

Macro: Bridge day effects negatively affected industrial production

The Industrial Production Index (IPI) declined by 4.9% mom and 3.4% yoy in April. In April, industrial production was negatively affected by i) 1 less working day compared to April last year, ii) sharp declines in sectors with historically high volatility, and iii) bridge days due to the combination of Ramadan Eid (April 10-12) and April 23 holidays with the weekend. While the first effect limited the annual industrial production by 3 points, we estimate the combined impact of the second and third effects on the monthly change to be in the range of 4-4.5 points. As a result, we estimate the monthly decline in the underlying trend of the IPI to be in the range of 0.5%-1.0%. This value is more in line with the slowdown implied by manufacturing data such as PMI and BTS. We expect the moderate deceleration in the underlying trend to continue in May. However, we are very likely to see a month-on-month increase due to the technical rebound caused by the bridge days. Evaluating April and May together next month will be a more useful approach to understand the course of industrial production and the sectoral composition of the slowdown in the underlying trend.

In April, the IPI decreased by 3.4% yoy and 4.9% mom on a seasonally adjusted basis (Charts 1 and 2). Excluding the regular calendar effects, the annual decline was more limited at 0.7% (Chart 1). The sharp monthly decline left output in April 4.2% below the average for the first-quarter (Charts 3 and 4).

Chart 1. Industrial Production Index (IPI) (yoy)

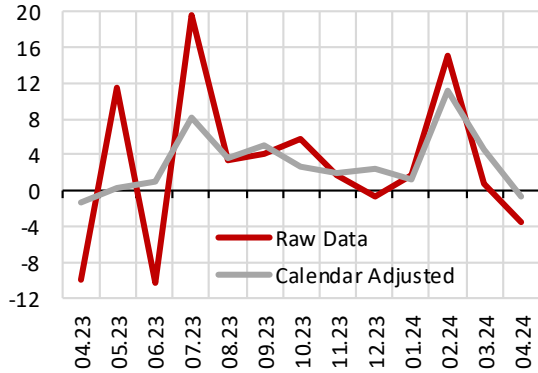


Chart 2. IPI (seasonally and calendar adjusted)

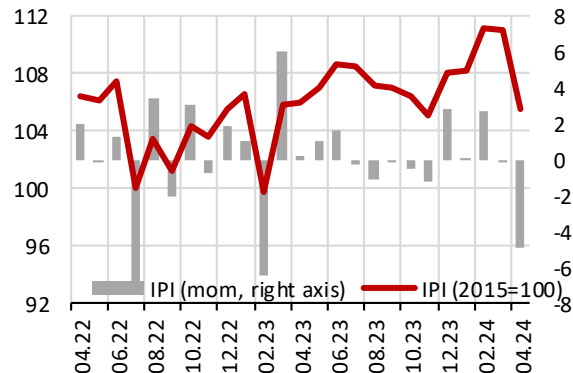
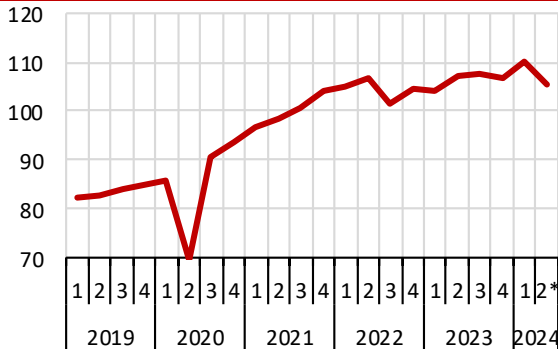
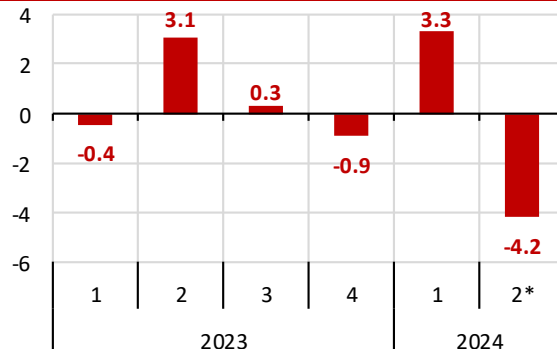


