

Box 1

Determinants of Nonfood, Nonregulated Goods Inflation in Colombia: Evidence from a VAR under an Open-Economy Phillips Curve Approach

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Introduction

From a theoretical perspective, tradable-goods inflation can be described by a New Keynesian Phillips curve for an open economy, in which current inflation depends on inflation expectations and real marginal costs. Since the latter variable is not observable, the literature generally approximates its domestic component using real unit labor costs, defined as the ratio of real wages to labor productivity or, equivalently, as the share of wages in income. Likewise, the output gap is frequently used in empirical applications as a reduced form approximation for real marginal costs. In addition, in an open economy, international prices, the nominal exchange rate, and transportation costs affect import prices and, through these, firms' marginal costs and tradable-goods inflation. Consequently, the output gap and measures of labor costs are interpreted as alternative proxies for domestic marginal costs, while external variables capture cost shocks originating in international markets.

In Colombia, in 2026 to date, the year-on-year change in the consumer price index (CPI) for nonfood, nonregulated goods (SAR goods for their Spanish acronym) has been on an upward trend, despite the appreciation of the peso against the U.S. dollar.¹ Although exchange-rate appreciation tends to ease inflationary pressures on tradable goods by reducing the peso cost of imported goods and external inputs, the recent behavior of these prices suggests this effect has been constrained by other factors. In particular, strong domestic demand, reflected in a positive output gap, higher inflation expectations, and, more recently, the rebound in external nonfood, nonregulated goods inflation stand out.

Based on the above, this box presents an estimate of a structural VAR (vector autoregression) model to explain the dynamics of SAR goods inflation in Colombia. The structure incorporates: 1) external goods inflation, constructed using comparable price indices for the United States, China, and Germany, weighted according to their shares in Colombia's imports; 2) changes in the nominal exchange rate, which capture the exchange-rate pass-through to domestic prices; 3) the GDP gap, as an indicator of domestic demand and cost pressures; 4) twelve-month inflation expectations from surveys of analysts; and 5) SAR goods inflation. The VAR is identified using a Cholesky decomposition, with the variables ordered according to their degree of contemporaneous exogeneity. Under this specification, external goods inflation is considered the most exogenous variable, while Colombia's SAR goods inflation is the most endogenous.

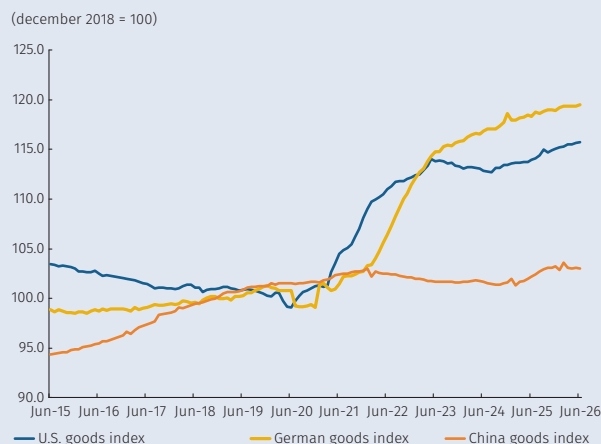
1. Construction of the external nonfood, nonregulated goods CPI

To measure external inflation for SAR goods in Colombia, an external goods CPI was constructed, using the subcategories that comprise this component of Colombia's CPI as a ben-

* The authors are members of the Programming and Inflation Department. The opinions herein expressed are solely the responsibility of the authors and do not necessarily reflect those of the Bank nor its Board of Directors.

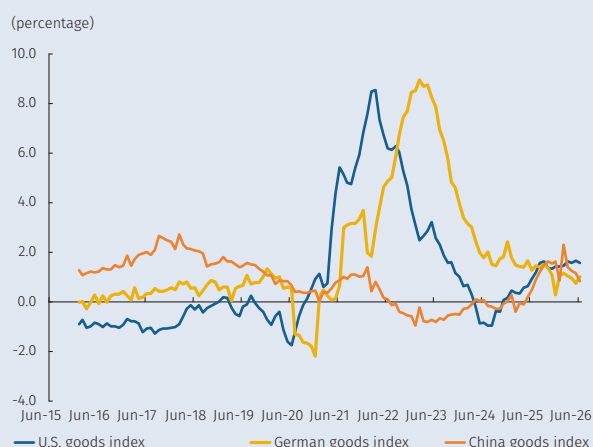
1 Seasonally adjusted year-on-year nonfood, nonregulated goods inflation has been on an upward trend since January 2025, and this trend has continued through 2026. As of June 2026, seasonally adjusted annual SAR goods inflation stood at 3.2%, while the year-on-year change in the peso-to-US-dollar exchange rate was -15.1%.

