the drastic change in consumption patterns on the inflation level. The weights of 2019

1 There are 17 shop types distinguished. They can be described as: restaurants, hotels, travel agencies & bungalow parks, airlines, fuels, food, vehicles, home interior, electro, clothing, medical, leisure & education, telecoms & electricity & gas, transport, construction, beauty, and others.

2 COICOP refers to Classification of Individual Consumption by Purpose. It classifies the individual consumption expenditure of households into different categories, and it is used in the consumer price indices. 2-digit level categories are aggregates of higher-level categories. For instance, the category "food and beverages" is represented by the 2-digit level category COICOP 01. Into food and beverages, we observe for instance the 5-digit level category COICOP 01.1.1.1 "rice", that is part of the 4-digit level category COICOP 01.1.1 "bread and cereals", on its turn part of COICOP 01.1 "food". There are about 235 COICOP categories at the 5-digit level.

3 In the official consumer price index, this problem is not present in the weights, since they are only updated on an annual basis. However, seasonality is found in the price data (higher prices in the summer for this category).

and January 2020 are the weights from the official HICP. From February 2020 onwards; weights are calculated based on changes in the sample of debit card expenditure data per shop category with respect to January 2020.

According to this sample of debit card data, the relative weights of most of the non-food sub-categories – such as clothing, restaurants and bars, etc. – showed a V-shape. This means that they declined from February onwards to reach a low point in April 2020, after which they went up again. It must be stressed that these weights are relative to total spending. In absolute terms, total spending in April was down considerably on January 2020. To some extent, consumers were forced to save – except for their primary necessities such as food – as some goods and services were simply not available or people preferred to stay at home for health reasons. The relative weight of the food category shot up in April, i.e. during the peak of the restrictions. Still, it is interesting to note that, in absolute terms, food spending did not reach a peak in April: month-on-month spending actually went up gradually.

Today's HICP index is a Laspeyres-type index, with chain-linking to December of the previous year's prices. A Laspeyres index assumes that quantities (i.e. representative basket) are those of the price reference period¹. However, in our framework, we want to construct an index with weights that represent the current situation. A Paasche-type index enables us to let the weights vary on a monthly basis. The respective formulae for these indices are the following:

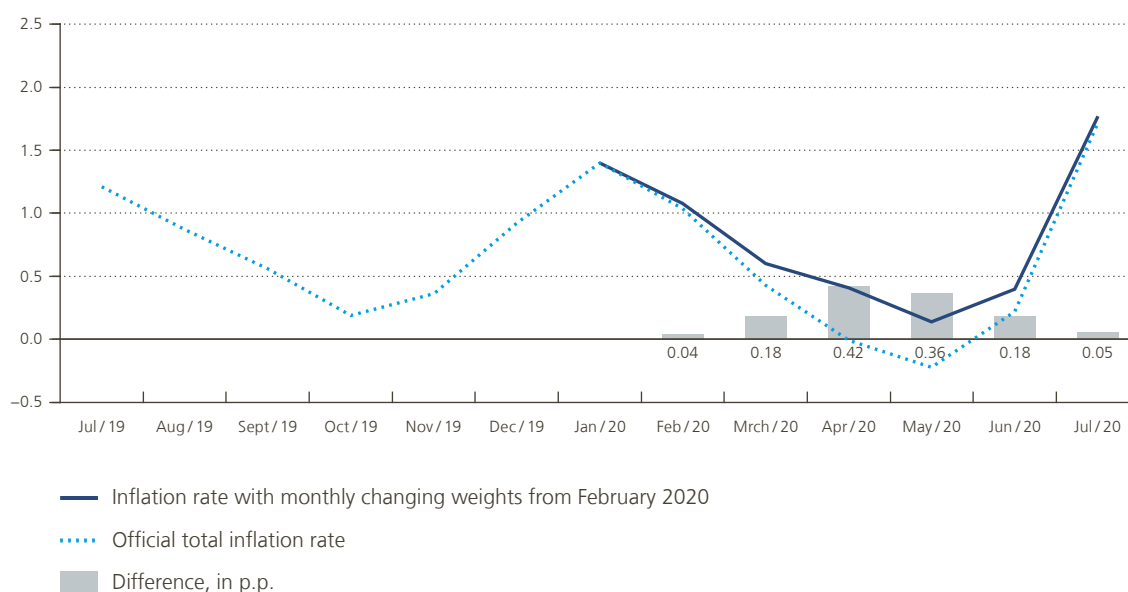
$$\begin{aligned} \text{Paasche index:} \quad \Delta P &= \frac{\sum p_{m,i} \cdot q_{m,i}}{\sum p_{t_0,i} \cdot q_{m,i}} \cdot 100 \\ \text{Laspeyres index:} \quad \Delta P &= \frac{\sum p_{m,i} \cdot q_{t_0,i}}{\sum p_{t_0,i} \cdot q_{t_0,i}} \cdot 100 \end{aligned}$$

