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Labour's Share In Japanese Manufacturing 1960-1990: "Dual Structure" and Imperfect Competition

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1. INTRODUCTION

In recent years, there has been a lively debate over labour's share in national income in Japan. This renewed interest in labour's share stemmed from its upsurge after 1990. Although it is well-known that labour's share shows distinctive counter-cyclicality, the recent rise in labour's share is considered for a number of economists and corporate managers as showing structural change rather than cyclical movement. A high labour's share is associated with high wages and profit squeeze, and thus there is fear of losing comparative advantage due to wage increase and low investment.

The purpose of this chapter is to analyse labour's share in Japanese manufacturing, in which the rising labour's share particularly stirred heated discussion. We focus our attention on the period after 1960 (the middle stage of the so-called rapid-growth era). The long-run behaviour of labour's share including pre-war periods, and sectoral difference between manufacturing and non-manufacturing will be discussed in the next chapter.

The widely-used figure of labour's share is that in the System of National Accounts (SNA). There is a sharp upward increase in this figure of labour's share in the past thirty years.[1] However, there exists bias in this figure, since the SNA profits include all of owner-proprietors' income (including wage counterparts) (see Ono [8]). In order to avoid this bias, the *Quarterly Report on the Incorporated Enterprise Statistics* (Houjin Kigyou Toukei Kiho) is often utilized[2], although the coverage of this statistics is rather limited. But we still find a sharp increase again, and moreover, there seems to be a strong upward trend in labour's share (see Figure 4-6 in Chapter 4). This sharp increase in labour's share in easily available statistics lies behind the heated discussion over labour's share in the 1990s.

This chapter has three purposes. The first is to re-estimate labour's share in manufacturing on more disaggregate basis. We re-estimate industry-wise labour's share, based on firm-based statistics. Especially, we take account of the difference between Japanese accounting convention and economic concept with respect to, for example, the value-added and the cost. Moreover, the oft-used statistics in calculating labour's share are either secondary statistics estimated from primary statistics (in the case of SNA) or statistics based on small samples (in the case of

[1]However, it should be emphasized here that the increase in labour's share is the characteristic of the post-1960 period, and that for a longer period, labour's share seemed to show long-run cycles. Thus, it may be appropriate to consider the upward movement in labour's share after 1960 as a part of long run swings. See the next chapter on this issue.

[2]The definition of the labour's share here is the ratio of employment compensation (the sum of wages and other fringe benefits) to the value-added as defined in the *Quarterly Report on the Incorporated Enterprise Statistics*.

the *Quarterly Report on the Incorporated Enterprise Statistics*) whose reliability is questioned at least for some part of it.[3] Consequently in this chapter, we estimate labour's share using various Censuses as far as possible, and if we cannot, we estimate the share by carefully comparing various statistics which have similar coverage, in order to avoid bias that may be present in such non-Census statistics. Finally, we disaggregate employment compensation into productive-sector (factory) wage payments, headquarters wage payments, R&D wage payments, and fringe benefits (payments for worker welfare) which is more or less fixed cost in nature.

The second purpose of this chapter is to delineate the difference between large firms and small ones. One of the most distinctive characteristics of the Japanese manufacturing is the coexistence of very large firms on the one side and a very large number of small firms on the other. In the past several decades, this so-called dual structure had been considered as the manifestation of backwardness of the Japanese manufacturing, having a "pre-modern" small-firm sector and a "modern" large-firm sector. The pre-modern small-firm sector was supposed to fade away as the modern large-firm sector expanded. However, the share of large firms in manufacturing has been stable[4] even after the rapid-growth era when "excess labour" was disappeared. Thus, it is very important to find out whether the origin of increasing labour's share during past thirty years is in the large-firm sector or in the small-firm sector in order to guide the industrial policy in the future properly.

The third purpose is to clarify the effect of imperfect competition on the movement of labour's share. The past analysis of labour's share often implicitly assumes perfect competition, and explains its movement by changes in factor endowment, technology, and demand conditions.[5] However, price depends not only marginal cost but also the mark-up rate, and thus labour's share depends strongly on competitive conditions as well as the effective demand, the wage level, and the substitutability between labour and capital.

The last point is particularly important in analysing Japanese manufacturing. As has already shown, there is a stable dual structure (coexistence of large firms and small firms) in Japanese manufacturing. The dual structure of the Japanese economy can be interpreted as two sectors of the economy in which the large-firm sector is the oligopolistic one characterized by advanced product differentiation,

[3]The reliability of the SNA figures is not high in earlier years. For example, labour's share in the electric appliance industry in 1955 and 1956 is unity, implying the capital's share is zero.

[4]According to the *Quarterly Report on the Corporate Enterprise Statistics*, the (estimated) share of large corporations whose capital is more that 1 thousand million yen in the total value-added of corporate enterprises is 44% in 1961, while the figure is 41% in 1991. The figure is very stable between these two years. The share of small corporations with capital of less than 5 million yen in the total value-added is 23% in 1961, while it is still 10% in 1991.

[5]However, this tendency is apparent only after the 1960s, mostly under the strong influence of the neoclassical tradition. In the 1940s and 1950s, there are several analyses such as Kalecki [5] emphasizing the effect of imperfect competition on labour's share.

high fixed cost, and thus high entry barrier, while the small-firm sector is a competitive one with low level of product differentiation, low fixed cost and easy entry. From this perspective, the major difference between large and small firms lies in the competitive condition.

This chapter is organized as follows. In Section 2, we presents a framework of analysing labour's share in the imperfectly competitive industry. In Section 3, we carefully examine the existing data sources, and make clear our criterion of choosing from these data. In Section 4, we first re-estimate the labour's share in the manufacturing as a whole, comparing and assessing various existing data. We then proceed with estimating labour's share in five major industries, which are food processing, chemical, steel, transportation equiment, and electric appliance industries. In Section 5, we analyse the effect of changing mark-ups on labour's share of the manufacturing as a whole, and for each of the above-mentioned five industries. Section 6 concludes the chapter.

2. THE FRAMEWORK

In order to facilitate the following analysis about labour's share, let us first consider a simple model of a firm. As we have already argued in the previous section, it is not appropriate at least for large firms to assume perfect competition. Thus, we consider the behaviour of an imperfectly competitive firm.

The firm is maximizing its profit under two constraints. The first constraint is technological, which is summarized by a production function. Let K be capital, L be labour inputs (in which L^F denotes the fixed labour inputs independent of the scale of production), and J be material inputs. Then, the firm's output D can be characterized by the production function $D = f\left(K, L - L^F, J; t\right)$. Here t is the shift parameter representing the change in technology. Letting r be the rental price of capital (if the firm owns capital, its imputed rental price), w be the wage rate, and s be the price of materials, then the *production cost* C^* is

$$C^* = rK + w\left(L - L^F\right) + sJ \tag{2.1}$$

The firm has to incur the fixed non-labour cost F and the wages of the fixed labour inputs, wL^F, regardless of the production level. The difference between large and small firms can be considered as the difference in the magnitude of these fixed costs. Large firms have large fixed costs, while small firms' fixed costs are relatively small.

The firm first minimizes the production cost C^* for given production level D. Throughout this chapter, we assume that the production function exhibits constant returns to scale. Then, as it has been widely known, the marginal cost is constant so long as the firm optimally chooses capital, labour and material inputs, and the marginal cost is equal to the average production cost C^*/D. This relation always holds regardless of changes in technology and factor prices.

The second constraint that the firm faces is the constraint imposed by the market. Under imperfect competition, the firm can sell products at price higher than marginal cost, but it must take account of its competitors' pricing strategy. The behaviour of the imperfectly competitive firm can be summarized by the mark-up rate η, which is the ratio of price to marginal cost. Under the maintained assumption of constant returns to scale, we have

$$p = \eta\left(\frac{C^*}{D}\right). \tag{2.2}$$

Since small firms are under competitive conditions, it is appropriate to assume that their mark-up is unity as the first approximation. On the contrary, reflecting imperfectly competitive market conditions that large firms face, large firms' mark-up rate deviates from unity. There are two strands of competing theories explaining the behaviour of the mark-up. One emphasizes positive correlation between the mark-up and the demand condition, while the other stresses negative correlation.[6] Since we do not have any definite result theoretically with respect to the direction of the mark-up movement, we do make any *a priori* assumption on this matter.

Labour's share of this firm ε is defined as the ratio of the total wage payment wL to the value added (which is equal to revenue pD minus both material costs sJ and fixed non-labour cost F). Since the value added is by definition equal to the sum of the total rental payment to capital rK, the total wage payment wL and the excess profit π. Thus we have

$$\varepsilon = \frac{wL}{pD - sJ - F} = \frac{wL}{rK + wL + \pi} \tag{2.3}$$

Dividing the above expression by the production cost C^*, and taking account of the fact that (1) the total wage payment can be divided into wage payments to fixed and variable labour inputs, and (2) the price/production-cost ratio is the mark up ε, then we have

$$\varepsilon = \frac{\text{Production-Wage Ratio}(\frac{w(L-L^F)}{C^*}) + \text{Fixed-Wage Ratio}\ (\frac{wL^F}{C^*})}{\text{Mark-up Ratio}(\eta) - \text{Material Cost Ratio}(\frac{sJ}{C^*}) - \text{Fixed Non-Labour Cost Ratio}(\frac{F}{C^*})} \tag{2.4}$$

[6]For example, the mark-up rate can be considered as the device to divide the joint profit between customers and suppliers in the case of long-run customer-supplier relationship (Nishimura [6]). If this is the case, the mark up rate increases when the market condition is favourable and the joint profit is large, while it shrinks in recessions where the joint profit is small. If there is tacit collusion among firms but information is imperfect, the mark up is reduced and the price war is likely to happen when the demand goes down (Green and Porter [4]).

