

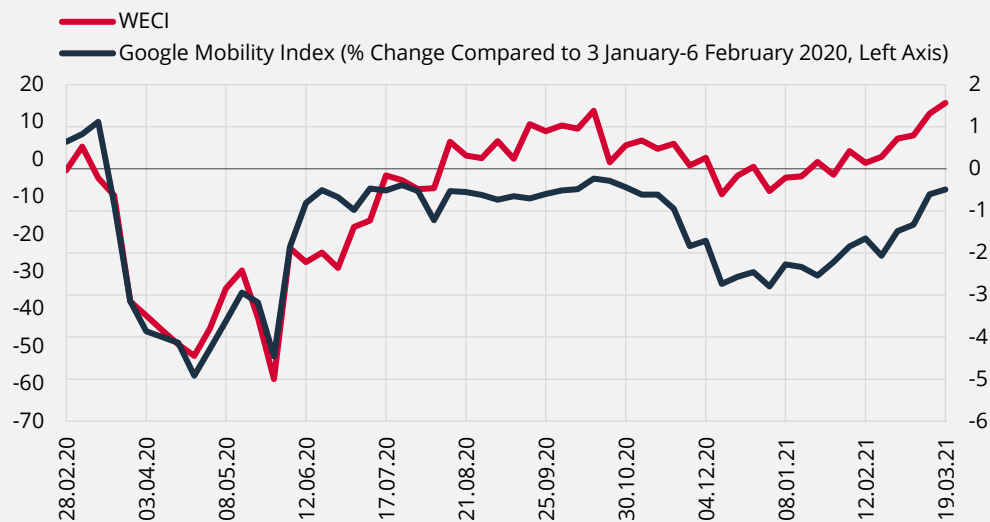
## Box 2.5

### Effects of Pandemic Restrictions on Economic Activity

During the pandemic period, analyses regarding the effect of lockdown periods and the tightness of restrictions on economic activity gained importance. International organizations have recently published various analyses aimed at measuring the impact of mobility restrictions on economic activity. For example, a study examining the impact of restrictions on European economies in sectoral detail for the year 2020 indicates that this effect changes for different quarters (Battistini and Stoevsky, 2021). In an analysis conducted for different countries for the second quarter of 2020 in the OECD Economic Outlook report, it is found that a 10-point decrease in the Google mobility index brings quarterly growth down by 1.7 points (OECD, 2020).<sup>1</sup>

In this box, the effects of pandemic restrictions on economic activity is quantified using the relationship between the Weekly Economic Conditions Index (WECI) constructed within the CBRT and the Google mobility index (Chart 1).

**Chart 1: WECI\* and Google Mobility Index\*\***



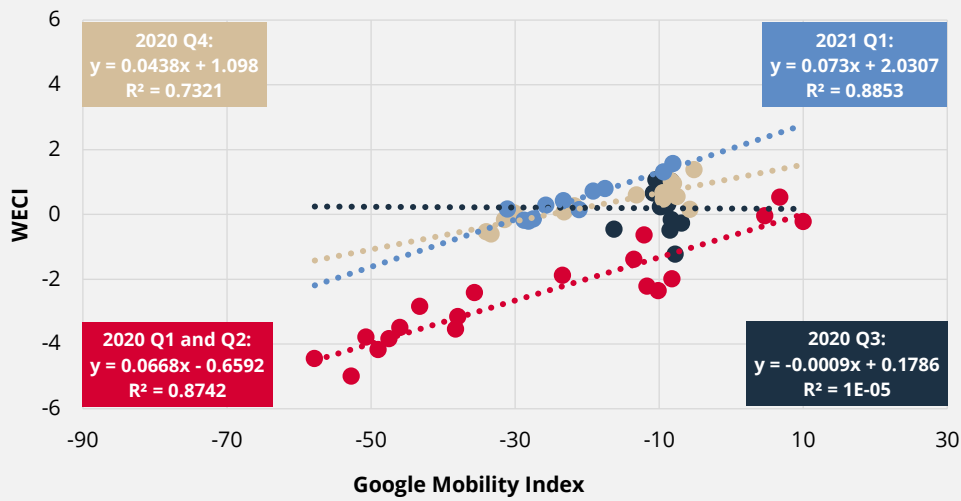
Sources: Google, Authors' calculations.

\* For the methodological details of the calculation of WECI, see Çelgin and Günay (2020) and CBRT Inflation Report 2020-III Box 4.1.

\*\* The Google mobility index is calculated by taking the average of the mobility indices for retail and recreation, grocery and pharmacy, and workplaces.