1 Expenditures of the previous year are updated to prices of December of that year.

Chart 5

Estimated inflation rate on the basis of monthly changing weights, against official HICP inflation rate

(year-on-year changes in the index, in %, unless otherwise stated)



Source: Eurostat, sample of debit card data, own calculations.

Where m refers to the current month, t_0 refers to the base period, and i represents the different shop types.

Still, in order to better capture the change in consumer spending from one period to the other, a Fisher index is recommended instead: it is calculated as a geometric mean of the Laspeyres index and the Paasche index, so it uses both the base period basket and the current period basket. The Fisher index is a so-called “superlative” index, that makes equal use of prices and quantities in both periods being compared (the reference period and the current period) (IMF, 2004). Therefore, we choose a Fisher index with monthly changing weights. December 2019 is used as the base period, as for the official Laspeyres-type HICP index.

When using the official HICP weights for 2019 and January 2020, and the estimated weights from February 2020, we obtain a higher inflation rate than the official one, especially in April 2020, with a difference of 0.4 of a percentage point in that month. This is not surprising, given the rise in food prices (see above) and the bigger weight of that category in total spending. As of May, the differences between the two indices became smaller, as the relative weights of the different sub-categories returned to a more normal situation. Over the months from February to July, the average year-on-year inflation rate according to the official HICP came to 0.5 %, whereas we estimate it to be 0.7 % with monthly changing weights. So, the average difference between the two series amounts to 0.2 of a percentage point.

Finally, when interpreting these results, it is worthwhile noting that differences with respect to the official HICP are not purely the result of the COVID crisis: an alternatively calculated index with monthly changing weights would have been different than the official HICP as well if there had been no COVID crisis at all.

4.2 Inflation differences according to household type

The previous sections have shown how the pandemic has brought unique changes in the consumption patterns of the population, along with marked changes in the prices of some components. While the consumer price index is constructed for an average Belgian household, households may differ in many respects, such as their level of income. For instance, a family with less revenue spends a relatively bigger part of their income on fixed costs such as housing rent. So, price movements of goods and services influence the groups differently, depending on their relative weights in each household’s consumption pattern.

The household budget survey (HBS) distinguishes spending across different income categories, per quartile¹. Even though the sample becomes smaller on a more detailed level (i.e. the individual product items level), it still enables a consumer price index on an aggregate level to be constructed, with weights that vary across different household types². The HBS is the primary source for determining the weightings for the national consumer price index (NCPI), so this chapter will refer to the NCPI, and not the HICP like the rest of the article.

It might be surprising that those who spend the largest proportion of their income on food are not the lowest income families, but the highest income families (see table in the Annex). This could be due to the fact that high-income families are probably more inclined to buy branded products and higher-quality, thus more expensive, food. By contrast, the share of electricity, gas and heating oil is the largest for the lowest income categories.

However, the pandemic has forced all consumers to have a rather similar consumer basket; differences in spending patterns across households have been narrowing. Because some goods and services were not available