On the contrary, if the market is the customer market in which the firm considers its customers as a sort of capital, there is incentive to reduce mark ups when the demand is strong and there are many new consumers around (Gottfries [3]). If there is tacit collusion and infomation is perfect, then firms charge a lower price than otherwise in order to reduce the incentive to break the implicit cartel, but increases a higher price in the recession where such threat is not likely to be materialized (Rotemberg and Saloner [9]).

According to (2.4), labour's share consists of three groups of five variables. The first group is the variables determined by substitution between production factors, which are the production wage ratio $w(L-L^F)/C^*$ and the material cost ratio sJ/C^*. The second group is the fixed-wage ratio wL^F/C^* and the fixed non-labour cost ratio F/C^*, which is independent of the production level, and determined by how much the particular technology requires fixed inputs and how much management and sales activities are needed which are largely independent of particular levels of production. The third group is the mark up rate η, which is determined by competitive conditions. The following discussion will be based on the decomposition (2.4).

3. LARGE AND SMALL FIRMS: CHOICE OF DATA

The enterprise (firm), rather than the establishment (factory), is the appropriate unit in the analysis of labour's share, since our aim is to analyse the way the value-added of enterprises is divided between workers and capitalists (stock holders). Moreover, we are concerned with whether there is difference between labour's share in large firms and that in small firms. There are two possible measures with respect to the "size" of firms: one is based on the size of capital, and the other is on the number of workers they hire.

There are three different data sets about enterprises in the manufacturing sectors in Japan: the *Annual Report on the Incorporated Enterprise Statistics*, the *Census of Manufactures, Report by Enterprises*, and the the *Annual Report on the Unincorporated Enterprises Survey*. We first discuss relative advantages and disadvantages of the three data sets, and explain our procedure in the estimation.

3.1. *The Annual Report on the Incorporated Enterprise Statistics*

The *Annual Report on the Incorporated Enterprise Statistics* (Houjin Kigyou Toukei Nenpo, hereafter abbreviated as the *Statistics*) provides us with data of all incorporated enterprises (excluding banking and insurance corporations) in Japan. However, there are four problems in using this data set in estimating labour's share.

First, its size classification is based on capital, and no adjustment is made for rapid inflation and changes in stock-issue conventions, during the entire sample period we are concerned (1960-1990). Because of inflation, the stock capital of new firms of the same employment size increases dramatically. The shift from issue at par to issue at market price is also a confounding factor. Thus, a corporation with capital from five to ten million yen in 1960 employed 88 workers on the average, while it employed 13 in 1990. Therefore, the firm-size classification based on capital is increasingly divergent from the firm-size classification based on the number of employees as time goes by.

Second, it is based on small samples in the case of small corporations, although it is a census for corporations with capital of more than one thousand million yen. This implies that there may be a large sampling error except for large corporations with more than one-thousand–million-yen capital, especially for smaller corporations in which the sample size is smaller.

Third, although activity of a corporation may span over several industries, the *Statistics* classifies the corporation in one industry. For example, if a corporation engages in wholesaling as well as manufacturing, its sales and wage payments are composite of two activities. However, the *Statistics* classifies it in the wholesale industry if its major operation is wholesaling. Thus, the data of the wholesale industry includes manufacturing activity of this corporation. This becomes increasingly serious as we use finer industry classification.

Fourth, and the most important of all with respect to our analysis, is its accounting practice in which R&D expenses are included in the "sales and general management expenses" (*Regulation Concerning Financial Statements* (Zaimu Shohyo Kisoku), Artcle 86).[7] From the viewpoint of economics, R&D is essentially investment in nature. If this point is properly taken into account, R&D expenses must be treated as investment like other capital expenses, and should not be included in the value-added.[8]

3.2. *The Census of Manufactures, Report by Enterprises*

The *Census of Manufactures, Report by Enterprises* (Kougyo Tokei Hyo, Kigyo Hen, hereafter abbreviated as the *Census*) is the census for enterprises employing more than twenty employees for the entire sample period. Its size-classification is based on the size of employment as well as on the size of capital. However, there are three disadvantages in using this data set.

First, the *Census* is re-classified data based on the establishment data. This is an advantage over the *Statistics* since it excludes establishments of the enterprise engaging non-manufacturing activity. However, it is also a disadvantage because a large non-manufacturing enterprise employing, say, fifty thousand workers, is classified as a manufacturing enterprise if it has a small manufacturing establishment (for example, a bakery shop in a resort facility of a large retailing firm). Thus, we find the enterprise with fifty-thousand employees producing tiny amount of manufacturing value-added in the *Census*.

[7]This article is added after 1963 ammendement. However, the data seems to show that practice actually begun in the previous year. We take account of this fact in the following estimation.

[8]This is the problem of not only the *Incorporated Enterprise Statistics* but also the SNA. The SNA treats fixed capital formation in a consistent way, but it does not with respect to investment in "knowledge capital", since we suppose such treatment is very difficult if not impossible. See Goto *et al* [2] for an attempt to estimate Japanese knowledge capital in a consistent way.

Second, the *Census* gives us only information about the value of shipment of final products, the value of material used, and total wage payments. Moreover, the value of shipment and the value of material used in the *Census* include transfer between establishments in the same enterprise. Thus, for a large corporation having several establishments, the amount of shipment exceeds the total sales pD of the corporation by the amount of intra-corporation transfer. For the same reason, the value of material used is larger than intermediate input costs sJ by the intra-corporation transfer. Unfortunately, the *Census* does not provide any information about the size of the upward bias.

Third, there is discontinuity of data in the total wage payments. Before 1984, the total wage payments of enterprises in the *Census* include the wage payments of the headquarters of the enterprises. However, the Ministry of International Trade and Industry stopped collecting data about the headquarters, so that the total wage payments after 1985 do not include them. Thus, we are obliged to extrapolate the wage payments of headquarters from 1985 on, using data before 1984.

3.3. *The Annual Report on the Unincorporated Enterprise Survey*

Finally, the *Annual Report on the Unincorporated Enterprise Survey* (Kojin Kigyo Keizai Chosa Nenpo, hereafter abbreviated as the *Survey*) provides us information about unincorporated enterprises, which are by definition excluded from the *Statistics*. It also has size classification based on the number of employees, whereas the *Census* bunches unincorporated enterprises into one category. Moreover, the Survey collects data about small corporations employing less than nineteen employees, while the *Census* surveys only unincorporated enterprises employing more than twenty workers. Thus, the *Survey* gives us valuable information about small producers employing less than twenty workers.

However, the problem of sampling error is all the more severe in this data set than the other two data sets. The number of samples is far smaller in this survey than, for example, in small enterprises in the *Statistics*. Moreover, we only have data about the value of shipment, value of material used, and total wage payments.

3.4. Large Firms and Small Firms

Balancing merits and demerits of these three data sets, we adopt the following definitions of large and small firms and criterion of choosing data.

First, we define large firms as the ones employing more than one thousand employees and having capital more than one thousand million yen, while small firms as the ones employing less than one hundred employees and having capital less than five million yen. These definitions make three statistics described above comparable, and it is in accordance with the one employed in the widely used

Basic Survey of the Wage Structure (Chingin Kozo Kihon Chosa), and the criterion used in the *Report on the Survey of Research and Development* (Kagaku Gijutu Kenkyuu Chousa Houkoku), which we use later in this chapter.

Second, although there is no data that exactly match our definition of large firms, we use the data of corporations with capital of more than one thousand million yen in the *Statistics* for the large firms defined above, and if necessary, we supplement it with the data of enterprises having capital of more than one thousand million yen or employing more than one thousand workers in the *Census*.

Our choice gives fairly a good picture of the large firms. Table 3-1 shows that the relative share of the large firms defined above in the relevant total value-added reported in the *Census*. The share of the large firms (with capital of more than one thousand million yen *and* with more than ten thousand employees) in the gross value-added (which is $pD - sJ$) of firms having capital of more than one thousand million yen is 89% in 1965, and 94% in 1989.[9] Its share in the gross value-added of enterprises employing more than ten thousand workers is 93% in 1965, and 82% in 1989.

Third, for the small firms, we use the data of enterprises with capital of less than five million yen in the *Statistics*, and if necessary, we supplement it with the data of enterprises employing more than twenty but less than one hundred workers in the *Census*[10]. The correspondence of the small firms in our definition (those with capital of less than five million yen and with less than one hundred employees) to the above data sets is not as close as in the case of large firms, but it is still a relatively good presentation of the group. Table 3-1 shows that the share of small firms of our definition, when we restrict our attention to enter-

[9]This is based on the cross tables (Table 1-3) in the *Census of Manufacturers (Enterprise Volume)*.

