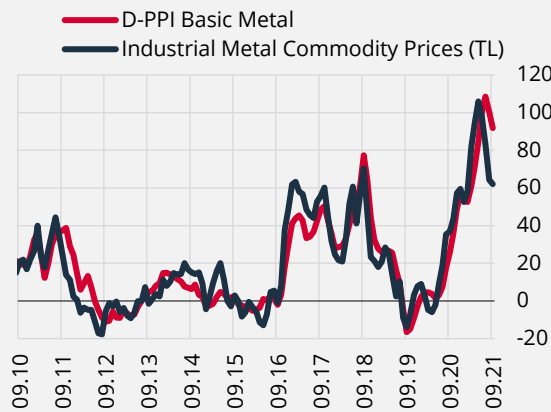


Box 2.4

Domestic Basic Metal Industry Price Dynamics: Recent Trends

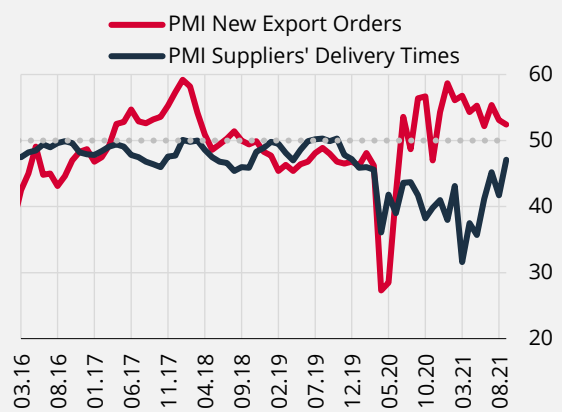
In addition to being one of the leading exporting sectors in Turkey, the basic metal industry also has a large impact on other producer prices as it provides input to many sectors such as automotive, machinery, electrical equipment, construction and energy. This box examines the price dynamics of the basic metal industry in greater detail as this sector had the second highest annual increase (91.73%) among the subgroups of domestic producer prices as of September 2021 (the highest being registered in refined petroleum products with 102.01%), and as it has strong connections with other manufacturing industry branches. Domestic basic metal prices respond quickly and sharply to international metal prices and exchange rate developments due to the facts that producer prices take place in the earlier stages of the supply chain and Turkey is an open economy (Chart 1).

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



Sources: Bloomberg, CBRT, TURKSTAT.

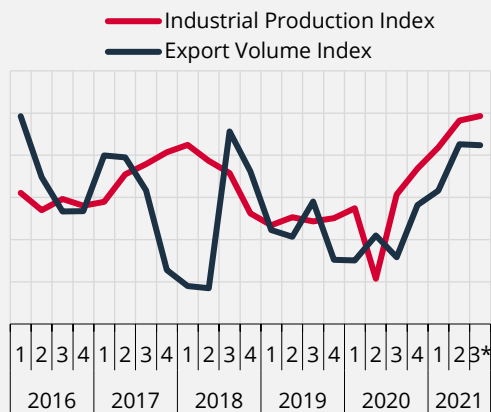
Chart 2: PMI Manufacture of Basic Metals: New Export Orders and Suppliers' Delivery Times*



Source: IHS Markit.

*A decrease in the PMI delivery time means longer delivery times.

Chart 3: Manufacture of Basic Metals and Exports (Seasonally and Calendar Adjusted, 2015=100)



Sources: CBRT, TURKSTAT.

* The third quarter data is the average for July and August.

Chart 4: Business Tendency Survey Manufacture of Basic Metals Registered Orders (Seasonally and Calendar Adj., Registered Orders Compared to Normal Levels)



Source: CBRT.

Econometric model estimations confirm this situation by showing that the monthly price changes in the domestic basic metal industry mostly reflect the changes in input costs such as exchange rates and commodity prices (Table 1, columns I and II). Changes in these items explain 88% of the variation in domestic prices for the given period. According to the equation results, while the exchange rate changes are reflected in prices in a short time, the reflection of the developments in international metal prices spreads over time (Table 1). Depending on factors such as the degree of dependence on imported inputs, the technology intensity of the manufactured product, the share of value added created in the manufactured product, and the integration of the relevant sectors with the outside world, the sensitivity of producer prices to external prices could be high in Turkey. As a matter of fact, the long-term coefficient estimates presented in the table signal that the exchange rate and commodity price pass-through are close to one-to-one in the basic metal industry.

On the other hand, Chart 1 indicates that despite the annual slowdown in TL-denominated international metal price pressures after May, the slowdown in the inflation in domestic basic metal industry remained limited. In the current conjuncture, the leading factors that influence domestic producer price dynamics include the sectoral supply shocks recorded in the post-pandemic period, the extended delivery times, and the differentiated outlook in metal products, as well as the acceleration in industrial production, overall orders and exports (Charts 2-4). Accordingly, the models were extended to measure the impact of PMI delivery time, PMI export orders and Business Tendency Survey (BTS) order indicators (currently registered domestic market, export and total orders compared to their normal levels) (Table 1, columns III-VI). The results show that supply-side constraints arising from longer delivery times in the basic metal industry have a statistically significant effect on prices. According to the findings, export orders were significant at the 10% level (Table 1, column IV). Among BTS order indicators, total registered orders were found to have a significant effect, rather than the distinction between domestic and foreign markets (Table 1, column V). Among the models, equation (VI) has the highest explanatory power for the given period; results indicate that while the domestic price dynamics of the basic metal sector are mostly determined by the external price and exchange rate developments, the supply constraints and the total registered orders also have statistically significant effects.

