Assessing the Insufficient Employment Sentiment in Light of Labor Share Trends

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Excessive employment, which plagued the post-bubble economy for a decade, has finally ended. Today, sentiment is mounting toward insufficient employment. This trend is consistent with the plunge of labor's share below the long-term equilibrium level suggested by labor productivity and real wages. At small enterprises, however, the labor share still remains stubbornly high. While the retirement of baby boomers is expected to drive down labor cost, two factors will mitigate the decrease: the continued employment of elderly workers, and rising average wage as workers become more educated. Large enterprises can afford to raise employment and wages. But small enterprises could become vulnerable to excessive employment again if the labor share rises further.

1. Sentiment Shifts from Excessive to Insufficient Employment

As the current expansion surpasses the postwar longevity record of the *Izanagi* expansion, employment conditions are showing definite signs of improvement. The unemployment rate is down from the all-time high of 5.5% to 4.0%, while the ratio of job offers to job seekers exceeds 1. Excessive employment sentiment, which was acute when the expansion began in early 2002, has disappeared. Today, sentiment is mounting toward insufficient employment.

According to the Bank of Japan *Tankan* survey, the diffusion index (DI) of employment conditions (percent of enterprises reporting excessive versus insufficient employment), which had been persistently above zero since 1993, dropped below zero in September 2005 and has continued to decline (Exhibit 1).

**Exhibit 1   Employment Conditions DI**
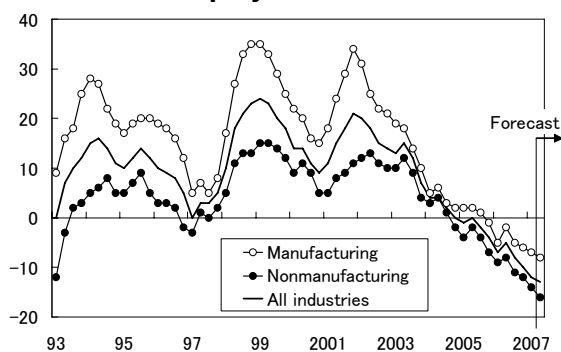
Source: Bank of Japan, *Tankan*.

2. Employment Sentiment and Labor's Share

(1) Plunge in Labor's Share

Employment sentiment is intimately tied to the labor share of income, or proportion of labor cost in value added by businesses. Generally, a high labor share is associated with excessive employment, and a low labor share with insufficient employment. In the early 1990s, the labor share plunged to the low 60s, then surged past 70 after the bubble burst. Despite dipping in expansions, it subsequently soared at around 70 for over a decade. In the current expansion, it has dropped steadily, and now stands in the mid 60s (Exhibit 2).

Exhibit 2   Labor Share
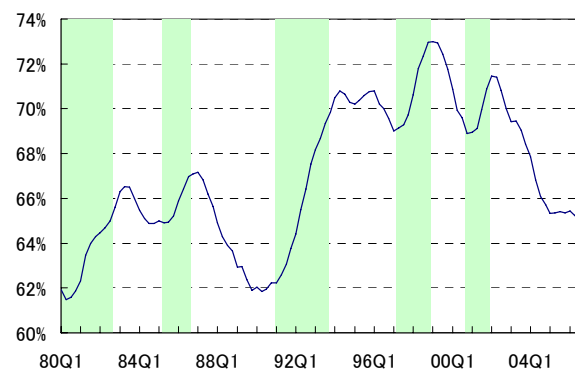
Notes: Labor share = Labor cost / (Labor cost + Operating profit + Depreciation cost). Shows 4-quarter moving average; shaded areas indicate recession.
Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

The labor share of income can be restated as:

$$\text{Labor share} = \frac{\text{Labor cost}}{\text{Value added}}$$

$$= \frac{\text{Labor cost / no. of employed persons / deflator}}{\text{Value added / no. of employed persons / deflator}}$$

$$= \frac{\text{Real wage}}{\text{Labor productivity}}$$

According to the *Annual Report on the Japanese Economy and Public Finance 2005* (Cabinet Office), a long-term equilibrium relationship exists between the real wage and labor productivity. From this relationship, we can derive the long-term equilibrium real wage and labor share from the actual labor productivity value.[1] If the actual labor share exceeds the long-term equilibrium, it can mean either that employment is excessive or that the real wage is high. Conversely, if the actual labor share is below equilibrium, then employment is insufficient or real wage is low.