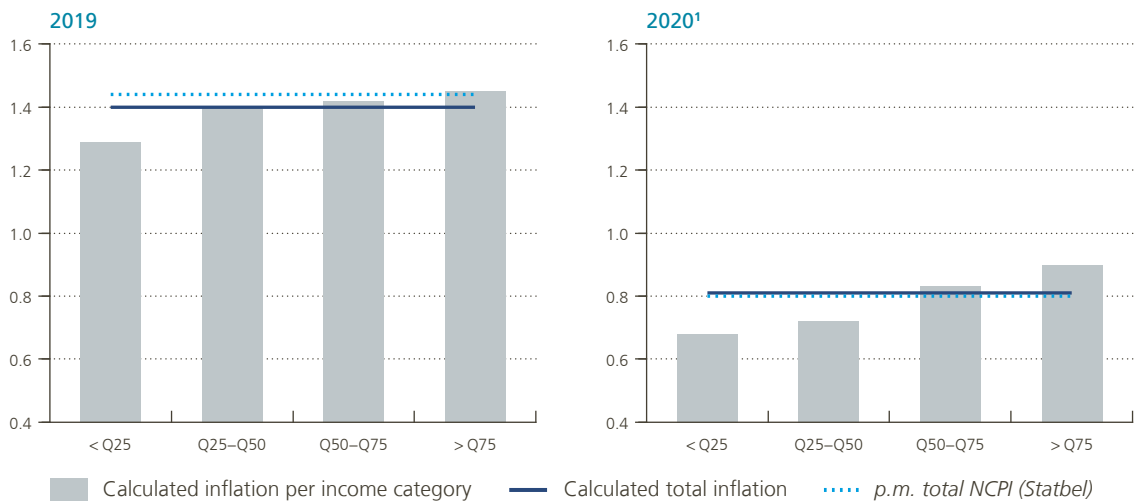
¹ The income quartiles divide the population of households into four equal groups depending on their income. Each group represents 25 % of the income categories, from the lowest quartile up to the highest quartile (HBS, 2018).

² Note that the weights vary according to different household types, but the price indices that are used are still the aggregate ones. This is a caveat, since low-income households also buy different types of products for certain categories than high-income families (cars, for instance). In order to reflect this, ideally, different price indices per income category should be used (but these do not exist).

Chart 6

Inflation rates: total and according to income category

(year-on-year changes of the NCPI, in %)



Sources: Statbel, own calculations.

¹ Data from January to September.

during the Spring lockdown, everyone was forced to spend relatively more on – mostly – food. As a result, the consumer basket of the lowest incomes may have become closer to that of the highest incomes.

On the basis of the latest HBS, i.e. the 2018 survey¹, we have calculated total NCPI inflation in a simplified way², as well as inflation per income quartile. Chart 6 shows the inflation rate, according to household type, that would be achieved if the consumption patterns from the HBS reflected the actual situation. In light of the COVID-19 crisis, oil prices fell sharply in early 2020. At the lowest point, energy inflation according to the NCPI came to –13.8% in May. The share of electricity, gas and heating oil (three categories that have registered declining inflation rates since the beginning of 2019) being the largest for the lowest income categories, and the share of food (with higher inflation rates in 2020) being the largest for higher-income families, the lowest quartile has achieved somewhat lower total inflation rates in 2020 (0.7 % on average during the first nine months of 2020) than the highest quartile (0.9 %).

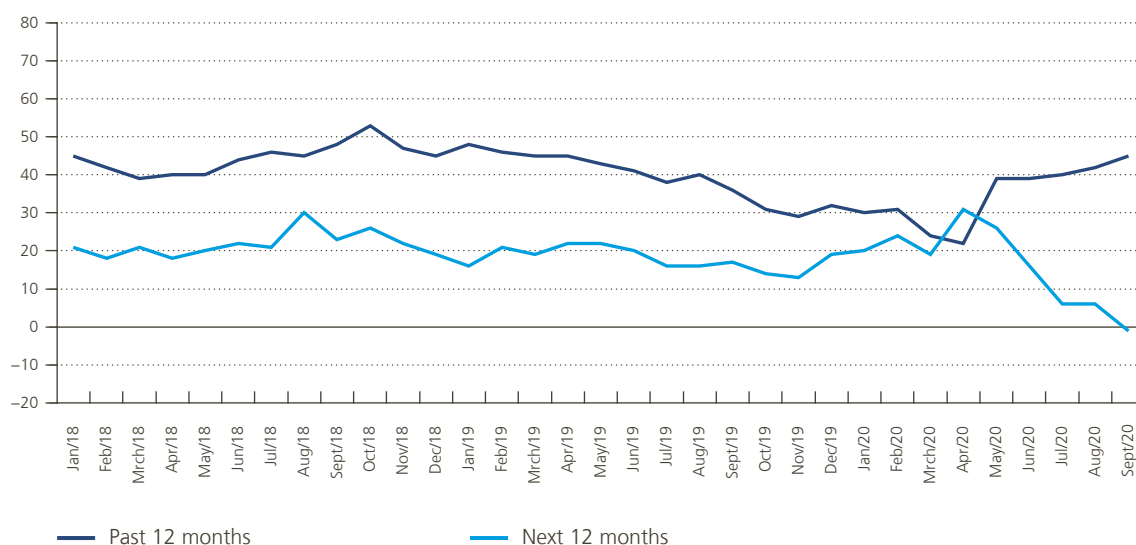
¹ The HBS is conducted every two years.