Chart 3. IPI (seasonally and calendar adjusted, 2021=100)



* As of April
Source: Turkstat

Chart 4. IPI (seasonally and calendar adjusted, qoq)

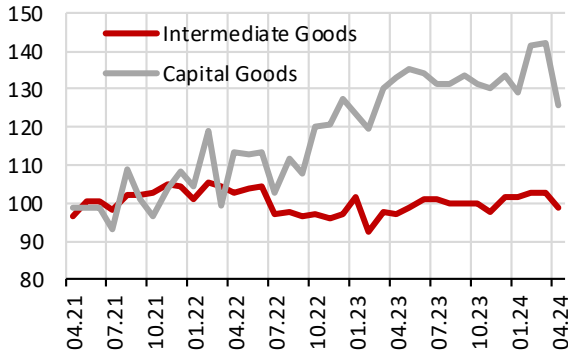


* As of April
Source: Turkstat

The extension of the Ramadan holiday to 9 days in April and the fact that the monthly decline was larger than implied by leading indicators across all sectors (Charts 5-8) suggest that the additional working day losses caused by combining weekday public holidays with weekends, so-called bridge days, were effective.

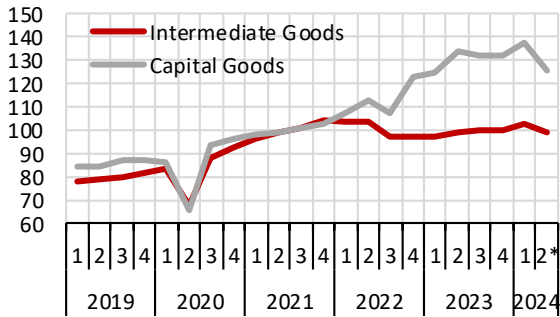
The fact that the standard seasonal and calendar adjustment methods do not take into account bridge days as calendar effects causes the seasonally and calendar adjusted series to be volatile in the months with bridge days and the first month after. Therefore, technical fluctuations due to bridge day effects should also be excluded in order to assess the underlying trend.

Chart 5. IPI (seasonally and calendar adjusted. 2021=100)



Source: Turkstat

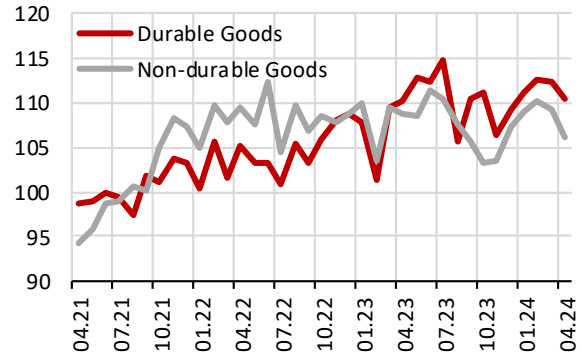
Chart 7. IPI (seasonally and calendar adjusted. 2021=100)



* As of April

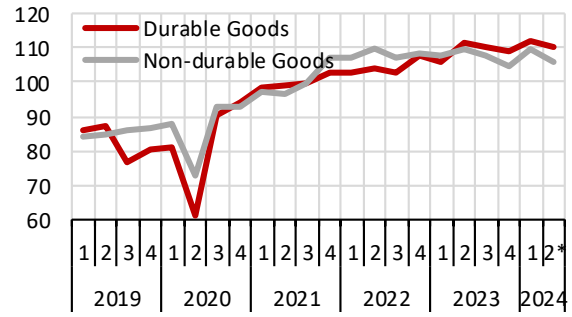
Source: Turkstat

Chart 6. IPI (seasonally and calendar adjusted. 2021=100)