Our results show that labor's share soared above equilibrium for over a decade in the post-bubble economy. Then it plunged in the current expansion which began in January 2002, and has been below equilibrium since early 2004. The labor share diverged positively from equilibrium peaked at almost 10% in 1999, the labor share now diverges below equilibrium by approximately -4% (Exhibit 3).

Exhibit 3   Labor Share's Divergence and Employment Conditions DI
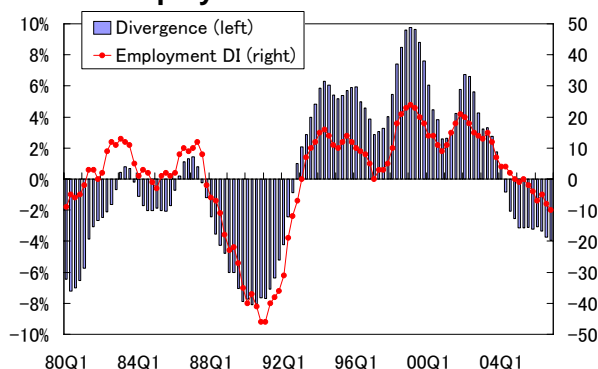
Note: Divergence = (Labor share − Equilibrium labor share) / Labor share.
Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

Generally, the labor share divergence moves in the same direction as the employment conditions DI. Thus the recent surge in insufficient employment sentiment supports the view that labor's share has undergone adequate correction.

(2) Causes of the Plunge of Labor's Share

In the last two post-bubble expansions, the labor share remained stubbornly high. Why, then, has it fallen so much in the current expansion?

The labor share was stable in the expansion from October-December 1993 because labor cost rose at roughly the same pace as value added. In the expansion from January-March 1999, labor cost growth was not pronounced, but value added growth was weak.

By comparison, in the current expansion from January-March 2002, rigorous labor cost cuts brought down the labor share despite the initial low growth of value added. In the third year of expansion in 2004, labor cost started to rise, but by that time value-added growth had picked up, causing the labor share decrease to accelerate. Recently, because labor cost growth has started to accelerate, the labor share shows signs of bottoming out (Exhibit 4).

**Exhibit 4   Value Added, Labor Cost, and the Labor Share**
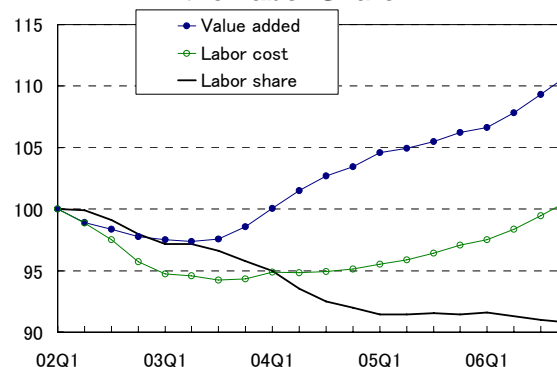
Note: January-March 2002 = 100
Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

(3) High Labor Share of SMEs

By enterprise size, the labor share's recent decline is most pronounced at large enterprises, where it has dropped to pre-bubble levels. But at SMEs, where the labor share is generally higher, the decrease is minor—in fact, the labor share actually rose from 2005 (Exhibit 5).