² That is, we only took out the categories “imputed rents”, “drugs”, “life insurance”, “hospitalisation insurance” and “health insurance” from the HBS as they are not taken into account in the CPI. However, Statbel applies more corrections than we did and takes weights from the national accounts for some categories. As a result, we have a larger weight for category 12 “personal care and services” (mostly due to insurances) than the actual published weights in the NCPI. Also, we take the weights from the 2018 HBS for the calculation of the indices for 2018, 2019 and 2020, applying a so-called price update for the latter two years. Since the 2018 HBS was only available at the end of 2019, Statbel only takes the weights of the 2018 HBS from the year 2020 onwards; the 2018 and 2019 weights are in fact based on the 2016 HBS (with a price update). In the same way as we re-calculated total inflation, we calculated inflation per income quartile, by adapting the weights accordingly. Our calculated total inflation approaches the official publication very closely, so we can assume that our calculation per income quartile is reliable.

Chart 7

Perceived and expected trends in prices

(balance statistic)



Source: NBB (consumer surveys).

5. Consumer surveys

Consumers’ qualitative and quantitative opinions on inflation developments are polled regularly by the NBB as part of the Joint Harmonised EU Programme of Business and Consumer Surveys. The surveys are designed to be representative at national level. Every month, around 2 000 randomly selected consumers are asked two questions about price developments. The first question refers to consumers’ perceptions of past price developments (“How do you think that consumer prices have developed over the last 12 months?”)¹. The second question polls their expectations about future price developments (“By comparison with the past 12 months, how do you expect that consumer prices will develop over the next 12 months?”)². An aggregate measure of consumers’ opinions – the “balance statistic” – is calculated as the difference between the relative frequencies of responses falling in different categories³.

We present the results of the qualitative questions. So, the series only provide information on the directional change in prices over the past and next 12 months, but with no explicit indication of the magnitude of the perceived and expected rate of inflation.

As regards inflation perceptions (past 12 months), the turnaround observed in May 2020 put a stop to the downward trend which had been observed from the end of 2018 to April 2020. Inflation perceptions remained stable up to August and a slight rise was observed, in September. While inflation expectations (next 12 months)

1 As regards qualitative assessments, possible answers include: They have: 1. risen a lot; 2. risen moderately; 3. risen slightly; 4. stayed about the same; 5. fallen; 6. don’t know.

2 They will: 1. increase more rapidly; 2. increase at the same rate; 3. increase at a slower rate; 4. stay about the same; 5. fall; 6. don’t know.

3 Answers are weighted using a scheme that attributes different weights according to the answers (for example, the middle response and the “don’t know” response are attributed zero weights). For more details on the way the surveys are conducted and the methodology, see: https://www.nbb.be/doc/dq/e_method/m_survey_consumer_en.pdf

had remained fairly stable since the end of 2016, they shot up in April 2020 (i.e. the balance statistic recorded the largest monthly increase for years) at the height of the lockdown, probably reflecting the economic stress situation. Thereafter, the trend reversed and the indicator has fallen regularly. A regular fall in the expectations indicator has been observed in other European countries as well.

Clearly, during this confusing period, perceptions and expectations moved in opposite directions. This was also the case in other countries such as France. The fact that certain goods and services had disappeared from the