[10]There are data about enterprises with capital of less than five million yen is available in the *Census*, but we do not use these data for the following reasons.

It should be first noted here that they are based on trancated samples in the *Census of Manufactures, Report by Enterprises*, in which only enterprises hiring more than twenty employees are counted. Thus, the data about enterprises with capital less than five million yen are actually about those with more than twenty employees at the same time.

We have already explained the distorting effect of post-war inflation, in which we see substantial increase in capital in every category of enterprise classification based on capital. Thus, the number of enterprises fitted in the category of enterprises with capital of less than five million yen and with more than twenty employees but less than one hundred employees is becoming smaller and smaller, and moreover, the share of enterprises employing just over twenty employees is becoming larger and larger, as we approach recent years. Therefore, it is inappropriate to single out this section of small enterprises as typical of the small firms of our definition (firms with less than one hundred employees and with capital of less than five million yen).

On the contrary, there is no trancation of samples with respect to the number of employees in the *Statistics*. Moreover, we must take account of the fact that enterprises with less than twenty employees have a large share in the Japanese small-firm sector. Consequently, we conclude that the enterprises with capital less than five million yen in the *Statistics* is more representative of small firms of our definition than the enterprises with capital less than five million yen in the *Census*.

prises employing more than four employees. Its share in the gross value-added of enterprises having capital of less than five million yen is 93% in 1965, and 97% in 1989. Its share in the gross value-added of enterprises employing less than one hundred workers 61% in 1965, and 23% in 1989.

Fourth, in order to supplement the data based on the *Statistics*, we use data about unincorporated enterprises employing five to nine employees in the *Survey*. Note that as its name shows, the *Statistics* surveys only incorporated enterprises. However, it is true that unincorporated enterprises are still important in Japanese manufacturing. Although it is very noisy data, the *Survey* provides scarce information about these very small enterprises.[11]

3.5. Medium-size Firms

In the next section, we will analyse the movement of labour's share both in large and small firms. But before proceeding with analysis, it may be worthwhile to explain why we do not consider medium-size firms in our analysis. It will become clear in the following discussion that the double-sided truncation involved in the size classification produces spurious movement in the medium-size firms' labour's share if we do not adequately take account of the problem.

The natural definition of the medium-size firms consistent with our definition of large and small firms is the firms with 100-1000 employees and with capital of 5 million - 1 thousand million yen, and the next step is to find an appropriate segment in the *Statistics* and/or the *Census*. However, as we explained earlier, because of rapid inflation that the Japanese economy has experienced after the second World War, there is also a rapid inflation in firms' capital. Thus, on the one hand, a relatively large firm which might be classified in this category in, say, 1960, is likely to be identified as a large firm in our definition in 1990, even though their actual scale of operation is the same. On the other hand, a small firm in our definition in 1960 might be included in the category of medium-scale firms in 1990. Therefore, the characteristics of the average firm in this category have changed in the course of time: In 1960, it represents relatively large firms

[11] In the *Survey*, there seven classifications with respect to the number of employees: 1, 2, 3, 4, 5-9, 10-19, and over 20. However, it is well known that data about enterprises with no more than four employees are not reliable, since the separation between household expenditure and business expenses is not well maintained in small firms in these classes. For this reason, we have extremely low labour's share in this part of small firms.

In contrast, we have relatively good data about the segment of 5-9 employees, since accounting is more reliable and moreover we have relatively a large number of samples in this segment (about one third of the total samples of eight hundred for manufacturing falls in this segment).

In the case of the segment of 10-19 employees, the number of samples is only one third of the samples of 5-9 employees, so that we do not have reliable data. In addition, there is tendency for firms in this segment to be incorporated, and thus this segment is reducing its size. Things are even worse in the segment of more than 20 employees. For these reasons, we use only data about the segment of 5-9 employees.

employing many workers, but in 1990 it is a small firm employing only a small number of workers. It is well-known that small firms have smaller capital-labour ratios and larger labour's share. Thus, we will expect a sharp increase in labour's share in firms of this category (firms having capital of 5 million to 1 thousand million yen), which is actually a spurious one.

In fact, we find a sharp increase in labour's share in this category both in the *Statistics* and the *Census*. However, as explained earlier, we cannot be certain whether this is a spurious one or some real one. Unfortunately, the present published statistics does not contain information about possible biases. Therefore, we are obliged to exclude the medium-size firms in our study. It should be emphasized that a similar problem of double-sided truncation exists in the classification based on the number of employees. It may be true that the same output can be produced by smaller number of workers in 1990 than in 1960, through various technological change leading substitution of labour by capital equipment.[12]

4. LABOUR'S SHARE IN MANUFACTURING: 1960-1990

4.1. Upward Trend in Large Firms Whereas No Trend in Small Firms

Let us now consider manufacturing as a whole, and examine the behaviour of labour's share in the large and the small firms. Figure 3.1 depicts labour's share in the value added of the large firms

Four series are shown in this figure. Here, the "Statistics (Original)" series is the ratio of the total employment compensation ("wage payments" plus "expenditures for the welfare of employees") to the published value-added of enterprises with capital of more than 1 thousand million yen in the *Statistics*. Upward trend is apparent in this series: it started just above 0.4 in 1960, went up to 0.7 in 1975, and stayed close to 0.7 in 1991. Although it is not shown in this figure, the share was increased further in the first half of the 1990s.

The second series, the "Statistics (Adjusted)" series, is obtained by the following adjustment: We add the R&D expenditure (excluding wage payments of R&D workers) to the published value-added, since R&D expenditure must be considered as investment. Labour's share is then calculated accordingly.[13] This series shows that the estimate of labour's share based on the published figure ("Statistics (Original)") exaggerates increase in labour's share somewhat. However, the basic message does not change: there is an upward trend in labour's share in the large firms.

[12]The same problem of spurious increase in labour's share may be found in the category of firms employing more than 20 workers but with capital of less than 5 million yen in the *Census*, and in the category of firms employing 10-19 workers in the *Survey*.

[13]The data about R&D expenditures are taken from the *Report on the Survey of Research and Development*.

In this figure, two series based on the *Census* are also shown. The "Census (Capital)" series is the ratio of wage payments[14] to the "gross value-added" of enterprises with capital of more than 1 thousand million yen. Here the gross value-added is defined by the *Census*, which is the difference between the "value of shipment" and the "expenditure on raw materials." The "Census (Employee)" is the same ratio for enterprises with more than 1000 employees.

There are several differences in the definition of compensation and value-added between the *Statistics* and the *Census*. On the one hand, as to employment compensation which is in the numerator of labour's share, the *Census* excludes much of "expenditures for the welfare of employees" and wage payments for R&D workers (researchers) who are working outside factories, which on the contrary are included in the *Statistics*. On the other hand, as to the value-added in the denominator, the *Census* includes the fixed cost of production, while it is excluded in the *Statistics*. Thus, since the denominator (value-added) is larger in the *Census* while the numerator (compensation) is smaller there, the labour's share is significantly smaller in the *Census* figure than in the *Statistics* figure. However, though it is not as salient as those based on the *Statistics*, labour's share based on the *Census* still shows upward trend between the 1960s and 1990s.

In contrast, a starkly different picture is found in Figures 3-2 and 3-3 for the small firms. Figure 3-2 shows labour's share (the ratio of employment compensation to the value-added) for enterprises with capital of less than five million yen in the *Statistics*, and labour's share (the ratio of wage payments to the gross value-added)of the enterprises with 20-99 employees in the *Census*. Here, we assume that R&D expenditures are negligible in this category of firms, and do not attempt to correct labour's share as we did for the large firms.[15] Figure 3-3 depicts the behaviour of labour's share (the ratio of wage payments to the gross value-added[16]) for the small firms with 5-9 employees based on the *Survey*.

We find no sign of trend in either way in labour's share in the small firms. In fact, labour's share in 1988-89 is almost the same as that in the 1960s. In sum, the data we examined reveal that there is a substantial upward trend in labour's share in large firms, no matter what definition of labour's share is employed, while there exists no such trend in small firms.

As explained in the introduction, there is an upward trend in labour's share for manufacturing as a whole. The result of this section shows this upward trend is mostly due the upward trend in the labour's share in the large firms. In fact, the large firms produce more than forty per cent of the total value-added of all incorporated enterprises. Thus, upward trend in labour's share in the large firms

[14]Here wage payments include wage payments in the headquaters (estimated wage payments after 1985). See footnote 20.

[15]Since the *Report on the Survey of Research and Development* does not survey small firms with capital of less than 5 million yen, it is practically impossible to make the same adjustment for small firms as for large firms.

[16]In the *Survey*, the gross value-added is defined as the difference between revenues and costs.

dominates the scene.

4.2. Sources of Upward Trend in Labour's Share of the Large Firms: The Fixed Labour Cost

Next, let us now consider what are the main sources of this upward trend in labour's share found in the large firms. We show that a substantial increase in the fixed labour cost relative to variable labour cost is the main source of this trend.

