

Box 1 Estimate of the Impact of Price Reliefs on Inflation

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The global pandemic caused by the Covid-19 led the National Central Government to declare a health and economic emergency in mid-March¹. Additionally, mandatory confinement of the Colombian population was ordered for several weeks, leading to total or partial closures of the country's productive and commercial capacity. These closures, which began to be relaxed in May, were accompanied by a program of consumer price reliefs implemented by local and national authorities with the purpose of sustaining the households' purchasing power. These programs have had an impact on annual consumer inflation, which is, to a large extent, transitory. Below we list the most important price reliefs and estimate their potential impact on prices. Subsequently, the same exercise is performed to try to approximate the impact of the VAT-free days on the CPI.

1. Price Relief Measures

Table B1.1 contains a brief description of the price reliefs decreed by the Government and that were included in the estimation exercise presented below. In addition, with Decree 579 of 15 April 2020, the Ministry of Housing froze the fees for leases and allowed out-of-contract negotiations until 30 June of this year. In addition, several territorial authorities designed programs to help the lower-income population with public utility fees by increasing subsidies to low-income households, freezing and deferring to several months, applying rebates for early payment, and even paying the cost of one or more public utility services, as was the case in Manizales, Ibagué, and Villavicencio.

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¹ On 12 March, the health emergency was decreed until 31 May 2020 (Resolution 385 of the Ministry of Health and Social Protection), which was extended until 31 August 2020 on 26 May (Resolution 844 of the Ministry of Health and Social Protection). The declaration of economic, social and ecological emergency was decreed on 17 March 2020 (Decree 417 by the President of the Republic) and was extended on 6 May for another month (Decree 637 of the Presidency of the Republic).

2. Estimate of the Impact of Price Reliefs on the CPI

As mentioned in the third chapter of this report, several factors have explained the downward performance of inflation in recent months, from which weak demand, spare productive capacity, and price reliefs decreed by governments stand out. These factors (along with others such as accumulated depreciation, global prices, measurement difficulties, etc.) have acted simultaneously, making the task of identifying their effects on inflation complex and subject to considerable uncertainty. However, this exercise provides an estimate of the impact of price reliefs described in Table B1.1. Reliefs for leases and utility rates are excluded, as it is particularly difficult to incorporate them due to their heterogeneity, scope, and complexity, which makes it more difficult to create a metric to quantify their impact.

The following steps were taken to estimate the impact of price reliefs:

- i. A pre-pandemic, non-tax price index equal to 100 was established for each of the components of the basic goods and services basket.
- ii. The average tax for each of the items in the CPI was identified under normal conditions (without pandemic reliefs), and was imposed on the index in item *i*. For example, for an item with a 19% VAT, its index goes from 100 to 119 (= $100 \cdot 1.19$). This value was related to February 2020 because it was the month prior to the first relief coming into effect.
- iii. The taxes for items covered by the decrees were eliminated starting in the month in which their relief came into effect. The other items maintain the same index that corresponds to them (depending on whether they are taxed and on their magnitude). Following the example of the item with a 19% VAT, if it belongs to a group of reliefs, its index goes to $100 = 119 / 1.19$. In contrast, if it has no relief, its index continues at 119. It should be noted that the percentage bearish impact of the relief on the item in the example is $(100 / 119) - 1 = -15.97\%$.
- iv. On the date of expiry of the decree, the tax is reset to the corresponding index. In the example, the index returns to 119 (= $100 \cdot 1.19$). This means an upward impact of $(119 / 100) - 1 = 19.0\%$, which shows the asymmetric effect that these situations have on percentage variations in price indexes (or levels).
- v. Since the above mentioned steps were applied to all items in the CPI basket, the resulting indexes are finally calculated for the different sub baskets and for the total basket over the months. From this, the percentage changes of interest were calculated.

Thus, the exercise estimates a baseline scenario, where the impact of the reliefs is transmitted completely to the CPI, both in price cuts (tax reliefs) as in the subsequent increase (expiry of the reliefs). The results are presented in Table B1.2, where it is noted that, in this scenario, the impact of the reliefs would result in a 1.78% fall in the total price level by June 2020 (*vis-à-vis* February), but would be lower by December 2020 (1.19% as compared to February).

