

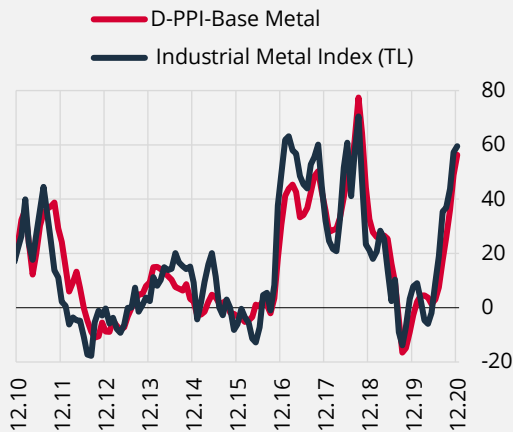
Box 2.4

Determinants of Producer Inflation and Risks

Domestic producer price (D-PPI) inflation, which was 5.53% in May 2020, soared in the second half of the year in response to the developments in exchange rates and international commodity prices and reached 25.15% in December. Despite the relative stability in exchange rates recently, sharp increases in international commodity prices weigh on inflationary pressures in many manufacturing industries as main input providers. Developments in agricultural commodity, oil and metal prices pose significant risks to consumer prices through the food, energy and core goods channels. This box discusses the risks to the inflation outlook in the coming period within the framework of the determinants of producer prices.

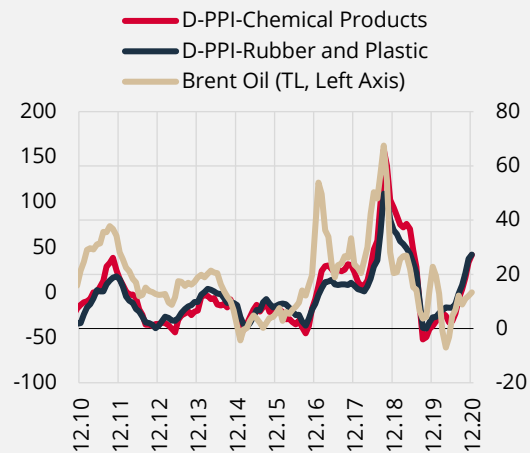
Considering the dynamics specific to Turkey's economy, most of the movements in producer prices may be said to reflect external cost factors such as exchange rate and import prices. By their nature, producer prices are more sensitive to exchange rate and import price shocks than consumer prices. In general, Turkish lira-denominated import prices are highly reflected in producer prices; in some intermediate goods sectors, the commodity price pass-through may approach one-to-one (Chart 1 and Chart 2).

Chart 1: D-PPI Base Metal and International Metal Prices (Annual % Change)



Sources: Bloomberg, TURKSTAT.

Chart 2: D-PPI Selected Items and Brent Oil Price (Annual % Change)

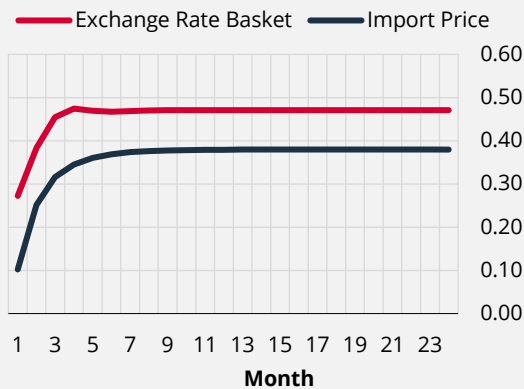


Sources: Bloomberg, TURKSTAT.

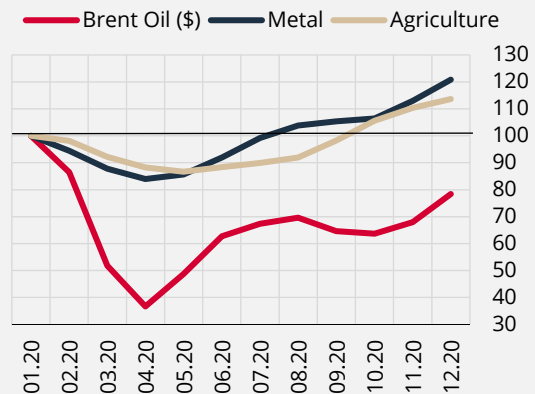
Studies show that domestic producer prices are more likely to be exposed to exogenous shocks as the use of imported inputs increases. However, the pass-through from import prices and exchange rates to producer prices differs in terms of size and speed¹. Estimations show that the 1% increase in the basket exchange rate change producer inflation by around 0.47 points on average and the pass-through is completed in approximately two quarters². A 1%-increase in import prices causes a 0.38 point-rise in producer inflation (Chart 3).