Total employment compensation can be decomposed in the following way.[17]

$$\begin{aligned}\text{Total employment compensation} &= \text{Wage payments at factories} \\ &+ \text{Wage payments at headquaters} \\ &+ \text{Wage payments of R\&D researchers and workers} \\ &+ \text{Expenditures for the welfare of employees}\end{aligned} \tag{4.1}$$

Here, wage payments at factories are directly related to production, while other items are rather independent of short-run movement of production.

Figure 3-4 shows, for large firms with capital of more than 10 million yen, the movement of each item in equation (4.1). The "Original" series and the "Adjusted" series are the same as in Figure 3-1. The "Excluding Welfare" series is the one excluding expenditures for the welfare of employees[18] from the "Adjusted" series. Then, if we further exclude R&D wage payments[19], we get the "Excluding R&D" series. Finally, the "Excluding HQ" series exclude wage payments at the headquarters[20] from "Excluding R&D" series. The data underlying these series in Figure 3-4 are reported in Table 3-2.

[17]We hereafter ignore wage payments in sales branches, assuming that the importance of direct sales activity is not so large in manufacturing enterprises compared with production and management.

[18]We use the published figure of expenditures for the welfare of employees in the *Statistics*.

[19]We use the published figure of R&D-related wage payments in the *Report on the Survey of Research and Development*.

[20]We estimated the wage payments at the headquarters from the *Census* in the following way. From 1977 to 1984, the *Census* reports both wage payments at the headquarters and the total wage payments excluding those at the headquarters. Thus, we use these figures during this period. After 1985, only wage payments excluding those at headquarters are published. Consequently, we are obliged to estimate wage payments at the headquarters, by multiplying the average ratio of wage payments at the headquarters to wage payments excluding them between 1977 and 1984, to the moving average of the latter of past three years. In the case before 1976, only the total wage payments including those at the headquarters are published, so that we are obliged to use the same technique to estimate wage payments of the headquarters, in that we multiply the ratio of wage payments at the headquarters to the total wage payment between 1977 and 1984, to the moving average of the total wage payments in the past three

From Figure 3-4, it is easy to see that the major source of increasing labour's share in the past thirty years lies in the significant increase in the fixed part of labour costs. In fact, Figure 3-4 shows that the fixed part of labour costs is about one third of the total compensation in early 1960s, while it climbs up to a half of the total in late 1980s.

The substantial increase in wage payments at the headquarters and expenditures for the welfare of employees, especially after the 1970s, indicates a significant increase in the number of managerial workers and their wage payments in the large manufacturing firms. In this period, it is reported that the number of subordinates per middle manager declined substantially, and that it resulted in lower probability of promotion (Ariga *et al.* [1]).[21] The following story often told in the labour economics literature fits the behaviour. In the era of rapid economic growth, most large firms hired many candidates of future middle-to-top managers in anticipation of high growth. This lead to oversupply of managerial workers after growth slowed down. Moreover, firms could not attempt to drastically change the wage scale based on age, so that they saw a rapid increase in the total wage payments.

In addition, a substantial increase in the cost related to sales. The cost entity called "sales and general managerial expenses" in the *Statistics* showed a rapid increase in the entire period of our investigation. It is often emphasized that high service accompanying transactions is one of the most distinctive characteristic of Japanese trade. Since such service is labour intensive, a high level of the accompanying service demands more and more service personnel who are not directly related to short-run change in production. This may also be a contributing factor to a substantial increase in the total wage payments.

It should be emphasized here that a substantial part of the increase in labour's is caused by a large increase in R&D-related wage payments. The period of our investigation is the one we witnessed a substantial increase in R&D activities, but the result of this section suggests that the benefit-cost ratio of such activities is not high.

4.3. Inter-industry Differences

The preceding sections show that labour's share in the large firms shows a substantial increase in manufacturing as a whole. However, the structural shift of importance between industries may cause a spurious upward trend in labour's share, without really changing labour's share in each industry. This section shows that this is not the case. We have a upward drift in labour's share even in the industry level. In this section, we show the movement of labour's share in five

years. (The choice of three years in the moving average is not essential. The result does not change even if we choose four or five years instead of three.)

[21] Although we see the decline in wages of managerial workers as the number of subordinates declines, the decline is so small that we observed a significant rise in the total wage payments.

industries, each of which commands more than 10% of the total manufacturing value-added: steel, chemical, transportation equipment, electric appliances, and processed food.

First, in analysing data spanning thirty years, we cannot ignore the change in the industrial structure. For example, the share of processed-food large firms in the "true value-added" (value-added with adjustment of R&D expenditure) of large firms (with capital of more than 1 thousand million yen) is 10.2% in 1960 but slips into 6.3% in 1990. Thus, we must be careful about possibility that the change found in manufacturing as a whole is merely the reflection of the change in the industrial structure.

Taking this into account, we present Figure 3-5, in which we show alongside with the Adjusted series in Figure 3-2, the two fixed-weighted series: the first one's weight is the 1960 relative value-added share of industries, and the second one's weight is the 1990 relative share. From these figures it is apparent that the structural change *strengthens*, rather than weakens, the main conclusion of the preceding sections. In fact, the fixed-weighted series show more rapid increase in labour's share than the Adjusted series. Thus, the upward drift is not spurious.

Let us now consider five industries mentioned above. Table 3-3 shows labour's share of large firms (with capital of more than 1 thousand million yen) in steel, processed food, chemical, electric appliances, and transportation equipment industries. Like in Figure 3-4, we present alongside with the Original figures, the one adjusting R&D expenditures, and the one excluding R&D wages and welfare payments from the adjusted figure. Since there is a serious problem in estimating wage payments at headquarters on the disaggregate level, we do not make any adjustment on this matter.[22]

Table 3-3 shows, except for steel, a significant rise in labour's share in each industry. This general increase in labour's share across the board lies behind the overall increase in labour's share in manufacturing. However, we also find that there is substantial difference between industries. For example, the processed food industry shows a significant increase in labour's share, even though we exclude the fixed part of labour cost, while the chemical industry shows stable labour's share if one exclude R&D wages and expenditures for the welfare of employees. In fact, the decline of relative importance of the processed food industry during past thirty years is one cause of less steep increase of the adjusted figure than the fixed-weight figure in Figure 3-5. Transportation equipment and electric appliance industries are in-between of the two, showing fluctuation and a small increasing trend in the series excluding R&D wages and expenditures for the welfare of workers.

[22]Since the problem of different classification between the *Statistics* and the *Census* becomes more serious in the disaggregate level, we expect a large bias if we attempt to estimate wage payments of headquarters in the disaggregate level. Thus, we do not attempt to estimate them. See footnote 20.

5. MARK-UP AND LABOUR'S SHARE

In the previous sections, we have shown an upward trend in labour's share in large firms, both in manufacturing as a whole, and in many industries in the disaggregate level. And it has been shown that this upward trend stems from a rapid increase in the fixed part of labour costs. In contrast, the ratio of production-related wage payments to the value-added does not have a pronounced upward drift. However, comparing Figure 3-1 (or Figure 3-4) with Figures 3-2 and 3-3, we can find that the cyclical variation in labour's share is apparently larger in large firms than in small firms, even if we concentrate our attention on the production-related wage payments.

The purpose of this section is to show that the fluctuation in mark-ups is the major cause of this large fluctuation in labour's share in large firms. As it has been already argued, labour's share depends on components depending on factor substitution $\left(w\left(L-L^F\right)/C^*, sJ/C^*\right)$, components based on the fixed part of cost $\left(wL^F/C^*, F/C^*\right)$, and the mark-up rate η (see equation (2.4)). The former two kinds components have been extensively examined in the literature, so that we concentrate our attention on the effect of mark-up fluctuation on the movement of labour's share.

Under the assumption of constant returns to scale (excluding fixed costs) and equations (2.2) and (2.1), the ratio of revenues pD to production cost C^* is equal to the mark-up rate η. Here, revenues can be obtained in the *Statistics*. Production cost is the sum of the (imputed) rental cost of capital rK, wage payments related to production $w\left(L-L^F\right)$, and the material cost sJ, which are obtained in the *Statistics* and the *Gross Capital Stock of Private Enterprises* (Minkan Kigyou Sihon Stock Nenpo) published by the Economic Planning Agency.[23] Using this two sources of data, we estimated the mark-up rate for five industries considered in the preceding section.[24]

[23]Wage payments related to production is obtained by subtracting from the total employment compensation the expenditures for the welfare of employees, R&D wage payments, and wage payments of the headquarters (see (4.1)). The cost of material is obtained by subtracting from the cost of merchandise in the *Statistics* wage payments related to production. The real rental price is calculated by the standard formula (ignoring tax) (see Tajika *et al.*[11]), and then it is multiplied by the product price to get the nominal rental price r. Here we use the data of nominal interest of Ritsuki Denden Sai, the 1985-base wholesale price index of capital goods, the 1985-base wholesale price index of relevant commodities, and the depreciation rate based on the 1970 *Survey of National Wealth* (Kokufu Chousa). In order to take account of the possible difference between actual and expected inflations, we use the three year moving average of nominal interest rates and capital goods inflation, following Tajika *et al.* The real capital stocks are estimated by the following procedure. We first estimate net capital stocks based on the data in the 1985-price *Gross Capital Stock of Private Enterprises* using the same procedure as Tajika *et al.*, and then we multiplied it with the ratio of large firms' capital stocks to the total private enterprise capital stocks obtained in the *Statistics*.

