

## **Declining Share of Wages in Organised Indian Industry (1973-97): A Kaleckian Perspective**

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The distribution of national income between social classes is a significant question in political economy of development. The classical economists see class distribution of income as central to analysis of economic growth. The neo-classicals move away from class analysis, and reduce income distribution to the matter of factor pricing. The neo-classical scheme renders, not only the class distribution of income but even personal distribution of income invisible. Kalecki is the first post-classical economist to reintroduce class distribution of income into macro-economic analysis.

In analysing the distribution of income, Kalecki departs from the conventional assumption of perfect competition, and is the first modern economist to use mark-up pricing in the analysis of distribution.<sup>1</sup> Specifically, Kalecki shows that mark-up pricing, along with the material-wage ratio of an industry, determines the distribution of income among social classes in an industry. He further shows that changes in the product mix in the economy also have a bearing on the distribution of income in the economy as a whole. Kalecki's departure from perfect competition models offers fresh insight into understanding the imperfectly competitive world. The Kaleckian method has the added advantage of using readily available data<sup>2</sup> for a proximate explanation of the distribution of income among social classes, specifically the wage share.

Western studies have shown a broad stability of the wage share in the national income in the long run (cf. Ranadive 1978, p. 134). It is worth investigating whether this result extends to the organised Indian industry as well. Hence this paper studies the long run trend in the wage share in organised Indian industry (1973-1997).

The share of wages in industrial income has a three-fold importance. First, it is broadly indicative of the relative importance of the working class in the economic structure in general, and in industry in particular. A trend decline in the wage share would indicate a general weakening of the importance of the working class in the socio-economic system<sup>3</sup>, and would be worth investigating.

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Second, a change in the share of wages alters the consumption profile of the economy. This is because the consumption basket of the workers differs from the consumption basket of the industrial surplus-sharing classes in many important respects. A decline in the share of wages would increase the weight of the consumption pattern of the industrial surplus-sharing classes in the economy. This in turn would affect the composition of industrial output, increasing the share of industries catering to the surplus-sharing classes.

Third, a decline the share of wages slows down the growth of consumer demand. This is because the working class has, in general, a higher propensity to consume than the surplus-sharing classes. This slowdown of consumer demand frees in principle, more resources for investment on the one hand, and on the other hand, increases the savings gap which has to be filled by greater investment or autonomous expenditures.

This paper is concerned with the long run trend in the aggregate wage share in organised Indian industry (1973-97) as a whole. The exercise is confined to the aggregate wage share in industry as a whole

### **Determinants of Wage Share: Kaleckian Scheme**

Kalecki's (1969) basic equation can be rewritten in our notation as:

$$\frac{W}{Y} = \frac{1}{1 - (m/w)} \dots \quad [1]$$

where  $(m/w) = j'$  of Kalecki, and  $= k' - 1$  of Kalecki. We call  $m/w$  the material wage ratio, and as 'markup' or the 'price margin'.

For the full derivation of Kalecki's basic equation, please refer to full text of our paper.

The total differential of [1] gives:

$$d\left(\frac{W}{Y}\right) = \frac{d\{1 - (m/w)\}}{\{1 - (m/w)\}^2} - \left(\frac{W}{Y}\right)^2 \{(m/w)d - d(m/w)\} \dots \quad [2]$$

The first partial differential on the RHS in [2] is due to change in price margins, while the second partial differential on the RHS in [2] is due to change in the material wage ratio.

### **Methodology and Data**

The variables relevant for Kaleckian analysis of wage-share are wages, industrial income, material costs, and mark-up. Wages are defined as inclusive of worker's wages, salaries of employees as well as other benefits

accruing to the employees.<sup>4</sup> All non-wage variable costs are material costs. Industrial income is defined as inclusive of depreciation, and is measured by the GVA in industry.<sup>5</sup> Mark-up is defined as  $[\{\text{Gross Output}/(\text{material costs} + \text{wage cost})\} - 1]$ . All the variables are measured at constant composition of industrial output.<sup>6</sup>

The study uses data drawn from the ASI at the 2 digit level (1973-81) and 3 digit level (1982-97). As is well known, ASI data show a significant fluctuation from year to year due to variations in coverage and reportage. However, it may be assumed that in the long run these fluctuations may cancel out, and a trend element will be revealed. For this reason, the paper concentrates only on the long run trend in the wage share.