Source: Turkstat

Chart 8. IPI (seasonally and calendar adjusted. 2021=100)



* As of April

Source: Turkstat

This year, the holiday of Ramadan fell between Wednesday, April 10 and Friday, April 12. In the standard definition of a working day, weekdays and Saturday are considered workdays. Given this information, Monday April 8, Tuesday April 9 before noon and Saturday April 13 can be defined as bridge days. In addition, since April 23 is National Sovereignty and Children's Day falls on Tuesday, Monday, April 22 can also be considered as a bridge day. In total, 3.5 potential working days can be defined as a bridge day.

1 bridge day is estimated to reduce industrial production by about 0.8 points.¹ Therefore, it is likely that there will be a 2.8-point bridge day effect on the IPI in April. However, considering that the holiday period does not coincide with the summer months and that the tendency to extend the holidays both during Ramadan and April 23 will be low, it would be a healthier assumption to consider the effective bridge day as 2.5-3 days. Accordingly, **we estimate the bridge day effect in April to be in the range of 2.0-2.5 points.** Therefore, we can consider the monthly decline excluding the bridge day to be in the range of 2.5-3.0% instead of 4.9%.

Another important factor that should be excluded when interpreting the underlying trend is the movement in sectors such as the manufacture of other transport equipment, the manufacture of computers, electronic and optical products, etc., which are very volatile on a monthly basis, as they

¹ See CBRT Inflation Report 2019-IV, Box 4.1., Bridge Day Effects on Economic Activity.

have been for many months. In April, these sectors fell by 21.3% and 29.7% mom, respectively, and made a negative contribution of around 2.0 points to the monthly change in the IPI.

All in all, we estimate the monthly decline in the underlying trend of the IPI, excluding bridge day effects and high volatility sectors, to be in the range of 0.5%-1.0%. This is more in line with the slowdown implied by manufacturing data such as PMI and BTS. We expect the moderate deceleration in the underlying trend to continue in May. However, a month-on-month increase is very likely due to the technical rebound caused by the bridge day.

As the bridging day effects make it difficult to interpret April's movements on their own, we will not provide sectoral details for this month. Evaluating April and May together next month will be a more useful approach to understand the course of industrial production and the sectoral composition of the slowdown in the underlying trend.

Table 1. Industrial Production Index (Annual Percentage Change)