Exhibit 5   Labor Share by Company Size
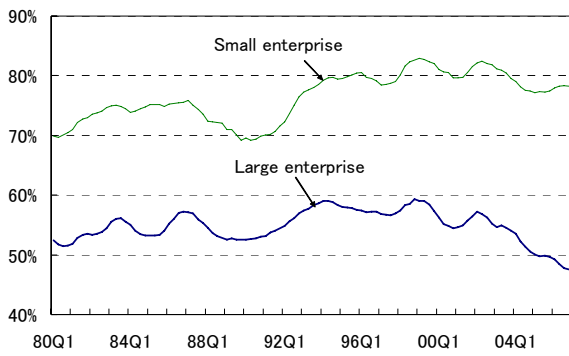
Note: Large enterprises have at least ¥1 billion in paid-in capital; SMEs have less than ¥1 billion in paid-in capital.
Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

Exhibit 6   Value Added and Labor Cost

(a) Large Enterprise

Note: January-March 2002 = 100
Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

(b) Small enterprise

Note: January-March 2002 = 100
Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

Exhibit 7 Labor Share Divergence and Employment DI (Small Enterprise)

Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

One reason for this is that value added slumped 7% at small enterprises when the expansion began from early 2002 to mid 2003, compared to a flat performance at large enterprises.

From mid 2003, despite value-added growth at small enterprises, the labor share remained high as their labor cost grew apace. At large enterprises, value-added growth accelerated while labor cost was rigorously contained, bringing down the labor share (Exhibit 6a and b).
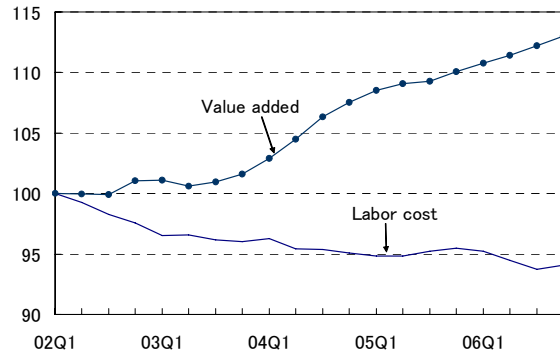
Using the same method as above, we calculated the labor share's divergence from long-term equilibrium by company size. At large enterprises, the labor share diverges almost -10% below equilibrium. At small enterprises, the divergence was roughly zero in 2005, but returned to positive territory in 2006.

In the past, the labor share's divergence and employment conditions DI have generally moved together. But despite the recent positive divergence, sentiment at small enterprises is mounting toward insufficient employment. Judging from the long-term equilibrium labor share, this sentiment appears to be exaggerated (Exhibit 7).

Part of the reason lies in expectations regarding the retirement of baby boomers. Compared to large enterprises, workers at small enterprises are more heavily concentrated in the age 55-59 cohort (Exhibit 8). Small enterprises thus expect their high labor cost to drop sharply with the retirement of baby boomers. This expectation
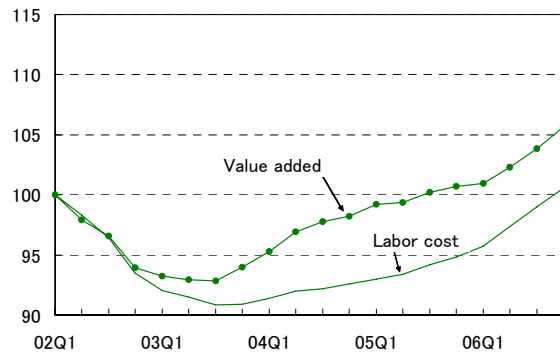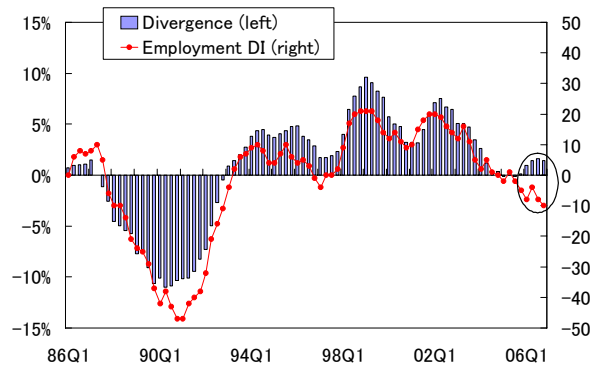
Exhibit 8 Age Composition of Workers by Company Size (2006)
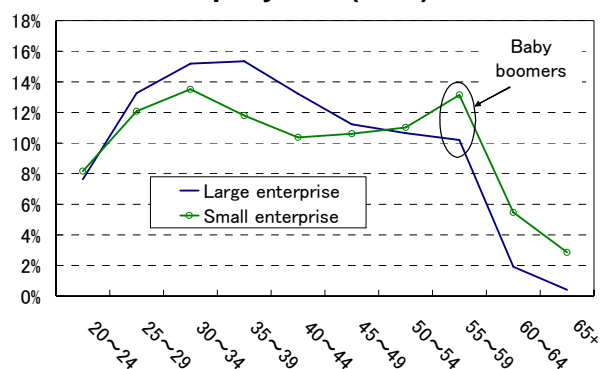
Notes: Large enterprises have at least 1,000 employees; small enterprises have 10 to 99 employees.
Source: MHLW, *Basic Survey on Wage Structure*.

