

## Effects of Demographic Change on Labor Market and Wage Developments

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Considering Japan's demographic outlook, labor supply is not likely to increase significantly and labor shortages are highly likely to continue in the future. This article examines the effects of such labor shortages on labor market and wage developments. In Japan's labor market, there are obstacles to a wage increase such as low labor mobility and the different wage-setting mechanisms used according to type of employment — the so-called dual structure. As the degree of labor shortage increases, signs of change in the situation have begun to emerge. Empirical results of this article suggest that, labor mobility is beginning to improve due to the expansion of job changes. A mechanism which enables wages to rise in tandem across markets — where wages had previously been decided according to different systems — has begun to yield results, as seen by increases in part-time employees' wages exerting upward pressure on full-time employees' wages. It is probable that these kinds of changes will continue and firms' wage-setting behavior will become more proactive.

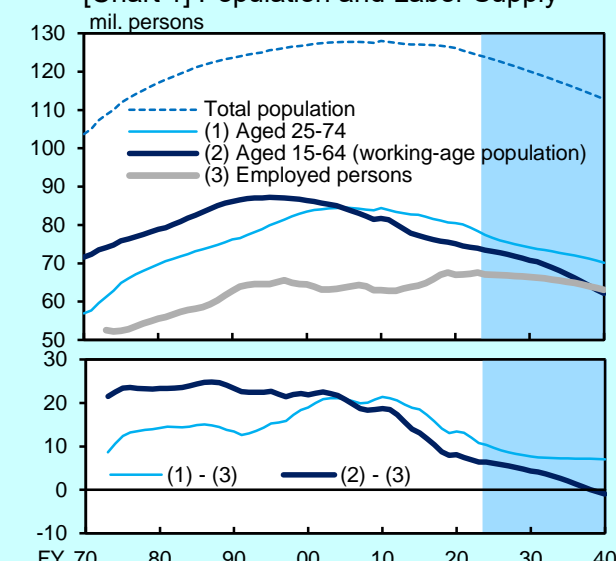
### Introduction

Japan's population has come into decline after its peak in 2008, but labor supply has been increasing as seniors and women's labor force participation has progressed. That being said, the potential space for further increases in the labor supply has been decreasing gradually (Chart 1). Considering the gaps between (1) the number of employed persons and the working-age population and (2) the number of employed persons and the population aged between 25 and 74 years, those gaps that indicate a potential labor supply pool have been narrowing significantly since around 2010 and are likely to further narrow with time.

These changes in the labor supply could have an impact on Japan's economy through various channels. A decline in labor supply itself exerts downward pressure on the economy; however, as many studies argue, it could exert upward pressure if the capital equipment ratio rises and productivity improves through, for example, labor-saving investment and digitization to address labor shortage.<sup>1,2</sup> Moreover, if a tightening of labor market conditions progresses with labor shortage being the trigger, it would exert upward pressure on wages and prices. Also, as resource allocation becomes more efficient through, for example, improved labor mobility, productivity will rise, leading to economic growth.<sup>3</sup>

This article briefly summarizes issues in the labor market in Japan and then considers the effect an expected decrease in labor supply would have on the labor market in a medium to long term by introducing the recently emerging characteristic developments. It also summarizes effects of these developments on firms' wage-setting behavior.

[Chart 1] Population and Labor Supply



Sources: Ministry of Internal Affairs and Communications; National Institute of Population and Social Security Research; Japan Institute for Labour Policy and Training.

Note: The shaded areas denote projection periods. The population projections are by the National Institute of Population and Social Security Research. The projection for the number of employed persons is calculated based on projections by the Japan Institute for Labour Policy and Training.