ASI has shifted from the 1970 NIC classification to the 1987 NIC classification after 1989. New industries have been added and some old series have been dropped or reclassified. 3 digit level data of 163 industries is however continuously available, and has been used in this study. This data has been taken from [www.circonindia.com](http://www.circonindia.com), which however only supplies data from 1982. Before 1982, 2 digit level ASI data has been taken from the Chandok series (1973-81).

Gaps exist in the data at individual industry levels for certain years and they have been filled through interpolation. Of particular importance is the absence of information on other benefits to employees which is not reported for several years.<sup>7</sup> This gap has been filled on the assumption that other benefits are proportionate to the wage bill, and this proportion has been estimated from the ratio of the two for the years 1982-85.

The price indices used for estimating the material price index have been taken from the Wholesale Price Index reported in CMIE and Economic Surveys, and the weights used to construct the material price index are: non-food: 75.9, minerals: 10.6, food: 2.4 and fuel etc.: 11.1, based on the 1973 input output tables (Balakrishnan P, 1991, App. 3, p 332).

### **Trend in Aggregate Wage Share**

Fig 1 shows the share of wages in GVA in organised Indian industry. It is based on numerical results that are presented in Table 1 (Appendix I). The share of wages in GVA in 1973 stood at c 52 per cent,<sup>8</sup> and in 1997 at c 33 per cent.

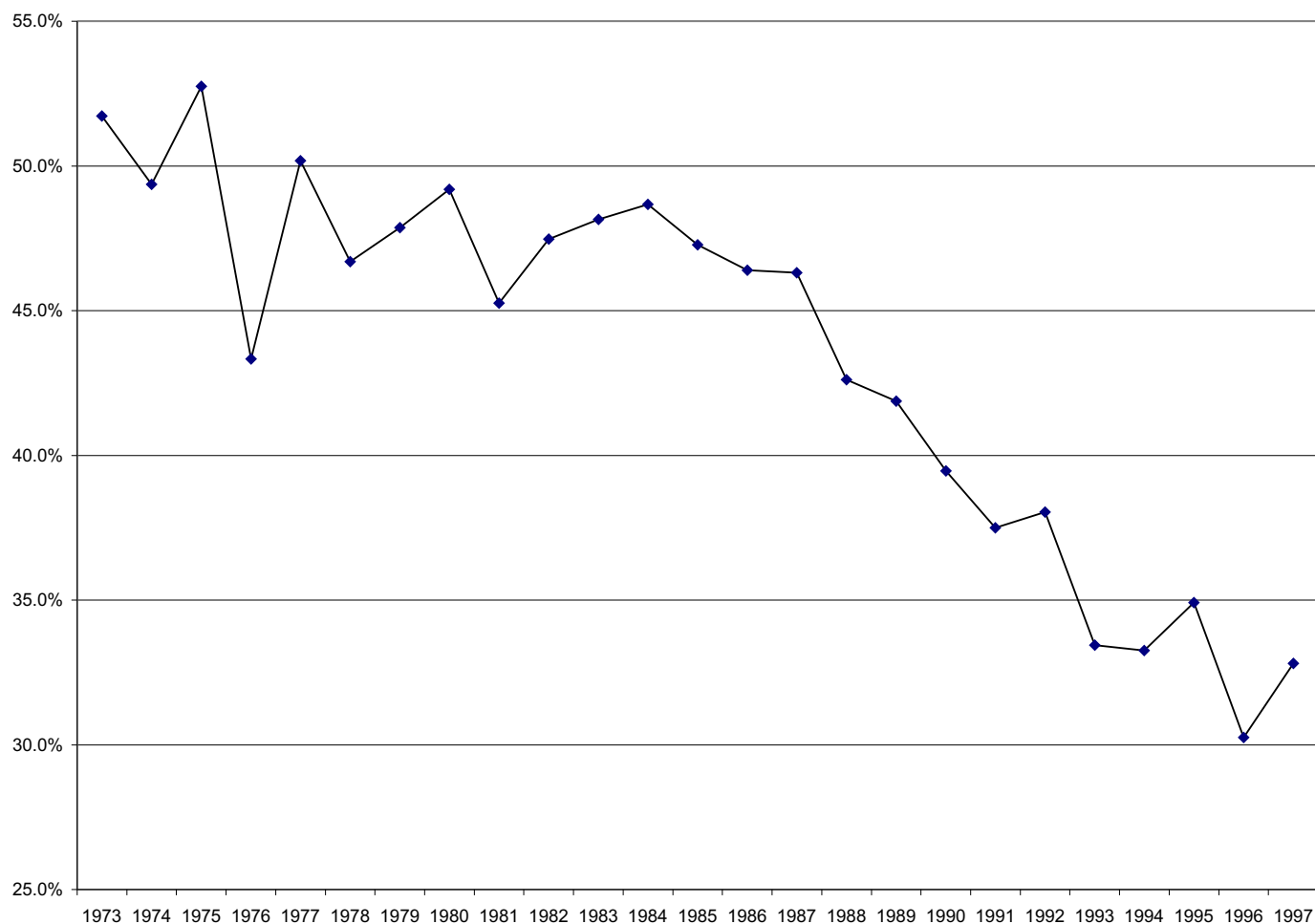
Fig 1 shows that:

- a) The share of wages declined considerably between 1973 and 1997 by about 19 percentage points from 50-55 per cent in the starting years to 30-35

per cent at the end of the period (See also Table 1, Appendix I)

- b) The decline was slower between 1973 and 1987, and accelerated after that. Between 1973 to 1987, the decline in the wage share was by about  $5\frac{1}{2}$  percentage points, while, after 1987 the fall was by  $13\frac{1}{2}$  percentage points.

Fig 1: Wage Share in Org Indian Manufacturing



Although as Table 1 indicates, the end to end decline in wage share was 19 percentage points, it is possible that this estimate does not take into account annual fluctuations which appear to be sizeable. In order to even out the quantitative dimensions of the annual fluctuations, we calculate the average wage share for the first five years and the last five years, as: 1973-77 49.2 per cent, 1993-97 32.8 per cent. This gives the trend difference in the wage share as  $16\frac{1}{2}$  percentage points in 25 years.

Thus, we may conclude that the decline in wage share, which stood at about  $\frac{1}{2}$  of the industrial GVA in 1973, was between  $16\frac{1}{2}$  and 19 percentage points

over the 25 years of analysis. In proportionate terms, it implies a decline in wage share by 33-40 per cent in 25 years. This is a sizeable decline by any standards.

In the sub-period 1973-87, the decline was by  $5\frac{1}{2}$  percentage points. After 1987, wage share fell by nearly  $13\frac{1}{2}$  percentage points.

In the remaining part of this paper, we will try to explain the trend decline in the wage share in Indian industry using Kaleckian tools of analysis.

### **Contribution of Changes in Industrial Composition to the Decline in the Wage Share**

One reason for the decline in the aggregate wage share can be the faster growth of low wage share industries when compared to high wage share industries. If this has been happening, it will be reflected in a change in the composition of industrial output.

One way of estimating the contribution of the changing composition of industrial output, is to eliminate it conceptually, and then estimate the decline in wage share at constant composition of output. The difference between the decline in wage share at constant composition, and the decline in the actual wage share may be attributed to the growing importance of low wage share industries.

In order to eliminate the influence of the changing composition of industrial output, the average shares of industrial output (1982-85) were calculated for individual industries at the 2 and 3 digit level. These weights were then applied to 2 digit level data (1973-81) and 3 digit level data (1982-97), and all the variables were transformed on the assumption of a linear relation of each variable with the output of that year. The wage share was then calculated as the ratio of the constant composition total wage and the constant composition GVA. The results have been presented in Table 1 (Appendix I). By way of contrast to the constant composition wage share, the actual wage share in industry is here onwards called the 'unadjusted' or 'actual' wage share.

Table 1 shows that the end to end decrease in the constant composition wage share is about  $9\frac{1}{2}$  percentage points from 45.1 per cent to 35.6 per cent. We have already estimated the actual decline the unadjusted wage share to be between  $16\frac{1}{2}$ -19 percentage points. This means that faster growth of low wage industries accounted for  $\frac{1}{3}$  to  $\frac{1}{2}$  of the actual decrease in the unadjusted wage share in Indian industry.

Table 1 also shows that between 1973 to 1987 the constant composition wage share increased by marginally by 2.8 percentage points. This indicates that the

**Fig 2: Wage Share with Constant Industrial Composition**



entire fall in the unadjusted wage share by  $5\frac{1}{2}$  percentage points in this period was due to the relative growth of low wage share industries. Between 1987-97, the constant composition wage share declines by 12.3 percentage points while the total unadjusted wage share declines by about  $13\frac{1}{2}$  points. This implies that only 1.2 out the  $13\frac{1}{2}$  point decline in the wage share ( i.e. about 9 per cent) was due to the relative growth of low wage share industries.