### Impact of the Decline in Social Mobility on Economic Conditions

The imposition of restrictions to reduce social mobility in certain periods and at different frequencies causes its impact on economic activity to differ from time to time. For example, the relationship between the Google mobility index and WECI appears to be quite strong in the first two quarters of 2020, covering March-April 2020, when the measures were first implemented, and in May 2020, when they were partially lifted (Chart 2). On the other hand, in the third quarter of 2020, when restrictions were completely lifted and normalization took place, the relationship between the two indices weakened considerably. The relationship between restrictions and economic conditions has strengthened again since the beginning of November, but the correlation has remained relatively weaker compared to the early stages of the pandemic. The WECI-mobility relationship, shown with dashed red and light brown lines in Chart 2 for the first and last quarters of 2020, shows that there is an inverse relationship between restrictions and economic activity in these periods. The dashed black line representing the third quarter indicates that the correlation weakened in this period.

**Chart 2: Elasticities Between WECI and Google Mobility Index for Different Periods \***

Source: Authors' calculations.

\* Each quarter is shown with different colored circles.

## Quantifying the Effects of Restrictions on Economic Activity

In order to quantify the impact of restrictions on economic activity, a model estimated by Çelgin and Günay (2020) is utilized. This model predicts the calendar-adjusted annual growth rate of the Gross Domestic Product (GDP) of Turkey using WECI. Using this model, it is calculated that a one-point increase in WECI drives GDP growth up by approximately 4.0 percentage points. Therefore, with the help of elasticities that enable the transition from mobility indices to WECI and from WECI to GDP in two stages, the effects of restrictions on economic activity can be estimated for each period. For example, the elasticity for the first half of 2020 indicates that a 10 percentage point drop in mobility lowers WECI by about 0.7 points. Since a one-point decrease in WECI implies a 4.0 percentage point reduction in GDP growth, it can be calculated that a 10 percentage point decrease in mobility implies an approximately 2.7 percentage point decrease in growth (Table 1).

**Table 1: The Effect of Restrictions on Economic Activity for Different Periods**

	Change Implied by a 10 Percentage Point Increase in Google Mobility Index in WECI (I)	Change Implied by a 1 Point Increase in WECI in Annual Growth Rate of GDP (II)	Change in Annual GDP Growth Implied by a 10 Percentage Point Increase in the Google Mobility Index (I*II)
<b>With the elasticity of 2020Q1-2020Q2</b>	0.67	4.0	2.7
<b>With the elasticity of 2020 Q3</b>	0.00	4.0	0.0
<b>With the elasticity of 2020 Q4</b>	0.43	4.0	1.7
<b>With the elasticity of 2021 Q1</b>	0.73	4.0	2.9

Source: Authors' calculations.

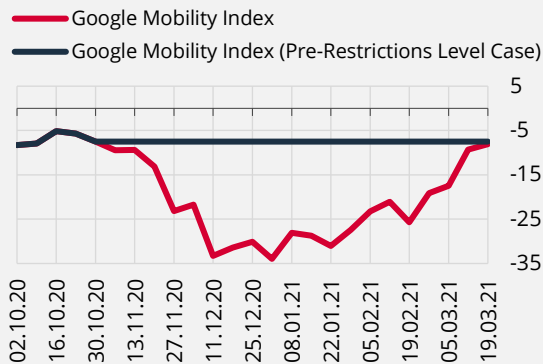
<sup>1</sup> Google mobility indices can be followed in six different categories: retail and recreation, grocery and pharmacy, parks, transit stations, workplaces and residential.

## Impact of Lockdowns on Economic Activity

The restrictions implemented since November caused a significant decrease in mobility, although not as much as in the March-May period (Chart 1). From this point of view, how much higher the growth rate would have been in the last quarter of 2020 and in the first quarter of 2021 if had there been no decrease in mobility due to restrictions is analyzed. For this purpose, first of all, the difference between the hypothetical situation in which the mobility index has not changed since the end of October 2020, before restrictions were implemented, and the actual mobility is calculated (Chart 3). Then, the effect on WECI is calculated with the coefficients obtained for different periods. The impact on economic activity is calculated using the elasticity between WECI and the GDP growth rate.

The impact of the restrictions on economic activity in the last quarter of 2020 is estimated to be between -1.5 and -2.8 percentage points, with an average of -2.1 percentage points (Chart 4). In other words, estimates indicate that the annual growth in the last quarter might have been around 8.0% instead of 5.9% if there had been no lockdown effects. Due to the implementation of restrictions until the end of February, it is calculated that the impact on economic activity in the first quarter of 2021 is between -1.4 and -2.6 percentage points, with an average of -2.0 points (Chart 4).

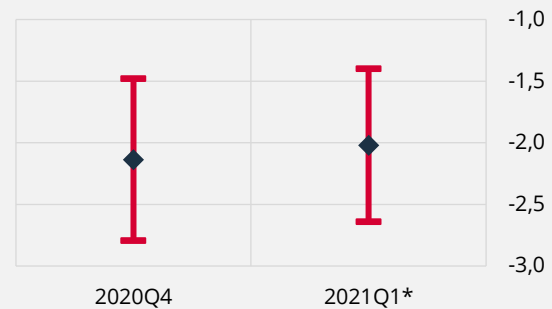
**Chart 3: Google Mobility Index\***



Sources: Google, Authors' calculations.