Graph B1.1
External nonfood, nonregulated goods CPI



Note: considers price indices with a December 2018 base of 100, seasonally adjusted.
Source: author's own calculations.

Graph B1.2
Year-on-year change in external nonfood, nonregulated goods CPI



Note: considers price indices with a December 2018 base of 100, seasonally adjusted.
Source: author's own calculations.

chmark. The exercise consisted of identifying, at the highest level of disaggregation available, comparable subcategories in the CPIs of the United States, China, and Germany. Based on these correspondences, an external SAR goods price index was constructed for each country in its respective currency. As shown in Graph B1.1, price behavior differs clearly between the pre- and post-pandemic periods. Between 2015 and 2019, the indices for the United States and Germany remained relatively stable, while China's index increased gradually. However, starting in 2021, goods prices in the United States and Germany underwent a pronounced and persistent change in trend, while China's index continued along the gradual path observed before the pandemic.

The post-pandemic inflation episode differed significantly across these countries in both magnitude and timing. In the United States, the annual change in the index peaked at 8.7% in March 2022, while in Germany the highest value, 9.0%, was observed nearly a year later, in February 2023. In China, by contrast, post-pandemic upward price pressures were moderate: the year-on-year change reached a post-pandemic peak of 1.4% in January 2022, below the levels observed before 2019, and then declined in the following months, falling into negative territory between 2022 and 2024. Starting in 2025, the year-on-year change in the indices has shown an upward trend, mainly in the United States and China, while in Germany it has exhibited a moderate downward trend. More recently, in June 2026, the annual change stood at 1.6% in the United States, 1.0% in Germany, and 0.8% in China (Graph B1.2).²

2. VAR model results

The model was estimated using monthly data from February 2015 through June 2026. The year-on-year results are obtained by accruing the changes observed over the previous twelve months.

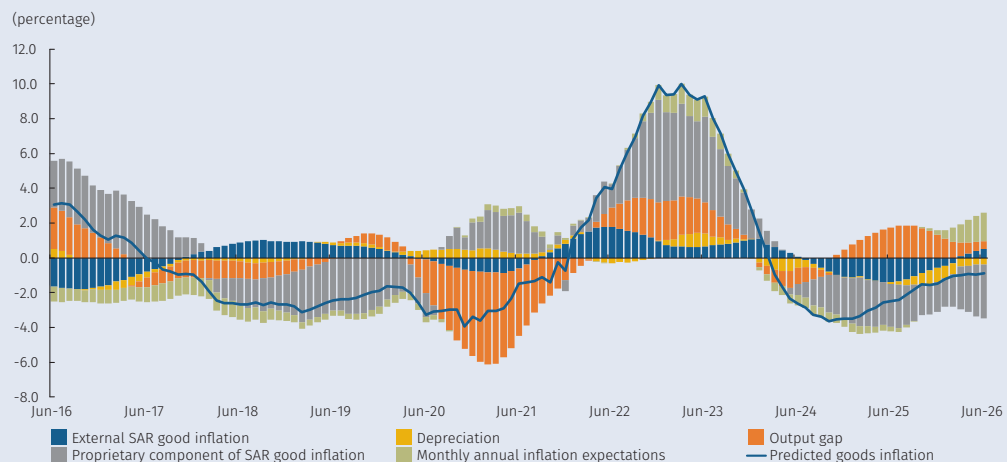
The historical breakdown of the twelve-month VAR model, presented in Graph B1.3,³ shows that external goods inflation and the GDP gap were relevant in explaining the increase in prices following the pandemic, together with positive contributions from depreciation, demand (output gap), and inflation expectations. In the current semester, the results show that the recent appreciation of the peso has helped ease goods inflation, but its effect has been insufficient to reverse the upward trend observed since early 2025. The evidence suggests that the leading sources of inflationary pressure have been the GDP gap, inflation expectations, and, more recently, external goods inflation.

² Alternative exercises and estimates were also conducted that included variables intended to approximate the relevant marginal costs within the Phillips curve framework. In particular, measures of international transportation costs, approximated by the difference between the CIF and FOB values of imports, as well as unit labor cost indicators for the manufacturing industry, were considered. However, the inclusion of these variables did not yield statistically or economically meaningful results and were therefore excluded from the model's final specification.

³ Contributions are expressed as deviations of inflation from its long-run average.

Graph B1.3

Historical breakdown of shocks: deviation of nonfood, nonregulated goods inflation from its long-term average



Note: considers price indexes whose base is December 2018 (=100), seasonally adjusted.
Source: author's own calculations.