Exhibit 9 New Graduate Hiring by Company Size
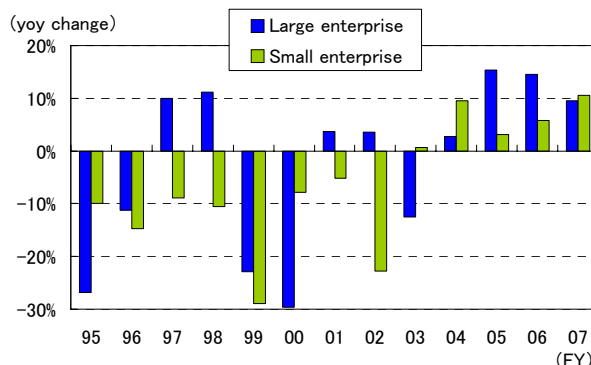
Note: Large enterprises have paid-in capital of at least ¥1 billion; small enterprises have paid-in capital of less than ¥100 million. Shows actual hiring to fiscal 2005, estimated hiring in fiscal 2006, and planned hiring in fiscal 2007.
Source: MOF, *Financial Statements Statistics of Corporations by Industry*.

appears to be accentuating the insufficient employment sentiment.

The sense of urgency at small enterprises regarding the impending retirement of baby boomers is evident from new graduate hiring trends. According to the BOJ *Tankan* survey, during the post-bubble decade from fiscal 1993, large enterprises increased new graduate hiring in economic recovery phases, while small enterprises consistently reduced hiring over the decade.

In the current expansion, however, small enterprises took a one-year head start on large enterprises by expanding new graduate hiring in fiscal 2003, and leading again in fiscal 2004. This indicates that small enterprises were actively repositioning themselves to accommodate the future labor shortage. While large enterprises led in fiscal 2005 and 2006, small enterprises regained the lead in fiscal 2007 (Exhibit 9).

3. Impact of Baby-Boomer Retirement

### (1) Size of Baby-Boom Generation

The baby boom generation (born 1947 to 1949) will start to reach the mandatory retirement age of 60 in 2007. Below we estimate the size of the wake that this generation will leave behind.

Based on data from the *Labour Force Survey* (MHLW) and Population Census (MIC), we estimate the 2006 baby-boomer labor force at

5.03 million persons, of which 4.85 million are employed.[2] Assuming that participation and employment rates remain unchanged from 2006, as many as 300 to 400 thousand baby-boomers will retire from 2007. This implies that the total labor force and total number of employed persons will both decrease by 300 to 400 thousand persons each year.

However, in recent years, participation and employment rates have risen among elderly persons (Exhibit 10). Causes include the ongoing economic expansion, which has improved employment conditions of for older workers, and compliance with the Amended Law Concerning the Employment of Older Persons, which promotes the rehiring of older workers.[4]

Exhibit 10 Participation and Employment Rates at Age 60
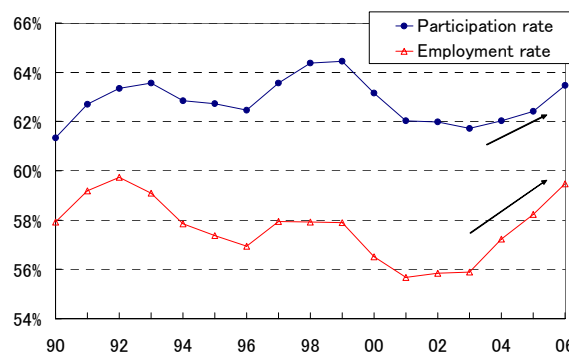
Source:s Estimated from MIC, *Population Census*, and MHLW, *Labour Force Survey*.