[24]As explained in footnote 20, it is very difficult to obtain reliable data about wage payments

Let us now consider the relationship between the mark-up rate and product demand. As it has been suggested in Section 2, there are two competing groups of theories with respect to cyclicality of mark-ups. To assess them, we plot the movement of the rate of change in the mark-up and real sales. In order to make the relation as distinctive as possible, the rate of change in the mark-up is amplified by five times in this figure. Table 3-5 presents data behind Figure 3-6.

It is evident that we have a clear procyclical movement of the mark-up in the manufacturing as a whole. That is, the mark-up rate is increased when demand is strong, while it is reduced when demand is weak.

Table 3-5 shows the disaggregate picture of the mark-up movement. Except for processed food, all other industries show a clear positive correlation between the mark-up rate and the real sales. Thus, we have across-the-board procyclical mark-up rate, which leads to a strong procyclical mark-up in the manufacturing as a whole in Figure 3-6. The fact that there is no industry showing counter-cyclical mark-up rate should be emphasized.

To supplement the graphical impression, we estimated the following simple equation by the ordinary least squares

$$\begin{aligned}&\text{Rate of Change in Mark-Up}\\&= \alpha + \beta(\text{Rate of Change in Real Sales}) + \gamma(\text{Trend}).\end{aligned} \tag{5.1}$$

The result is reported in Table 3-6. The number of samples is 27, so that the degree of freedom is 25. The value in the parentheses is the t value. Since α is not significant in all regressions, so that it is omitted in the table.

From this table, we find that a significantly positive coefficient for rate of change in real sales in the steel, chemical, and electric applianceindustries at 5% level, and in the transportation equipment industry at 10% level. Processed food is an exception, but Table 3-5 seems to show a positive correlation after the middle of the 1970s. These disaggregate movements help the aggregate mark-up being significantly positively correlated with real sales at 10% level.

Next, let us consider the effect of the mark-up movement on the movement of labour's share. From (2.4) it is evident that, other things kept equal, an increase in the mark-up rate decreases labour's share, and *vice versa*. However, other factors may change in such a way to offset the negative correlation between the mark-up and labour's share. In order to see whether the mark-up rate is strongly negatively related to labour's share in the course of economic fluctuations, we draw the rate of change in labour's share along side with that of mark-up rate in Figure 3-6.

Figure 3-6 shows a clear negative correlation between the mark-up rate and labour's share. The mark-up rate is positively correlated with real sales, so that

of the headquarters in the disaggregate level. Consequently, we do not attempt to adjust them. Thus, the wage payments related to production estimated here include those of the headquarters.

labour's share is negatively correlated with real sales. This confirms the rule of thumb that labour's share decreases in booms and increases in recessions. The same picture is also easily found in Table 3-5 both in the manufacturing as a whole and in specific industries except of processed food.

Finally, to get some quantitative feeling about how much the movement of the mark-up explains the movement of labour's share, we estimated the following simple regression equation by ordinary least squares

$$\begin{aligned} &\text{Rate of Change in Labour's Share} \\ &= a_0 + a_1\,(\text{Rate of Change in Mark-up}) + a_2\,(\text{Trend})\,. \end{aligned} \tag{5.2}$$

The resulting coefficient a_1 is -1.21 with t value of 4.51, and R^2 is equal to 0.68. This shows a substantial part of the fluctuation in labour's share is associated with the change in the mark-up rate.

6. CONCLUDING REMARKS

The result of this chapter can be summarized in three points. We will discuss their implications one by one.

First, it has been shown that the main cause of the overall increase in labour's share in manufacturing found after 1960 is its increase in large firms. Labour's share in small firms are stable during the entire period of investigation.

This implies that it is difficult to explain the behaviour of labour's share in the framework of coining all Japanese firms as homogeneous J-firms (Japanese-type firms) or other variants. If there are distinctive J-firms, then there must be two types of J-firms: J-large firms and J-small firms. Or one might also consider J-medium firms as well, taking account of the importance of small and medium firms in Japan.

Second, it has been revealed that the major source of this increasing labour's share is a substantial increase in the fixed part of labour costs. In particular, the increase in expenditures for the welfare of employees and R&D-related wage payments is the main cause of this increase in fixed labour costs. This increase is found in many industries in manufacturing in the same way.

The traditional macroeconomics is mostly concerned on factor inputs in production, and pays little attention on the fixed labour costs as well as fixed capital costs. They are often considered as conditions given to firms, not directly related to firms' production decision. However, the result of this chapter shows importance of such fixed components of cost in understanding not only long run behaviour of labour's share but also its short-run fluctuation. More thorough analysis of these fixed costs is needed.

Third, it has been also shown that the movement of the mark-up ratio affects strongly the movement of labour's share. It has been revealed that the mark-up

rate is procyclically sensitive, going up in booms and down in recessions. This characteristic of the mark-up rate accentuates the sensitivity of labour's share to economic conditions in the Japanese manufacturing.

In the recent literature of microeconomic foundations of macroeconomics, imperfect competition is the key concept to understand many macroeconomic phenomena (Nishimura [7]). The mark-up rate is determined by the firm, which is greatly influenced by strategic interaction between firms. In this chapter we have shown that the mark-up rate is procyclical in Japan. However, in the United States, a number of studies find the opposite: the mark-up rate is down in booms and up in recessions (Rotemberg and Woodford [10]). In this case, the behaviour of the mark-up reduces, rather than amplifies, the movement of labour's share. Further investigation is needed to understand why the movement of the mark-up rate is opposite between Japan and the United States, and how this is related to the different behaviour between Japanese and U. S. firms.

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Table 3-1: The Ratio of Value-Added: (a)/(b) (%)

Incorporated Enterprises with more than 4 employees

(a)	(b)	1965	1970	1975	1980	1985	1989
Firms with capital of less than 500 million yen *and* with less than 100 employees	Firms with capital of less than 500 million yen	92.6	94.2	96.6	97.1	96.5	96.9
Firms with capital of less than 500 million yen *and* with less than 100 employees	Firms with less than 100 employees	61.4	48.8	36.8	30.7	26.9	23.2
Firms with capital of more than 1 thousand million yen *and* with more than 1000 employees	Firms with capital of more than 1 thousand million yen	93.0	92.1	90.1	87.2	84.4	82.3
Firms with capital of more than 1 thousand million yen *and* with more than 1000 employees	Firms with more than 1000 employees	89.0	89.9	91.3	92.3	93.4	94.0

Source: *The Census of Manufactures, Report by Enterprises*

Table 3-2: Components of Labor's Share in Large Firms in Manufacturing (Enterprises with Capital of More than 1 Thousand Million Yen)

Year	Published Value-Added	R&D-Adjusted Value-Added	Published Wage Payments	Expenditure for Welfare of Workers	Wage Payments in R&D	Wage Payments at Headquarters
1960	1,583,589	1,636,922	655,175	67,130	22,263	112,111
1961	1,948,714	2,026,977	835,596	78,615	32,343	124,562
1962	2,065,166	2,148,056	971,391	100,355	40,988	146,195
1963	2,597,368	2,688,521	1,160,329	127,982	49,804	174,507
1964	2,915,730	3,012,229	1,369,637	159,873	59,291	199,641
1965	3,108,237	3,210,081	1,544,285	196,621	68,778	225,900
1966	3,740,324	3,874,784	1,768,024	236,766	101,368	263,802
1967	4,549,520	4,733,462	2,124,927	280,747	124,689	311,616
1968	5,342,825	5,558,765	2,549,730	334,128	137,858	374,990
1969	6,615,058	6,894,195	3,152,371	397,219	172,245	464,299
1970	7,670,880	8,044,231	3,906,962	520,751	217,898	563,733
1971	7,850,584	8,233,323	4,465,486	592,210	269,883	642,658
1972	9,187,550	9,598,105	5,125,875	677,021	334,829	731,796
1973	12,657,740	13,182,508	6,627,052	908,399	423,465	960,255
1974	14,492,273	15,077,437	8,563,577	1,199,362	569,097	1,203,756
1975	12,566,771	13,131,433	8,666,502	1,221,168	622,278	1,285,665
1976	15,812,471	16,474,262	10,029,992	1,421,932	709,704	1,428,609
1977	16,336,969	17,107,267	10,879,190	1,598,613	770,504	1,537,087
1978	17,524,858	18,386,832	11,258,539	1,723,203	840,975	1,551,234
1979	21,292,542	22,321,235	12,001,508	1,865,440	922,347	1,713,672
1980	22,495,881	23,776,972	13,185,380	2,001,282	1,053,126	1,915,421
1981	24,026,767	25,587,596	14,277,304	2,206,327	1,187,702	2,008,885
1982	24,386,445	26,219,086	15,175,960	2,364,315	1,334,836	2,153,660
1983	25,515,044	27,556,325	16,045,395	2,526,080	1,500,157	2,257,366
1984	28,342,100	30,767,818	17,139,549	2,655,377	1,688,145	2,458,691
1985	28,911,472	31,845,719	18,585,020	2,968,691	1,895,866	2,582,890
1986	26,937,647	29,962,471	18,507,879	2,999,793	2,014,850	2,571,833
1987	29,623,921	32,840,554	19,063,062	3,200,154	2,137,875	2,675,603
1988	33,846,540	37,464,340	20,257,803	3,322,675	2,340,514	2,836,406
1989	37,345,696	41,594,816	22,456,626	3,665,723	2,612,501	3,149,421
1990	39,958,946	44,820,075	24,683,814	4,139,435	2,898,558	3,418,404

Source: *The Annual Report on the Incorporated Enterprise Statistics, the Report on the Survey of Research and Development*, and the authors' calculation.

