

SPECIAL  
FEATURE

# Food inflation in net food importing developing countries (NFIDCs):<sup>1</sup> characterizing the increase and the effect of currency movements

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## Introduction

Since the beginning of 2021, the consumer price index (CPI), the most widely used measure of inflation, has increased rapidly to levels not seen in several decades in all regions of the world, including advanced, emerging and low-income economies. Despite recent data indicating that inflation is abating, notably in the United States of America and the European Union, price pressures continue to occupy centre stage in many countries, where inflation rates remain stubbornly high. High and persistent inflation has a number of macroeconomic consequences since it distorts market price signals that reveal the changing scarcity of goods and services, leading to inefficiencies in the allocation of resources (Spencer, 1975; Hayek, 1960). Importantly, it could also contribute to widening income inequalities, with the most vulnerable people bearing the heaviest economic burden (Colciago et al., 2019; Easterly and Fischer, 2001; Romer and Romer, 1998; Bulir, 2001; Menyhert, 2022).

There is a general agreement that the recent surge in inflation was driven by three main factors – rising commodity prices, supply chain disruptions and strong aggregate demand spurred by expansionary monetary policy and fiscal support implemented to address the economic setbacks caused by the COVID-19 pandemic (IMF, 2021; Cline, 2023; Stiglitz, 2023). While there is a general consensus about the broad causes of the inflation, much of the recent debate tends to revolve around two important issues. First, questions remain about the appropriate public policy interventions and, in particular, whether and how high interest rates should be raised to rein in inflation without triggering a severe economic recession – a so-called “soft landing” scenario (Verbrugge and Zaman,

2023). The vast majority of central banks around the world have raised interest rates at least once since 2021. For example, as of May 2023, the Federal Reserve Bank of the United States had hiked its federal funds rate target ten times since March 2022 (United States Federal Reserve, 2023). So far, it seems the world has managed to avoid a recession despite an expected slowdown in economic activity for 2023. The latest economic projections released by the International Monetary Fund (IMF) indicate that growth in the world’s gross domestic product (GDP) is anticipated to reach 2.8 percent in 2023, which is down from the 3.4 percent recorded in 2022, before rising back to 3 percent in 2024 (IMF, 2023). Second, the significant increases in the food and beverage component of the consumer price index (CPI) have raised concerns around persistent inflation, and possibly a change in long-term inflation expectations, which would require stronger actions by central banks (Armantier et al., 2022). Importantly, rising food prices can lead to social unrest and increased financial risks, undermining efforts to fight poverty and food insecurity and wiping out any progress achieved so far. The IMF estimates that global inflation will decline from 8.7 percent in 2022 to 7 percent this year and 4.9 percent in 2024. These forecasts are based on a number of assumptions that can alter the basic working scenario.

This note describes recent changes in the food component of the CPI (FCPI) for countries from the group of NFIDCs, given their dependence on food imports to meet food security needs and the relatively high share of food in their household budgets. It examines the extent to which changes in international prices for wheat, maize and rice have impacted the NFIDCs, taking into account movements in exchange rates. The last section of the note offers some general recommendations as to how domestic food inflation might be tackled.

## Data and Method

While international food commodity prices have generally declined since reaching their highest levels in March 2022, domestic food prices in many countries remain high or continue to increase. The FAO food price index (FFPI), which captures price movements of some

<sup>1</sup> Net food-importing developing countries (NFIDCs) are included in a list of countries maintained by the World Trade Organization (WTO)’s Committee on Agriculture. The selection criteria and the list of countries can be found at <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/AG/5R11.pdf&Open=True>

\* Useful comments and suggestions provided by George Rapsomanikis.

of the most traded staple foods, reached 159.7 points in March 2022 and then declined for 12 consecutive months to 127.0 points in March 2023, corresponding to a 20.5 percent decline, before a slight increase in April, which was more than offset by a 2.6 percent decline in May 2023.