| | Jan.24 | Feb.24 | Mar.24 | Apr.24 | 2023-Q3 | 2023-Q4 | 2024-Q1 | 2024-Q2* |
|---|------------|-------------|------------|-------------|------------|------------|------------|-------------|
| IPI | 1.7 | 15.0 | 0.9 | -3.4 | 8.5 | 2.2 | 5.4 | -3.4 |
| Mining and quarrying | 6.0 | 15.2 | 8.2 | 10.4 | 8.8 | 5.1 | 9.5 | 10.4 |
| Mining of coal and lignite | 5.2 | 19.1 | 11.0 | 20.7 | -27.2 | -27.5 | 11.0 | 20.7 |
| Extraction of crude petrol. and n. gas | -16.1 | -4.3 | 32.2 | 25.8 | 12.9 | 10.3 | 3.9 | 25.8 |
| Mining of metal ores | 20.1 | 17.2 | 1.6 | 11.4 | 33.9 | 26.5 | 12.6 | 11.4 |
| Other mining and quarrying | -7.6 | 17.4 | 5.8 | -0.5 | -6.0 | -6.2 | 4.1 | -0.5 |
| Manufacturing | 1.1 | 15.7 | 0.1 | -4.5 | 8.4 | 2.4 | 5.1 | -4.5 |
| Food products | 11.1 | 17.5 | 3.3 | 5.8 | 1.3 | 9.9 | 10.3 | 5.8 |
| Beverages | 18.3 | 24.1 | 9.6 | 11.3 | 7.5 | -6.3 | 16.6 | 11.3 |
| Tobacco products | 16.6 | 35.9 | 11.6 | -3.9 | 25.2 | 8.0 | 20.4 | -3.9 |
| Textiles | -4.7 | 14.9 | -3.6 | -7.7 | -2.5 | -5.4 | 1.3 | -7.7 |
| Wearing apparel | -13.4 | -8.8 | -14.2 | -20.5 | -4.2 | -13.1 | -12.3 | -20.5 |
| Leather and related products | -20.6 | -10.4 | -20.2 | -20.2 | 1.2 | -15.5 | -17.4 | -20.2 |
| Wood and cork products | -2.5 | 12.1 | -6.1 | -13.8 | 8.0 | 7.3 | 0.3 | -13.8 |
| Paper and paper products | 2.7 | 13.8 | 3.8 | 5.0 | 3.3 | -0.7 | 6.5 | 5.0 |
| Recorded media | -9.5 | 1.2 | -11.6 | -16.6 | -16.6 | -17.3 | -7.1 | -16.6 |
| Coke and refined petroleum products | 6.4 | 25.8 | 8.9 | 12.2 | -1.3 | 7.8 | 12.8 | 12.2 |
| Chemicals and chemical products | 0.7 | 17.4 | 1.3 | -0.5 | -4.8 | -1.2 | 5.8 | -0.5 |
| Basic pharmaceutical products | -3.5 | 8.6 | -1.8 | 1.8 | 22.9 | 3.8 | 1.1 | 1.8 |
| Rubber and plastic products | -2.0 | 9.1 | -2.8 | -7.5 | 8.4 | 0.4 | 1.1 | -7.5 |
| Other non-metallic mineral products | -7.3 | 19.9 | 3.5 | -2.4 | 3.6 | -0.8 | 4.3 | -2.4 |
| Base metals | 7.4 | 22.1 | 4.8 | 5.3 | 4.1 | 8.3 | 10.7 | 5.3 |
| Fabricated metal products | 1.2 | 13.0 | -3.2 | -11.9 | 17.9 | 5.9 | 3.1 | -11.9 |
| Computer. electronic and optical products | -11.5 | -19.6 | 30.3 | 4.4 | 47.6 | 8.8 | 0.9 | 4.4 |
| Electrical equipment | 4.1 | 14.1 | 3.5 | -1.1 | 12.5 | 5.5 | 7.0 | -1.1 |
| Machinery and equipment | -5.4 | 0.3 | -7.2 | -12.0 | 12.9 | 4.0 | -4.3 | -12.0 |
| Motor vehicles | 6.9 | 24.6 | -2.1 | -9.8 | 15.2 | 8.6 | 8.8 | -9.8 |
| Other transport equipment | 32.0 | 113.6 | 6.3 | -13.2 | 88.4 | -1.3 | 39.6 | -13.2 |
| Furniture | -4.1 | 8.5 | -7.6 | -13.2 | 1.4 | -11.2 | -1.7 | -13.2 |
| Other manufacturing | 6.0 | 14.2 | -4.4 | -12.7 | 5.8 | 6.0 | 4.4 | -12.7 |
| Repair and installation of mach. and equip. | 9.4 | 29.5 | 11.3 | 16.2 | 35.1 | 23.1 | 16.4 | 16.2 |
| Electricity. gas. steam | 8.4 | 9.1 | 5.1 | 1.6 | 5.3 | 2.9 | 7.5 | 1.6 |
| IPI | 1.7 | 15.0 | 0.9 | -3.4 | 8.5 | 2.2 | 5.4 | -3.4 |
| Intermediate Goods | 0.0 | 15.5 | 1.5 | -1.9 | 6.6 | 3.3 | 5.1 | -1.9 |
| Durable Consumer Goods | 5.1 | 16.6 | 1.4 | -1.0 | 10.5 | -1.3 | 7.1 | -1.0 |
| Non-durable Consumer Goods | 0.5 | 7.9 | -5.5 | -6.4 | 0.4 | 0.4 | 0.6 | -6.4 |
| Energy | 7.1 | 12.5 | 7.8 | 6.7 | 1.7 | 2.3 | 9.0 | 6.7 |
| Capital Goods | 4.8 | 23.7 | 2.3 | -8.5 | 26.5 | 6.0 | 9.5 | -8.5 |
| Low Technology | 0.3 | 10.6 | -3.6 | -5.8 | -0.3 | -0.9 | 1.9 | -5.8 |
| Medium-Low Technology | 0.9 | 17.9 | 1.7 | -0.7 | 10.3 | 6.1 | 6.2 | -0.7 |
| Medium-High Technology | 3.8 | 15.6 | -2.1 | -7.5 | 14.5 | 2.4 | 5.1 | -7.5 |
| High Technology | -2.1 | 37.3 | 23.3 | -2.8 | 42.5 | 8.7 | 20.7 | -2.8 |

