

Determinants of Labor Share in Japan^{*}

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1. Introduction

The labor share has been declining in many Western countries (Elsby *et al.* 2013, Karabarbounis and Neiman 2014, Piketty 2014, Dao *et al.* 2017, Autor *et al.* 2017). For example, Autor *et al.* (2020) report that since 1970, the labor share has been on a downward trend in many OECD countries. Now, the decline in the labor share has become an important issue in terms of economic policy. Since the number of people who earn income from capital is generally considered to be smaller than the number of workers, a decrease in the labor share would mean an increase in income disparity.

Japan also has been facing the issue. The paper uses two types of statistics to clarify the change in the labor share in Japan. The labor share using the Cabinet Office's "National Accounts" is obtained by dividing the employee's compensation by the gross domestic product. The difference between this and the JIP2018 labor share is whether employee compensation includes the income of the self-employed or not. Therefore, the JIP2018 version of labor share is higher because it includes the income of the self-employed. However, these two tendencies are generally consistent. Although labor share appears to have increased in 2008, 2009, and 2011, this is an anomaly due to the marked drop in the gross domestic product following the global financial crisis and the Great East Japan Earthquake. Since the latter half of the 1990s, Japan's labor share has been on a downward trend. This has also been observed in other developed countries.

The following hypotheses have been tested in related studies as factors that reduce the labor share. For instance, the decline in the labor share can be attributed to (1) the globalization hypothesis, which is the effect of offshoring and cheap imported goods (Bassanini and Manfredi 2012, Elsby *et al.* 2013), (2) the technological innovation hypothesis, which states that the labor is replaced by capital such as AI and robots (Acemoglu and Restrepo 2019), and (3) labor-saving giant IT companies. It is categorized as the superstar company hypothesis, which is the effect of rapidly expanding the scale and increasing the market share (Autor *et al.* 2020).

However, it cannot be said that there is consensus among researchers on the determinants of the labor share

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because the results of previous research differed depending on the period, country, industry, and so on (Fukao and Perugini 2018, Fukao *et al.* 2019, Adachi and Saito 2020). In addition, most of the related studies analyze by country or industry, and therefore fails to consider the heterogeneity of individual firms (Autor *et al.* 2020). The paper empirically examines the factors that affected the labor share of Japanese firms using the information from the Basic Survey of Japanese Business Structure and Activities over the period of 2006-2015. The paper focuses on the effect of (1) imports from China, (2) industrial robotics, and (3) the ratio of non-regular workers, on the labor share in Japan.

The remainder of this paper is organized as follows: Section 2 summarizes the changes in labor share in Japan by decomposing its growth rate. Section 3 explains the econometric specification. Section 4 discusses the results and Section 5 concludes.

2. Changes in labor share in Japan

The paper aggregates data from the Basic Survey of Japanese Business Structure and Activities, and analyzes changes in labor share (logarithmic difference) using the method explained below. The paper also explores the causes of the decline in labor share in Japan. Firm-level labor share is calculated as follows:

$$\text{(Total salary + welfare expenses) / added value (= total salary + welfare expenses + operating income + depreciation + real estate rent + taxes and dues + interest/discounts paid)} \quad (1)$$

Welfare expenses were not surveyed in the Basic Survey of Business Activities up to 2006, and considering the continuity of the data, the target period for analysis was from 2006 to 2015.

This study aggregate the labor share of each company at the industry level using the following method: the logarithmic value of labor share in year t is aggregated, as shown in Equation (2).

$$\ln LS_{i,t} = \sum_{f=1}^n \theta_{f,t} \ln LS_{f,t} \quad (2)$$

where $\ln LS_{i,t}$ is the industry-level labor share, $\ln LS_{f,t}$ is the logarithm of the labor share of each firm, and $\theta_{f,t}$ is the nominal value-added share of the firm in the industry to which it belongs. Autor *et al.* (2020) break down (decompose) the changes in labor share into entry, exit and internal effects as well as share effects to clarify the factors that explain the changes in labor share. The paper adopts the decomposition method of Forster *et al.* (2001), which corrects Autor *et al.* (2020)'s problem.