The analysis in this note uses international price data for the major cereals, which refer to standard benchmarks: No.2 yellow corn, United States FOB Gulf Ports, for maize; No.2 hard red winter wheat, ordinary protein, United States FOB Gulf Ports for wheat; and export prices, India, rice (25 percent), for rice. To capture changes in domestic prices in NFIDCs, the analysis uses data on consumer prices, food indices (2015 = 100) available from FAOSTAT (FAO, 2023), with the series for all countries running until September 2022. Changes in the food consumer price indices are assessed by computing the cumulative changes in food CPIs for each of the NFIDCs. An aggregate FCPI is also derived for the group by computing a population-weighted average FCPI. Population data are taken from FAOSTAT. The analysis focuses on the period between March 2022 (the highest level reached by the FFPI) and September 2022 (latest data available for the food CPI in FAOSTAT).

The extent of the transmission of changes in world food prices to domestic markets in the NFIDCs is assessed by considering movements in nominal exchange rates. The world prices for wheat, maize and rice in real local currency terms are computed as follows:

$$WP_{LC}^R = WP_{USD}^N * NER * \frac{FCPI_{USD}}{FCPI_{LC}} \quad (1)$$

where WP refers to the world price of the selected cereals (wheat, maize and rice), R stands for real (inflation adjusted), N stands for nominal, NER represents the nominal exchange rate, LC stands for local currency, FCPI is the food consumer price index and USD refers to the United States dollar.

Data for nominal exchange rates in the NFIDCs were collected from the International Financial Statistics (IFS) of the IMF.<sup>2</sup> By combining the nominal exchange rates with data on FCPIs, we derived the real exchange rate vis-à-vis the United States dollar. The use of the real exchange rate serves to account for changes in nominal exchange rates when converting international commodity prices to domestic terms. For example, the value of the United States dollar versus a broad basket of currencies appreciated by 8 percent between March 2022 and September 2022.<sup>3</sup> The sustained appreciation of the United States dollar began

<sup>2</sup> <https://data.imf.org/>

<sup>3</sup> See FRED, Federal Reserve Bank of St. Louis. <https://fred.stlouisfed.org/series/TWEXBGSMTIH>

much earlier, in May 2021. The strength of the United States dollar, and the resulting depreciation of the real exchange rate of other currencies against the dollar, means that the increase in international commodity prices tends to be exacerbated in domestic currency terms. It also means that declines in world commodity prices denominated in United States dollars are not proportionally transmitted in local currency terms when the dollar is appreciating. During the 2007–08 global food price crisis, the depreciation of the United States dollar helped many food-importing countries offset the increase in international food prices in domestic currency terms. The current context seems to have created the opposite scenario.