¹ See, Ertuğ, Özlü and Yüncüler (2018), Yüncüler (2011), Kara and Öğünç (2012), Özmen and Topaloğlu (2017).

² The exchange rate pass-through is based on the impulse-response analyses obtained from various VAR models using variables such as exchange rate basket, import price index in US dollars, output gap, minimum wage and domestic producer prices.

Chart 3: Cumulative Currency Pass-Through to Producer Prices (% Point)


Source: CBRT.

Chart 4: International Commodity Prices (January 2020=100)


Sources: Bloomberg, Goldman Sachs.

Despite the recent appreciation in the Turkish lira, the strong upward trend in international commodity prices leads to a continued rise in producer inflation through the import prices channel (Chart 4). In order to evaluate the risks of these developments to producer prices, an inflation equation is estimated for the period of 2012-2020 on a monthly frequency. The variables in the equation are expressed as monthly percentage change, and only the output gap variable (deviation from the trend of industrial production) is included as percentage points.

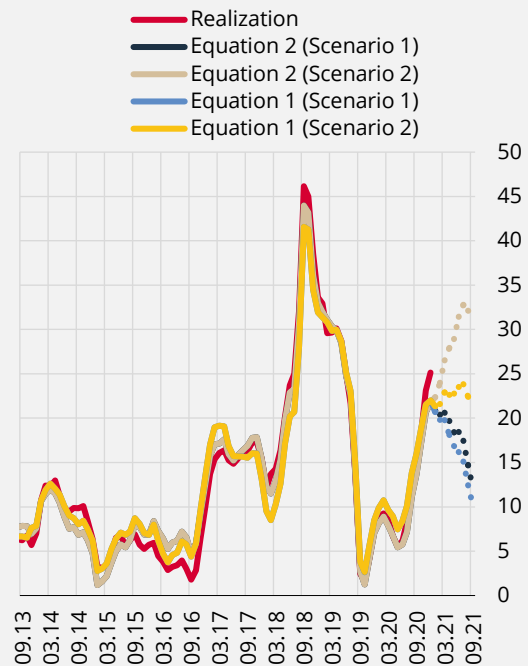
Table 1: Model Results³

Sample: 2012M1 - 2020M12	Equation 1	Equation 2
Constant	0.19***	0.12**
D-PPI (t-1)	0.36***	0.25***
Dollar (t)	0.29***	0.25***
Brent Oil (t)	0.01***	0.02***
Industrial Metal (t)	0.03***	0.04***
FAO Food Price Index (t)	0.09***	0.06***
FAO Food Price Index (t-1)	0.07**	0.06***
Paper	-	0.15***
Minimum Wage	-	0.05***
Output Gap	-	0.03***
Dummy 09-2018	5.10***	4.54***
Dummy 11-2012	-	1.89***
Adjusted R²	0.88	0.91

Sources: CBRT, TURKSTAT.

** Statistically significant at 5 % level.

*** Statistically significant at 1% level.

Chart 5: D-PPI and Composite Indicator (Annual % Change)

³ Dummy variables are used for September 2018 in Equation 1, and for September 2018 and November 2012 in Equation 2.

Estimation results confirm that the exchange rate and international commodity prices have a significant effect on producer inflation (Table 1). A significant part of the cost effect in producer inflation, which stood at 25.15% as of December, can be attributed to the exchange rate. The upward trend in international commodity prices in the second half of the year also played a major role in the recent developments. However, increases in international food, oil and metal prices fall short of explaining the course of producer inflation in recent months (Equation 1) and pandemic-specific sectoral price shocks, such as paper products, also exert an additional upward pressure (Equation 2). In order to quantify the possible effects of the upward trend in commodity prices on producer inflation, two different scenario analyzes have been conducted by using these equations. In Scenario 1, where exchange rate and commodity prices remain constant at their current levels, producer inflation is estimated to decline from the beginning of the second quarter. In Scenario 2, where the exchange rate remains constant and foreign prices continued the recent up trend, producer inflation is expected to increase further reaching quite high levels, depending on the course of paper products in particular (Chart 5).

In sum, the news flows regarding the course of the pandemic have a significant impact on expectations regarding the global growth outlook, and especially on energy and metal commodity prices. In addition, global drought and food policies adopted by countries against the pandemic have recently caused sharp increases in agricultural commodity prices. All these developments keep the upside risks to the producer inflation outlook alive despite the relative stability in exchange rates. These supply-side factors affect consumer inflation through the energy, core goods and food prices channels.

References

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