

## Box 2.6

### An Assessment of the Effect of Minimum Wage Increase on Inflation

The interim regulation on 1 July 2023, raised the minimum wage by 34% to a net TL 11,402.3 (January 2023 – 8,506.8), and a gross TL 13,414.5 (January 2023 – 10,008.0). While the practice of not receiving income and stamp tax from the minimum wage continues, it has been decided to increase the support given to employers per worker to TL 500. The cost of the minimum wage to the employer also increased by 34% and reached TL 15,762 (January 2023 – 11,759.4). This box discusses the possible impact of the minimum wage increase in July on the basis of sectors with high sensitivity to minimum wage.

#### Relation of Minimum Wage and Other Wages

**Table 1: Nominal Annual Rates of Increase in Various Wage Indicators (%)**

	2018	2019	2020	2021	2022
Gross Minimum Wage	14.2	26.1	15.0	21.6	60.4
LII Non-Farm Hourly Labor Cost Index*	18.6	25.6	16.6	19.8	73.2
LII Non-Farm Hourly Earnings Index	18.3	26.2	18.0	19.3	73.2
LII Non-Farm Hourly Non-Earning Labor Cost Index	19.7	22.9	9.5	22.5	73.4
LII Gross Wage Salary Index	15.9	18.3	6.8	39.7	88.2
SSI Average Daily Earnings (Private Emp. Weighted)**	17.8	22.6	17.7	23.2	75.2

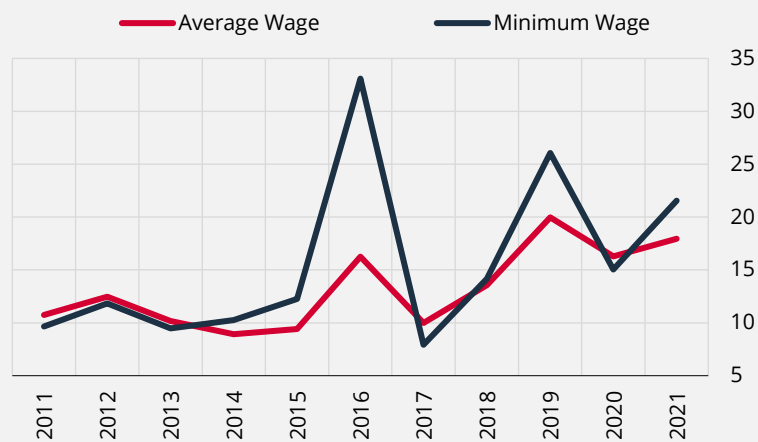
Source: CBRT, Ministry of Labor and Social Security, SSI TURKSTAT.

\* LII: Labor input indices.

\*\* For each sub-item, private earnings x private employment are aggregated and divided by total private employment data.

A significant share of regular or casual wage earners in Türkiye are entitled to the minimum wage or wages in the neighborhood of the minimum wage, and thus, minimum wage increases and past CPI outturns determine general wage rises (Table 1). In this respect, most of the nominal wage increases can be explained by the minimum wage, past inflation and output gap. An analysis of the annual average net income of wage earners and their minimum wage growth by years suggests that a 1-point minimum wage increase corresponds to an average wage rise of approximately 0.93 points (Chart 1).

**Chart 1: Annual Course of Wages (Nominal % Change)**



Source: CBRT, Ministry of Labor and Social Security, TURKSTAT Household Labor Force Survey (HLFS).

## On Which Sectors Is the Minimum Wage Most Effective?

The micro data of the HLFs for 2021 indicate that approximately 43.1% of wage earners in non-agricultural sectors are composed of minimum wage and below-minimum wage earners (Table 2). The proportion of minimum wage and below workers is 50.4% in the industrial sector, 71.4% in construction and 37.9% in services. Although this rate appears to be lower in the service sector compared to other main sectors, it differs considerably across sub-items. While being in the public sector and financial services industry is a factor to limit the overall sensitivity to the minimum wage, the proportion of minimum-wage earners is high in non-public and non-financial services sectors. For example, the proportion of minimum wage and below minimum wage earners reaches 73% in accommodation and food services, while a high share is observed in the wholesale and retail trade sector with 64%. In the manufacturing industry, clothing (70.5%) and food (67.1%) stand out with their high proportion of minimum wage and below minimum wage earners.<sup>1</sup>