The following conclusions emerge from the foregoing analysis:

- About  $\frac{1}{3}$  to  $\frac{1}{2}$  of the total decrease in the unadjusted wage share (1973-97) was due to the faster growth of low wage share industries.
- The entire decrease in the unadjusted wage share between 1973-87 (of  $5\frac{1}{2}$  points) was due to the growing importance of low wage share industries.
- After 1987, the faster growth of low wage share industries accounted for only 9

per cent of the total decrease in the unadjusted wage share.

### **Contribution of Industry Level Fall in Wage Share to the Decline in Unadjusted Wage Share**

The foregoing section revealed that about  $1/3$  to  $1/2$  of the decline in wage share over the 25 years (1973-97) was due to the rise of low wage industries. This implies that the remaining  $1/2$  to  $2/3$  of the decline in the aggregate wage share was due to the fall in wage shares at the individual industry level. Table 1 confirms that the end to end drop in the constant composition wage share was about  $9\frac{1}{2}$  percentage points. Thus, the fall in wage shares at the individual industry level contributed at least half of the overall decline in the unadjusted wage share.

Figure 2 superimposes the constant composition wage share over the aggregate wage share. It shows that over the entire time period, the constant composition wage share fell by about 10 percentage points.

Fig 2 also reveals a sub-period pattern. Between 1973 and 87, the constant comp. wage share actually increased (by 2-3 per cent points), although the actual wage share fell in this period. This implies that at the industry level, the wage share rose in this sub-period. However this rise at the individual industry level did not show up in the unadjusted wage share because of the faster growth of low wage share industry. One corollary of the above finding is that between 1973 and 1987 the decrease in the unadjusted wage share was only due to the rise of low wage industries and not due to a decline in wage shares at the individual industry level.

Fig 2 also shows that after 1987 constant composition wage share is very close to the unadjusted wage share, and has a parallel drop. Table 1 in Appendix I shows that the end-to-end drop in the unadjusted wage share was about 13.5 percentage points in this sub-period, whereas constant composition wage share fell by 12.3. Thus, most of the decrease in the aggregate wage share in this sub-period was due to the decline in wage shares at the individual industries level. This was the principal cause of the fall in wage share after 1987.

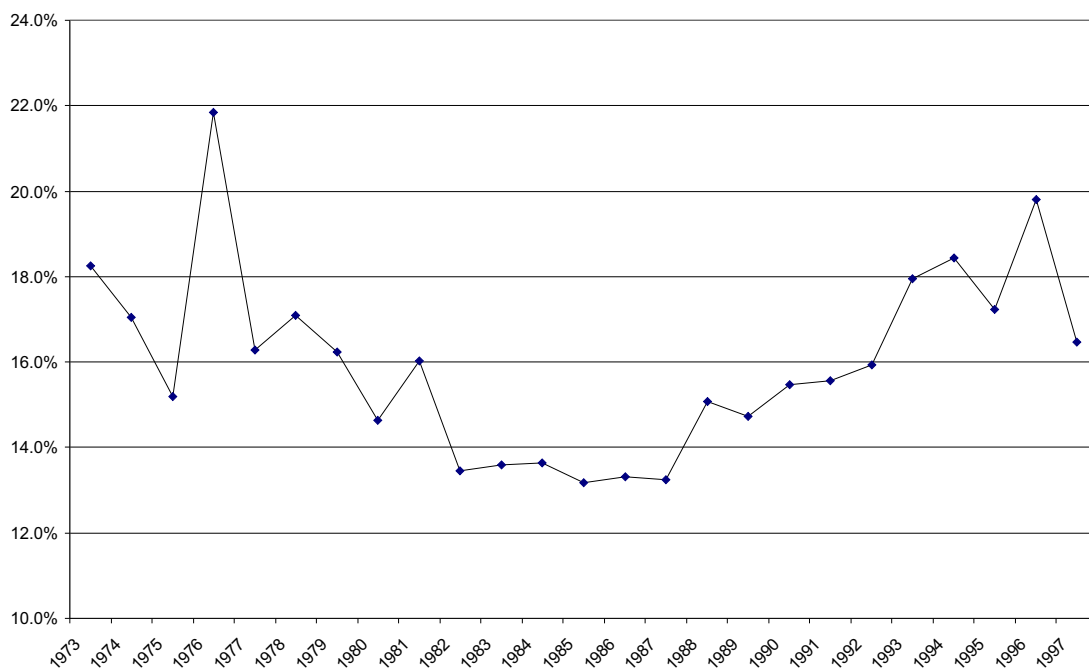
### **Decomposition of the Changes in Constant Composition Wage Share**

The above analysis revealed that the wage shares actually increased during 1973-87 at the individual industry level. In contrast, after 1987, wage shares decreased at the individual industry level, and this was the chief reason for the decline in the aggregate industrial wage share in the sub-period 1987-97.