* As of April.

Source: TURKSTAT

Table 2. Industrial Production Index (Seasonally and Calendar Adjusted)

| | Monthly % Change | | | | Quarterly % Change | | | |
|---|------------------|-------------|-------------|-------------|--------------------|-------------|------------|-------------|
| | Jan.24 | Feb.24 | Mar.24 | Apr.24 | 2023-Q3 | 2023-Q4 | 2024-Q1 | 2024-Q2* |
| IPI | 0.1 | 2.7 | -0.1 | -4.9 | 0.3 | -0.9 | 3.3 | -4.2 |
| Mining and quarrying | 4.3 | -3.4 | 3.5 | -1.3 | 9.2 | 1.5 | 0.4 | -0.2 |
| Mining of coal and lignite | 11.1 | -11.4 | 2.5 | 7.3 | 5.5 | 6.6 | 8.5 | 4.6 |
| Extraction of crude petrol. and n. gas | 7.9 | 0.0 | 32.6 | -1.8 | 7.2 | -0.6 | -2.3 | 17.5 |
| Mining of metal ores | -2.1 | -5.3 | -2.2 | 4.0 | 14.2 | 2.0 | -6.8 | 0.6 |
| Other mining and quarrying | 6.0 | 3.5 | 2.6 | -12.4 | 3.8 | -0.6 | 7.9 | -9.9 |
| Manufacturing | -0.5 | 3.2 | -0.2 | -5.3 | -0.5 | -0.8 | 3.5 | -4.4 |
| Food products | 4.7 | 2.1 | -4.9 | -0.9 | 2.0 | 0.5 | 6.9 | -3.5 |
| Beverages | 11.4 | 2.5 | -5.5 | 2.3 | 1.1 | 3.1 | 10.7 | -0.7 |
| Tobacco products | -3.2 | 7.2 | -0.4 | -5.7 | 4.0 | -3.0 | 1.1 | -3.8 |
| Textiles | 0.1 | 0.7 | 1.6 | -1.6 | -2.6 | -3.5 | 2.6 | -0.3 |
| Wearing apparel | -0.5 | -1.7 | 4.2 | -6.9 | -10.4 | -5.9 | 2.9 | -4.9 |
| Leather and related products | -5.2 | -1.8 | 2.8 | -3.9 | -7.0 | -5.3 | -2.2 | -2.7 |
| Wood and cork products | 1.2 | 1.7 | -1.5 | -9.2 | -1.1 | -0.8 | 3.4 | -9.6 |
| Paper and paper products | 2.1 | 2.9 | -1.1 | 0.4 | 4.9 | -3.6 | 3.9 | 0.6 |
| Recorded media | -1.1 | 4.5 | 4.0 | -3.2 | -7.7 | -5.9 | 3.9 | 0.8 |
| Coke and refined petroleum products | -1.9 | 0.7 | -2.4 | 0.6 | 4.5 | 8.1 | -3.0 | -0.8 |
| Chemicals and chemical products | 2.3 | 1.3 | -0.1 | -2.9 | -2.2 | 2.9 | 3.9 | -2.6 |
| Basic pharmaceutical products | -11.1 | 5.4 | 4.6 | -4.3 | 14.5 | -9.3 | -0.6 | 0.3 |
