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## Special Notes Series on COVID-19

The Special Notes Series includes short papers discussing critical economic issues related to COVID-19. Special Notes are important to quickly disseminate IMF expertise to member countries. The views expressed in these notes are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

# The Impact of COVID-19 on Inflation: Potential Drivers and Dynamics

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*This note examines conceptually and wherever possible, empirically, the potential drivers and dynamics of inflation during the COVID-19 pandemic distinguishing between the lockdown phase, characterized by restrictions in mobility and potentially significant supply and demand disruptions, and the reopening phase, when restrictions to mobility are lifted and economic activity starts to rebound. Early evidence from advanced and emerging market economies points to an increase in food prices; however, there is no evidence of inflation when considering broader indexes. Although it is still too early to analyze the behavior of inflation following the reopening, measures of inflation expectations show no obvious pattern of an upward move in inflation. There has been, however, a rise in the variance of expected inflation indicating significant uncertainty and a potential risk of de-anchoring.*

## I. LOCKDOWN PHASE

During the lockdown phase, the epidemic and associated lockdown measures can affect the supply and demand of certain products, and hence, their prices. An obvious example is food and medical goods. Short-term price inflation of such goods can be driven by a number of factors.

One factor is the extent of price gouging in high-demand goods as panic buying and hoarding ensue (for example, sanitizers, [masks](#), medical supplies, [pain relief medications](#)).

A second factor is dependence on migrant workers in the production process. Prices of certain products (for example, agricultural goods) can increase if supply is disrupted because of labor shortages resulting from a decline in the number of migrant workers. The duration and generosity of unemployment benefits, especially for local unskilled workers who could replace migrants, may affect the duration and severity of this type of disruption in supply.

<sup>1</sup> Anna Maripuu, Chau Nguyen, and Mu Yang Shin provided excellent research assistance.

A third factor is the extent of reliance on imported critical goods since this can expose countries to inflation from abroad or to pass-through if countries witness sharp depreciations as a result of outflows driven by risk-off sentiments. This is bound to be especially important for emerging market economies and developing countries.

A fourth factor is the possibility of a hoarding equilibrium in international trade as countries fail to coordinate their emergency policies. A hoarding equilibrium in food and medical supplies among countries can arise, if there is a fear that supply disruptions might occur (or get worse) in these industries in the future. If exporting countries anticipate that they will not be able to import critical goods if they need, they might start hoarding and avoid exporting these goods in the present (for example, in early April, the US Trump administration invoked a Korean War-era law to [force 3M to cut off sales of masks abroad](#)). This outcome can be more likely if the [food supply chain](#) and global trade linkages are expected to be affected for an extended period of time. According to the World Trade Organization, as of the end of April, 80 countries and customs territories had introduced [prohibitions or export restrictions](#) as a result of the COVID-19 pandemic. Most export prohibitions and restrictions focused on medical supplies (for example, face masks and shields), pharmaceuticals, and medical equipment (for example, ventilators), but others extended the controls to additional goods such as [food](#) and toilet paper. The UN has warned that these and other COVID-related measures could cause a [global food shortage](#).

Despite the potential increase in the prices of some critical goods, the impact on overall inflation during the mitigation phase could be muted. Before official lockdowns came into effect, demand for some “contact-intensive” goods and services (for example, restaurants, gyms) had been declining already due to individuals’ response to COVID-19 risk. This behavior and the subsequent official lockdowns resulted in massive unemployment and income loss intensifying the fall in demand, and spreading it to other sectors. This fall in demand combined with high uncertainty and constraints on central banks’ ability to loosen monetary policy (MP), such as an effective or zero lower bound (ZLB), could create deflationary pressures especially in advanced economies (AEs). The dynamics could, however, be quite different in emerging markets (EMs). Supply disruptions combined with currency depreciations might lead to an increase in inflation even during the containment period.

### Evidence on price pressures during the mitigation phase

During the early days of the COVID-19 outbreak, demand for pandemic-related products (preventive medical supplies, household cleaning supplies, over-the-counter healthcare products) surged in many countries (Figure 1). As a result prices of some specific goods (for example, face masks, bleach, non-prescription antiviral medication) went up in some countries. While cross-country data at such a granular level are difficult to find, anecdotal evidence suggests that prices rose by as much as 200 percent for medical face masks (Figure 2).

Figure 1. Demand for pandemic-related products surged

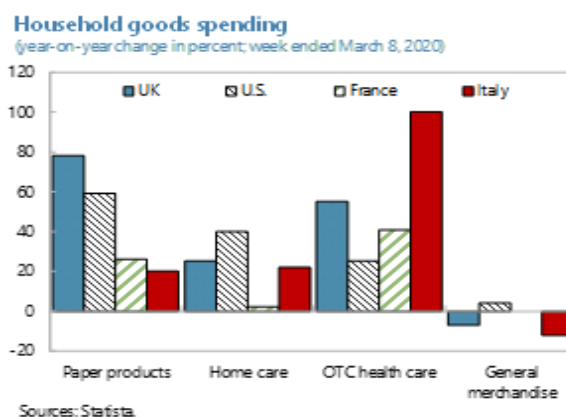
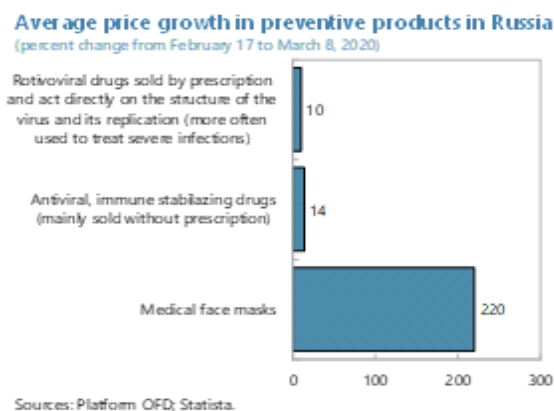