Table 3-3: Industry-wise Labour's Share (Enterprises with Capital of More than 1 thousand million Yen)

Year	Steel			Chemical			Processed Food			Electric Appliance			Transportation Equipment		
	"Origicnal"	"Adjusted"	Welfare/ R&D excluded	"Origicnal"	"Adjusted"	Welfare/ R&D excluded	"Origicnal"	"Adjusted"	Welfare/ R&D excluded	"Origicnal"	"Adjusted"	Welfare/ R&D excluded	"Origicnal"	"Adjusted"	Welfare/ R&D excluded
1960	0.488	0.478	0.419	0.461	0.436	0.372	0.156	0.155	0.139	0.393	0.368	0.315	0.401	0.383	0.323
1961	0.495	0.486	0.438	0.477	0.442	0.371	0.163	0.162	0.146	0.414	0.382	0.322	0.434	0.416	0.355
1962	0.593	0.579	0.503	0.479	0.448	0.373	0.236	0.234	0.207	0.446	0.414	0.349	0.395	0.376	0.312
1963	0.520	0.511	0.441	0.431	0.405	0.333	0.202	0.200	0.173	0.475	0.446	0.371	0.425	0.405	0.332
1964	0.519	0.510	0.443	0.439	0.408	0.326	0.206	0.204	0.174	0.494	0.463	0.377	0.481	0.459	0.383
1965	0.549	0.540	0.462	0.463	0.436	0.345	0.220	0.218	0.181	0.556	0.524	0.428	0.479	0.453	0.356
1966	0.474	0.468	0.395	0.453	0.432	0.335	0.229	0.227	0.190	0.516	0.485	0.388	0.481	0.451	0.362
1967	0.483	0.476	0.402	0.438	0.414	0.317	0.249	0.247	0.207	0.493	0.462	0.371	0.480	0.450	0.363
1968	0.526	0.517	0.445	0.454	0.428	0.324	0.284	0.282	0.234	0.474	0.441	0.348	0.478	0.446	0.357
1969	0.469	0.461	0.394	0.444	0.420	0.320	0.295	0.291	0.240	0.505	0.465	0.374	0.451	0.425	0.339
1970	0.507	0.497	0.416	0.467	0.437	0.326	0.334	0.329	0.266	0.545	0.496	0.389	0.511	0.474	0.381
1971	0.611	0.598	0.489	0.542	0.505	0.378	0.361	0.357	0.291	0.598	0.549	0.429	0.560	0.516	0.412
1972	0.533	0.523	0.423	0.532	0.502	0.377	0.395	0.390	0.323	0.593	0.548	0.412	0.561	0.509	0.403
1973	0.474	0.466	0.379	0.455	0.435	0.323	0.399	0.394	0.322	0.595	0.551	0.413	0.603	0.543	0.428
1974	0.528	0.518	0.421	0.530	0.505	0.372	0.454	0.450	0.362	0.681	0.633	0.476	0.706	0.639	0.487
1975	0.688	0.668	0.533	0.666	0.630	0.469	0.662	0.655	0.536	0.732	0.683	0.510	0.672	0.612	0.460
1976	0.598	0.583	0.475	0.607	0.577	0.428	0.626	0.618	0.508	0.685	0.640	0.477	0.601	0.554	0.425
1977	0.685	0.667	0.534	0.635	0.602	0.437	0.609	0.601	0.492	0.702	0.655	0.493	0.617	0.560	0.431
1978	0.552	0.540	0.428	0.592	0.563	0.408	0.593	0.586	0.478	0.693	0.643	0.472	0.627	0.567	0.439
1979	0.472	0.463	0.361	0.528	0.499	0.361	0.615	0.605	0.491	0.643	0.592	0.434	0.604	0.549	0.418
1980	0.512	0.499	0.384	0.561	0.526	0.380	0.603	0.593	0.479	0.633	0.579	0.420	0.628	0.567	0.441
1981	0.520	0.504	0.394	0.591	0.549	0.392	0.609	0.598	0.482	0.619	0.560	0.404	0.650	0.575	0.445
1982	0.632	0.607	0.483	0.597	0.551	0.393	0.622	0.608	0.487	0.641	0.572	0.406	0.647	0.573	0.434
1983	0.698	0.666	0.524	0.571	0.525	0.368	0.608	0.593	0.476	0.631	0.558	0.391	0.650	0.580	0.439
1984	0.575	0.553	0.437	0.557	0.508	0.346	0.610	0.596	0.477	0.590	0.520	0.361	0.670	0.592	0.452
1985	0.669	0.634	0.491	0.571	0.516	0.348	0.619	0.605	0.469	0.669	0.571	0.394	0.612	0.545	0.415
1986	0.814	0.752	0.571	0.577	0.521	0.346	0.616	0.601	0.470	0.765	0.636	0.427	0.668	0.584	0.441
1987	0.613	0.578	0.416	0.539	0.485	0.319	0.612	0.593	0.462	0.721	0.606	0.408	0.666	0.582	0.438
1988	0.505	0.480	0.354	0.522	0.471	0.309	0.630	0.611	0.473	0.654	0.551	0.367	0.629	0.552	0.416
1989	0.506	0.482	0.359	0.536	0.480	0.316	0.651	0.627	0.483	0.645	0.541	0.359	0.649	0.566	0.430
1990	0.538	0.507	0.382	0.566	0.503	0.325	0.634	0.613	0.472	0.662	0.551	0.363	0.685	0.586	0.436
Period Average															
1960-1969	0.512	0.503	0.434	0.454	0.427	0.342	0.224	0.222	0.189	0.477	0.445	0.364	0.415	0.426	0.348
1970-1979	0.571	0.558	0.449	0.565	0.535	0.395	0.524	0.517	0.422	0.658	0.610	0.458	0.617	0.561	0.434
1980-1990	0.598	0.569	0.436	0.563	0.512	0.349	0.619	0.604	0.476	0.657	0.568	0.391	0.650	0.573	0.435

Source: See Table 3-2.

Table 3-4: Labour's Share, Mark-up Rate, and Business Cycles

Manufacturing, Incorporated Enterprises with More Than 1 Thousand Million Yen

Year	Labour's Share (" R&D Adjusted")	Mark-up Rate	Real Sales (1960=100)	Year	Labour's Share (" R&D Adjusted")	Mark-up Rate	Real Sales (1960=100)
1960	0.400	na	10	1976	0.609	1.123	800
1961	0.412	na	13	1977	0.636	1.121	847
1962	0.452	na	15	1978	0.612	1.139	889
1963	0.432	1.131	18	1979	0.538	1.164	952
1964	0.455	1.137	21	1980	0.555	1.148	995
1965	0.481	1.132	23	1981	0.558	1.147	1058
1966	0.456	1.157	26	1982	0.579	1.140	1076
1967	0.449	1.166	32	1983	0.582	1.147	1142
1968	0.459	1.167	38	1984	0.557	1.159	1220
1969	0.457	1.174	46	1985	0.584	1.147	1336
1970	0.486	1.164	53	1986	0.618	1.149	1312
1971	0.542	1.146	57	1987	0.580	1.177	1381
1972	0.534	1.181	62	1988	0.541	1.210	1532
1973	0.503	1.223	67	1989	0.540	1.206	1641
1974	0.568	1.173	71	1990	0.551	1.204	1791
1975	0.660	1.121	69				

Source: The authors' Calculation.