$$\begin{aligned} & \sum_{f \in S} \theta_{f,t-\tau} \Delta \ln LS_{f,t} + \sum_{f \in S} \Delta \theta_{f,t} [\ln LS_{f,t-\tau} - \overline{\ln LS_{t-\tau}}] + \sum_{f \in S} \Delta \theta_{f,t} \Delta \ln LS_{f,t} + \\ & \sum_{f \in E} \Delta \theta_{f,t} [\ln LS_{f,t} - \overline{\ln LS_{t-\tau}}] + \sum_{f \in X} \theta_{f,t-\tau} [\overline{\ln LS_{t-\tau}} - \ln LS_{f,t-\tau}] \end{aligned} \quad (3)$$

where S is the surviving firm, X is the exiting firm, and E is the set of entering firms. The bar above the variable means the calculated average value for all firms in the industry, and Δ is the difference from period $t-\tau$ to period t . The first term on the right-hand side is the change in the weighted average of the labor share of surviving firms, which indicates the internal effects. The second term on the right-hand side is the change in labor share due to the change in the industry share of surviving firms with high labor shares, called the share effect. The third term is the covariance effect, the effect of expanding the value-added share of companies whose labor share has increased. The

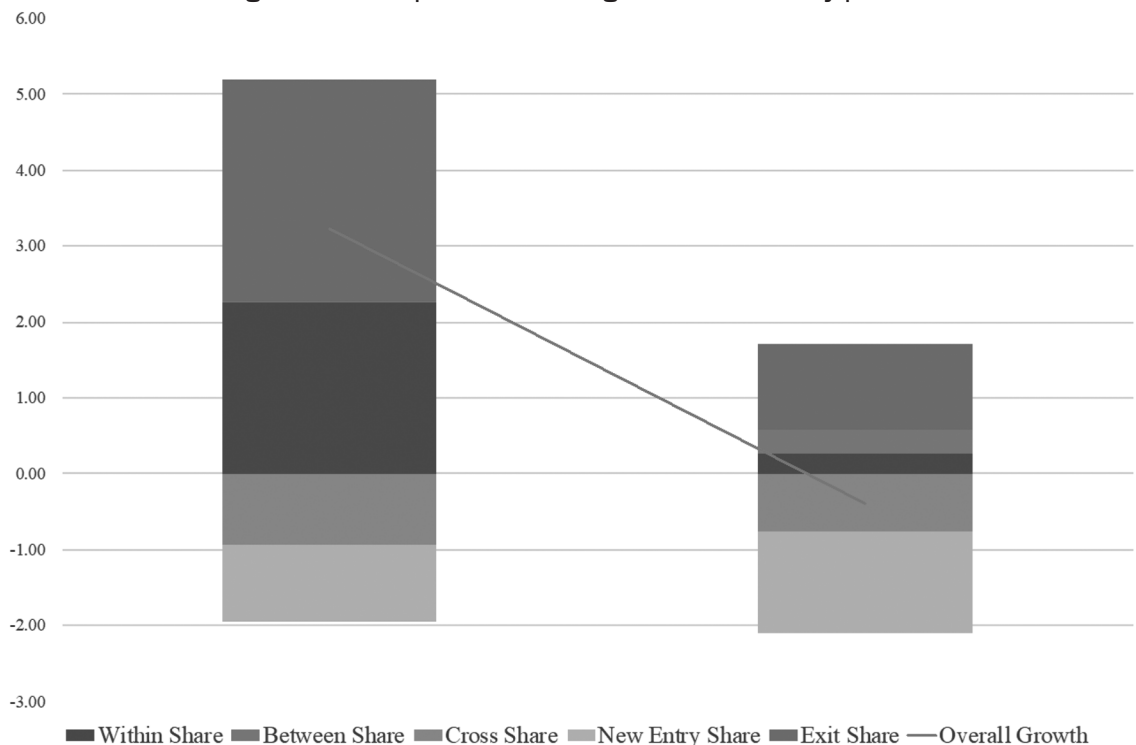
fourth term captures the impact of firms newly entering the market during period t and the fifth term captures the impact of firms newly exiting during period t .