Figure 2. Price of pandemic-related products rose

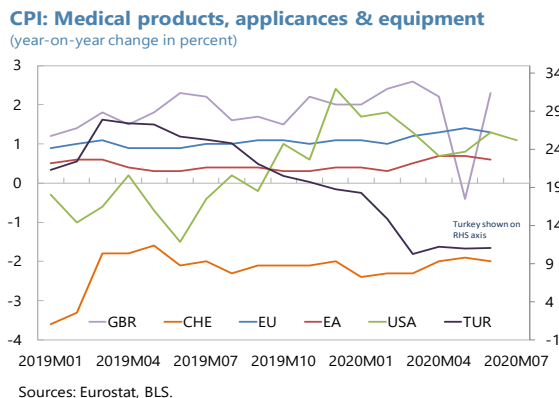


Looking at consumer price index (CPI) categories (which provide information at a less-granular level than individual items), one can detect some increase in medical products, appliances, and equipment in Europe in April and a bit later in June in the United States (Figure 3). One potential explanation for this could be the timing of the COVID-19 outbreaks in the two regions: many European countries were hit earlier than the United States.

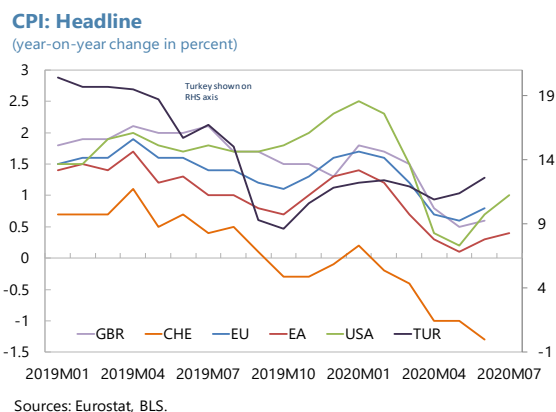
Headline inflation<sup>2</sup> in both regions took a nosedive, primarily driven by energy prices; however, core inflation (excluding energy and food) also declined (Figure 4). This reflects a decline in many service categories (for example, transportation) as well as in nonessential goods (for example, apparel). As lockdown measures have been eased, inflation recovered somewhat but so far remained below pre-pandemic levels in most countries. The one category that showed remarkable increase in inflation at the start of the pandemic is food: the price of meats, dairy, and canned/frozen fruits and vegetables spiked early on and remain elevated (Figure 5).<sup>3</sup>

In emerging markets (particularly in Latin America), a decline or steady pattern in headline inflation is also visible with food prices trending upward (Figure 6). In China, food prices soared during the height of the coronavirus epidemic and, while still at elevated levels, food inflation has since come down. Inflation in health-related goods and services has been contained for the most part, with the exception of Russia and, to a much lesser degree, Mexico.

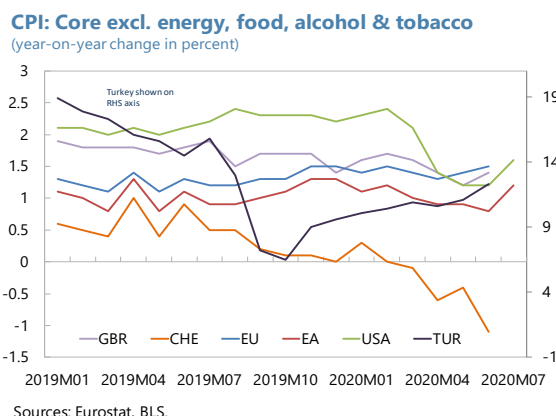
**Figure 3. Medical supply inflation rose in the EU but not the US**



**Figure 4. Headline inflation took a nose-dive...**



**...and core inflation declined albeit at a lesser scale.**



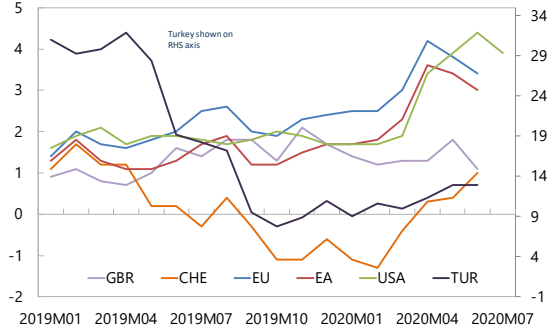
**Figure 5. But food price inflation increased with many food items in the top 10 in terms of largest increase in price.**

<sup>2</sup> It is worth noting that headline CPI may not capture unobservable changes in housing costs for at least two reasons. First, there could be sizeable discounts on rental offers (for example, cash-back offers to renew existing lease contracts) although not showing up in headline rental statistics for CPI; and second, eviction restrictions remain in effect in many jurisdictions that, once removed, could lead to a sizeable fall in rental prices.

<sup>3</sup> Headline inflation is not affected by changes in the composition of the consumer basket since CPI weights are constant (food items carry a weight of about 15 percent and medical items and services less than 10 percent, with some variation across countries).

### CPI: Food & beverages

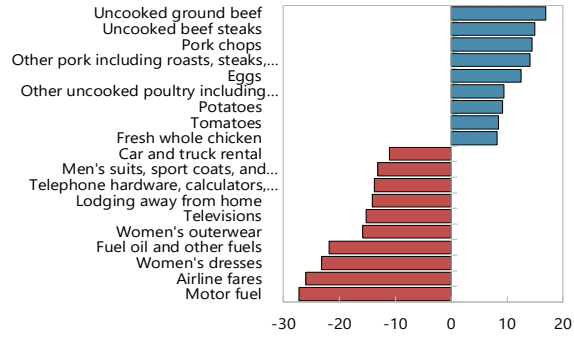
(year-on-year change in percent)



Sources: Eurostat, BLS.