## Issues in the Japanese Labor Market

A number of issues have been raised regarding the labor market in Japan.<sup>4</sup> Many point to low labor mobility in particular. Japan's labor market structure has meant that human capital is less likely to be reallocated efficiently. Labor mobility, such as a job change, has been limited for many years under the system of lifetime employment. Since the 1990s, a globally competitive environment and a changing domestic economic structure have required necessary personnel to move smoothly from declining sectors to growth areas; however, many note that a rigid labor market in Japan has been an obstacle to such movement of workers.<sup>5</sup>

Moreover, the "dual structure" is also often raised as an issue. The dual structure refers to the fact that wage-setting mechanisms are different for workers whose wages are susceptible to short-term fluctuations in labor market conditions as they move across different firms (i.e., workers in "external labor market") and workers who are on long-term employment contracts (i.e., workers in "internal labor market"). For example, wage-setting mechanisms are different for part-time and full-time employees. Even among full-time employees, wage-setting mechanisms differ between those who build their career by changing firms or even industries and those who remain in lifetime employment and receive seniority-based wages. Some have pointed out that due to these differences, even if there is upward pressure on wage increases in part for these types of workers, it does not easily spread to the entire labor market.<sup>6</sup> A number of discussions since the mid-2010s have considered why regular employees' wages do not rise amid a heightening degree of labor shortage. Many have pointed out that this may be because firms responded to labor shortages by increasing the number of non-regular (part-time) employees, mainly consisting of women and seniors, instead of raising regular employees' wages.<sup>7</sup>

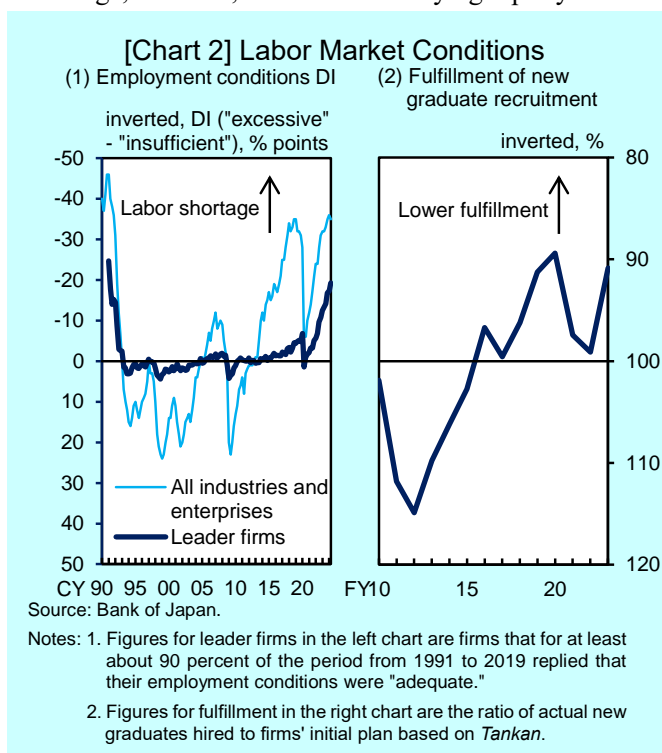
Japan has faced the abovementioned issues in the labor market for many years and they have led to firms' rigid wage-setting behavior. These issues will not be solved overnight. Nevertheless, as the labor market demographic continues to change, labor market conditions further tighten. As concern that these issues will intensify spreads, changes have started to be seen in the labor market and firms' wage-setting behavior. The following section introduces these developments.

## Labor Market Changes Brought about by Labor Shortages

### Further tightening labor market conditions

The current situation in labor demand and supply shows that labor shortages have been intensifying on the whole, mainly in the highly-skilled labor force and the younger generation (Chart 2). Labor shortages in the younger generation can also be confirmed by a lower fulfillment rate in new graduate recruitment.

Intensifying labor shortages have spread to firms which are seen to have an advantage in recruiting and retaining employees — e.g., industry-leading firms (hereinafter referred to as "leader firms"). Analyzing microdata from the *Tankan* (Short-Term Economic Survey of Enterprises in Japan), as shown in Chart 2 (1), leader firms did not show labor shortages previously even when aggregate labor market conditions tightened; their recent perception of labor shortage, however, has been intensifying rapidly.