**Table 2. Proportion of Minimum Wage and Below Employees by Selected Sectors**  
(%, 2021)

	Minimum Wage and Below Minimum Wage Earners*	Personnel Cost/Production Value
<b>Non-Farm Total</b>	<b>43.1</b>	<b>10.5</b>
<b>Industry</b>	<b>50.4</b>	<b>6.7</b>
Manufacturing Industry	52.0	7.2
Textile	57.4	8.4
Wearing Apparel	70.5	13.8
Leather	69.7	11.5
Furniture Manufacturing	57.8	13.1
Food	67.1	6.4
Petroleum**	19.9	-
Motor Vehicles, trailers etc.	26.3	6.5
Other Transportation	19.6	10.4
<b>Construction</b>	<b>71.4</b>	<b>9.0</b>
<b>Services</b>	<b>37.9</b>	<b>17.9</b>
Wholesale and Retail Trade	64.4	17.6
Transportation and Storage	47.3	9.7
Accommodation and Food Ser.	73.0	20.2
Public Administration**	5.8	-
Education	10.1	51.1
Finance Insurance**	13.3	-

Source: CBRT (2021), TURKSTAT HLFs Micro Data, Annual Industry and Service Statistics.

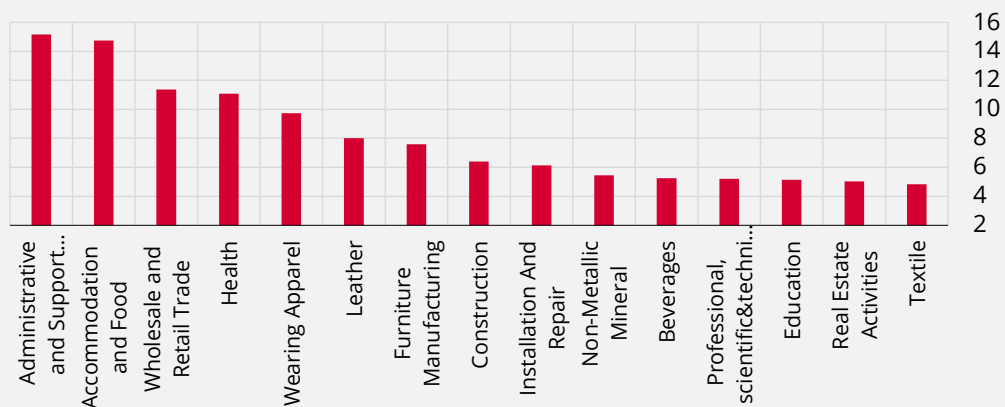
\* Data are filtered by profession and sector. Those who work in the 10% lower and upper neighborhood of the minimum wage are accepted as minimum wage earners, and those who work below 10% lower neighborhood are accepted as below-minimum wage earners.

\*\* Personnel cost/production value could not be calculated due to lack of data.

The degree of labor intensity of sectors is another indicator that should be considered when assessing the cost pressures stemming from wage developments. For this purpose, personnel cost/production ratio was calculated from TURKSTAT's Annual Industry and Service Statistics data (Table 2). When the share of the minimum wage earners and the share of personnel cost in the production value are evaluated together, it is observed that the sectors most sensitive to the increase in the minimum wage are administrative-support services, restaurants-hotels, wholesale-retail trade, human health, clothing, furniture, construction and maintenance-repair (Chart 2).

<sup>1</sup> Additionally, Başkaya and Özmen (2013) conclude that the increase in the employer cost of the minimum wage increases producer prices more in sectors with higher employment of unqualified workers.

**Chart 2: Sensitivity to Minimum Wage\***  
(%, 2021)



Source: CBRT (2021), TURKSTAT HLFS Micro Data, Annual Industry and Service Statistics.

\* Sensitivity to Minimum Wage is calculated by personnel cost/production x number of below minimum wage employees.