The paper aggregated the changes in the labor share of all industries, weighted by each industry's share of total value-added. The results of this analysis are shown in Figure 1. The paper analyzed changes in the labor share in Japan over two periods, 2006-2010 and 2010-2015. First, from 2006 to 2010, the labor share increased by 3.24% annually. The factors behind this increase are the internal effect and the exit effect. Next, in the period from 2010 to 2015, the labor share was -0.40%, a sharp decline compared to what it was in 2010. The main reason being the decline in the internal effect and the exit effect. The exit effect contributed positively because many companies with lower labor share than the industry average exited the country. In particular, the results strongly suggest that companies that did not pay much compensation to their employees left the country due to major shocks such as the global financial crisis and great earthquake in eastern Japan between 2006 and 2010.

Moreover, it is understood from the results of the decomposition analysis that changes in the labor share on a macro-level are highly dependent on changes in the labor share within firms. These results are in line with the results of Autor *et al.* (2020) who showed that changes in the labor share are highly dependent on the redistribution effect (the sum of the share effect and the covariance effect) is different.

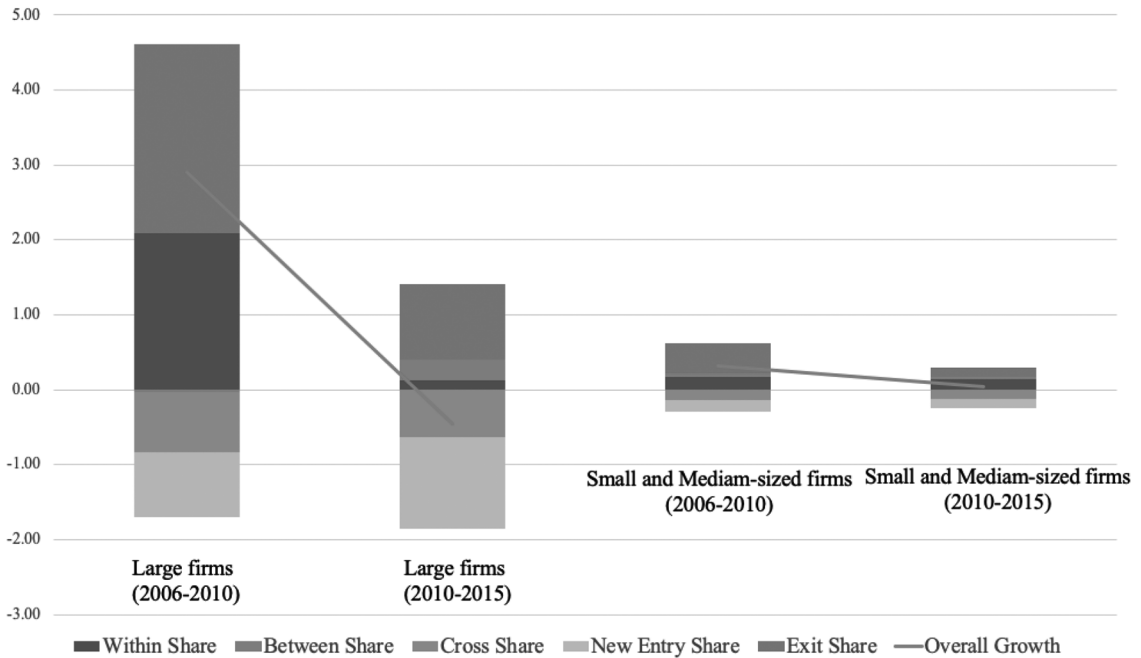
The paper analyzed the sample by dividing it into large companies and SMEs as well as manufacturing and non-manufacturing industries to clarify the type of companies and industries contributed to the changes in labor share shown in Figure 1.

Figure 1 Decomposition of change in labor share by period



Source: The figure is depicted by the author by using Basic Survey of Japanese Business Structure and Activities.

Figure 2 Decomposition of change in labor share by period and firm size



Source: The figure is depicted by the author by using Basic Survey of Japanese Business Structure and Activities.

Figure 2 shows the results of breaking down changes in the labor share by dividing the sample into large companies and small and medium enterprises (SMEs). The sum of each effect for large companies and SMEs for each period is consistent with the results shown in Figure 1. This indicates that large firms lead the changes in the labor share of the economy overall. The contribution of SMEs to changes in the overall labor share is very small.