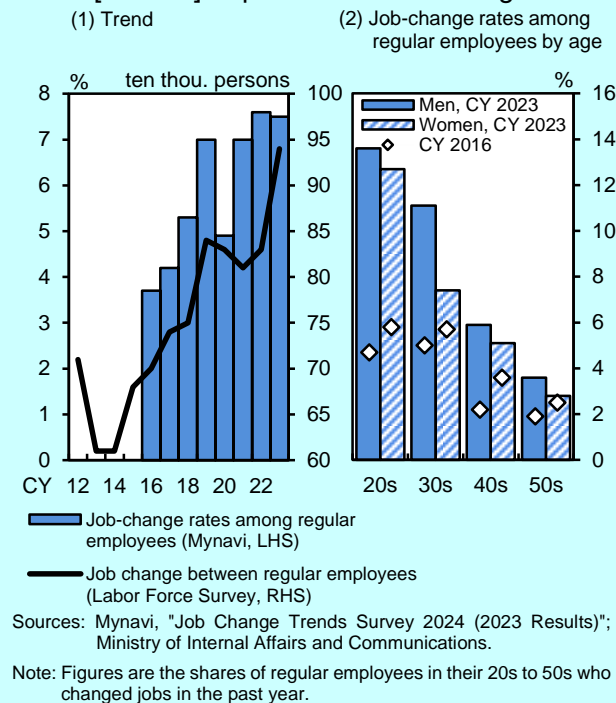


### Expansion of job changes

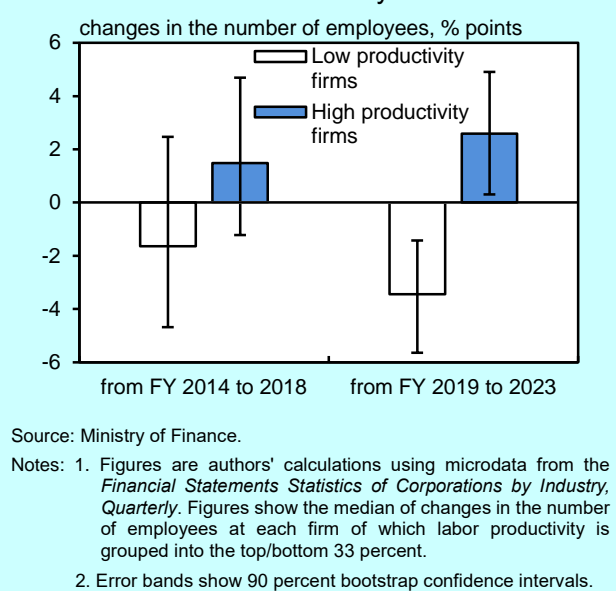
In this environment, the competition over human resources has become more intense. Regular employees have had low labor mobility and there has been a low level of pressure on wage revisions to retain employment; however, the number of regular employees changing jobs has increased significantly (Chart 3). Where up until recently the labor market has been rigid, it is now possible to say that there is increasing labor mobility in Japan. In addition, a closer

look at changes in the number of full-time employees shows that workers seem to be transitioning to firms with higher productivity. This suggests that, triggered by changes in the labor market, resource allocation is becoming increasingly efficient (Chart 4).