Table B1.1
Government-Decreed Price Reliefs Incorporated in the Estimation Exercises

| Relief | Decree and Effective Application | Date |
|--|--|---|
| Temporary VAT elimination for mobile cellular plans below COP 71,000. | Decree 540 of 13 April 2020, Ministry of Information Technologies and Communications | Four months from the date of the decree. |
| Temporary elimination of VAT on health products, body hygiene, and household hygiene products. | Decree 551 of 15 April 2020, Ministry of Finance and Public Credit. | End of the health emergency (for the time being, 31 August 2020). |
| Temporary VAT reduction to air travel tickets from 19% to 5.0%. | Decree 575 of 15 April 2020, Ministry of Transport. | 31 December 2021 |
| Temporary elimination of consumption tax on food services. | Decree 682 of 21 May 2020, Ministry of Finance and Public Credit. | 31 December 2020 |
| Temporary elimination of VAT for tourism and hotel services. | Decree 789 of 4 June 2020, Ministry of Finance and Public Credit. | 31 December 2020 |
| Reduction in fuel prices close to COP 1,300. | Two decisions by the Ministry of Mines and Energy in the first weeks of March 2020. | We assume that it is maintained for the entire horizon of the exercise. |

Source: Ministries mentioned; elaborated by the authors.

Table B1.2
Impact Exercise on the CPI of Reliefs in Prices under a Full-Transmission Scenario

| | Total | Excluding Food and Regulated items (EFR) | Tradables EFR | Non-tradables EFR | Regulated Items ^{a/} | Food |
|---|-------|--|---------------|-------------------|-------------------------------|-------|
| Average Tax | 6.0% | 7.5% | 16.5% | 3.5% | 1.6% | 4.8% |
| Indexes | | | | | | |
| No Tax | 100 | 100 | 100 | 100 | 100 | 100 |
| Feb-20 | 106.0 | 107.5 | 116.5 | 103.5 | 101.6 | 104.8 |
| Jun-20 | 104.1 | 106.2 | 113.6 | 102.9 | 99.0 | 101.9 |
| Aug-20 | 104.2 | 106.4 | 113.6 | 103.1 | 99.0 | 101.9 |
| Dec-20 | 104.7 | 107.2 | 116.4 | 103.1 | 99.0 | 101.9 |
| Jan-21 | 105.6 | 107.5 | 116.4 | 103.5 | 99.0 | 104.8 |
| Dec-21 | 105.6 | 107.5 | 116.4 | 103.5 | 99.0 | 104.8 |
| Jan-22 | 105.6 | 107.5 | 116.5 | 103.5 | 99.0 | 104.8 |
| Variations vis-à-vis February 2020 (impact of reliefs vs. initial price level) | | | | | | |
| (Percentage) | | | | | | |
| Jun-20 | -1.78 | -1.22 | -2.51 | -0.57 | -2.53 | -2.81 |
| Aug-20 | -1.69 | -1.08 | -2.51 | -0.35 | -2.53 | -2.81 |
| Dec-20 | -1.19 | -0.28 | -0.15 | -0.35 | -2.53 | -2.81 |
| Jan-21 | -0.39 | -0.05 | -0.15 | 0.00 | -2.53 | 0.00 |
| Dec-21 | -0.39 | -0.05 | -0.15 | 0.00 | -2.53 | 0.00 |
| Jan-22 | -0.36 | 0.00 | 0.00 | 0.00 | -2.53 | 0.00 |

Note: The February price level incorporates the average tax to the items comprised by each sub-basket, i.e., it is equal to the level without taxes plus the average tax.

a/ It only considers the relief on the price of fuels.

Source: DANE; elaborated by the authors.

This implies part of the upward effects of these measures resulting from the expiry of some of the reliefs (those related to mobile phone plans and health products, body hygiene, and hygiene products), given that between June and December 2020 there would be a 0.60% increase in the total CPI level. Precisely, every time some relief expires, the exercise will show an increase in the price level. In addition to the one already mentioned, in December 2020, reliefs

on food, tourism and hotel services will end, and the total price index would therefore increase by 0.81% in January 2021 *vis-à-vis* December 2020. Finally, between December 2021 and January 2022, the index would rise 0.03% due to the return of the 19% VAT on air travel fares.