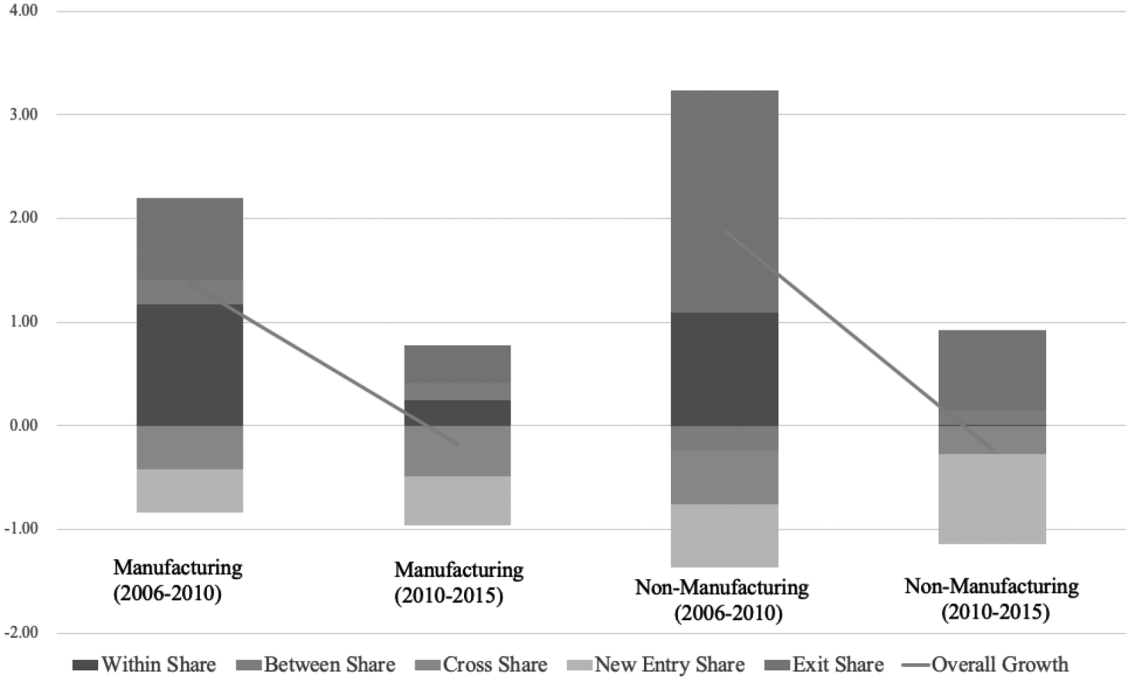
Figure 3 shows the results of breaking down changes in the labor share by dividing the sample into manufacturing and non-manufacturing industries. It can be observed that the contribution of the non-manufacturing industry is slightly larger than that of the manufacturing industry. The positive contribution of the exit effect is large in the non-manufacturing sector, while the positive contribution of the internal effect is large in the manufacturing sector.

The change in the labor share of Japanese companies was not caused by a decline or increase in the labor share of some companies, as it was in the United States. In Japan, the overall labor share is influenced by the decline and rise in a company's labor share.

3. Determinants of labor share in Japan

The paper conducts an empirical analysis of Japanese companies from 2006 to 2015 to clarify the factors contributing to the decline in Japan's labor share. First, the study explains how to decompose labor share and present an estimation model. Next, it summarizes the estimation results and clarify the determinants of labor share in Japanese companies. Finally, the paper derives policy implications based on the estimation results.

Figure 3 Decomposition of change in labor share by period and industry



Source: The figure is depicted by the author by using Basic Survey of Japanese Business Structure and Activities.

3.1 Econometric specification

The paper first decomposes labor share as follows and identify the determinants of labor share. Based on this, it finalizes the estimation model.