## Evolution of the food consumer price index in NFIDCs

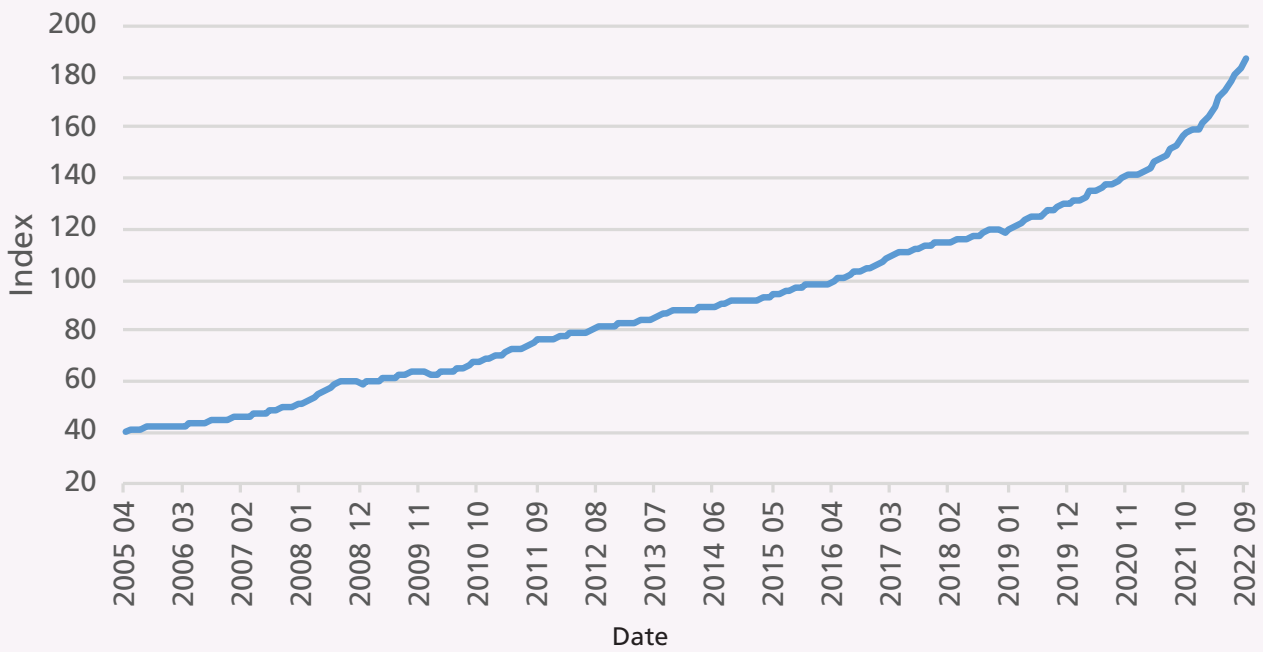
Figure 1 represents the population-weighted average of the FCPI for the NFIDCs.<sup>4</sup> It illustrates the marked acceleration in food inflation, which started in the second half of 2020. Between June 2020 (when the FFPI started to increase) and September 2022, the FCPI increased by about 38 percent. The acceleration in food inflation is further illustrated in Figure 2, which shows the monthly percentage change in the FCPI, computed by taking the difference in logarithm of two consecutive monthly values of the FCPI. This shows that the FCPI increased by an average of about 1 percent per month between June 2020 and March 2022, before peaking at 2.43 percent in April 2022. Soon after, however, the rate of food inflation began a downward trend. This was somewhat similar to the situation during the 2007–08 global food price crisis, when the change in the FCPI in the NFIDCs reached its peak in February 2008, before trending downward towards its average value, reaching that level after seven to eight months. However, it is important to recognize that the current economic and geopolitical contexts are quite different.

An analysis of the FCPI monthly percentage change series over the sample period indicates that, on average, the FCPI increases by 0.5 percent per month in NFIDCs. Overall, the series is characterized by relative elevated volatility, with more peaks than troughs, but it is mean reverting, i.e. it tends to revert back to its long-term average after some periods.<sup>5</sup>

<sup>4</sup> Based on available data, the analysis covers 71 NFIDCs from a total of 78 countries forming the group.

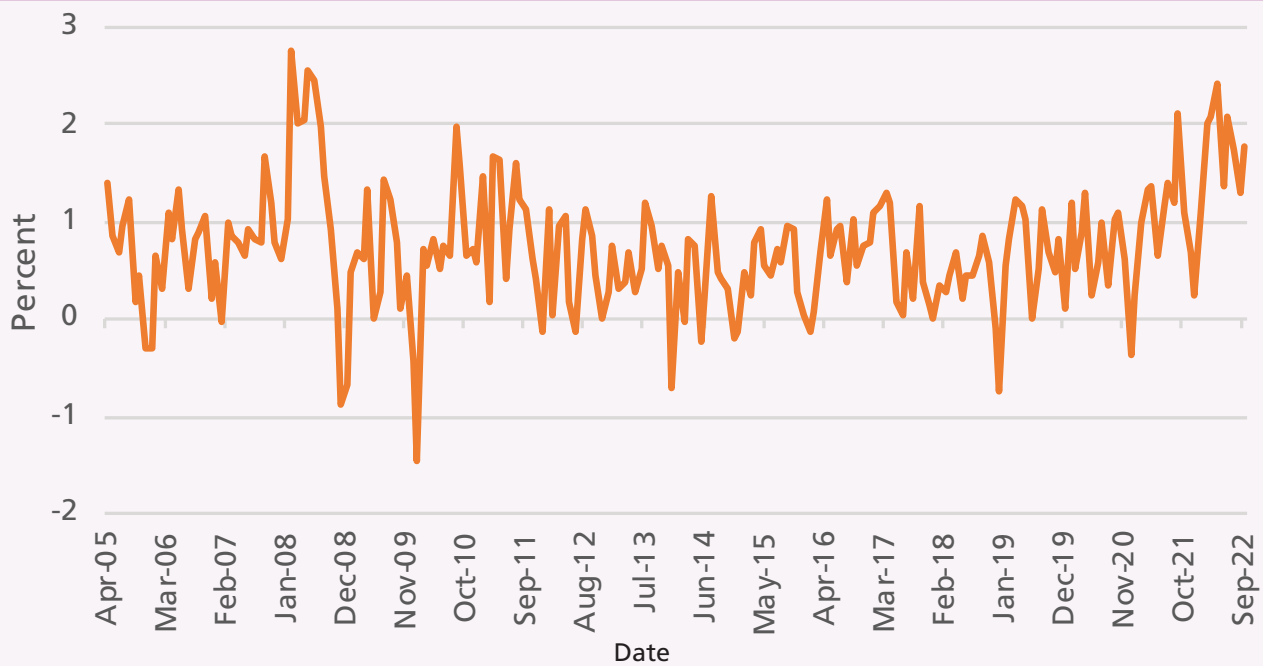
<sup>5</sup> The stationarity property of the series is tested using the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests. Results show that the FCPI percentage change series is stationary (around its mean), with the null hypothesis of the presence of a unit root strongly rejected. Also, the kurtosis coefficient of the series is larger than the normal distribution, indicating that the probability of observing peak values is higher than that under