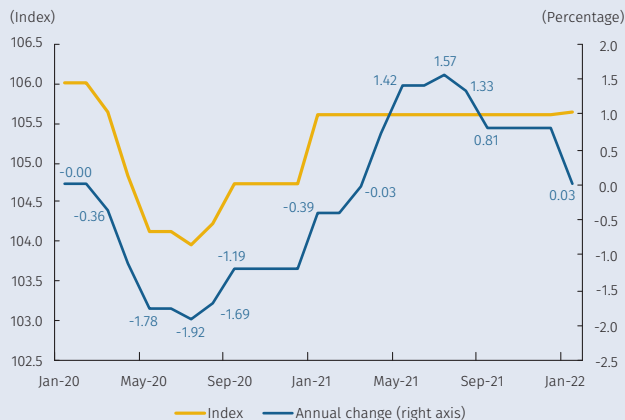
On the other hand, it is important to note that such movements of the indexes lead to a particular behavior of their

annual variation. Precisely, as has already been mentioned, the reliefs generate a decrease in the annual variation when they are in force, but also an increase (which is greater than the decrease)², when they expire, first, and then when the

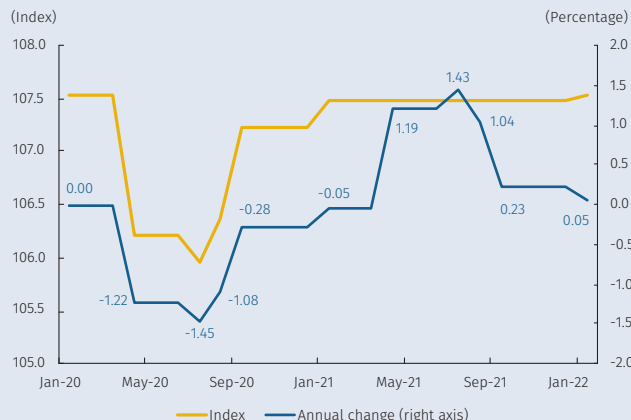
index with the reliefs is used as a basis of comparison for the calculation of the annual variation. This is shown by Graph B1.1, which shows the price indexes and their respective annual variations for the year detailed.

Graph B1.1
Relief Impact Exercise on the CPI and its Annual Variation under a Full Transmission Scenario

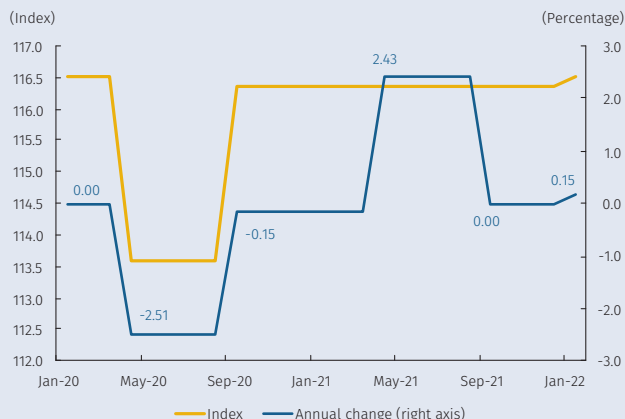
A. Total CPI



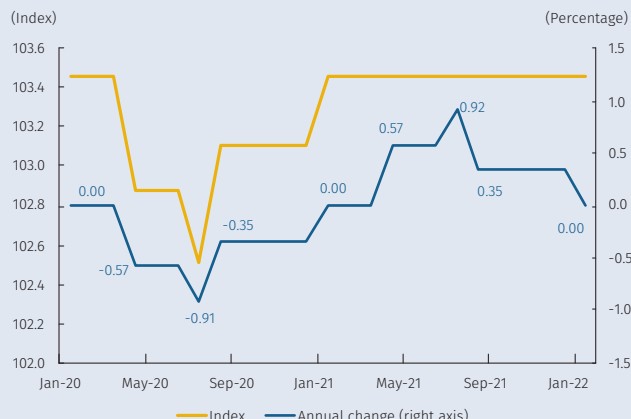
B. CPI excluding food and regulated items