In general, labor share is calculated by dividing the salary and welfare costs for workers by the real value-added. Taking the logarithm of labor share and decomposing it yields the following relational expression:

$$\begin{aligned}
 \ln(LS) &= \ln(WL/PY) = \ln(W/P) - \ln(Y/L) \\
 &= \ln(W/P) - \ln(AK^{1-\alpha}L^\alpha/L) \\
 &= \ln(W/P) - \ln(A) - (1-\alpha) \cdot \ln(K/L)
 \end{aligned} \tag{4}$$

where LS is the labor share, W is the nominal compensation of employees, P is the value-added deflator, L is the labor input, Y is the real value-added, K is the capital stock, and A is the TFP respectively. Equation (4) holds true if both the product and labor markets are perfectly competitive, assuming a Cobb-Douglas production function with constant returns to scale and one elasticity of substitution between capital and labor. In reality, it is believed that ideal assumptions and deviations are multiplied. Therefore, the study added variables that are assumed to have strong explanatory power as control variables since the fact that real employee compensation, TFP, and the capital-labor ratio in Equation (4) would not be sufficient to determine the labor share. The empirical analysis covering the period 2006 to 2015 estimates the following basic equation:

$$\ln LS_{f,t} = \beta_1 \ln RW_{f,t} + \beta_2 \ln TFP_{f,t} + \beta_3 \ln CLRatio_{f,t} + aX_{f,t} + bY_{jt} + \gamma Z + \varepsilon_{ijt} \tag{5}$$

Table 1 Definition and source of variables

Variable	Definition	Source	Unit
Labour share (log)	(Total salary + welfare expenses) / added value (= total salary + welfare expenses + operating income + depreciation + real estate rent + taxes and dues + interest/discounts paid)		
Real employer compensation (log)	(Total salary + welfare expenses) / value-added deflator		
TFP (log)	TFP calculated by the method developed by Good, Nadiri and Sickles (1997)		
Capital-Labour ratio (log)	Capital stock / total number of workers		
Share of Part-time workers	Total number of part-time workers / total number of workers		
Firm's savings ratio	(Net income after taxes - dividend amount (including interim dividends)) / owned capital		
Outside director	This value takes 1 if a firm employs an outside director, 0 otherwise	Basic Survey of Japanese Business Structure and Activities	Firm
Foreign parent firm	This value takes 1 if its parent firm is a foreign firm, 0 otherwise		
Domestic parent firm	This value takes 1 if its parent firm is a domestic firm, 0 otherwise		
Ratio of imports	Direct import value / sales		
Ratio of exports	Direct export value / sales		
R&D intensity	R&D expenses / sales		
Outsourced manufacturing	This value takes 1 if a firm outsources domestically or overseas, 0 otherwise		
Domestic outsourced manufacturing	The value of domestic manufacturing consignment / sales		
Foreign outsourced manufacturing	The value of overseas manufacturing consignment / sales		
Stock option	This value takes 1 if a firm introduces stock options, 0 otherwise		
Diversification index	The number of businesses diversifying		
Competitive index with imports from China	Competitive index with imports developed by Autor et al. (2013)	Basic Survey of Japanese Business Structure and Activities, Comtrade database	Industry
Industrial robotics (log)	The value of industrial robotics (stock)	International Federation of Robotics	

where f, j , and t represent the company, industry, and target year, respectively. $lnLS$ is labor share (logarithm). $lnRW$, $lnTFP$, and $lnCLRatio$ are the logarithms of real employee compensation, TFP, and the capital-labor ratio, respectively. Additionally, X is a firm-level control variable that changes every year, including the proportion of non-regular workers, corporate savings ratio, presence or absence of domestic and overseas subsidiaries, import-export ratio, degree of R&D intensity, ratio of overseas and domestic manufacturing consignment, outside directors, stock option introduction dummies, and number of businesses other than the main business. In addition, Y is an industry unit variable that changes every year, including competition for imports from China and industrial robots (stock). The definitions of the variables, sources, and units of the variables are summarized in Table 1. Z represents the industry and year dummies. Welfare costs, which is necessary for calculating labor share, have been available from 2006 onward. Therefore, this study analyzes the period from 2006 to 2015. In addition, variables related to dividends, domestic and overseas manufacturing consignments, and outside directors, which are necessary to calculate the corporate savings ratio, have been available since 2009. To confirm robustness, the paper also estimated the upward trend of Japan's labor share from 2006 to 2008. Table 2 shows the relevant descriptive statistics.