BOX 1

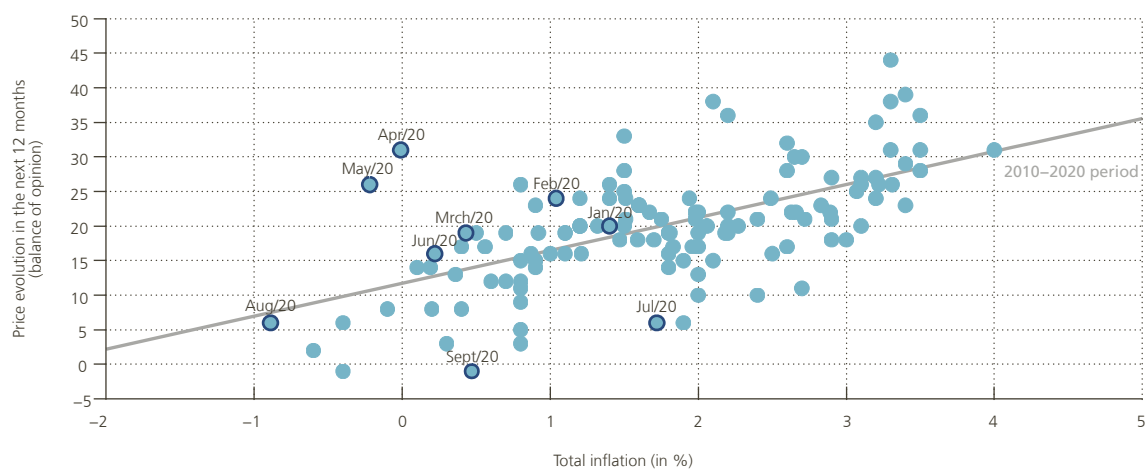
Reports by the media

After the first couple of weeks of the lockdown, the media reported high price rises in supermarkets, notably based on a daily updated information chart by the consumer organisation Test Aankoop/Test Achats (see Annex). In that chart, average prices of a fixed basket of products in various large supermarket chains are shown. On this basis, at the end of March, the media highlighted price increases of 5 to 7 % in some supermarkets, compared to the beginning of March. This gave the impression that the price increases reported in the official consumer price index were smaller than those reported by the consumer organisation.

However, the findings of the latter and the following reports in the media should be nuanced. Firstly, Test Aankoop/Test Achats shows price growth rates compared with the beginning of March. So, it cannot be ruled out that the selected prices were exceptionally low at the start of March in those supermarkets where the highest increases were observed. Second, the price increases of 5 to 7 % at the end of March that were highlighted by the media are in the supermarkets whose prices rose the most. At the same time, some retailers left their prices unchanged from the beginning of March; or even saw their prices decline slightly. Third, the consumer organisation presents price growth figures on a daily basis, so it shows fluctuations. The consumer price indices by Statbel, by contrast, take an average of prices for about the first two weeks of the month in the case of the NCPI and about the first three weeks for the HICP. Fourth, the basket that is followed by Test Aankoop/Test Achats consists of products sold only in supermarkets, therefore a large part of it consists of food products. The Statbel price indices are not contradictory as they also report high price increases for food, both due to COVID-related and non-COVID-related factors.

Chart 8

Observed inflation and inflation expectations in Belgium¹



Sources: Eurostat, NBB.

1 Chart based on Gautier *et al.* (2020).

usual consumer basket may have increased households' uncertainty about overall inflationary pressures, as it greatly transformed their expenditure patterns and made it difficult – possibly even impossible – to observe prices (Gautier *et al.*, 2020). In Belgium, the temporary ban on special offers may have played a role in the perception of the price growth and the role of the media in the assessment of inflationary or deflationary pressures should not be neglected. Regarding perceptions, the media reported high price rises in supermarkets during the Spring lockdown. This issue is developed in the following box.

Households' expectations are generally well correlated with actual inflation. Yet, at the time of the March-April lockdown, households' inflation expectations and measured inflation diverged. This was also the case in other European countries (Gautier *et al.*, 2020). While total inflation fell sharply from January 2020 to May 2020 in Belgium, households expected a sharp increase in prices when surveyed in April (see chart 8).

The gap that appeared between households' actual consumption structure during the COVID-19 pandemic and that of the reference basket used for the price index could help understand the divergence between observed inflation (low) and household expectations (rising in April). Indeed, the less frequently consumed goods are those for which prices rose the least rapidly (such as some services) or even fell (fuels), while the more often consumed goods are those for which prices grew the most (food). In April, the higher proportion of households expecting a strong price rise could be explained by an overreaction to changes in food prices. That is, the prices of recently purchased goods tend to be overweighted in inflation expectations (Gautier *et al.*, 2020) and several studies have shown that, when forming inflation expectations, households weigh food prices much higher than the actual share of food in expenditure (Peersman, 2018). Regarding the energy component, most households pay a fixed advance for their consumption of gas and electricity at home and are not immediately aware of falling prices. However, as underlined above, the expectations are on a declining path.