[Chart 3] Expansion of Job Changes



[Chart 4] Transition to Firms with High Labor Productivity

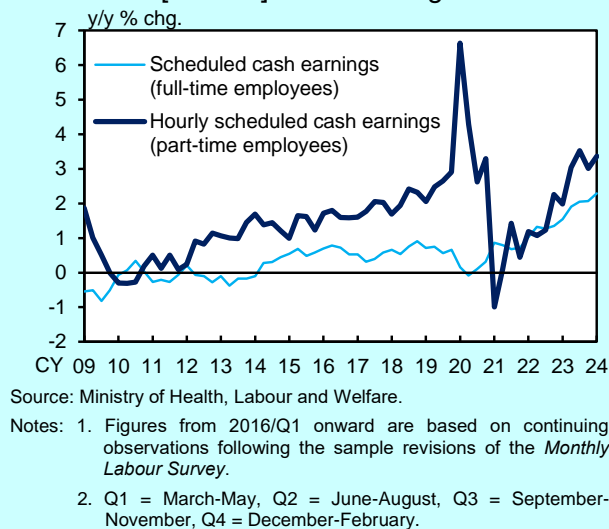


## Changes in Firms' Wage-setting Behavior

There has been upward pressure on wages recently, reflecting the tightening labor market conditions. Wages of full-time employees and part-time employees have seen significant increases (Chart 5). Meanwhile,

it is possible that a new mechanism is working across markets to increase wages in tandem, where previously they had been set according to different systems (such as through the aforementioned dual structure).

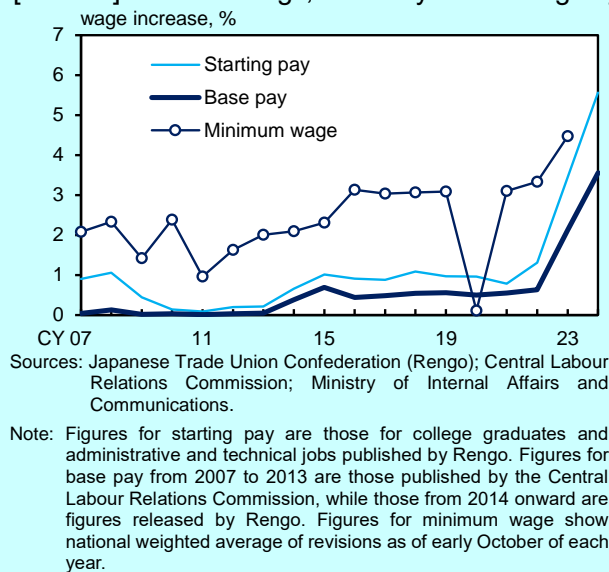
[Chart 5] Nominal Wages



## Spillover from a rise in part-time employees' wages to full-time employees' wages

First, part-time employees' wages have been increasing significantly, mainly due to tightening labor market conditions and a rise in the minimum wage. This is exerting upward pressure on full-time employees' wages, in addition to part-time employees, in industries and firms where the gap between wages of full-time and part-time employees is small (Chart 6).

[Chart 6] Minimum Wage, Base Pay and Starting Pay

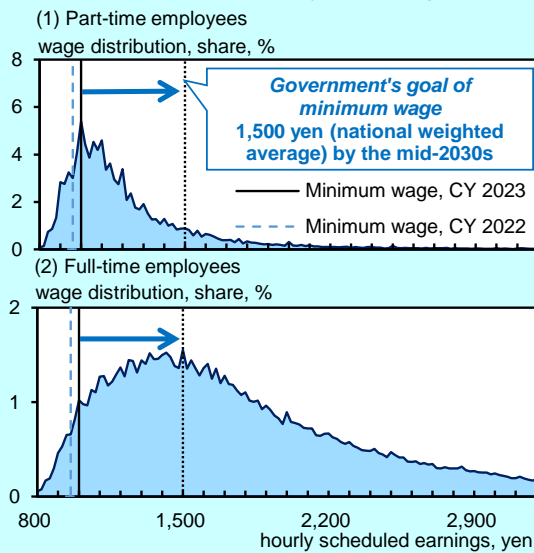


A distribution of wages of part-time and full-time workers using microdata from the *Basic Survey on Wage Structure* shows that there are a certain number of full-time workers who work with wages close to the minimum wage (Chart 7).<sup>8</sup> An increase in the

minimum wage seems to encourage wage increases not only for part-time employees but also for full-time employees, especially at SMEs and in the services industry — e.g., eating and drinking services — where the gap between wages of full-time and part-time employees is small. The minimum wage has been raised continuously at a relatively high rate in recent years and it seems to support these wage developments.