### Top and bottom 10 items in the US, sorted by inflation

(year-on-year change in percent, average over April-July 2020)

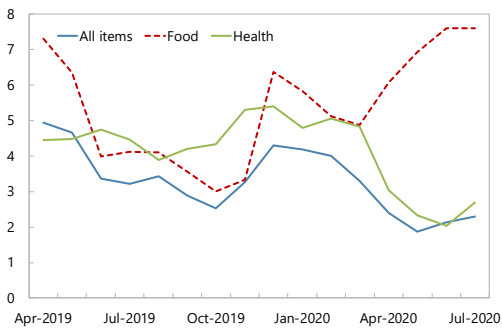


Sources: BLS.

Figure 6. Patterns in other regions also suggest a rise in

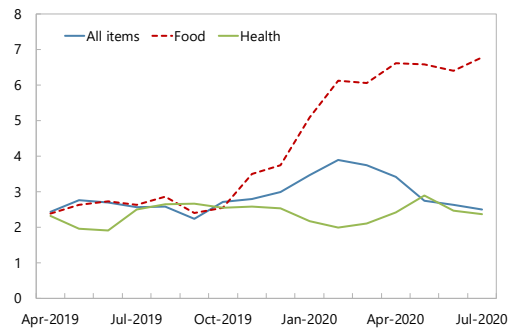
food inflation but not in health inflation (except Russia).