Assuming that labor force participation and employment rates continue to rise at the same pace as in 2005–2006, we estimate that the labor force will level off from 2007 onward, and the number of employed persons will continue rising (Case 2 of Exhibit 11).

With the population already in decline, the labor force and number of employed persons are bound to shrink in the long run. However, assuming that the economic expansion continues, and that participation and employment rates keep growing at their recent pace, the impact of the baby-boomer retirement will be limited, and labor shortages can be averted at least in the near future.

(2) Labor Cost Decrease

Most companies expect the retirement of baby boomers to significantly reduce labor cost, which accentuates their insufficient employment sentiment. Obviously, labor cost will decrease in

Exhibit 11　Impact of Baby-Boomer Retirement

Case ①

(Thousand persons)

	2006 act.	2007 fore.	2008 fore.	2009 fore.	2010 fore.
Labor force	66,570	66,236	65,844	65,419	64,987
(annual change)	(70)	(−330)	(−392)	(−425)	(−432)
Baby boomers	5,027	4,721	4,354	3,947	3,652
(annual change)	(−101)	(−307)	(−366)	(−407)	(−295)
Employed persons	63,820	63,496	63,126	62,727	62,326
(annual change)	(260)	(−320)	(−371)	(−399)	(−401)
Baby boomers	4,850	4,513	4,147	3,751	3,500
(annual change)	(−95)	(−337)	(−366)	(−395)	(−251)

Case ②

(Thousand persons)

|	2006 act.	2007 fore.	2008 fore.	2009 fore.	2010 fore.
Labor force	66,570	66,601	66,569	66,505	66,427
(annual change)	(70)	(30)	(−32)	(−64)	(−79)
Baby boomers	5,027	4,774	4,469	4,128	3,874
(Annual change)	(−101)	(−253)	(−306)	(−341)	(−253)
Employed persons	63,820	64,016	64,156	64,264	64,361
(annual change)	(260)	(176)	(140)	(107)	(97)
Baby boomers	4,850	4,578	4,286	3,974	3,777
(annual change)	(−95)	(−272)	(−291)	(−313)	(−197)

Notes: In Case 1, participation and employment rates remain unchanged from 2006 onward. In Case 2, both rates grow at the same pace as from 2005 to 2006.
Sources: MHLW, *Labour Force Survey*; MIC, *Population Census*; IPSS, *Population Projections for Japan: 2001-2050*

proportion to the decline in number of employees. Moreover, since baby boomers earn high wages, their retirement should significantly reduce the wage per worker.

But on the other hand, the wage structure is growing upwardly flexible as young workers receive more education. In 2006, the proportion of male workers with a college or graduate degree is 23.6% in the 55−59 age cohort, rising to 32.0% in the 50−54 cohort, 40.3% in the 45−49 cohort, and 40.4% in the 40−44 cohort. Because educational attainment is correlated with wages, the trend toward higher educational attainment puts upward pressure on average wages (Exhibit 12).

Exhibit 12　Percentage of College Graduates (2006)
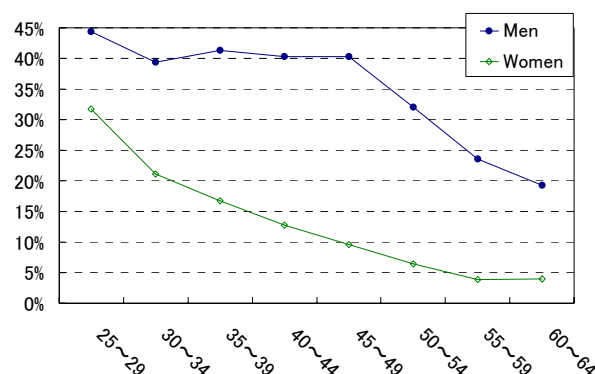
Source:　MHLW, *Basic Survey on Wage Structure*.