Table 1: Model Results

Dependent Variable: D-PPI Basic Metal Industry Prices^(a)						
Sample: 2016:09 – 2021:09	(I)	(II)	(III)	(IV)	(V)	(VI)
Constant Term	0.07	0.10	-0.15	-0.14	0.45**	0.20
D-PPI Basic Metal Industry Prices (t-1)	0.29***	0.30***	0.27***	0.27***	0.29***	0.26***
US Dollar (t)	0.67***	0.68***	0.66***	0.67***	0.66***	0.65***
International Metal Prices (t)	0.17***	0.16***	0.14**	0.14**	0.17***	0.14**
International Metal Prices (t-1)	0.19***	0.22***	0.21***	0.18***	0.20***	0.19***
International Metal Prices (t-2)	0.04					
International Metal Prices (t-3)	0.05					
International Metal Prices (t-4)	0.10	0.13***	0.12**	0.10*	0.09*	0.08
International Metal Prices (t-5)	0.17***	0.16***	0.16***	0.15***	0.12**	0.12**
PMI Basic Metal Delivery Time (t, Deviation from 50) ^(b)			- 0.10**	- 0.10***		- 0.09***
PMI Basic Metal Export Orders (t, Deviation from 50)				0.05*		
BTS Overall Registered Orders (t-1)					0.03***	0.03**
Adjusted R ²	0.88	0.88	0.89	0.89	0.89	0.90
Exchange Rate Pass-Through (Long Term)	0.95	0.97	0.91	0.91	0.93	0.88
International Metal Prices Pass-Through (Long Term)	1.01	0.97	0.87	0.78	0.80	0.72

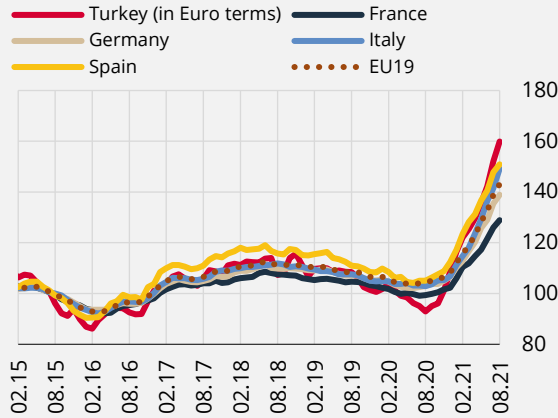
Sources: CBRT, TURKSTAT.

(a) In the model, monthly percentage changes of the relevant variables were used for the variables other than the PMI and BTS indicators. PMI indicators were used in the form of deviation from 50.

(b) A decrease in the PMI delivery time means longer delivery times and more prominent supply constraints.

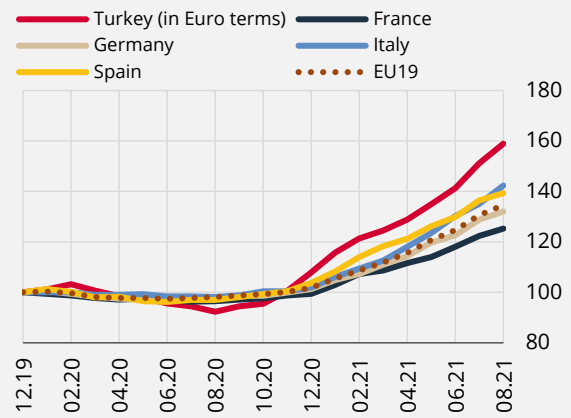
***, ** and * show the statistical significance at 1%, 5% and 10% levels, respectively.

Chart 5: D-PPI Basic Metal Industry Price Index: Comparison Between EU Countries and Turkey (Level, 2015=100, in Euro terms)



Sources: CBRT, EuroStat.

Chart 6: D-PPI Basic Metal Industry Price Index: Comparison Between EU Countries and Turkey (Level, 2019 December=100, in Euro terms)



Sources: CBRT, EuroStat.

How does the course of domestic basic metal industry prices compare to other countries?

Under the assumption that the exchange rate pass-through to the basic metal industry sector in D-PPI is one-to-one, basic metal industry prices are calculated in euro terms and compared with the basic metal industry producer prices of European Union countries (Chart 5). According to this simple analysis, when the exchange rate effect is adjusted (i.e., prices are compared in euro terms), producer prices of the basic metal industry in Turkey generally follow a trend similar to that in EU countries. Focusing on the pandemic period, prices declined faster than in EU countries at the beginning of the pandemic, but this trend reversed at the end of 2020, and the basic metal industry prices in Turkey increased more than the EU average in euro terms (Chart 6). Field observations indicate that in addition to domestic supply constraints, there is an additional demand for basic metal industry in Turkey due to global disruptions in production. In this context, it should be noted that although producer prices largely reflect the impact of cost-related factors such as exchange rates and import prices, prices can also be affected by supply and demand conditions from time to time. As a matter of fact, the estimations made for the D-PPI basic metal industry price dynamics point to the effects of the recent significant increase in external price pressures as well as supply shortages due to the longer delivery times and the strong course in overall orders. In similar periods of rapid recovery in global demand, capacity constraints together with the stronger demand can lead to a surge in domestic prices. These increases in domestic basic metal industry prices have a negative impact on consumer inflation mainly through the core goods.