#### Brazil



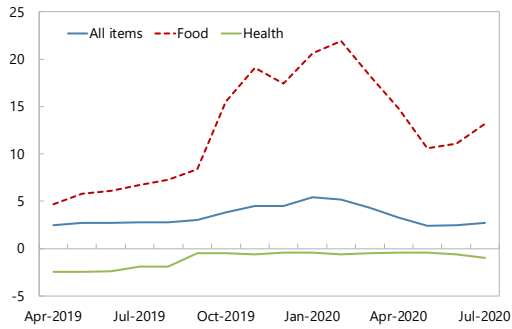
Sources: OECD

#### Chile



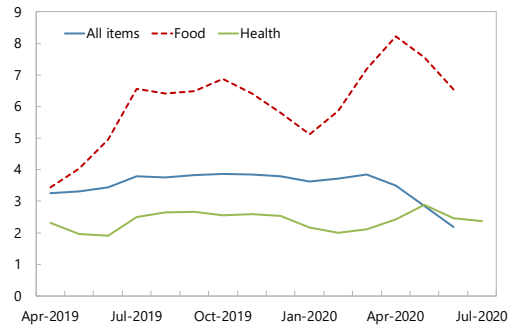
Sources: OECD

#### China



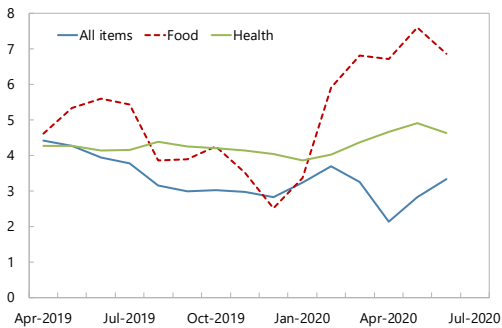
Sources: OECD

#### Colombia



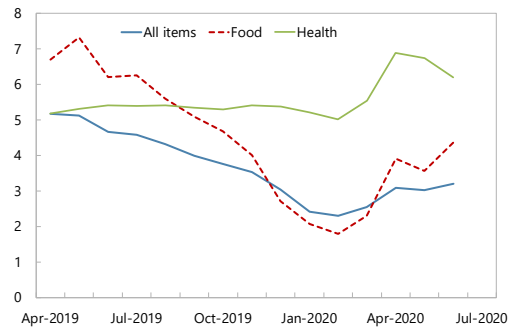
Sources: OECD

#### Mexico



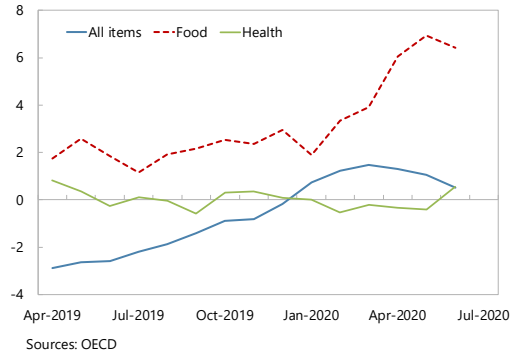
Sources: OECD

#### Russia

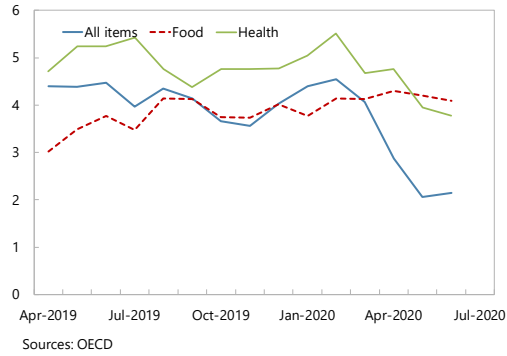


Sources: OECD

### Saudi Arabia



### South Africa



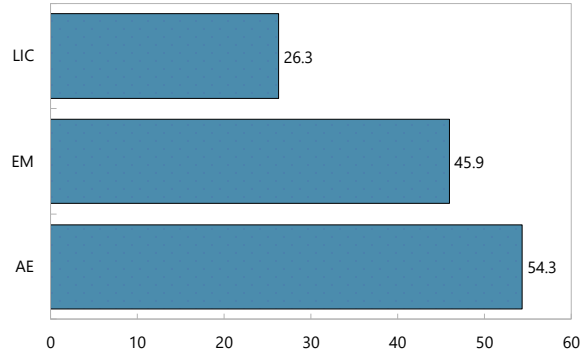
Considering a larger group of countries (107 to be exact), we examine cross-country variation in inflation patterns and also check how this relates to mitigation policies. Looking at what happened to inflation in March–July 2020 in AEs, we see that in one out of two observations, the change in inflation was negative (Figure 7). By contrast, in EMs and low-income countries (LICs), the change was negative roughly in one out of three observations. We detect only a very weak correlation between how stringent containment or mitigation measures are in a country and how high the inflation has been since March, after controlling for average inflation levels across countries. This appears to hold both for advanced economies and emerging markets. The picture does not change much if we look at individual components of CPI instead of the overall index.

**Figure 7. Decline in inflation during COVID-19 more common in AEs...**

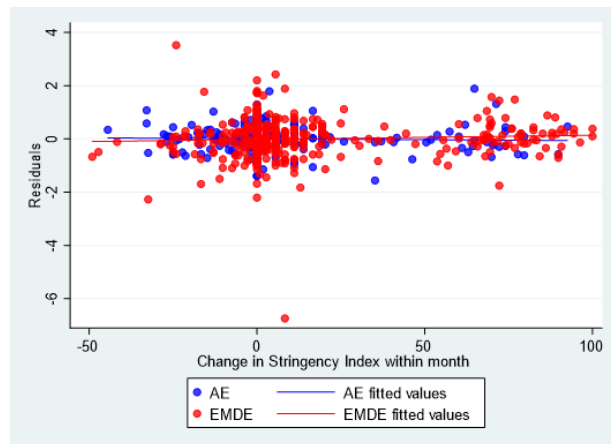
**...and weak link between inflation and containment**

#### Incidence of decelerating inflation by country group

(proportion of cases in March–July 2020 where the change in inflation was negative)



Sources: IMF International Financial Statistics, IMF STA CPI Database.



Sources: IMF International Financial Statistics, IMF STA CPI Database, IMF Global Debt Database, Global Financial Database, Hale and others (2020).

Note: The "residual" shown on the vertical axis is the error term obtained from regressing month-over-month inflation rate in March, April, May, June, and July on country fixed effects. The change in the stringency index shows the difference in the strictness of lockdown measures (for example, school closures, stay-at-home orders, ban on public gatherings) over the same month. The index takes values between 0 and 100; see [Hale and others \(2020\)](#) for details.

## II. REOPENING PHASE (MEDIUM TERM)

The conventional framework to analyze the cyclical behavior of inflation is the Phillips curve. As postcrisis estimates indicate that the Phillips curve has become very flat,<sup>4</sup> it would take strong economic stimulus to raise inflation in the near term. The upshot of a flatter Phillips curve is that we may not see noticeable deflationary pressures either: if the coefficient is close to zero, high unemployment would not translate to deflation.

The existence and the intensity of inflationary pressures during the reopening will also depend on several factors which might influence the Phillips curve relationship. Some of these factors are relevant for both EMs and AEs. Others are likely to apply to EMs only.

A first factor is the extent of pent-up demand during the containment phase, which is likely to be heterogenous across sectors.<sup>5</sup> Pent-up demand will depend on the depth and duration of mitigation measures. Private sector leverage and loss of income (which will depend on the rise of unemployment and the extent of mitigating fiscal policies) may depress the rebound in demand and reduce inflationary pressures during the recovery. The reason is that households/businesses can end up accumulating more debt during the containment phase as a result of economic policies. This amounts to a transfer (debt payments) from borrowers to lenders during the recovery which can potentially dampen aggregate spending due to differences in marginal propensity to consume between borrowers and lenders ([Mian, Straub, and Sufi 2020](#)). Finally, changes in consumer preferences (for example, permanent decline in demand for air travel and/or cruises) might also limit the demand rebound and dampen price increase in some sectors.

A second factor is the extent of supply disruptions during the pandemic and scarring afterward. Impaired supply and a spike in demand can be inflationary and may also constrain the MP response ([Goodhart and Pradhan 2020](#)). If containment measures lead to mass liquidations and the destruction of economic relationships, the supply side of the economy may suffer from a slow recovery (after the end of the pandemic). Moreover, the virus can have a persistent adverse impact on labor supply,<sup>6</sup> educational attainment, and other types of human capital formation. Mitigation measures may also have adverse impact on attendance and performance in schools, as well as school admissions and other forms of human capital formation that is contact-intensive. While these negative impacts on the supply can create inflationary pressures, it may also lower incomes and weaken the rebound in demand. Further, an exceptionally high level of unemployment makes a strong wage push less likely (as mentioned above). These can have a mitigating effect on inflationary pressures during the reopening phase.

A third factor is the possible change in the importance of wage pressures due to changes in the bargaining power of labor. An increase in the labor's bargaining power can lead to higher wages, higher spending, and inflationary pressures during the recovery. The COVID-19 pandemic can increase labor's bargaining power in two ways. First, it can intensify the current trends toward more populism resulting in supporting domestic workers' bargaining power (for example, more limits on migrant workers). Second, the pandemic can damage the global supply chain linkages and effectively reduce the employers' bargaining power in the wage setting process ([Goodhart and Pradhan 2020](#)). This is connected to countries' trade openness and firms' reliance on foreign suppliers as discussed below.