To estimate the overall impact of these trends on labor cost, we first estimated the change in number of employed persons, assuming that the employment ratio (ratio of employed persons in the population) of each age cohort remains the same as in 2006 (Case 1 in Exhibit 11). Then assuming that no change occurs in the 2006 wage structure by gender, age cohort, and educational attainment, we estimated the change in average wage caused by the change in educational attainment of workers. Finally, we obtained the change in total labor cost over the next decade by company size.

According to our estimate, in the next five years, the retirement of baby boomers will reduce employment at both large and small enterprises by at least 4%. However, since higher

educational attainment will increase the wage per worker by approximately 2%, total labor cost will decrease by only 2–3%. Similar results were obtained for the period from 2011 to 2016 (Exhibit 13).

Compared to large enterprises, labor cost at small enterprises will decrease more because the educational attainment of workers will advance less rapidly, causing wages to rise by less. Nonetheless, small enterprises will still feel the impact of higher educational attainment on labor cost.

Ultimately, unless the lower employment level is accompanied by labor productivity growth, sales revenue and value added will suffer. In that case, the labor share will inevitably rise.

4. Conclusion

The excessive employment conditions that plagued the post-bubble economy for a decade have ended. Today, there is an acute sense of insufficient employment due to the labor share's plunge in the extended economic expansion, combined with concerns surrounding the impending retirement of baby boomers.

However, employment sentiment varies by company size. This is because the labor share has dropped to pre-bubble levels at large enterprises, but remains persistently high at small enterprises.

While the retirement of baby boomers will undoubtedly reduce employment, the rehiring of older workers will help stave off labor shortages for a while. In the meantime, aging and higher educational attainment will push up the average wage, resulting in a smaller labor cost decrease than most companies expect.

At large enterprises, the labor share now stands far below the equilibrium level, leaving ample room to increase employment and wages. But at small enterprises, the labor share is well above the long-term equilibrium level. Thus if an increase of employment or wages pushes up the labor share any higher, they risk becoming vulnerable again to excessive employment.

Exhibit 13   Change in Total Labor Cost (2006−2016)
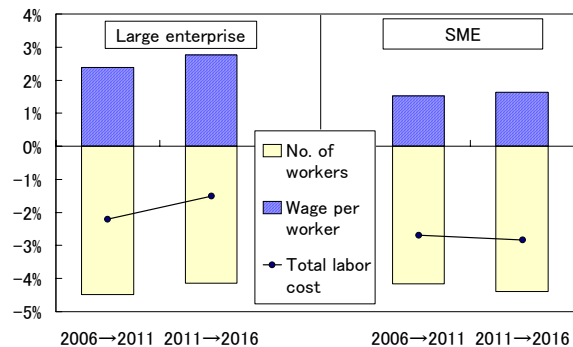
Notes: To calculate the wage per worker (scheduled cash earnings), we held the wage structure by age and education constant from 2006, and input the projected age and educational composition of workers over the next decade.

Source: MHLW, *Basic Survey on Wage Structure*; IPSS, *Population Projections for Japan: 2001-2050*.

End Notes

1. The long-term equilibrium relationship mentioned in the fiscal 2005 *White Paper* is:

   Labor share = real wage / labor productivity   (Eq. 1)

Regression of data from 1975–2006 yields the following:

   ln (real wage) = 1.04 * ln (labor productivity) $-$ 0.47

By inserting the actual labor productivity value into the last equation, we can obtain the equilibrium real wage and labor share.

2. Using *Population Census* data, which contains the labor force participation rate and employment rate by individual age, we decomposed the 5-year age group data from the *Labour Force Survey* into 1-year age increments.

3. Under the revised Law Concerning Stabilization of Employment of Older Persons, employers must implement one of the following options from April 2006: (1) raise the mandatory retirement age; (2) introduce a system of continued employment; or (3) abolish mandatory retirement.

4. We assume that the education profile by age cohort simply shifts to the right in five years. For example, 40.4% of the 40-44 age cohort are college graduates in 2006. Five years later in 2011, the same workers will belong to the 45-49 age cohort.