

Box 2

Assessment of Macroeconomic Forecasting Errors in 2022

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After the Covid-19 pandemic, the Colombian economy in 2022 continued its strong recovery and expanded by 7.5% for the year, in an environment of significant inflation increases and high international and domestic uncertainty.

The economic growth and inflation escalations, particularly the magnitude thereof, were the result of successive shocks throughout the year which *Banco de la República's* technical staff (TS-Banrep) identified and subsequently included when updating its forecasts in the 2022 reports. These shocks were primarily related to problems in the global and local supply of food, raw materials and goods;¹ greater exchange rate pressures stemming, in part, from tighter-than-expected external financial conditions² and higher sovereign risk premiums reflecting greater domestic uncertainty; and strong domestic demand dynamics.

In this box we use the 4GM model, one of *Banco de la República's* central forecasting models,³ to interpret and compare the narratives of the shocks implicit in the forecast errors. These errors are measured as the difference between the observed macroeconomic variable data at yearend 2022, and the corresponding forecasts made by the TS-Banrep in January of the same year. This analysis is similar to the one described in De Castro-Valderrama *et al.* (2021) and is part of *Banco de la República's* annual internal evaluation of its forecasting process. The exercise is presented below for the annual headline inflation, inflation excluding food and regulated items, and for GDP growth.

1. Headline Inflation and Inflation Excluding Food and Regulated Items

Forecast errors in headline inflation and inflation excluding food and regulated items (Graph R2.1) during 2022 were high and reflected the unanticipated shocks that affected prices throughout the year.

Forecast errors in the basket excluding food and regulated items are explained mainly by unfavorable supply shocks, which are largely reflected in indexation to higher headline inflation values and a stronger-than-expected increase in the prices of tourism services and food away from home.⁴ The latter showed a surprising increase, in line with the rapid escalation in food prices. Likewise, there were also greater demand and exchange rate pressures evinced resulting from persistently worsening external financial conditions than those foreseen by the TS-Banrep in January 2022.

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1 Fallout from disruptions to global supply chains remained at the forefront in 2022 and exacerbated with Russia's invasion of Ukraine.

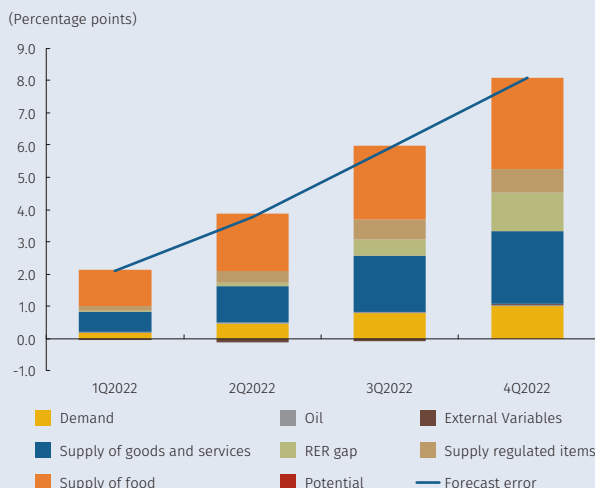
2 These tighter external financial conditions were a byproduct of a tighter monetary policy stance in the United States, increased risk perceptions for emerging markets, global geopolitical conflicts and fears of a global economic slowdown.

3 See <https://repositorio.banrep.gov.co/handle/20.500.12134/9812>

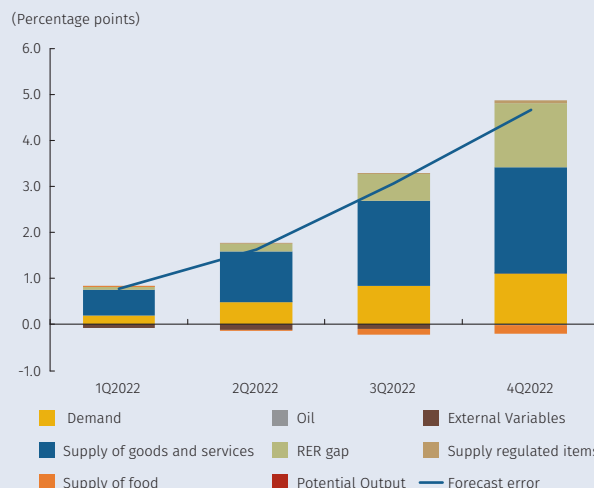
4 Although wages were not among the main drivers of the inflationary surge observed in 2022 (Pulido *et al.*, 2023), a fraction of the supply shocks to goods and services involved higher than expected labor costs.

Graph R2.1
Inflation forecasting error in 2022
(Percentage points)

A. Headline inflation (annual end-of-period, percentage)



B. Inflation excluding food and regulated items (annual end-of-period, percentage)



Note: the forecast error is calculated as the difference between the observed value and the forecasts made in January 2022, so that a positive value indicates that the final value observed was higher than the forecast and therefore the variable was underestimated. In each quarter, the bars represent the cumulative shocks that explain the discrepancy between the forecast and the observed data; thus, a bar above the horizontal axis indicates that more shocks materialized than what was initially expected by the technical staff. Total inflation in 1Q2022, for example, was underestimated mainly because shocks to goods, services and food were larger.
Source: Calculations by the authors.