A fourth factor is openness to trade. On the one hand, potentially long-lasting disruptions to global supply chains can have inflationary effects (for example, role of China). On the other hand, if a country is highly dependent on exports, a collapse in external demand can lead to lower income and spending at home with deflationary effects. Finally, possible de-globalization of the supply chains due to the pandemic can strengthen the relationship between the economic slack and inflation (Phillips curve) which seems to have disappeared in the past decade ([Blanchard 2018](#); [Borio and Filardo 2007](#)). One explanation discussed in the literature for the flattening of the Phillips curve has been an increase in the extent to which prices of tradeable goods are set in international markets as this restrains aggregate inflation even when domestic labor markets are tight ([Peach, Rich, and Lindner 2013](#); [Tallman and Zaman 2017](#); [Forbes 2018](#)). As firms across countries de-link from global supply

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<sup>4</sup> See [Ball and Mazumder \(2011\)](#), [Hall \(2013\)](#), [IMF \(2013\)](#), [Blanchard, Cerutti, and Summers \(2015\)](#), and [Bullard \(2018\)](#) among others.

<sup>5</sup> For example, barber shops will see many customers as they are allowed to reopen but "foregone haircuts" cannot be made up for. In contrast, individuals can postpone their purchases of durable goods (for example, cars) leading to a spike in demand for durables when the uncertainty is resolved.

<sup>6</sup> The direct impact from deaths due to COVID-19 may be small, as evidence so far suggests that [fatality increases with age](#).



chains due to the pandemic, this countervailing force might be less important, potentially reinvigorating the importance of the Phillips curve in predicting the path of inflation.

A fifth factor is the monetary policy framework.<sup>7</sup> In an environment with well-anchored inflation expectations as a result of credible monetary policy, the more aggressively monetary policy reacts to higher inflation, the lower inflation expectations and the materialized inflation will be. At the same time, monetary policy rules that put a high weight on output stabilization might produce excessive inflation in the face of a negative supply shock.<sup>8</sup> This can worsen the trade-off between lowering inflation and stabilizing output when inflationary pressures are due to supply disruptions during the recovery phase.

Public debt purchases by the central banks will not necessarily be inflationary as long as they are not the cause or the result of fiscal dominance (more on this below), they're done in a measured way, and there is clear and well-communicated strategy for unwinding them. In normal times government debt is purchased by the banking system (or other primary dealers). But in a crisis, such as the COVID-19 pandemic, where the government needs to issue significant amounts of debt in a short period of time, central banks may have to absorb the supply and provide the necessary financing in time. Unlike bond purchases by the banking sector, central bank's purchases typically lead to an expansion of the central bank's balance sheet as it creates new money to pay for government bonds. This new money will finally end up on the balance sheets of the banks in the form of deposits as government spends the receipts of its bond sale. It's unlikely that these new deposits will be inflationary during the pandemic as banks will be reluctant to lend. But it may become a problem as the economy starts to recover. The central banks can curb the inflationary pressures during the recovery by paying higher interest on reserves to encourage banks to keep their excess deposits as reserves or by selling government bonds to absorb the excess liquidity. But if the amount of debt held by the central bank becomes too large, increasing the interest rate to absorb the excess liquidity without endangering government debt sustainability may become difficult ([Blanchard and Pisani-Ferry 2020](#)).

### **Factors especially relevant for EMs and LICs**

Central bank independence and credibility, as well as fiscal capacity, are among the critical determinants of inflationary pressures in EMs ([De Haan and Siermann 1996](#); [Cottarelli, Griffiths, and Moghadam 1998](#); [Brumm 2006](#)). In a "fiscal dominance" regime expansionary fiscal policy during the containment phase can create inflationary pressures during the recovery.<sup>9</sup> Moreover, with "fiscal dominance," a higher nominal rate under an "active" monetary policy can backfire and amplify the inflationary response to an expansionary fiscal shock. This occurs because a higher nominal rate increases debt payments and hence the future nominal wealth of the private creditors. Under "fiscal dominance," this wealth effect isn't undone by appropriate fiscal policy (raising taxes to lower deficit or increase surplus). Hence, it stimulates aggregate demand and may dwarf the negative impact of a rate hike on inflation. Longer average maturity of debt can smooth the inflationary response over time as some of the adjustment happens through a decline in the prices of long-term bonds (that is, increase in future inflation). Finally, with low fiscal capacity and a non-negligible default risk and *even within* a "monetary dominance" regime, a rate hike that targets the risky rate may increase rather than decrease inflation.<sup>10</sup> This is because an increase in the (risky) nominal rate can increase the default risk, which is accommodated by a decrease in the risk-free rate and higher inflation ([Leeper and Leith 2016](#); [Bi, Leeper, and Leith 2018](#)).

Another relevant factor, especially in small open economies, is foreign exchange (FX) borrowing (sovereign and private), which can constrain the effectiveness of monetary policy in responding to inflationary pressures. High levels of FX borrowing can weaken the effect of MP as the balance sheet effect can undo the traditional exchange rate effect in small open economies. For example, high levels of FX-denominated household liabilities (for example, Hungary a few years back) can make an interest rate hike inflationary. This is because a rate hike causes an appreciation in the local currency and hence improves household balance sheets and stimulates spending. Moreover, it can reduce the default risk of FX consumer loans which frees up bank capital and makes

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<sup>7</sup> For a discussion of how the monetary policy framework can affect the Phillips curve, see [McLeay and Tenreyro \(2019\)](#).

<sup>8</sup> See [Gali \(2008\)](#); see Chapter 4, Table 4.1 and references therein).

<sup>9</sup> "Fiscal dominance" (as opposed to "monetary dominance") is a regime in which fiscal deficits are not very responsive to the real value of public debt burden and monetary policy is "passive" in that it makes sure government debt is stable without being too aggressive in combating inflation.

<sup>10</sup> In a "monetary dominance" regime, fiscal policy is "passive" and makes sure that debt is sustainable.

it possible to increase lending by banks. These balance sheet effects can lower the ability of monetary policy in managing the inflationary rebound in demand during the recovery.