\* The counterfactual case is the state that the Google mobility index remained at the pre-restriction level, which is the value it took as of the end of October 2020 before the restrictions were implemented in early November.

**Chart 4: The Impact of Restrictions on Economic Activity in 2020Q4 and 2021Q1\*\***

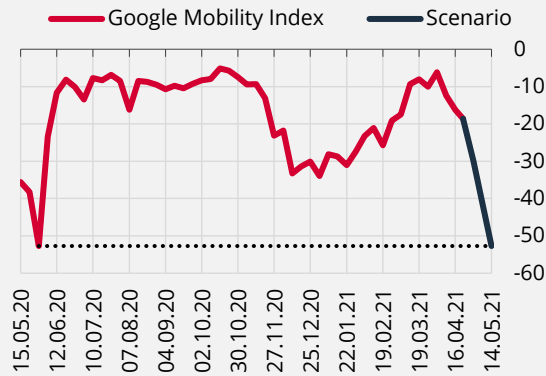


Source: Authors' calculations.

\* Estimates for 2021Q1 reflect the impact of restrictions on January-February 2021.

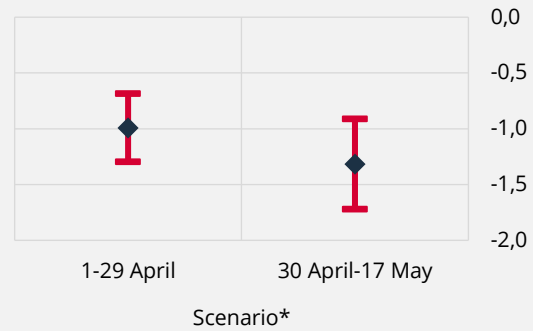
\*\* The impact range is calculated using the elasticities for the periods of 2020Q3-2021Q1, 2020Q4 and 2021Q1.

Since the beginning of April, partial restrictions have been implemented based on the number of cases in the cities, and it has been announced that a full lockdown will be applied across the country for the period of 29 April-17 May. The impact of these measures on the economic activity in the second quarter of 2021 will depend on many factors. However, in order to calculate the possible effect of the restrictions, a scenario framework has been constructed in which the mobility index is assumed to decline to the level of last year's Ramadan Feast until May 17 (Chart 5). Then, the differences between the hypothetical situation where the mobility index maintains its level before partial restrictions and full lockdown implementation and the scenario level of the mobility index were calculated. The impact of the partial restrictions between 2-29 April on economic activity in the second quarter of 2021 is estimated to be between -0.7 and -1.3 percentage points, with an average of -1.0 percentage points. For the same scenario, it has been calculated that the effect of full lockdown on economic activity in the second quarter of 2021 may range from -0.9 to -1.7 percentage points, with an average of -1.3 points (Chart 6). The total impact on second quarter growth is estimated to be between -1.6 and -3.0 points, with an average of -2.3 points. In this direction, the WECI estimates presented in the Chart 2.3.10 are expected to come down with the data flow. On the other hand, the effect of restrictions on growth may be more limited than these estimations based on the framework of past period relationships, due to the fact that economic units have adapted their business models to new conditions compared to the early stages of the pandemic.

**Chart 5: Google Mobility Index and Scenario\***

Sources: Google, Authors' calculations.

\* A scenario has been constructed in which the Google mobility index will fall to the level of last year's Ramadan Feast until May 17.

**Chart 6: The Impact of Restrictions on Economic Activity in 2021Q2\*\***

Source: Authors' calculations.

\* Estimates for 2021Q2 reflect the impact of partial restrictions on 2-29 April and full lockdown on 30 April-17 May.

\*\* The impact range is calculated using the elasticities for the periods of 2020Q3-2021Q1, 2020Q4 and 2021Q1.

In summary, when evaluating the underlying trend of economic activity, it is necessary to take into account the impact of mobility restrictions that aim to limit the spread of the pandemic. The lockdown effect for the last two quarters points to a quite strong underlying trend for economic activity when temporary factors are taken into account. Restrictions, which were put into effect in April and tightened in the recent period, are also expected to have a significant impact on the growth of the second quarter.

## References

Battistini, N. and Stoevsky, G. (2021). The Impact of Containment Measures Across Sectors and Countries During the COVID-19 Pandemic. ECB Economic Bulletin, Issue 2, 2021.

Çelgin, A. and Günay, M. (2020). Weekly Economic Conditions Index for Turkey. Central Bank of Turkey, Research Notes in Economics, No: 20/18.

OECD (2020). OECD Economic Outlook, Volume 2020, Issue 2, No: 108, Box 1.1.

CBRT (2020). Weekly Economic Conditions Index (WECI). Inflation Report 2020-III, Box 4.1.