Conclusion

The COVID-19 pandemic has challenged the measurement of prices in several ways. Transactions for travel and transport, restaurants, personal care services, cultural and sports events, some manufactured goods, etc. became impossible at the peak of the crisis and their prices had to be estimated. This required coordination and harmonisation efforts at EU level. The growing use of big data in Belgium – namely scanner data from supermarkets, web-scraping for clothing shops – helped overcome the health measures which made price quoting in shops more difficult or impossible. The “digitalisation” of the price index construction has proved particularly useful in this respect.

In the first few months of 2020, total inflation was largely shaped by energy developments. The impact of the COVID-19 pandemic pushed oil prices down. Other energy products have been affected as well. Food inflation accelerated considerably, both due to COVID-19 and other factors not related to the pandemic. This movement has been observed in our main neighbouring countries as well. The negative gap between Belgium and the latter during the first half of the year finds its origin mainly in energy price developments, indirectly linked to the pandemic.

The expenditure patterns were forced to change as a result of the confinement and risk-avoidance behaviour, notably. Some have argued that the CPI weights should be updated in order to reflect this dramatic shift in household expenditure patterns on consumer prices. While we do not question the current methodology of the HICP or NCPI, we have attempted to estimate the impact this would have on total inflation, based on a sample of debit card transaction data. As expected, inflation would have been higher; i.e. by on average 0.2 of a percentage point over the February–July period. Data on credit and debit card transactions have been used in several other countries to conduct the same type of exercise for economic analysis purposes. Wider availability of such data (while ensuring anonymity) would prove promising in times of rapidly changing economic conditions because of its timeliness and high frequency.

Households may have been affected diversely by the dispersion of price changes for commonly purchased goods. We have calculated inflation rates according to different household types defined by their level of income, with a weighting scheme that represents their spending pattern. Lower-income households have experienced lower inflation rates in the most recent period. However, this finding is based on the weights according to the 2018 HBS, which does not necessarily represent the actual situation of the pandemic.

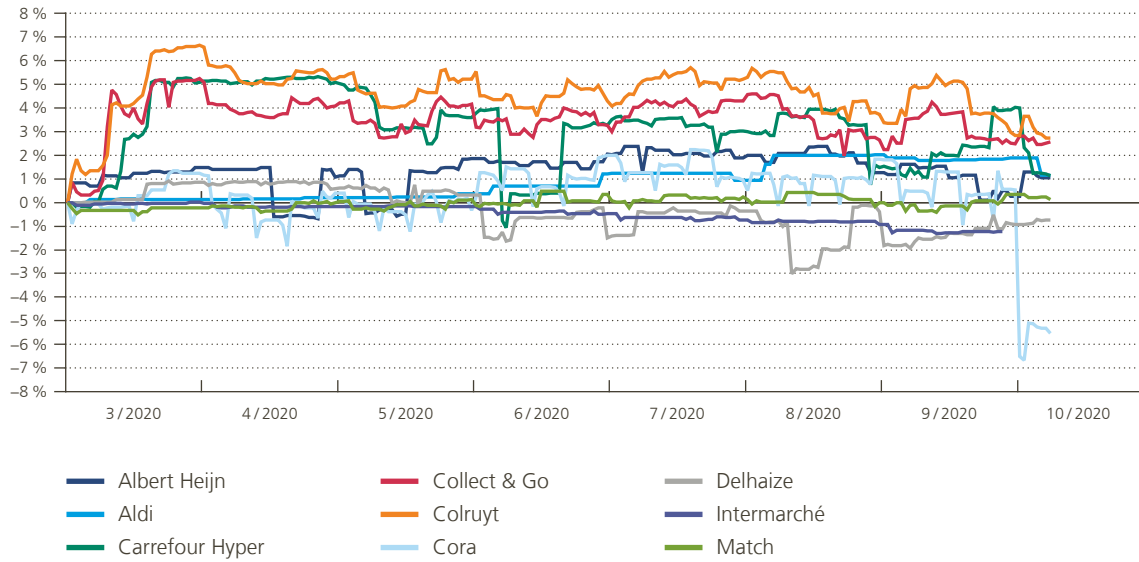
The challenge of measuring prices and inflation in times of COVID-19 is also reflected in consumer surveys, where perceptions and expectations seem to be temporarily disconnected. Comparing inflation expectations and observed inflation, while the latter was falling for several months in a row, expectations picked up strongly in April 2020. The influence of the everyday consumer basket may have played a role here. The media’s role in forming inflation perceptions should not be neglected either.