Finally, financial development (availability of saving vehicles) can affect the extent of pent-up demand during the containment phase. For example, in a country with a low level of access to bank accounts, the rebound in demand may be small as most people are less able to save. Informal saving schemes (for example, rotating savings and credit associations, [ROSCAs](#)) can help mitigate this problem in some countries.

### *The behavior of inflation expectations*

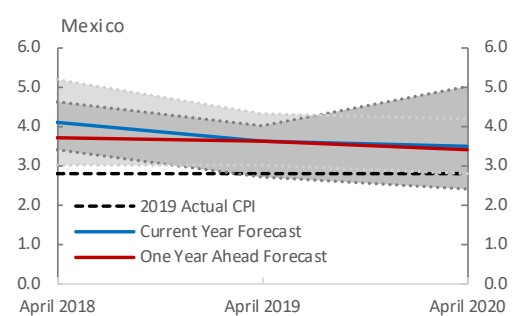
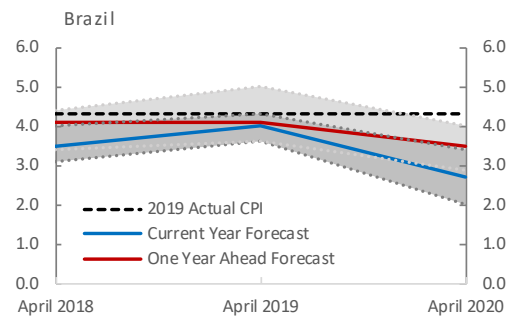
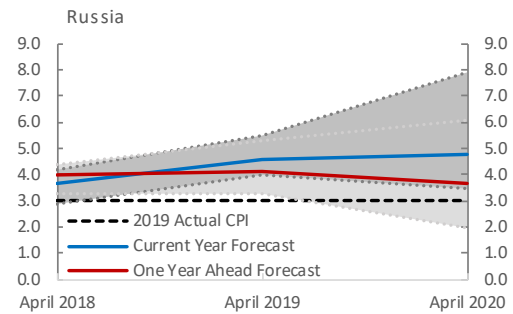
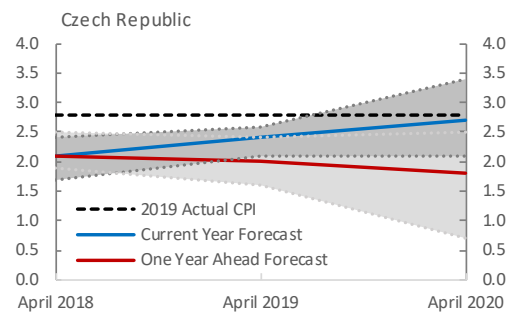
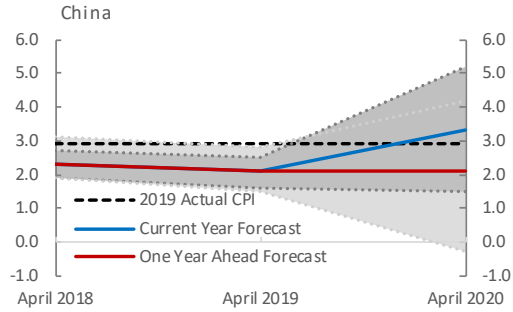
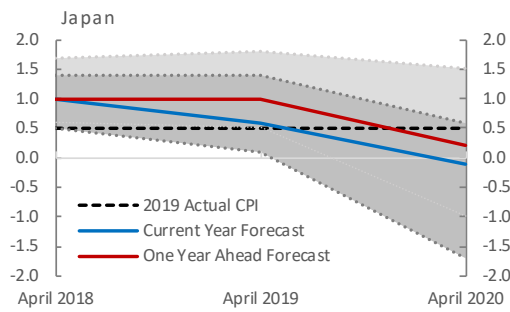
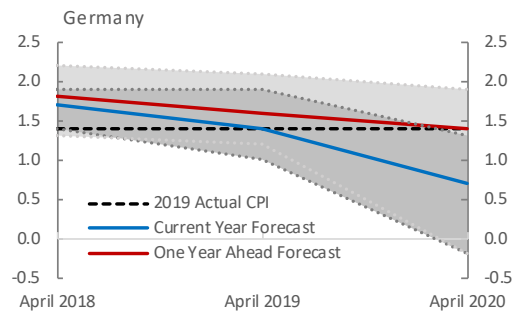
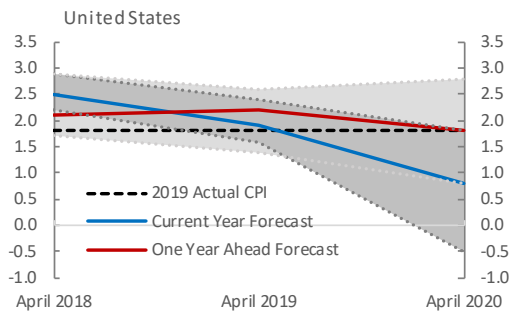
Measures of inflation expectations provide a good metric of how price dynamics might evolve in the medium term. Survey data from Consensus Forecast as of April 2020 show no obvious pattern of an upward move in inflation expectations. Actually, in a number of countries as varying as Brazil, Japan, and the United States, we observe a decline in one-year-ahead inflation forecasts. In other countries such as China and Russia, there is some increase in current-year forecasts. What is common across many countries, however, is an increase in the variance of expectations, plausibly indicating a rise in uncertainty (Figure 8).<sup>11</sup> These patterns suggest that inflation expectations have not shown a clear upward or downward trend since the emergence of COVID-19 but disagreement across respondents has increased, which could be a sign that the risk of inflation expectations unanchoring has risen. This is also in line with evidence from the Survey of Consumer Expectations in the United States ([Armantier and others 2020](#)).