Table 3-5: Correlation among Annual Rates of Change
Labour's Share, Mark-up Rate, and Real Sales

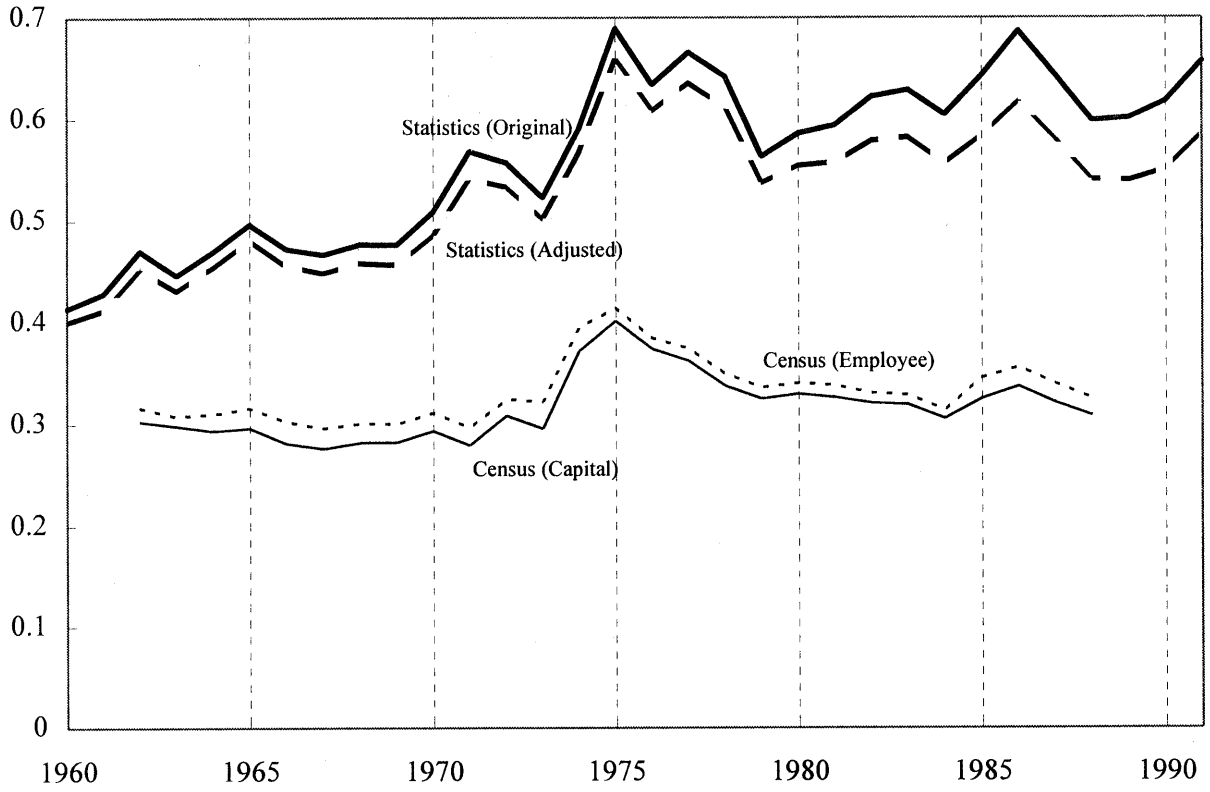
	Manufacturing			Steel			Chemical		
	Whole Period	Before Oil Shock	After Oil Shock	Whole Period	Before Oil Shock	After Oil Shock	Whole Period	Before Oil Shock	After Oil Shock
	1964-90	1964-74	1975-90	1964-90	1964-74	1975-90	1964-90	1964-74	1975-90
Labour's Share and Real Sales	-0.288	-0.367	-0.656	-0.472	-0.476	-0.745	-0.299	-0.484	-0.507
Labour's Share and Mark-up Rate	-0.858	-0.918	-0.878	-0.929	-0.945	-0.932	-0.830	-0.941	-0.781
Mark-up Rate and Real Sales	0.284	0.209	0.447	0.489	0.324	0.746	0.320	0.425	0.353
	Processed Food			Electric Appliances			Transportation Equipment		
	Whole Period	Before Oil Shock	After Oil Shock	Whole Period	Before Oil Shock	After Oil Shock	Whole Period	Before Oil Shock	After Oil Shock
	1964-90	1964-74	1975-90	1964-90	1964-74	1975-90	1964-90	1964-74	1975-90
Labour's Share and Real Sales	0.0444	-0.589	0.0369	-0.648	-0.684	-0.826	-0.148	-0.353	-0.265
Labour's Share and Mark-up Rate	-0.2970	-0.710	-0.2770	-0.821	-0.903	-0.855	-0.514	-0.484	-0.557
Mark-up Rate and Real Sales	0.0100	0.844	-0.2640	0.553	0.544	0.589	0.360	0.371	0.488

Table 3-6: Mark-up Rate and the Business Cycle

	β	γ
Manufacturing	0.148	0.00065
	(2.05)	(1.26)
Steel	0.347	**
	(3.27)	
Chemical	0.253	0.00155
	(2.75)	(2.06)
Processed Food	0.0018	**
	(0.02)	
Electric Appliances	0.092	**
	(3.04)	
Transportation Equipment	0.049	0.0003
	(1.73)	(0.92)

Note: See the Text. Here ** shows that there is no trend in regression equaiton.