Figure 1. Evolution of the FCPI for the NFIDCs



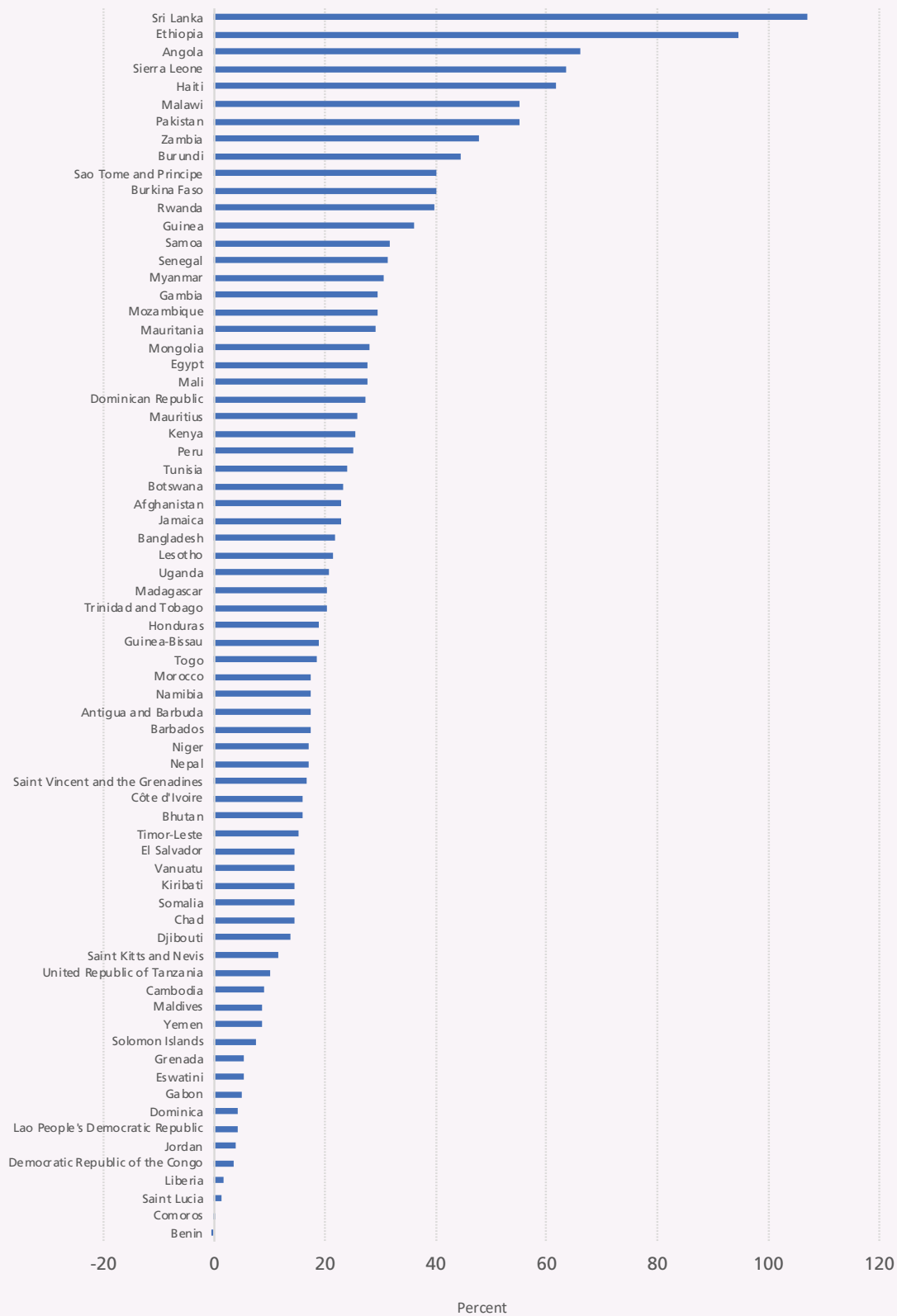
Source: FAO, 2023 and author's calculation