3.2 Results

Table 3 presents the estimation results for the period 2009-2015. First, real employee compensation is statistically significant and positive, while TFP and the capital-labor ratio are statistically significant and negative. This result aligns with previous research and is consistent with the theory. In other words, although an increase in real employee compensation is a factor in an increase in labor share, the fact that labor share has been declining since 2009 implies that real employee compensation has not risen, which means technological progress, as measured by TFP, is a factor in the decline in labor share. This suggests that technological progress was complementary to capital and a substitute for labor. This finding is similar to Grossman *et al.* (2017), who find that

Table 2 Descriptive statistics

Variable	Sample	Mean	SD	Minimum	Max
Labour share (log)	278,643	-0.414	0.326	-7.662	0.292
Real employer compensation (log)	278,612	6.731	1.127	0.651	13.583
TFP (log)	267,622	-0.014	0.209	-1.579	1.395
Capital-Labour ratio (log)	276,121	1.053	1.777	-8.605	7.935
Share of Part-time workers	278,648	0.162	0.232	0.000	1.000
Firm's savings ratio	191,831	0.049	0.237	-2.000	2.000
Outside director	278,648	0.208	0.406	0	1
Foreign parent firm	278,648	0.012	0.110	0	1
Domestic parent firm	278,648	0.382	0.486	0	1
Ratio of imports	278,648	0.033	0.135	0	1.630
Ratio of exports	278,648	0.032	0.115	0	1.012
R&D intensity	278,644	0.006	0.032	0	3.642
Outsourced manufacturing	278,648	0.495	0.500	0	1
Domestic outsourced manufacturing	196,990	0.052	0.111	0	1
Foreign outsourced manufacturing	196,990	0.004	0.035	0	0.991
Stock option	278,648	0.050	0.218	0	1
Diversification index	278,648	2.594	1.344	1	32
Competitive index with imports from China	126058	5.799246	71.78017	-2075.374	1438.515
Industrial robotics (log)	113589	2.50979	1.899247	0	4.725061

the decline in labor share is due to the decline in productivity. However, research and development (R&D) intensity has a positive and statistically significant effect on labor share.

Next, the ratio of part-time workers, a characteristic of Japanese companies in recent years, is statistically significant and negative. This result suggests that non-regular workers increase the proportion of low-wage workers, which may result in a decline in the labor share. This is consistent with the results of previous studies. It is also found that labor share decreases as the corporate savings ratio increases. This is because excessive use of corporate funds for internal reserves and dividends reduces employee compensation. Moreover, outside directors, foreign-affiliated company dummies, and domestic subsidiary dummies, variables related to corporate governance, did not have a statistically significant effect on labor share.

Furthermore, the export ratio is statistically significant and negative, while the import ratio is statistically significant and positive. When globalization is evaluated by the import ratio, the result is that globalization raises labor share while the export ratio showed the opposite result. Tanaka *et al.* (2018) pointed out that it is possible that the import ratio does not accurately capture globalization. However, no statistically significant results are obtained for imports from China.

Additionally, the domestic and overseas outsourcing ratios are statistically significant and positive only for domestic outsourcing. This result is inconsistent with the hypothesis that outsourcing manufacturing reduces labor share. Moreover, the effect of stock options on labor share is negative and statistically significant. This suggests the possibility that Japanese companies have cut the wages of general workers by introducing stock options. Finally, industrial robots had a statistically significant and negative outcome. In other words, it can be said that labor share is on a downward trend in industries that make extensive use of industrial robots.

The paper excluded variables related to outsourcing to foreign countries, outside directors, and the corporate savings ratio, and conducted an analysis targeting the years 2006 and beyond. Table 4 summarizes the estimation results from 2006 to 2015. First, real employee compensation, TFP, capital-labor ratio, and R&D intensity are

Table 3 Estimation results (2009-2015)