The fact that full-time workers' wages did not increase even though part-time workers' wages increased from the mid-2010s, has been a point of discussion, together with the issue of the dual structure. As additional potential space for labor supply has been declining recently (Chart 1), part-time workers' wages have continued to increase, partly owing to a rise in the minimum wage, narrowing the gap between part-time and full-time workers. In this situation, upward pressure has finally started to be exerted on full-time workers' wages. The government has indicated that it intends to raise the minimum wage to 1,500 yen per hour (national weighted average) by the mid-2030s. Based on this fact, some firms believe wages will continue to rise going forward, and hence raise wages in advance with a view to recruiting and retaining workers.<sup>9</sup>

[Chart 7] Spillover of Minimum Wage to Full-time Employees' Wage



Source: Ministry of Health, Labour and Welfare.

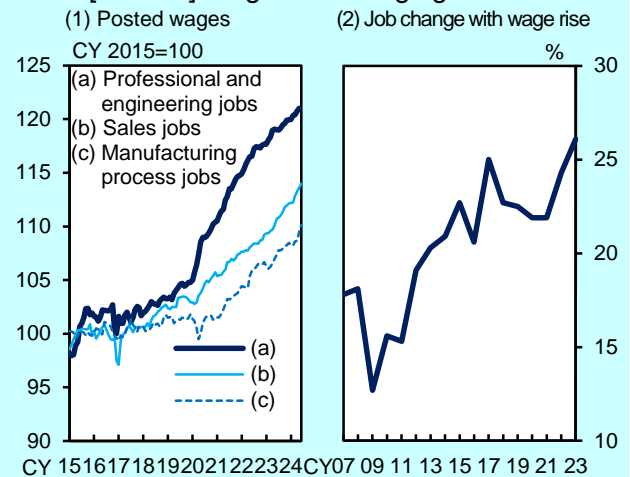
Note: Figures are authors' calculations using microdata from the *Basic Survey on Wage Structure*. Figures are as of June 2023. The vertical lines show the national weighted average minimum wage as of early October of each year.

### Effects of the expansion of job changes on full-time employees' wages

Moreover, an expansion of job changes (external labor market) tends to lead not only to a rise in posted wages but also to an increase in the wages of existing

employees (internal labor market) as firms attempt to proactively retain workers. Although data on the external labor market are limited, as workers changing jobs have increased in recent years, posted wages for job changers have been following an increasing trend, mainly in highly-skilled personnel (Chart 8).<sup>10</sup> Furthermore, a job change accompanied by a wage increase is on the rise. Chart 9 shows an estimate of spillover to wages of workers in the internal labor market when the wages of the workers in the external labor market increase by one percent. In this analysis, full-time workers are categorized into the two classes of labor markets using microdata from the *Basic Survey on Wage Structure*.<sup>11</sup> Although such wage spillover had not been shown to be statistically significant before,

[Chart 8] Wages in Changing Jobs

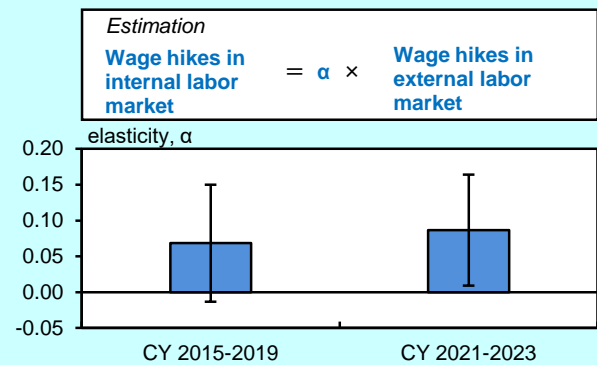


Sources: HRog; Ministry of Health, Labour and Welfare.