**Figure 8. Disagreement among inflation forecasters has increased**

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<sup>11</sup> Updating the figure using July forecasts paint a similar picture. We prefer to compare forecasts as of April in 2018, 2019, and 2020 as it allows us capture the revision to inflation expectations when the pandemic shock is first realized. Note that the a rise in uncertainty is merely one interpretation of an increase in variance (see [Rich and Tracy 2010](#) for a discussion on the co-movement of expected inflation, disagreement among forecasters, and inflation uncertainty), disagreement among forecasters may increase for other reasons such as variety in the signals they receive. Also note that household inflation expectations may considerably differ from those of experts as reflected in the Consensus Forecasts.





Source: Consensus Economics, Inc.

Note: Blue and red lines, respectively, are current year forecasts and one year ahead inflation forecasts. On April 2018 forecasts are for 2018 and 2019, on April 2019 for 2019 and 2020, and on April 2020 for 2020 and 2021. Shaded areas indicate confidence bounds (minimum and maximum consensus forecast inflation rates), with the darker gray corresponding to the current year forecast and the lighter gray to the one-year-ahead forecast. The dotted black line indicates the 2019 actual inflation rate.

## Evidence on inflation during past epidemics, wars, and other disasters

Past epidemics, wars, and other disasters may also shed some light on the inflation dynamics to be expected during and after the COVID-19 pandemic. Mortality rates during the Spanish flu of 1918 have been shown to be positively correlated with higher inflation during the pandemic and a lower inflation during the recovery from pandemic. Nonetheless, the net effect of Spanish flu mortality on inflation (during plus after) were negligible ([Barro, Ursua, and Weng 2020](#)).

During both WWI and WWII, the price of most staples (corn, rye, barley, wheat; the exception appears to be rice) and meat (beef and pork) increased sharply (Figure 9). But in contrast to the Spanish flu, world wars mortality seems to have raised inflation on average both during and after the wars ([Barro, Ursúa, and Weng 2020](#)). The average annual inflation rate was about 17 percent across Canada, France, Germany, the United Kingdom, and the United States during WWI and 8 percent during WWII.

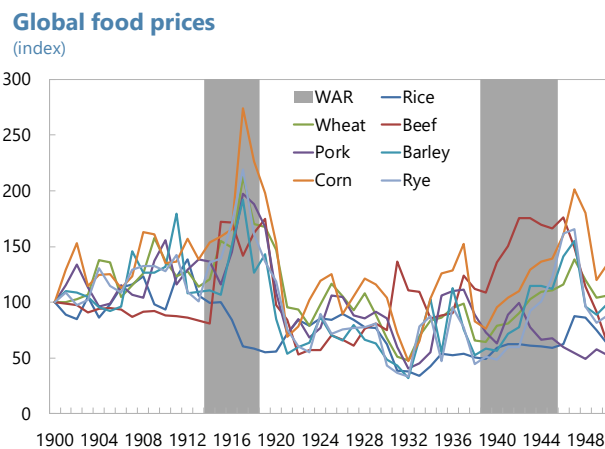
There are several differences between the world wars and the COVID pandemic. First, there is no destruction of physical capital during the COVID-19 pandemic as in the world wars, and the loss of lives will hopefully not be as dramatic. Second, the increase in debt-to-GDP might not be as much as in the world wars at least for advanced economies. Finally, there is a less-clear end to pandemics compared to the world wars. Even if a vaccine and/or treatment becomes available and is broadly accessible, the [take-up could be slow](#) if, for instance, trust in experts and the government is eroded. Although there is no physical destruction, slower resolution of uncertainty and persistent changes to individual choices and behavior (for example, social distancing becoming the norm) could delay a comeback in demand.

These differences could imply a less dramatic impact on the supply and a more gradual rebound in demand in the case of a pandemic and, hence, more manageable inflationary pressures during the recovery from COVID-19 ([Miles and Scott 2020](#)).

To shed further light on potential inflation dynamics related to COVID-19, we examine empirically the behavior of inflation around previous epidemics, weather-related disasters (floods, droughts, hurricanes) and other natural disasters (earthquakes and volcano eruptions).<sup>12</sup> We plot the median month-over-month inflation rates in the countries that experienced an event in different horizons: 12/6 months before the event, the month of the event, 3/6/12 months after the event. That is, we calculate the month-over-month changes first, create a data set that covers the country observations in each time horizon, and plot the median.

There appears to be some pick-up in inflation during all complex events, driven by food prices (Figure 10). This is more pronounced around epidemics than around weather-related events or other natural disasters. The pick-up is, however, short-lived.

**Figure 9. Food prices rose sharply during the two world wars**

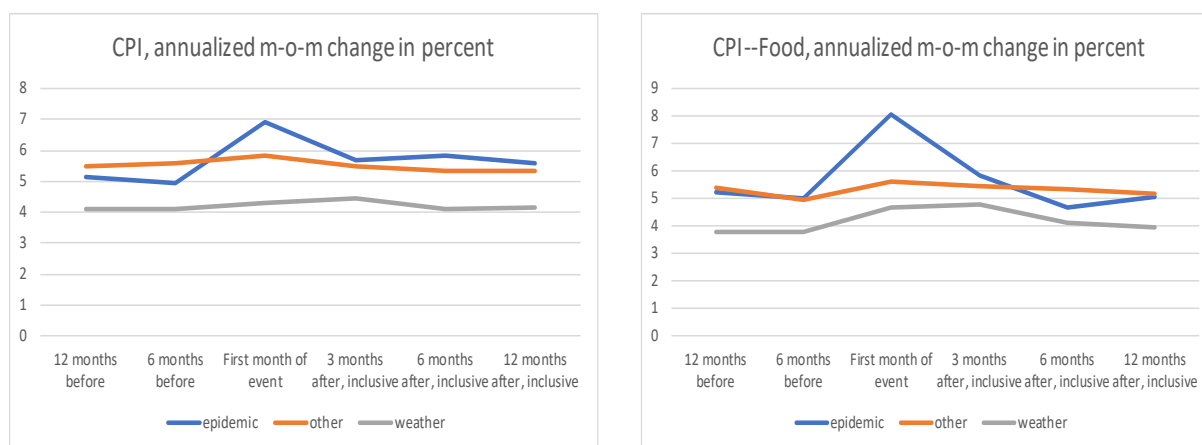


Sources: Global Financial Database.