	Fixed effects model			
	All industry	Manufacturing		Non-manufacturing
	2009-2015	2009-2014	2009-2015	2009-2015
Real employer compensation (log)	0.32318*** (0.005)	0.40363*** (0.008)	0.41194*** (0.008)	0.31432*** (0.007)
TFP (log)	-0.95099*** (0.013)	-1.83554*** (0.022)	-1.85012*** (0.023)	-0.70236*** (0.014)
Capital-Labour ratio (log)	-0.03251*** (0.002)	-0.06638*** (0.002)	-0.06525*** (0.003)	-0.02311*** (0.002)
Share of Part-time workers	-0.15551*** (0.008)	-0.09037*** (0.012)	-0.08731*** (0.012)	-0.14792*** (0.010)
Firm's savings ratio	-0.07480*** (0.002)	-0.06398*** (0.003)	-0.06197*** (0.003)	-0.06048*** (0.003)
Outside director	0.00022 (0.002)	-0.00404 (0.002)	-0.00225 (0.003)	0.00307 (0.002)
Foreign parent firm	0.0124 (0.020)	0.02112 (0.024)	0.02022 (0.028)	0.01009 (0.028)
Domestic parent firm	-0.00394 (0.004)	-0.0074 (0.006)	-0.00502 (0.007)	0.0012 (0.005)
Ratio of imports	0.03124*** (0.008)	0.04721* (0.024)	0.05028* (0.024)	0.02338** (0.009)
Ratio of exports	-0.02416* (0.010)	-0.03238* (0.013)	-0.03339* (0.014)	0.0019 (0.012)
R&D intensity	0.20658** (0.063)	0.14760* (0.068)	0.13625* (0.065)	0.09151* (0.044)
Domestic outsourced manufacturing	0.02978*** (0.008)	0.03848** (0.014)	0.03684* (0.015)	0.02283* (0.009)
Foreign outsourced manufacturing	0.05443 (0.029)	0.05668 (0.037)	0.04862 (0.040)	0.07267 (0.043)
Stock option	-0.00885* (0.004)	-0.01091 (0.006)	-0.00858 (0.006)	-0.00973* (0.005)
Diversification index	-0.00559*** (0.001)	-0.00568*** (0.002)	-0.00636*** (0.002)	-0.00478*** (0.001)
Competitive index with imports from China		-0.00002 (0.000)	-0.00001 (0.000)	
Industrial robotics (log)			-0.00878*** (0.002)	
Constant	-2.05407*** (0.067)	-2.87967*** (0.052)	-2.89190*** (0.056)	-2.16097*** (0.067)
Observations	185,450	83,770	71,885	101,680
The number of group	37,357	16,399	16,031	22,094
Firm dummy	○	○	○	○
Industry dummy	○	○	○	○
Year dummy	○	○	○	○

Note: Dependent variable is logarithm of labor share. Cluster-robust standard error is reported in parentheses. Level of significance are *** 1%, ** 5%, * 10%.

consistent with the results for 2009 and beyond, which indicates that the influence of these variables does not change depending on the target period. Next, non-regular employment is statistically significant and negative, similar to the estimation results for 2009 and beyond. Moreover, the coefficient for non-manufacturing has a higher value. Similar results were obtained for the import ratio while the export ratio was statistically significant only for the manufacturing industry. Outsourcing has no significant effect on the labor share.

Furthermore, the competition for Chinese imports is not statistically significant, which implies that imports from China was not been able to explain changes in labor share in any period. The industrial robots also yielded

Table 4 Estimation results (2006-2015)

	Fixed effects model			
	All industry	Manufacturing		Non-manufacturing
		2006-2015	2006-2014	2006-2015
Real employer compensation (log)	0.29949*** (0.004)	0.38915*** (0.006)	0.39792*** (0.006)	0.28174*** (0.005)
TFP (log)	-0.88698*** (0.012)	-1.75852*** (0.019)	-1.78356*** (0.019)	-0.63843*** (0.013)
Capital-Labour ratio (log)	-0.03132*** (0.001)	-0.04883*** (0.001)	-0.04867*** (0.001)	-0.02779*** (0.001)
Share of Part-time workers	-0.16849*** (0.007)	-0.12384*** (0.010)	-0.12697*** (0.010)	-0.15842*** (0.009)
Foreign parent firm	0.02129 (0.018)	0.03104 (0.020)	0.02983 (0.021)	-0.00132 (0.032)
Domestic parent firm	-0.00342 (0.003)	-0.00332 (0.005)	-0.00107 (0.005)	0.00102 (0.005)
Ratio of imports	0.02908*** (0.007)	0.06107** (0.019)	0.06437*** (0.019)	0.01905* (0.008)
Ratio of exports	-0.01501 (0.010)	-0.04332*** (0.013)	-0.04302** (0.014)	0.01459 (0.012)
R&D intensity	0.23367*** (0.056)	0.18388** (0.062)	0.17254** (0.059)	0.10737** (0.042)
Outsourced manufacturing	0.00045 (0.001)	-0.00377 (0.002)	-0.00353 (0.002)	0.00202 (0.002)
Stock option	-0.0036 (0.003)	-0.0094 (0.005)	-0.00797 (0.006)	-0.00256 (0.004)
Diversification index	-0.00567*** (0.001)	-0.00596*** (0.001)	-0.00625*** (0.001)	-0.00455*** (0.001)
Competitive index with imports from China		0.00000 (0.000)	0.00001 (0.000)	
Industrial robotics (log)			-0.00168 (0.001)	
Constant	-1.90646*** (0.049)	-2.78882*** (0.042)	-2.83351*** (0.044)	-1.95995*** (0.053)
Observations	267,589	121,924	109,782	145,665
The number of group	42,184	18,454	18,121	25,514
Firm dummy	○	○	○	○
Industry dummy	○	○	○	○
Year dummy	○	○	○	○