Notes: 1. Figures in the left chart show average posted wages for full-time job openings in major private job advertisements. Figures are as of the last Monday of each month.

2. Figures in the right chart show the share of those changing from full-time jobs to other full-time jobs whose wages increased by 10% or more. Figures for 2023 are as of the first half of the year.

[Chart 9] Spillover of Wage Hikes in External Labor Markets



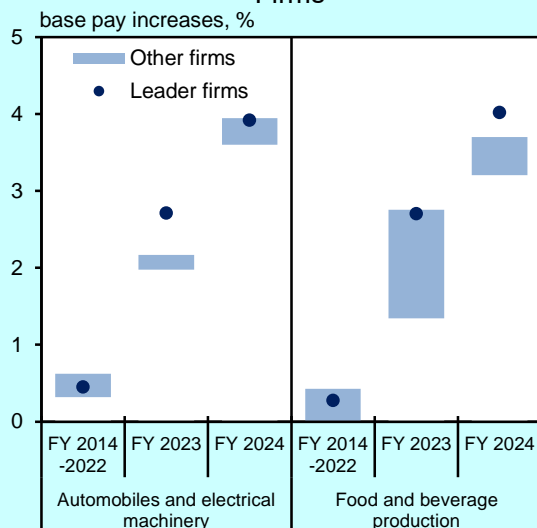
Source: Ministry of Health, Labour and Welfare.

Note: Figures show the estimated effects of wage hikes for workers categorized into the external labor market class on those for workers categorized into the internal labor market class in the same enterprises, based on authors' calculations using microdata from the *Basic Survey on Wage Structure*. Firm size and industry are included as control variables. Error bands show 99 percent confidence intervals.

it has been statistically significant recently, albeit at a limited level.

Meanwhile, in the annual spring labor-management wage negotiations in 2023 and 2024, "leader firms," which have a large number of union members, implemented large base pay increases. Following in their footsteps, many other firms also raised wages considerably (Chart 10).<sup>12</sup> There are many factors attributable to large wage revisions, such as the rise in inflation. As even leader firms perceive the labor shortage as significant, the expansion of job changes and increased upward pressure on wages in the external labor market are likely to have contributed, to some extent, to firms' wage revisions including those of leader firms. Indeed, in interviews with firms, an increasing number of firms mention that they are revising wages with a view to recruiting and retaining personnel, while monitoring wage developments in competitors.

[Chart 10] Spillover of Wage Hikes in Leader Firms



Source: Japanese Trade Union Confederation (Rengo).

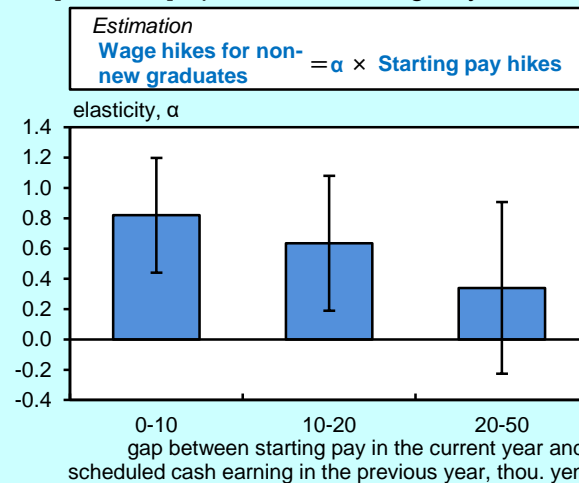
- Notes: 1. Figures for base pay increases are authors' estimates based on Rengo's microdata on wage hikes and wage levels reported by its major labor unions.  
 2. Figures for leader firms in each sector are the averages of three firms with among the largest number of union members in that sector.  
 3. The blue bars show the 25th-75th percentile distributions of wage hikes at other firms.