Figure 2. Monthly percentage change in the FCPI for NFIDCs



Source: FAO, 2023 and author's calculation

Figure 3. Percentage change in FCPI between June 2020 and September 2022 in NFIDCs



Note: Based on available data, the analysis covers 71 out of the 78 countries in the group of NFIDCs.

Source: FAO, 2023 and author's calculation

Figure 3 shows the percentage change in food inflation for a number of NFIDCs between June 2020 (when the FFPI started to increase) and September 2022.<sup>6</sup> The vast majority of countries experienced double-digit inflation during this period. The cumulative distribution function indicates that half of the NFIDCs were likely to experience food inflation of more than 20 percent during this period, when FFPI grew by 41 percent. It is important to note, however, that a direct comparison of both indices can be misleading. The FCPI not only takes into consideration a broader range of commodities than the FFPI, but it also includes other products such as fruits and vegetables, processed foods and beverages. In addition, the FCPI considers both food consumed at home and away from home. The latter means that the index is influenced by a host of variables that range from labour cost to rent and overheads.

To summarize, while food inflation in NFIDCs has accelerated over the past 18 months, data up to September 2022 seems to indicate that the pace of acceleration has weakened since reaching a peak in April 2022. This trend may be confirmed once more recent official data becomes available in FAOSTAT. The observed disinflation is mainly a reflection of falling energy and non-energy commodity prices, the easing of supply chain bottlenecks and improvements in global food supplies, as well as the expected restraining impact of monetary tightening on commodity prices (Frankel, 1986) and on global economic activity. However, there are still sizeable risks associated with this somewhat positive pattern. Food inflation growth can pick up again and remain sticky for some time because of a number of local and international factors. These include stronger global demand than anticipated, a sudden surge in energy prices, an upturn in fertilizer prices, and adverse weather shocks that compromise crop harvests and reduce supplies. National policy measures can also play a major role when countries implement export restrictions or subsidize food imports to contain domestic price surges. Clearly, persistent or emerging geopolitical tensions can also fuel new rounds of inflation. At this point in the inflation cycle, it is critical that central banks stay the course with rate hikes until it is apparent that core inflation (excluding food and energy) stability is returning. Finally, a sustained real appreciation of the United States dollar against other currencies, including those of NFIDCs, renders

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the assumption of a normal distribution. The result of the Jarque-Bera test confirms the rejection of normality for the series. In addition, the Ljung-Box test for autocorrelation, when applied to the series, points out evidence of autocorrelation, indicating a large degree of similarity between FCPI values over successive time intervals. Finally, the ARCH test for heteroscedasticity indicates the presence of ARCH effect, showing the dominance of time-varying volatility and volatility clustering.

<sup>6</sup> Latest available data for FCPIs in FAOSTAT (FAO, 2023).

food imports more expensive in local currency terms and contributes to domestic inflation. This particular issue is addressed in the following section.