In addition to the shocks that boosted prices of the basket excluding food and regulated items, headline inflation was affected by negative food-basket-related factors (Graph R2.1, panel A), such as persisting supply chain disruptions and global supply constraints, as well as the increase in international prices due to Russia’s invasion of Ukraine. These factors were accompanied by domestic supply problems, adverse weather conditions in the second half of the year, and higher-than-expected increases in gasoline prices, which affected both the baskets of regulated items and food. The basket of regulated items was also influenced by the unexpected increases in the CPI and PPI because of the indexation to these prices of certain utilities (see Box 1 of the January 2023 Report). It should be noted that, in both headline and core inflation, the shocks affecting the exchange rate and the strength of domestic demand became increasingly more significant as the year progressed, although supply shocks accounted for a larger share of the forecast errors.

2. GDP Growth

After the economic recovery in 2021, largely driven by the positive performance of private consumption, TS-Banrep expected demand to moderate in 2022, thereby significantly slowing the growth rate of the economy. This was partly due to the expectation of less favorable external conditions among high global inflation and a monetary policy tightening in the world’s main economies, a very uncertain international environment, elevated energy prices, and the prospect of a global economic slowdown. However, local economic activity continued on an upward trend, reaching high output levels and exceeding its sustainable productive capacity.

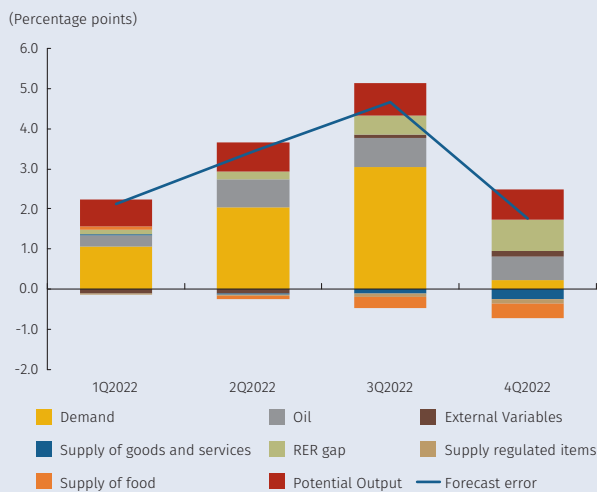
However, local economic activity continued on an upward trend, reaching high output levels and exceeding its sustainable productive capacity.

Graph R2.2 shows the economic growth forecast errors in 2022, both in terms of the annual growth of quarterly GDP and four-quarter accumulated GDP (panels A and B, respectively). The errors in the economic activity forecasts were mostly due to aggregate demand activity surprises, which were gradually included in the forecasts made throughout the year. This dynamic was related to higher-than-expected consumer credit growth, reduced savings, an expansionary fiscal policy and the effects of repressed demand after the pandemic, all this despite a monetary policy tightening instigated by the strong inflationary pressures experienced in 2022.

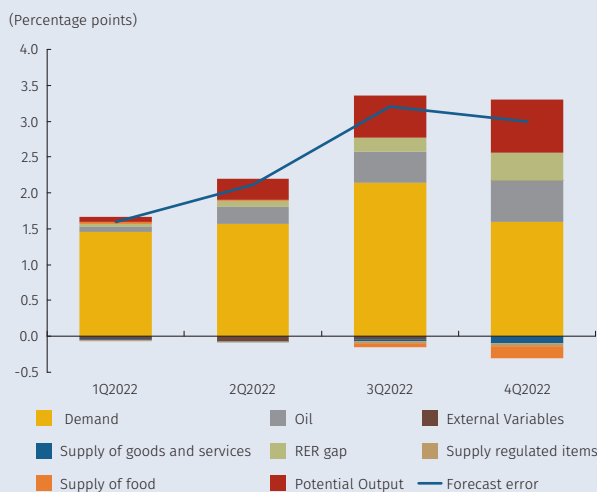
Additionally, the GDP growth forecast errors were due to a greater national income, on account of better oil prices in the first half of 2022, as well as the depreciation of the peso during the second half of the year. The latter had positive effects on the export sector, contributing to improved GDP performance.

Graph R2.2
Error in GDP growth forecasting in 2022
(Percentage points)

A. Quarterly GD growth (annual end-of-period, percentage)



B. Annual GDP growth



Note: the forecast error is calculated as the difference between the observed value and the forecasts made in January 2022, so that a positive value indicates that the final value observed was higher than the forecast.
Source: Calculations by the authors.

References

De Castro-Valderrama, Marcela, Santiago Forero-Alvarado, Nicolás Moreno-Arias, and Sara Naranjo-Saldarriaga. "Unraveling the Exogenous Forces behind Analysts' Macroeconomic Forecasts." *Borradores de Economía*, no. 1184 (2021). <https://doi.org/10.32468/be.1184>.

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Pulido, José, Hernando Vargas-Herrera, and Juan J. Ospina-Tejeiro. "The Labor Market in Colombia: Structural Features and the Role of Wages in the Post-Pandemic Inflationary Surge." *Borradores de Economía*, no. 1232 (2023). <https://doi.org/10.32468/be.1232>.