In addition, as more workers in the younger generation are changing jobs, some firms are proactively hiring new graduates by increasing the starting pay of new graduates (Chart 6). A rise in new graduates' starting pay seems to be affecting wage revisions of full-time employees, mainly in the younger generation, who have similar wage levels to that of new graduates (Chart 11).

As described above, firms' wage-setting behavior has started to change into a positive one, triggered by

labor shortages. The potential space for further increases in the labor supply is likely to further narrow gradually based on the outlook for demographics. This will likely continue pushing up wages through tightening labor market conditions.

[Chart 11] Spillover of Starting Pay Hikes



Source: Ministry of Health, Labour and Welfare.

Note: Figures show the estimated effects of starting pay hikes on wage hikes for non-new graduates in the same enterprises, based on authors' calculations using microdata from the *Basic Survey on Wage Structure*. Error bands show 99 percent confidence intervals. Figures are estimated using scheduled cash earning data for employees with college and postgraduate degree from 2015 to 2023.

## Concluding Remarks

This article points out that changes are starting to be seen in the ongoing structural issues affecting the Japanese labor market, as demographics change and the potential space for further increases in the labor supply decreases. In other words, the empirical results in this article suggest that (1) job changes are expanding and labor mobility is starting to improve, triggered by labor shortages, and (2) wages had been set differently across markets, as seen in the aforementioned dual structure; however, a mechanism has begun to operate in which wages rise in tandem across those markets.

Going forward, there is a possibility that firms' wage-setting behavior becomes even more proactive as these changes continue. Moreover, it is necessary to closely monitor whether resource allocation will be made more efficient, triggered by changes in the labor market, pushing up the economy through an improvement in productivity. Various factors beyond those raised in this article could affect developments in the labor market and wages, including the economic situation and labor policies. It will continue to be important to analyze various data on the situation in the labor market and firms' wage-setting behavior and to collect and examine information gathered from

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<sup>1</sup> Chikamatsu *et al.* (2023) note that firms tend to replace labor with capital (machines), triggered by labor shortages. For details, see the following paper.

Chikamatsu, K., S. Ikeda, and T. Yagi (2024), "Effects of Demographic Changes on Medium- to Long-Term Business Fixed Investment," Bank of Japan Review Series, 24-E-7.

<sup>2</sup> In addition, although the potential space for further increases in the number of workers seems to be narrowing as discussed in this article, in terms of the labor supply, effects of government policies to address issues, such as the so-called barrier of 1.03 and 1.06 million yen, may increase the total hours worked to a certain extent, mainly among women.

<sup>3</sup> For recent discussions on productivity in Japan, see the following paper.

Yagi, T., K. Furukawa, and J. Nakajima (2022), "Productivity Trends in Japan -- Reviewing Recent Facts and the Prospects for the Post-COVID-19 Era --," Bank of Japan Working Paper Series, No.22-E-10.

<sup>4</sup> This article introduces discussions regarding two issues in the labor market: labor mobility and the dual structure. For other issues, see the following papers.

Fukunaga, I., K. Furukawa, S. Haba, Y. Hogen, Y. Kido, T. Okubo, K. Suita, and K. Takatomi (2023), "Wage Developments in Japan: Four Key Issues for the Post-COVID-19 Wage Growth," Bank of Japan Working Paper Series, No.23-E-4.

Genda, Y. (ed.) (2017), *Hitode busoku nanoni naze chingin ga agaranai noka* [Why wages do not increase amid labor shortages], Keio University Press (available only in Japanese).

<sup>5</sup> See, for example, the following papers.

Shioji, E. (2016), "Fuka kachi seisensei to bumonkan rōdō haibun" [Added-value productivity and inter-sectoral labor distribution], *Keizai Bunseki*, Vol.191 (available only in Japanese).

