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## *Has Japan's Labor Share Bottomed?*

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### *What is the "Equilibrium Level"?*

According to Financial Statements Statistics of Corporations by Industries, Quarterly published by the Ministry of Finance on June 5, 2006, labor's share of income, the ratio of total value added attributable to labor, showed the first increase in a long time and some economists now argue that its downward trend has bottomed. This, in turn, has led to increasing optimism that growth in personal consumption will enable the economy to stage a recovery driven by domestic demand, as further increase in value added will have a direct and more proportionate impact on employment and income.

The equilibrium level of labor's share, however, is not necessarily clear. Nishizaki and Sugo (2001), for example, rearranged the share as the ratio of real wage to labor productivity and, utilizing a long-term cointegration relationship between the two variables, estimated the equilibrium level. Their study concluded that labor's share in Japan had been on a gradual rising trend since the 1973 oil crisis and was approaching its long-term equilibrium around the year 2000. A harsher reality, however, set in as corporate restructuring intensified in and after the year.

In this paper, labor's share is estimated as the value one less that of capital's share, which is closely tied with rate of return that is required of corporations and their management.

### *An Approach from Return on Capital*

As per Nishizaki and Sugo (2001) and others, labor's share is defined as below and calculated using the data from MOF's Financial Statements Statistics of Corporations by Industries, Quarterly: <sup>1</sup>

$$\begin{aligned} \text{labor's share} &= \text{personal expenses} / \text{value added} \\ \text{value added} &= \text{personnel expenses} + \text{operating profits} \end{aligned}$$

1..Nishizaki and Sugo (2001) based its analysis on labor's share on a gross basis including depreciation but this paper calculates the figure on a net basis excluding depreciation

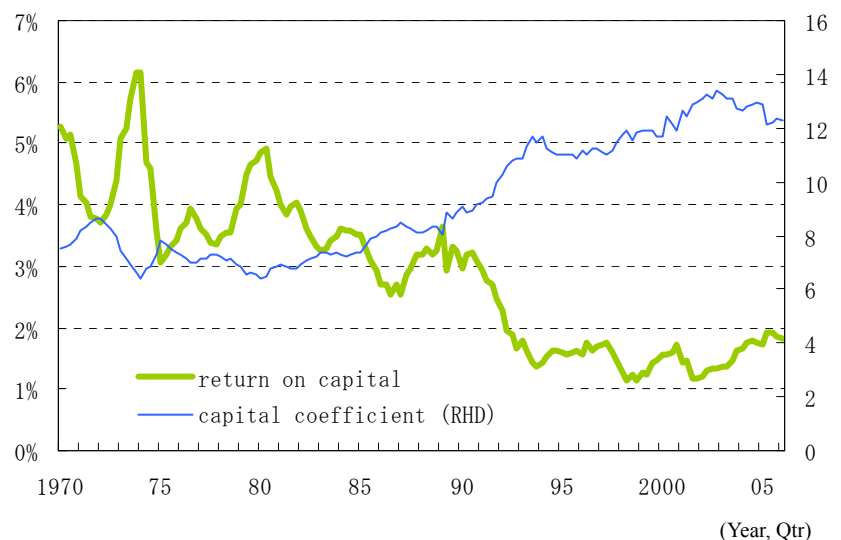
As mentioned earlier, capital's share is calculated as unity minus labor's share and can be rearranged as follows:

$$\begin{aligned} \text{capital's share} &= 1 - \text{labor's share} \\ &= (\text{operating profits}) / (\text{value added}) \\ &= (\text{operating profits}) / (\text{fixed assets}) \times (\text{fixed assets}) / (\text{value added}) \end{aligned}$$

The equation above shows that capital's share is determined by the return on capital (the first term) and capital coefficient (the second term). Exhibit 1 illustrates the changes over time in the return on capital and capital coefficient, calculated using "Fixed Assets" data in *Financial Statements Statistics of Corporations*.

The capital coefficient has been on a moderate upward trend. The trend reflects a number of factors including technological innovations and cannot be adjusted in the short term. It can therefore be assumed that firms seek to achieve the required return on capital given a certain level of capital coefficient, or technology. With this assumption, the equilibrium return on capital effectively determines the equilibrium labor's share.