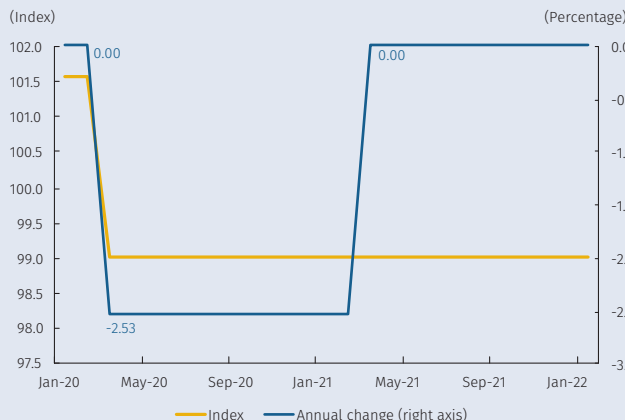
C. CPI for tradables excluding food and regulated items



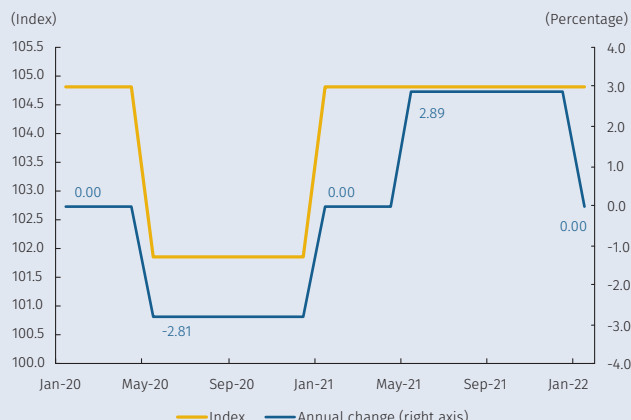
D. CPI for non-tradables excluding food and regulated items



E. CPI for Regulated items



F. Food CPI



Source: DANE; calculations by the authors.

2 As long as no other effects operate, such as a very weak demand that does not allow for adjustment.

However, it is very likely that the effects of the transitory elimination of indirect taxes will not be completely transmitted to consumer prices. Assuming an alternative scenario of a 50% carryover, the total CPI would only fall by a little less than one percentage point (89 bp) to June 2020. This result is similar to that of an additional exercise done to attempt quantifying the impact of price reliefs (and the VAT-free day) on the headline annual inflation figure observed in June 2020. This exercise was to maintain until June the last observed value of the index for CPI items with price reliefs or which were included in the VAT-free day before it registered falls within the periods where the reliefs are in force. Annual inflation was calculated with the resulting indexes and compared with the figure actually observed, obtaining a downward impact of about 80 bp in June 2020. The result of this additional exercise is also an approximation and it should be considered that it could be collecting not only the effect of the reliefs, but also other factors such as weak demand or the difficulty in price measurement, given the cautionary health measures and the closure of establishments.

In summary, a significant fall in inflation occurred in June 2020, among other reasons, due to the various price reliefs implemented by different local or national authorities. However, starting in August, inflation could be expected to pick up, as some price reliefs begin to expire. However, the impact and likely trajectory of the CPI and inflation illustrated here are greatly uncertain due to multiple overlapping factors in both supply and demand, including price measurement difficulties in current circumstances. Therefore, the exact degree and extension of the transmission of price reliefs to the CPI is unknown.

3. Estimation of the impact of the VAT-free days on the CPI

Furthermore, Decree 682 of 21 May 2020 of the Ministry of Finance provided the exemption of VAT on certain consumer goods and supplies for the agricultural sector on 19 June and 3 and 19 July. However, three days before the last VAT-free day, this was postponed, with no announcement of a new date³. The items included in this exemption were: clothing and footwear, clothing accessories (briefcases, umbrellas, glasses, etc.), appliances, sporting goods, toys and games, school supplies and goods and supplies for the agricultural sector.

Following the same calculation methodology as in the previous paragraph, the impact of a VAT-free day on the CPI level was estimated. This calculation has a wide range of uncertainty because the number of times in which DANE records the prices per item is unknown, so that if the information is collected once a month, the estimated impact is divided by 1 (If that record is taken on the VAT-free day), while if the information is recorded on a daily basis, the calculated impact is divided by 30. Consequently, it was estimated that the impact of a VAT-free day on the change in the total CPI would be a 87 bp fall recording prices once per month, while, with 30 price records per month, the adjustment of the total CPI would contract only 3 bp. In any case, it is assumed that this impact would be low, since the goods that benefited from the VAT-free day are of high demand, so we assume that DANE carries out a frequent recording of prices.

³ On 16 July, by Decree 1044 of the Ministry of Domestic Affairs, the third VAT-free day was suspended.