### Possible Inflationary Effect of the July Minimum Wage Increase

Current econometric models (similar to the previous impulse-response findings from Bayesian VAR models) indicate that a 1% nominal increase in the minimum wage increases D inflation by 0.06-0.08 points in the first quarter, and by 0.08-0.12 points over a one-year period (Table 3).<sup>2</sup> These estimates imply a slight increase in the minimum wage effect in recent years compared to previous studies. Accordingly, considering the average elasticities presented in Table 3, the possible impact of the 34% minimum wage increase of July on consumer inflation is estimated to be between 2.7 and 4.1 percentage points. Equations estimated on the basis of goods and services subgroups indicate that the minimum wage has a significant effect on the prices of processed foods and selected service items. Similarly, Andiç et al. (2015) find that particularly the real unit labor cost measure, which is calculated based on the minimum wage, is closely related to services inflation. This seems plausible in the sense that the services sector utilizes a higher share of labor input and a lower share of imported inputs compared to non-service sectors.

**Table 3: Inflation Equations**

**Dependent Variable: CPI Excluding Unprocessed Food and Alcohol-Tobacco (D Index) Quarterly Inflation<sup>a</sup>** (Sample: 2010Q1- 2023Q1)

	Model 1 <sup>b</sup>	Model 2 <sup>b</sup>	Model 3 <sup>b</sup>
<b>Minimum Wage (t)</b>	0.06***	0.08***	0.07***
<b>Long-Term Minimum Wage Pass-Through<sup>c</sup></b>	0.08	0.12	0.12

a) Seasonally and tax-adjusted. \*\*\* denotes statistical significance at 1% level.

b) In Model 1, controlled parameters were the constant term, the first lag of quarterly inflation, output gap, exchange rate basket and its lagged values, import prices in USD, Brent oil prices (in USD) and exchange rate volatility, yet dummy variable was also used for 2018Q4. In addition to Model 1, Model 2 includes Goldman Sachs commodity index and dummy variables for 2018Q3-Q4 and 2021Q4, while excluding exchange rate volatility and import prices. In Model 3, the constant term, the first lag of quarterly inflation, exchange rate basket and its lagged values, import prices in US dollars and dummy variables for 2018Q3-Q4 and 2021Q4 are controlled.

c) When the effect from the lagged value of inflation is also considered.

<sup>2</sup> In 2021, the CBRT estimated Bayesian VAR models to evaluate the possible effects of wage increases on inflation. These analyses (according to median responses) indicate that, when the effects of variables that may affect the inflation rate such as import prices, the cyclical state of the economy, exchange rates, producer prices, and inflation expectations are controlled (for the period after 2005), the effect of a 1% increase in the minimum wage on consumer inflation falls within the range of 0.06-0.08%. In addition, according to the findings of the impulse-response analysis, the impact is mostly completed within two quarters, with the greater part realized in the first quarter.

The ability of companies to reflect wage increases in their prices may differ depending on demand conditions and level of competition, sectors, and industry or company-specific factors. In this context, the average effect estimated here is a kind of indicator to understand the effect of minimum wage increases on the rise of consumer prices. Moreover, there are some additional factors that may play a role in the differentiation of the effect of the minimum wage increase in the current conjuncture from what historical elasticities imply. The first point is that in the current inflationary environment with a forward-looking perspective, a minimum wage increase is expected to maintain purchasing power, and therefore, some of the wage-driven effect may have been reflected on prices in the past months. Another point is that since the rise in the minimum wage coincides not only with a period in which the price adjustment frequency is high and domestic demand is strong, but also with summer months marked with increased mobility, it may bring forward some expenditures, thereby affecting inflation in the short run more than the elasticities imply. On balance, the July Inflation Report is based on an outlook in which the impact of the minimum wage increase on consumer inflation will come out at a level closer to the upper band of the effect range presented above.

### References

- Andıç, S.B., Küçük, H. and Ögünç, F. (2015). Inflation Dynamics in Turkey: In Pursuit of a Domestic Cost Measure, *Emerging Markets Finance and Trade*, 51:2, 418-431.
- Başkaya, Y.S., and Özmen, M.U. (2013). Türkiye’de Asgari Ücret-ÜFE Enflasyonu İlişkisi Üzerine Ampirik Bir Analiz (in Turkish). CBRT Research Notes in Economics No. 13/23.
- CBRT (2021). Wage Distribution and Effects of Wages on Inflation in Turkey, *Inflation Report 2021-I*, Box 2.6.