**Figure 10. Inflation increases when an epidemic hits,**

**but this appears to be short-lived and driven by food.**

<sup>12</sup> The sample covers 107 countries between 1900 and 2019, although coverage for most countries start in 1950s.



Sources: IMF, International Financial Statistics; IMF, STA CPI Database; Global Financial Database; and EM-DAT.  
 Note: The figure plots the median month-over-month inflation rates in the countries that experienced an event in different horizons: 12/6 months before the event, the month of the event, 3/6/12 months after the event. "Weather" refers to floods, droughts, and hurricanes. "Other" captures natural disasters not related to the weather, that is, earthquakes and volcano eruptions.

Looking at country groups, this short-lived pick-up in inflation is more visible in AEs than it is in EMDEs. In a regression setup where we can control for country fixed effects, the coefficient on a dummy that marks the first month of an epidemic is positive while that on a dummy that indicates the rest of the epidemic episodes is negative (Table 1). This is in line with the pattern shown in the figure: a short-lived spike in inflation followed by a reversal to pre-epidemic levels. The coefficient on the first-month dummy is statistically significant for the food component of CPI and in EMDEs, but not in AEs.

**Table 1. Inflation Dynamics during Epidemics**

	Full sample		AEs		EMDEs	
	All items	Food	All items	Food	All items	Food
Epidemic=1 after first month	-0.171*** (0.042)	-0.021 (0.062)	-0.084 (0.071)	0.018 (0.141)	-0.177*** (0.045)	-0.021 (0.068)
First month=1	0.010 (0.070)	0.201* (0.109)	0.067 (0.077)	-0.048 (0.152)	-0.006 (0.079)	0.251** (0.127)
Constant	0.755*** (0.017)	0.599*** (0.025)	0.219*** (0.017)	0.225*** (0.033)	0.837*** (0.019)	0.670*** (0.030)
Clustered SE	No	No	No	No	No	No
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.228	0.062	0.095	0.080	0.218	0.054
Number of observations	7791	5714	975	868	6766	4808
Number of countries	107	91	18	17	87	72

Sources: IMF International Financial Statistics, IMF STA CPI Database, Global Financial Database, EM-DAT; staff calculations.

Note: The table shows the results of a regression where we regress the month-on-month inflation rate in the period covering the year before and the year after an epidemic on a dummy that takes the value of 1 in the first month of the epidemic and 0 otherwise, a dummy that takes the value of 1 in the subsequent months of the epidemic, and country and month fixed effects. Inflation data are winsorized. \*\*\*, \*\*, and \* denote statistical significance at the 1, 5, and 10 percent level, respectively.

We do acknowledge, however, that COVID-19 might be different from other exogenous shocks (epidemics and natural disasters) in the recent past, given its global nature and the magnitude of the economic impact so further research is required. Given that the pandemic hit most countries less than six months ago and many countries have just started reopening their economies, the analysis of inflation dynamics will continue to evolve as more data become available.

### III. KEY TAKEAWAYS

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This note discussed the potential drivers and dynamics of inflation in response to COVID-19 distinguishing between the containment and reopening phases. We argue that during the containment phase, supply disruptions due to the lockdown and hoarding due to panic buying could result in an increase in prices of critical goods (food and medical supplies). Early evidence from advanced and emerging market economies reveals an increase in food prices. However, beyond these critical goods we see no evidence of inflation.

It is too early to analyze the behavior of inflation following the reopening, but our discussion points to the relevance of factors such as pent-up demand, supply disruptions and scarring, changes in the bargaining power of labor, trade openness, fiscal space, and monetary policy. In EMs additional considerations include the level of financial development, the degree of central bank independence, and credibility and the extent of FX borrowing in the economy.

So far, measures of inflation expectations show no obvious pattern of an upward move in inflation in the next year, but there is a rise in the variance indicating significant uncertainty and a potential risk of de-anchoring. Going forward, more research is needed to examine the behavior and determinants of realized and expected inflation as the pandemic continues to unfold.

In terms of policies, several measures could help to address temporary price spikes, including (1) international coordination to secure food and medical supplies especially for low-income and fragile countries, (2) temporary price controls, (3) reallocation of production to increase the supply of essential goods, (4) limiting purchases to avoid hoarding, (5) reducing taxes on food and other essential goods and tapping into domestic emergency stocks to prevent speculative price bubbles from forming, and (6) using more targeted transfers—like food stamp programs—to address the needs of the most vulnerable populations at the country level.

As lockdowns start to be lifted, announcing a credible plan to open up the economy can reduce uncertainty and hence the extent of pent-up demand. This can mitigate both deflationary pressures due to lack of demand during the containment and the inflationary pressures due to a rebound in demand during the reopening. Policies that prevent scarring of the supply side can help supply go back to normal, mitigating supply-driven spikes in inflation during the reopening. Moreover, to avoid creating inflationary pressures, appropriate monetary and fiscal policy after the end of pandemic should be data dependent and based on the strength of the rebound in supply and demand.

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