| Rubber and plastic products | 1.5 | -0.1 | -1.0 | -3.9 | -1.0 | -2.2 | 4.1 | -4.5 |
| Other non-metallic mineral products | 2.8 | 3.6 | -2.3 | -5.7 | 0.9 | -1.5 | 4.7 | -6.1 |
| Base metals | 3.6 | -3.7 | 0.2 | -1.8 | 0.1 | 3.7 | 3.1 | -2.9 |
| Fabricated metal products | -2.8 | 1.3 | 1.9 | -4.8 | -2.5 | -3.5 | 2.1 | -3.2 |
| Computer, electronic and optical products | -21.8 | -1.8 | 50.9 | -29.7 | 7.9 | -2.1 | 0.4 | -9.8 |
| Electrical equipment | -3.6 | 2.6 | 0.5 | -5.7 | -0.4 | 1.7 | 3.4 | -4.6 |
| Machinery and equipment | -7.7 | -1.6 | 2.5 | -5.1 | -0.1 | -0.4 | -4.6 | -4.1 |
| Motor vehicles | 3.4 | 5.9 | -4.4 | -6.4 | -2.7 | 1.3 | 2.7 | -7.5 |
| Other transport equipment | -1.0 | 43.3 | -15.0 | -21.3 | 1.0 | -7.1 | 19.6 | -21.3 |
| Furniture | 3.2 | 1.9 | -1.1 | -4.5 | -7.7 | -3.7 | 5.6 | -4.6 |
| Other manufacturing | -2.5 | -2.7 | 1.8 | -6.8 | -3.0 | 4.3 | -1.8 | -6.6 |
| Repair and installation of mach. and equip. | -2.7 | 9.1 | -0.7 | 2.1 | 7.8 | 3.6 | 0.2 | 4.5 |
| Electricity, gas, steam | 4.6 | 0.3 | -1.6 | -2.7 | 3.9 | -3.1 | 4.0 | -3.6 |
| IPI | 0.1 | 2.7 | -0.1 | -4.9 | 0.3 | -0.9 | 3.3 | -4.2 |
| Intermediate Goods | 0.0 | 1.1 | -0.1 | -4.0 | 1.2 | -0.5 | 2.7 | -3.7 |
| Durable Consumer Goods | 1.8 | 1.3 | -0.3 | -1.6 | -1.3 | -1.3 | 2.9 | -1.4 |
| Non-durable Consumer Goods | 1.6 | 1.1 | -0.9 | -2.8 | -1.5 | -3.0 | 4.6 | -3.0 |
| Energy | 4.1 | -0.8 | 0.2 | -0.9 | 4.3 | 0.2 | 2.4 | -1.1 |
| Capital Goods | -3.4 | 9.7 | 0.5 | -11.4 | -1.5 | -0.2 | 4.3 | -8.4 |
| Low Technology | 2.1 | 1.2 | -1.2 | -2.6 | -2.0 | -2.1 | 4.4 | -3.0 |
| Medium-Low Technology | 0.0 | 1.5 | -0.8 | -2.6 | 0.8 | 0.5 | 2.0 | -2.6 |
| Medium-High Technology | 0.9 | 0.8 | -2.9 | -2.8 | 0.0 | -0.6 | 1.6 | -4.4 |
| High Technology | -22.0 | 38.8 | 16.1 | -33.8 | 0.7 | -0.7 | 12.5 | -19.9 |

* As of April

Source: TURKSTAT

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