## The effect of the United States dollar appreciation on food prices in NFIDCs

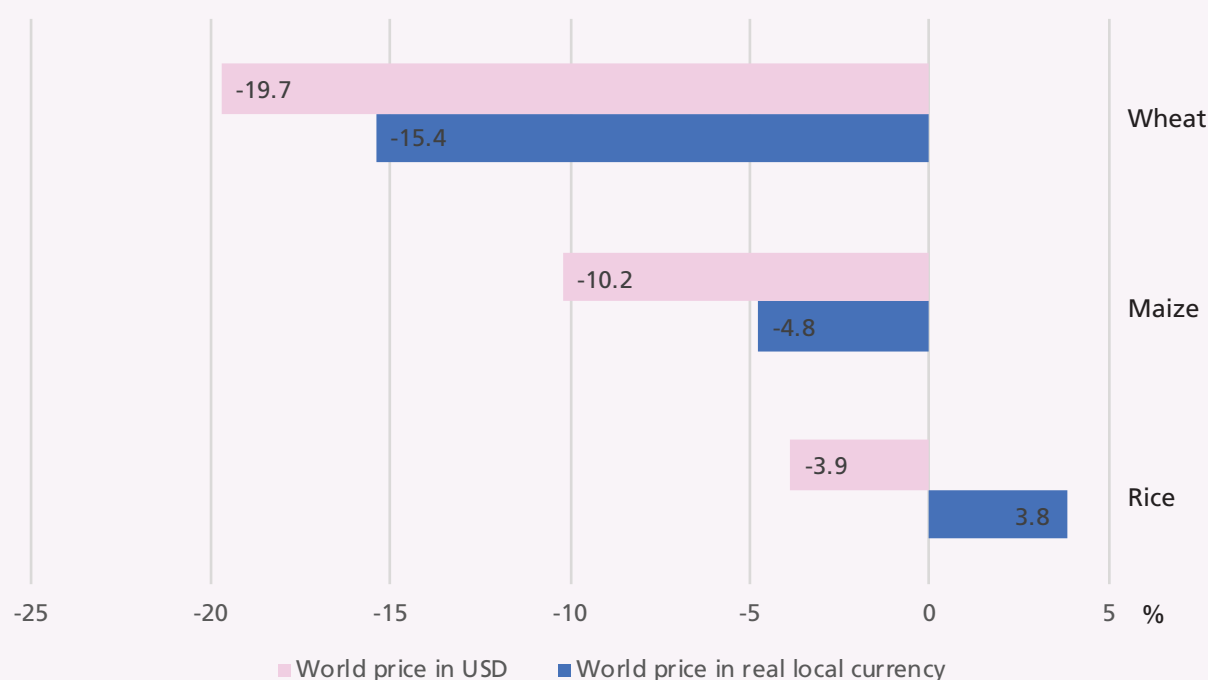
It is estimated that over the period of 1999 to 2019, the United States dollar accounted for 96 percent of trade invoicing in the Americas, 74 percent of trade invoicing in the Asia-Pacific region and 79 percent in the rest of the world, while the Euro was the dominant currency in Europe (Correa et al., 2022). The relative importance of the dollar means that dollar currency fluctuations directly affect the cost of imports in local currency terms. However, the variation in nominal exchange rates is only one key element to consider, the other being the purchasing power parity (PPP) of a currency. This is where the real exchange rate concept comes into play. PPP considers fluctuations in the nominal exchange rate and the ratio of the price level between two countries to measure the value of a country's goods against those of another trading partner or the rest of the world.

The concept of real exchange rate is applied in Equation (1), which we use to measure changes in world market prices expressed in real domestic currency (DC) terms for wheat, maize and rice in NFIDCs. The comparison was carried out between June 2020, when cereal prices initiated their upward trend, and the month in which the prices reached their highest level.<sup>7</sup> The results show that world wheat prices went up by 163.2 percent between June 2020 and May 2022 and, when expressed in real local currency terms, prices rose by an average of about 169.2 percent in the NFIDCs. Hence, the real appreciation of the United States dollar resulted in an additional 6 percentage points increase in the price of wheat when expressed in real local currency terms. Likewise, international maize prices went up by 135.2 percent, and by 139.4 percent in real domestic currency equivalent. On the other hand, world rice prices decreased by 0.3 percent between June 2020 and February 2021, but when converted into real local currency terms, the decline was comparatively stronger at 0.6 percent, as the United States dollar depreciated during that period.