Note: Dependent variable is logarithm of labor share. Cluster-robust standard error is reported in parentheses. Level of significance are *** 1%, ** 5%, * 10%.

statistically insignificant results for the period. This result suggests that industrial robots may replace labor in recent years.

4. Discussion

This section focuses on the effects of competition with imported goods, the introduction of industrial robots, and the shift to non-regular employment of workers (which has not been mentioned much in previous research) on the decline in labor share.

First, the paper confirms that the inclusion of variables representing the degree of competition with overseas outsourcing and imports from China as an index of globalization does not have a significant impact on labor share. No statistically significant results were obtained for overseas outsourcing from the empirical analysis. This is a different result from previous research, and factors such as the difference in the analysis period and estimation

model can be considered. Next, competition with imported goods from China may have lowered labor share as a result of price competition and employment adjustments in industries in a competitive relationship with imported goods from China. However, this hypothesis was rejected.

Regarding the introduction of industrial robots, an analysis targeting 2009 and later reveals that the trend is statistically significant and negative. In this respect, especially in labor-intensive processes in the manufacturing industry, labor and industrial robots are in a substitutive relationship. Therefore, one can say that in some instances industrial robots have replaced labor.

Furthermore, it became clear that an increase in the ratio of non-regular employees (part-time workers) to all workers is a factor in lowering labor share. This is peculiar to Japan, and highlights the possibility that the shift to non-regular employment is driving a decline in labor share. Regarding the proportion of non-regular employees, from the analysis of 2006 onward, the paper observe that it is statistically significant and negative. Regardless of the period, it is highly likely that this has been a factor in the decline in Japan's labor share.

5. Conclusions

According to previous research, labor share in advanced countries has been on a downward trend since 2000. This study shows that Japan's labor share increased during the period 2006-2008 and has been on a downward trend since 2009. During this period, the labor share of Japan was influenced by overall fluctuations in the labor share of Japanese companies. Japan's labor share is declining mainly because the labor share of large companies has also declined. In other words, to raise Japan's labor share, it is important to have policies that encourage large companies to expand their investment in research and development and support workers in upgrading their skills. Additionally, it is important to create a system that prevents large companies from increasing the number of non-regular workers.

This study conduct the empirical analysis of Japanese companies from 2009 to 2015 in order to clarify the factors that contributed to the decline in labor share in Japan. First, as in previous studies, falling real wages, technological progress, and rising capital-labor ratios are factors in the decline in labor share. Second, industries that have introduced more industrial robots tend to have a lower labor share. The non-regularization of employment is also a factor that lowers the labor share. However, R&D intensity is a factor that increases labor share.

These results suggest that to increase the labor share of Japanese companies, it is necessary to promote R&D investment, develop new technologies such as industrial robots and artificial intelligence, and expand support for higher education and re-education of workers. This also suggests the need for policies that encourage the transition from non-regular to regular employment.

The following issues remain for future research: it is necessary to consider factors such as the impact of Japanese management, seniority-based wages, the introduction of industrial robots in the non-manufacturing industry, and the impact of artificial intelligence, which is being increasingly used, as factors contributing to the decline in the labor share of Japanese companies.

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