Kalecki attributes the changes in the industry level wage shares to two proximate causes: industrial mark-ups ( $\mu$ ) and the raw material-wage ratio ( $m/w$ ) (Kalecki M., 1969, pp. 28-41).

Industrial mark-ups are variously defined in literature. For Kalecki, the industrial mark-up was the margin (percentage) added to the prime costs of the representative firm. The higher the mark-up, the larger the share of profits in the GVA and lower the share of wages. The size of the mark-up was influenced by a variety of factors including capital size, advertisements, and market power.<sup>9</sup>

Fig 3: Industrial Markups with Const Comp



A second proximate influence on the share of wages is the material input-wage ratio ( $m/w$  ratio). Given the mark-up, the larger the  $m/w$  ratio, the smaller would be the share of wages in industrial income. The  $m/w$  ratio is affected by the relative price changes of material inputs and labour on the one hand, and material intensity per employee defined by technology.

Thus, changes in the mark-up and  $m/w$  ratio are the proximate reasons for the changes in industry level wage shares. Industry level wages shares would rise if the mark-up rises and fall if the mark-up falls. And a rise in the  $m/w$  ratio would reduce the share of wages. We now turn to the Indian data to see what actually happened in Indian industry between 1973-97.

Using the transformed values at constant industrial composition, the overall

industrial mark-up and m/w ratio has been calculated for the entire period 1973-97, and the results have been presented in Table 2 in the Appendix I. Figures 3 and 4 bring out the trends in the two variables over the period of analysis.

Fig 3 shows the trend in the industrial mark-up, measured as a percentage over prime costs, between 1973-97. It can be seen that end-to-end, industrial mark-ups have remained the same: around, 18 per cent. This implies that for the period as a whole, mark-ups contributed nothing to the decline in wage share at the industry level.

The apparent constancy conceals an important sub-period variation. Between 1973-87, the mark-ups actually declined: from c 18 per cent to c 13 per cent. This is the period in which the industry level wage shares rose. This leads us to infer that the rise in industry level wage shares between 1973-87 may have been due to a fall in price margins. Secondly, after 1987, there is a definite and consistent increase in the mark-up: from c 13 per cent to 18 per cent. Thus, the rise in mark-ups appear also to have contributed to the decline in industry level

