## (Box 3) The Background to Changes in the Labor Share

The labor share is on a downtrend in many countries. While there are many hypotheses to explain the decline, this box follows the approach of Autor et al. (2017), which presents the "superstar firm hypothesis," to examine recent labor share trends in Japan.[35]

The "superstar firm hypothesis" suggests that the decline in the labor share at the macro-level is due to the increased market share of some top firms with a relatively low labor share, referred to as "superstar firms." To examine changes in the labor share, these are decomposed into three components: (1) the "within-firm effect," reflecting changes in the labor share within individual firms; (2) the "between-firm effect," reflecting changes in the market share of incumbent firms; and (3) "other," which includes firm entry and exit effects (Chart B3-1).

The results presented by Autor et al. for the United States indicate that the "between-firm effect" is the main cause for the decline in the labor share (Chart B3-2). This suggests that the labor share at the macro-level decreases as the market share of "superstar firms" with a low labor share increases, such as Apple and Amazon.

On the other hand, different results were obtained for Japan, although it should be noted that this

**Chart B3-1:** Decomposition of Labor Share

The change in labor share $\Delta S$ from time $t$ to $t+k$ is decomposed as follows:

$$\Delta S = \overline{S}_{t+k} - \overline{S}_t \quad \text{(a) Within-firm effect}$$

$$+ \sum (w_{i,t+k} - \overline{w}_{t+k})(S_{i,t+k} - \overline{S}_{t+k}) - \sum (w_{i,t} - \overline{w}_t)(S_{i,t} - \overline{S}_t) \quad \text{(b) Between-firm effect}$$

$$+ Other$$

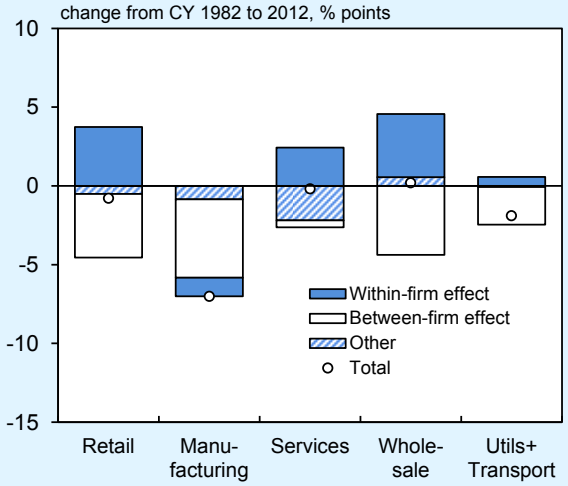
(a) and (b) are calculated based on incumbent firms at time $t$ and $t+k$.

$S$ denotes the labor share. $w$ is the share of value-added, where value-added is defined as the sum of operating profits and personnel expenses.

$\overline{S}$ and $\overline{w}$ denote the unweighted mean of the labor share and value-added, respectively.

The data are unbalanced, cover about 550,000 firms, and span the period from FY 2000 to 2016. $Other$ is calculated as the residual.

**Chart B3-2:** Decomposition of the Change in the Labor Share in the U.S.



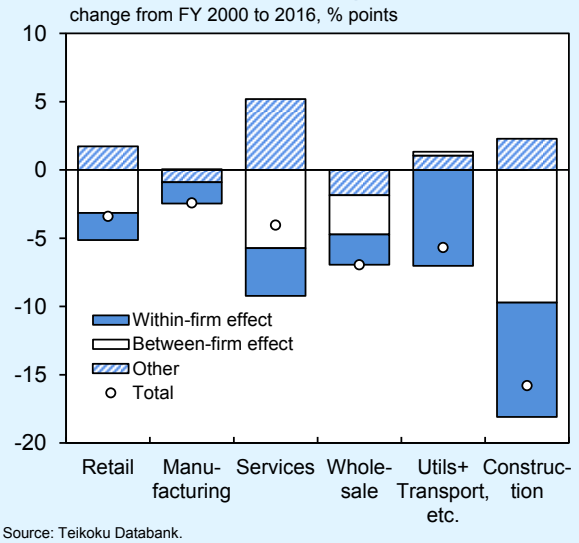

Source: Autor, D., D. Dorn, L. Katz, C. Patterson, and J. Van Reenen (2017), "The Fall of the Labor Share and the Rise of Superstar Firms," MIT Working Paper.
Notes: 1. "Other" consists of firm entry and exit effects, etc.
2. The decomposition for "Utils + Transport" is for the period from CY 1992 to 2007.

[35] Autor, D., D. Dorn, L. Katz, C. Patterson, and J. Van Reenen (2017), "The Fall of the Labor Share and the Rise of Superstar Firms," MIT Working Paper.

could be partly due to differences such as in the observation period. Specifically, the results show that not only the "between-firm effect" but also the "within-firm effect" have made a substantial contribution to the decline in the labor share (Chart B3-3).

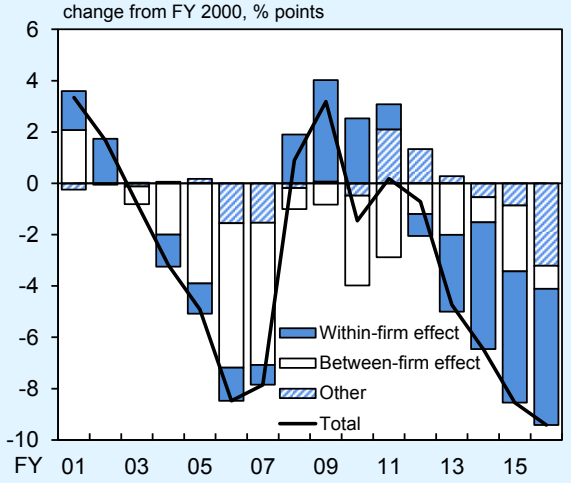
Looking at the decomposition of the change in the labor share for all industries in Japan over time, a notable feature in recent years is that the "within-firm effect" has been lowering the labor share (Chart B3-4). This likely reflects the current situation in which individual firms have been raising productivity against the backdrop of labor shortage while real wage growth has been relatively restrained (Chart 39).[36]

**Chart B3-3:** Decomposition of the Change in the Labor Share in Japan




Source: Teikoku Databank.
Notes: 1. Value-added = operating profits + personnel expenses, labor share = personnel expenses / value-added. Observations with negative value-added and a firm-level labor share at the 95th percentile or above were excluded as outliers.
2. "Other" consists of firm entry and exit effects, etc.

**Chart B3-4:** Decomposition of the Change in the Labor Share, FY 2001 to 2016




Source: Teikoku Databank.
Notes: 1. Value-added = operating profits + personnel expenses, labor share = personnel expenses / value-added. Observations with negative value-added and a firm-level labor share at the 95th percentile or above were excluded as outliers.
2. "Other" consists of firm entry and exit effects, etc.

[36] See Box 3 in the July 2017 Outlook Report.