We applied the same analysis for the selected commodities to the period between the FFPI peak in 2022 and September 2022 (the latest available data for the FCPI in FAOSTAT). That period was characterized by a sustained decline in international food commodity

<sup>7</sup> International maize prices reached a peak in April 2022, while wheat and rice recorded their highest level in May 2022 and February 2021, respectively.

**Figure 4. Changes in world cereal prices in NFIDCs expressed in USD and in real domestic currency terms**



Note: Changes represent percentage change in cereal prices from their high levels since June 2020 and September 2022.

Source: FAO, 2023 and author's calculation

prices, as illustrated by the FFPI, which fell by 14.8 percent between March 2022 (its highest value) and September 2022. The analysis indicates that the international prices of maize, wheat and rice – expressed in real local currency terms – fell less than the world price of these commodities expressed in United States dollars. For example, world maize prices declined by 10.2 percent between April 2022 and September 2022. However, when expressed in real local currency terms, maize prices only fell by an average of 4.8 percent in the NFIDCs. The rice case is interesting: while world rice prices declined, prices in real local currency terms actually increased. Hence, the relative strength of the United States dollar with respect to the currencies of the NFIDCs prevented these countries from benefiting fully from the fall in international cereal prices (See Figure 4).

### Concluding comments

The analysis described in this note gives rise to several observations. First, the real appreciation of the United States dollar meant that the increase in international cereal prices was generally much higher when prices were expressed in local currency terms. For the group of NFIDCs, the analysis showed that, over the period from June 2020 to May 2022, world wheat prices in real local currency

terms rose, on average, by as much as 6 percentage points more than the increase in world wheat prices expressed in United States dollars. On the other hand, at the height of the COVID-19 pandemic (April 2020–January 2021), the depreciation of the United States dollar cushioned some of the increase in world prices (expressed in local currencies). Second, the sustained fall in world cereal prices, after reaching a peak in mid-2022, was not fully transmitted to NFIDCs in real domestic prices. Changes in real exchange rates are only one component of food import costs, which also include elements such as transportation, insurance, financing and other retailing fees. Increases in these costs constitute a burden, particularly on the poorest and most vulnerable people, with serious implications for their food security. Further analysis is warranted to assess the extent to which these elements have contributed to recent domestic food inflation.

Third, while food inflation in the NFIDCs rose in mid-2020 for several successive months, data up to September 2022 seems to indicate that the pace of inflation has abated since reaching a peak in April 2022. Updates are needed to confirm this trend. Yet there are heightened risks linked with this somewhat encouraging prospect. Energy prices could pick up again quickly, feeding into headline inflation. Nominal wage rates could accelerate



beyond current projected levels, fuelling concerns over a wage–price spiral. We also do not know to what extent the COVID-19 pandemic and the energy crisis have affected the productive capacity of agrifood systems. It is possible that decision-makers are overestimating the amount of resources in the economy that are not used, meaning that inflation may in fact be more sticky than current forecasts. Finally, changes in the rate of inflation in the NFIDCs tend to be mean-reverting after a shock, implying that the inflation rate returns to its long-term average level after some periods.

Defeating inflation requires coordinated actions at national and international levels. Central banks need to maintain tight monetary policies until core inflation is clearly on a downward trajectory. Likewise, authorities should prioritize fiscal consolidation, with well-targeted measures to support the poor, vulnerable and food-insecure segments of the population. A tight fiscal stance keeps debt service costs within acceptable limits, which ensures financial stability, resilience to future shocks and, in the case of NFIDCs, the capacity to finance food import bills. In addition to monetary and fiscal measures, governments should work towards introducing effective supply-side actions that can ease headline inflation and, in particular, food inflation. For example, incentives can be introduced to accelerate the adoption of farm productivity-enhancing innovations and technologies, and improve access to markets, credit and extension services. Digitalization, science, investments in climate change and renewable energy can also help win the battle against inflation. Finally, empowering women and youth and promoting their participation in agrifood systems will go a long way towards sustaining productivity growth and easing inflationary pressure.

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