**Exhibit 1: Return on capital and capital coefficient**



Source: *Financial Statements Statistics of Corporations by Industries, Quarterly*, Ministry of Finance Japan

Let us then investigate what the equilibrium return on capital is. The level of return that investors require of firms on the capital they provide is presumably influenced by interest rates and inflationary expectations. Return on capital is thus regressed on an interest rate, represented by the average interest rates on loans and discounts – domestic banks, and expected inflation rate, using as a proxy GDP deflator one year later. Estimation results using the Cochrane-Orcutt method are summarized below. They indicate that a higher level of interest rate or expected inflation rate will cause an increase in the required return on capital

$$\begin{aligned} \text{return on capital} &= 1.508 + 0.183 \times \text{interest rate on loans} \\ &\quad (3.413) \quad (2.200) \\ &\quad + 0.092 \times \text{expected inflation rate} \\ &\quad (5.636) \end{aligned}$$

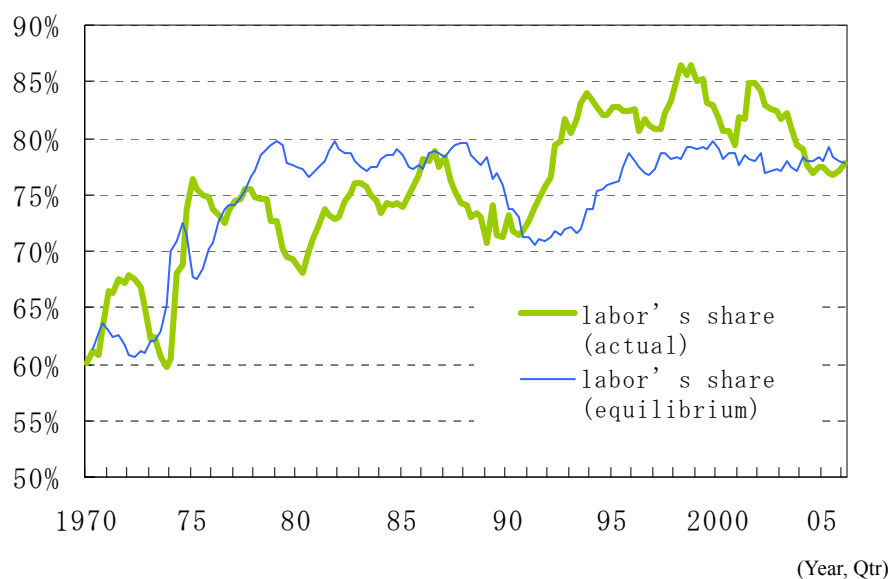
Estimation Period: the second quarter of 1970 to the first quarter of 2005  
Adjusted R-square = 0.965     $\rho$ (population correlation coefficient) = 0.91  
Figures in the parentheses denote t-statistics.

### *Little Room for Upturn.*

Based upon the estimation results, the theoretical value is assumed to be the equilibrium return on capital<sup>2</sup>. Multiplying the actual value of capital coefficient with the assumed equilibrium return, the equilibrium level of capital's share is derived and, subsequently, the equilibrium labor's share is calculated.

The equilibrium and actual values of labor's share are depicted on Exhibit 2.

**Exhibit 2: Labor's share - actual and theoretical**



Source: *Financial Statements Statistics of Corporations by Industries, Quarterly*, Ministry of Finance Japan

In early 2004, the equilibrium labor's share fell to the same level as the actual figure and has been consistently below it since 2005. This coincides with the fact that employment conditions DI (all industries, all enterprises) in the Bank of Japan's TANKAN survey has been in the negative territory since early 2005, indicating more firms assert employment to be insufficient rather than excessive.

2.. For the purpose of calculating the theoretical value of return on capital, GDP deflator is forecast to approach zero towards the end of 2006.

More recently with an updrift in the equilibrium return on capital as the Japanese economy is leaving the era of ultra-low interest rates and deflation, the equilibrium level of labor's share has been tending to decline. Since the actual value has also turned up, the equilibrium and actual values are close together, again.

Given these results, the equilibrium labor's share could potentially fall from the current level, even if the capital coefficient should level off after trending up in past years. Therefore, the actual labor share has little room to rise and may suffer a renewed decline depending on the future course of lending rates and inflation. Corporations, plagued with the recent labor shortage, will likely face a difficult task of maintaining an already low labor's share.

#### References

Nishizaki, Kenji and Sugo, Tomohiro (2001), "On Japan's Labor Share", Working Paper Series 01-8, Research and Statistics Department, Bank of Japan

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