Fukao, K. and Y. Kim (2023), "Kigyō grūpu nai no shigen saihaiibun ga makuro keizai no zen yōso seisensei ni ataeru eikyō" [Effects of resource reallocation within a corporate group on aggregate total factor productivity], RIETI Discussion Paper Series, No.23-J-023 (available only in Japanese).

<sup>6</sup> Since the mid-2010s, while part-time employees' wages followed an increasing trend amid tightening labor market conditions, the growth in full-time employees' wages was sluggish. This was said to be attributable to the issue of the dual structure in the labor market. The following paper shows that the internal labor market and the external labor market are divided and their wage sensitivity to labor market conditions are different between the two markets, using data up to 2021.

Date, D., T. Kurozumi, T. Nakazawa, and Y. Sugioka (2024), "Heterogeneity and Wage Growth of Full-time Workers in Japan: An Empirical Analysis using Micro Data," *Journal of the Japanese and International Economies*, Vol.73, 101324.

<sup>7</sup> See, for example, Genda (ed.) (2017). The following paper focuses on non-regular workers as a factor to contain wage increases and notes that, as room for additional labor supply of women and seniors who have supplanted labor shortages decreases, there is a possibility that the non-regular job market will come to "Lewisian Turning Point," exerting upward pressure on aggregate wages.

Ozaki, T. and Y. Genda (2020). "Chingin jōshō ga yokusei sareru mekanizumu" [A mechanism that contains wage increases], *Kinyū Kenkyū*, Vol. 39 (4), pp.55-105 (available only in Japanese).

<sup>8</sup> In detail, Chart 7 suggests that it appears as if there are some workers who work with wages under the minimum wage (the vertical line). This is because the minimum wage shown as the vertical line in the graph is a national weighted average; there are prefectures which set their minimum wage lower than the national average, and there are a certain number of workers to whom special provisions for the reduction of minimum wages apply, such as those in trial period.

<sup>9</sup> In "Basic Policy on Economic and Fiscal Management and Reform 2024," the Cabinet Office notes that "[t]o achieve this goal as early as possible, the government will strive to increase labor productivity by supporting automation and labor-saving investments, and by improving the environment for business succession and M&A."

<sup>10</sup> Furukawa *et al.* (2023) calculate posted wages for regular workers using online job advertisements. In this article, data used in their analysis are updated. For the details of the calculation method, see the following paper.

Furukawa, K., Y. Hogen, and Y. Kido (2023), "Labor Market of Regular Workers in Japan: A Perspective from Job Advertisement Data," Bank of Japan Working Paper Series, No.23-E-7.

<sup>11</sup> Using a finite mixture model estimated using various characteristics of the workers and the firms they work for, as in Date *et al.* (2024), regular employees (full-time workers) are categorized into two classes with different wage structures. Date *et al.* (2024) confirm that those two classes correspond to external labor market class and internal labor market class noted in the past studies. In this article, workers who appear to be employed by the same workplace for more than two years in a row are extracted on the basis of a certain assumption; therefore, the job changers are not directly extracted. Nevertheless, there is a possibility that wage developments among job changers affect wages of workers classed with the external labor market except for those of job changers, and its spillover effects are exerted on wages of workers classed with the internal labor market.

<sup>12</sup> On the annual spring labor-management wage negotiations in recent years, see, for example, Bank of Japan (2024), *Outlook for Economic Activity and Prices (July 2024)*, Box 1, and Bank of Japan (2024), *Outlook for Economic Activity and Prices (April 2024)*, Box 2.

<sup>13</sup> Regarding wage increases, the information gathered through interviews with firms by the Bank of Japan also show that firms' behavior has been changing. For the recent interview information, see the annex paper to the Bank's *Regional Economic Report*, "Chiiki no chūken chūshō kigyō ni okeru chingin dōkō -- saikin no kigyō kōdō no henka wo chūshin ni" [Wage developments in regional SMEs: Focusing on recent changes in firms' behavior] released in July 2024 (available only in Japanese).

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