With the pandemic not behind us yet, the issues raised in this article remain relevant and open the way to the use of alternative sources of data or surveys and further analyses in this respect.

Annexes

Daily updated chart published by Test Aankoop/Test Achats on 12 October

(daily price growth rates per supermarket with respect to the reference period, i.e. the beginning of March)



Source: Test Aankoop/Test Achats.

Consumer basket weights

(official versus calculated, for the total index and per income quartile, unless otherwise stated)

		Official total NCPI 2020	Total HBS	< Q25	Q25-Q50	Q50-Q75	> Q75
CP01	Food and non-alcoholic beverages	176	172	168	174	166	177
CP02	Alcoholic beverages, tobacco	25	25	34	28	25	19
CP03	Clothing and shoes	59	57	39	49	57	69
CP04	Living costs, water, electricity, gas and other fuels	176	161	277	200	154	98
	of which:						
	Electricity	32	29	38	33	30	24
	Gas	15	15	21	17	13	13
	Heating oil	12	10	14	12	10	8
CP05	Furniture, household appliances and maintenance products	60	64	41	51	68	79
CP06	Health	41	56	64	59	56	51
CP07	Transport	158	139	91	120	154	160
	of which:						
	Diesel	18	18	12	19	20	19
	Petrol	16	16	16	19	17	15
CP08	Communication	41	38	48	44	37	31
CP09	Culture and spare time	90	88	69	76	89	104
CP10	Education	10	9	3	5	9	13
CP11	Accommodation, restaurants and cafés	79	81	53	74	80	96
CP12	Personal care and services	87	109	113	120	105	104
	Total	1 000	1 000	1 000	1 000	1 000	1 000
	Share of motor fuels, alcoholic beverages and tobacco (in %)	5.9	5.9	6.2	6.5	6.2	5.3

Sources: HBS 2018, own calculations.

Bibliography

- Cavallo R. (2020), *Inflation with Covid Consumption Baskets*, NBER, Working Paper 27352.
- EC (2020), *European Economic Forecast, Summer 2020 (interim)*, Institutional Paper 132, July.
- ECB (2017), *EU consumers' quantitative inflation perceptions and expectations: an evaluation*, Occasional Paper Series, 186, April.
- Eurostat (2020), *Guidance on the compilation of the HICP in the context of the COVID-19 crisis*, Methodological note, 3 April.
- Gautier E., Y. Ulgazi and P. Veriter (2020), *Inflation and households' inflation expectations during the Covid-19 pandemic*, Eco Notepad, Banque de France, Post 171.
- Hindriks J. and A. Germain (2020), *Inégalité de prix: inégalités régionales d'inflation selon l'âge et le revenu du ménage entre 2011-2018*, Itinera Institute, March.
- Hindriks J. and V. Bodart (2013), *Les inégalités d'inflation selon l'âge et le revenu*, IRES, Regards économiques, 102, March.
- IMF (2004), *Consumer Price Index Manual: Theory and Practice*.
- INSEE (2020), *Point de conjoncture*, 9 April.
- Observatoire des prix (2020), *Analyse des prix: Deuxième rapport trimestriel 2020 de l'Institut des comptes nationaux*.
- Peersman G. (2018), *International food commodity prices and missing (dis)inflation in the euro area*, NBB, Working Paper series, 350, October.
- Reinsdorf M., J. Tebrake, N. O'Hanlon and B. Graf (2020), *CPI Weights and COVID-19 Household Expenditure Patterns*, IMF Statistics, Special Series on COVID-19, August.
- Roels D. and K. Van Loon (2017), *L'utilisation des scanner data des supermarchés dans l'indice des prix à la consommation*, Statbel analysis, December.
- Roels D. and K. Van Loon (2018), *Le webscraping, la collecte et le traitement de données en ligne pour l'indice des prix à la consommation*, Statbel analysis, January.
- Statbel (2020), *Impact of the COVID-19 on the index calculation and the measurement of inflation*, April <https://statbel.fgov.be/en/news/impact-covid-19-index-calculation-and-measurement-inflation>.