Figure 3.1: Labour's Share in Large Firms
Manufacturing; Incorporated Enterprise



With Capital of More Than 1 Thousand Million Yen/With More Than 1000 Employees

Figure 3-2: Labour's Share in Small Firms
Manufacturing: Incorporated Firms

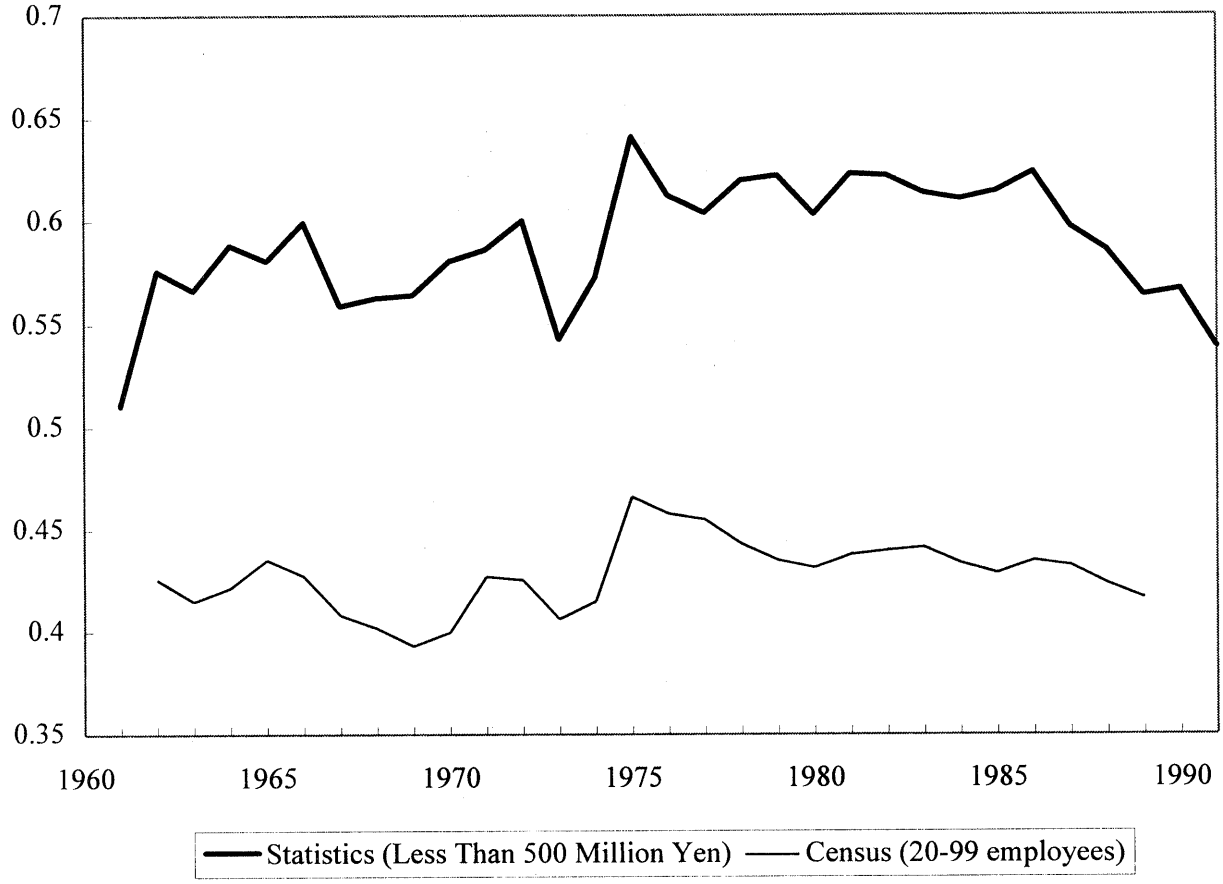


Figure 3-3: Labour's Share in Small Firms
Unincorporated Enterprises

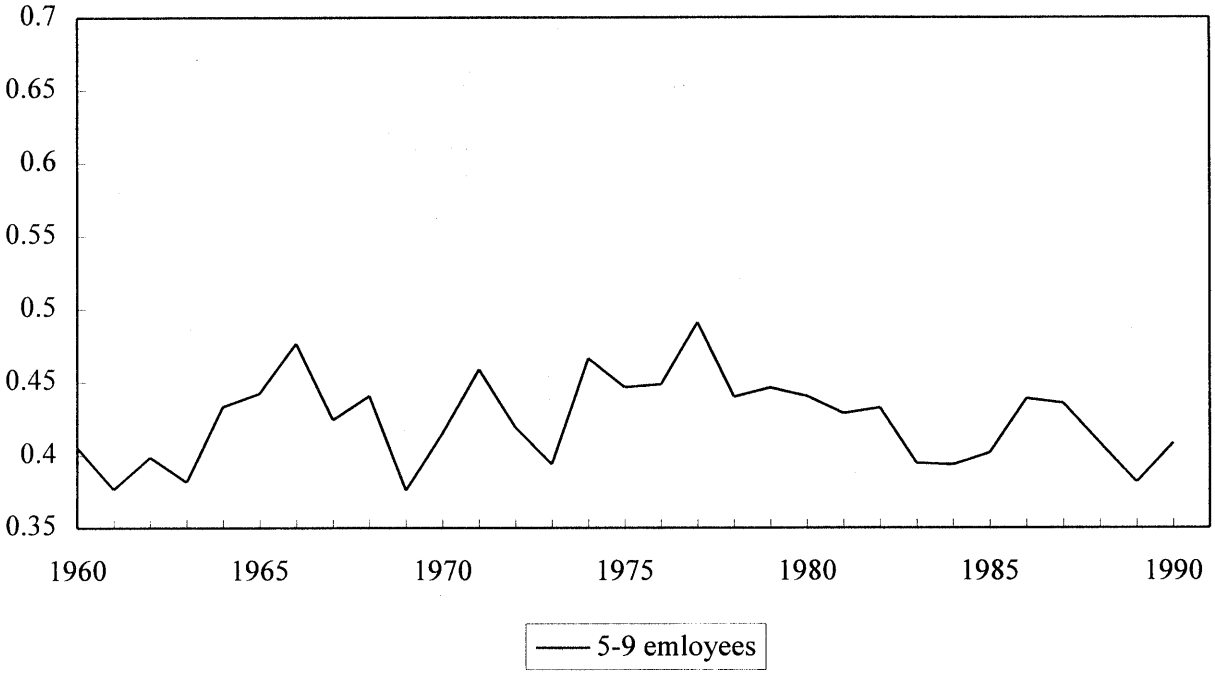


Figure 3-4: Factors Casuing Increase of Labour's Share in Large Frims

Incorprated Enterprise Statistics

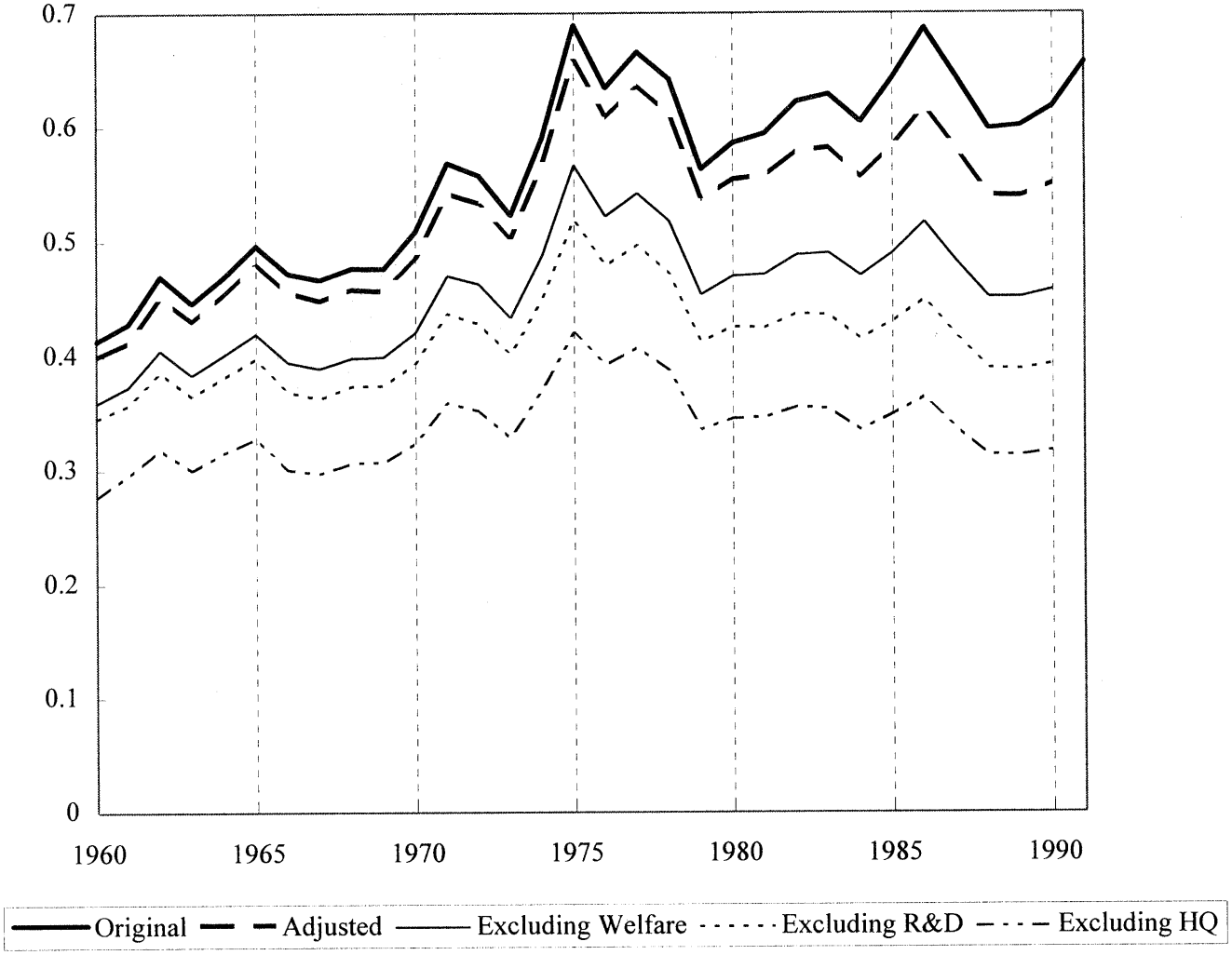


Figure 3-5: Fixed-Weight Labour's Share in Large Frims
Manufacturing; Firms with Capital of More Than 1 Thousand Million Yen

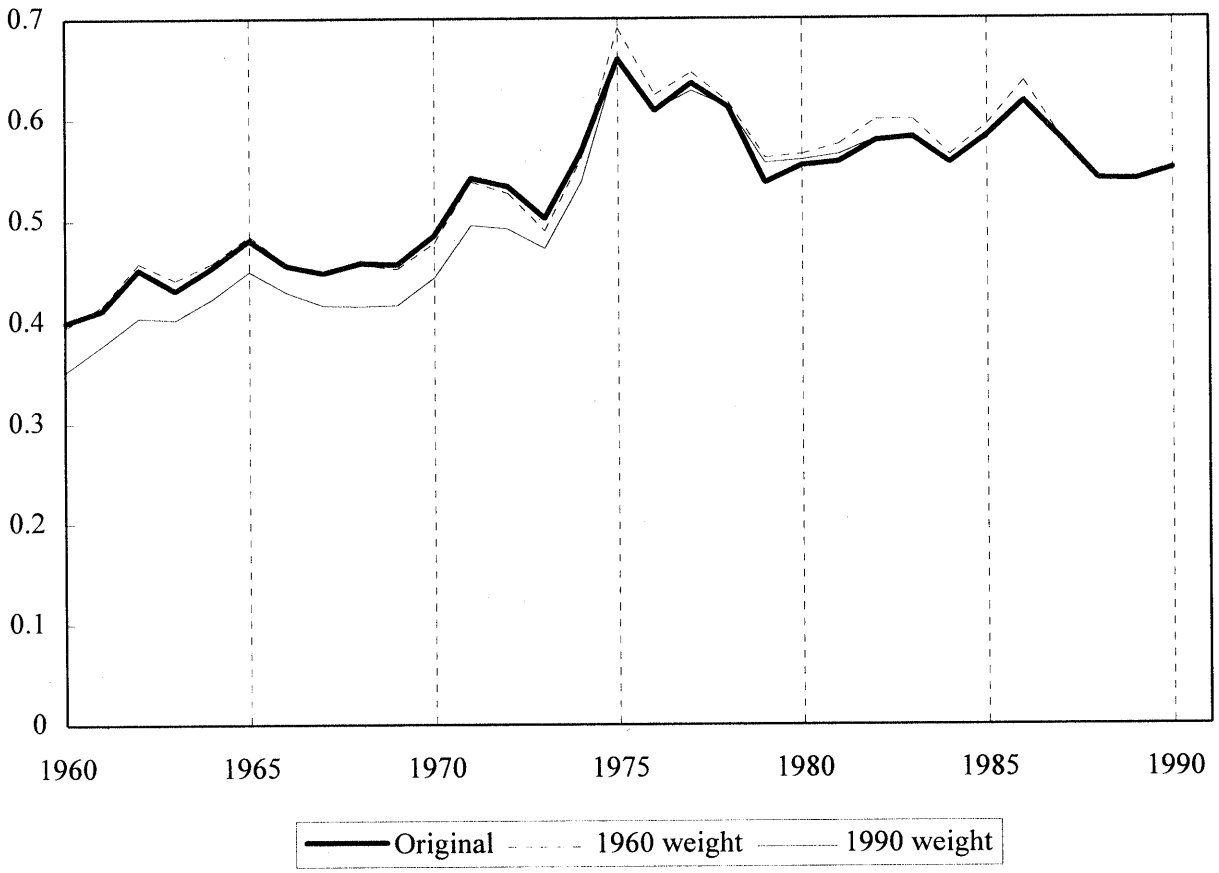


Figure 3-6: Short-Run Movement of Labour's Share, Mark-up, and Sales
Manufacturing; Firms with Capital of More Than 1 Thousand Million Yen