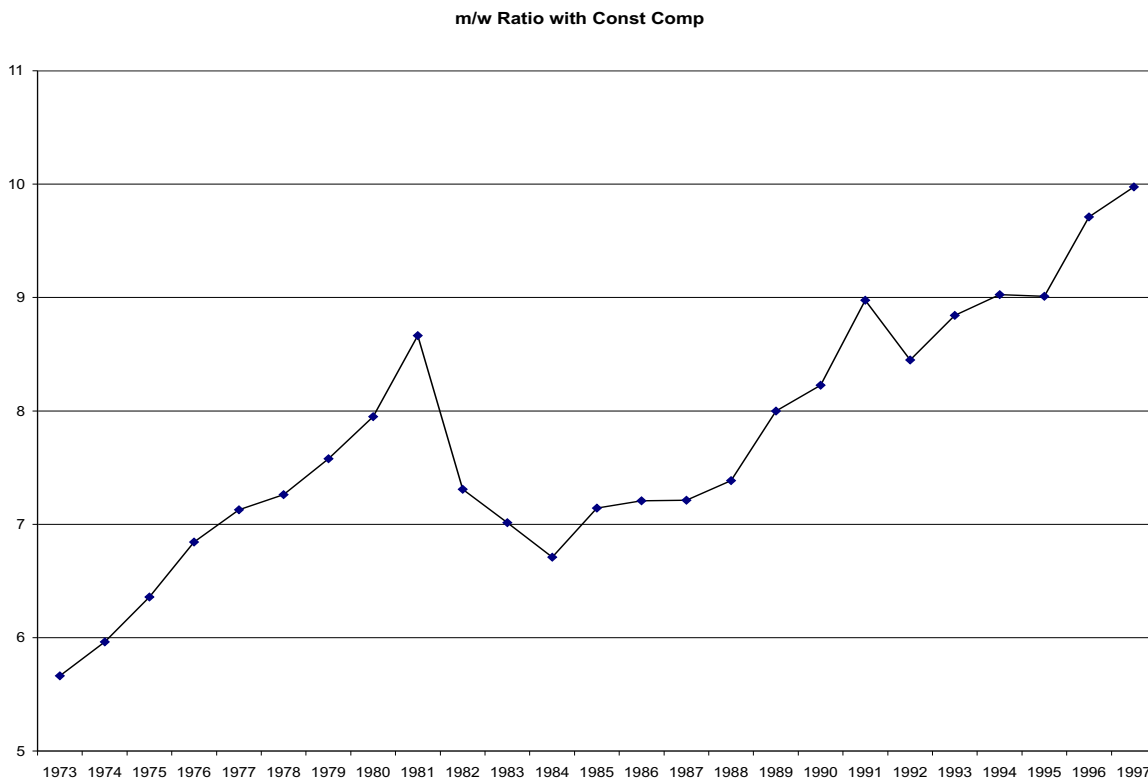


Fig 4 shows that the m/w ratio has grown consistently over the entire time period under study. Thus the rise in the m/w ratio has exerted a steady

downward pull on the wage shares at the industry level. Apparently, between 1973-87, the downwards pull of the m/w ratio on the wage share was neutralised by the fall in mark-ups. But after 1987, rising m/w ratios and mark-ups seem to have acted in tandem to pull down wage shares across industries. These inferences can be tested by a crude decomposition exercise that derives from the kaleckian formula of distribution:

$$d\left(\frac{W}{Y}\right) = \left(\frac{W}{Y}\right)^2 \left\{ (1 - m/w)d + d(m/w) \right\} \dots \quad [2]$$

The results of the analysis are presented in Table 3 below:

Table 3

	Change in wage share at const. Comp.	contribution of markup	contribution of m/w ratio
1973-97	9.5 per cent	2.4 per cent	16 per cent
1973-87	2.8 per cent	6.8 per cent	5.8 per cent
1987-97	12.3 per cent	6.1 per cent	7.7 per cent

It can be seen that the decomposition is inexact. This is primarily because the results of differential calculus are being applied to discrete changes. Nevertheless, the broad dimensions of changes and the individual contributions to that change are evident from the result.

Row 1 of Table 3 indicates that over the period as the whole, the nearly 9½ point decrease in wage share at the individual industry level was entirely due to the rise in the m/w ratio. As Table 2 in Appendix I shows, the m/w ratio rose continuously from 5.7 to 10 in the period.

Row 2 of the Table confirms that the marginal increase in wage share between 1973-87 at the industry level was due to the fall in price margins. This was only partly neutralised by the rise of m/w ratio. Row 3 of the Table indicates that the share of wages decreased by 12.3 percentage points between 1988-97 at the industry level. This decrease was partly due to the rise in mark-ups during the sub-period and partly due to the rise in the m/w ratio.

The chief conclusion from the foregoing analysis is that the rising m/w ratio has exerted a steady downward pull on the share of wages at the individual industry level. During 1973-87 it was counteracted by the effects of falling industrial mark-ups, so that the wage share actually rose at the industry level. However, after 1987, mark-ups have started rising again, joining the rising m/w ratio in pulling down industry level wage shares.

## Factors Responsible for the Rise in the m/w Ratio

The previous section revealed that the primary reason for the decline in the share of wages at the industry level has been the rise in the m/w ratio, although rising mark-ups did contribute their bit after 1987. This section tries to analyse the reasons for the rise in the m/w ratio.

The material/wage ratio may rise due to two reasons: it is possible that the material prices are rising faster than the wage per employee. Alternatively, it is possible that a greater amount of material inputs are being used per employee. One or both of the above reasons can be responsible for the rise in the m/w ratio. The following attempt to identify the influence of these two factors on the m/w ratio is conditioned by the fact that industry level input price data are not available. Hence, aggregate price data are used in the following analysis.

An comparison of the material price index with the wage cost per employee reveals that the former has been growing much slower than the latter. Raw material prices have generally lagged behind wage cost per employee.<sup>10</sup> (See Table 4, Appendix I). This means that the rise in the m/w ratio has been entirely due to the rise in real quantity of materials used per employee.

Table 5 below gives the ratio of real materials used per employee (M/L), and the ratio of real materials used per unit of real output (M/O). As stated earlier, aggregate price indices have been used to deflate the values of the relevant variables at constant composition, in order to arrive at these figures.

The results in Table 5 show firstly, that the amount of materials used per employee has been rising continuously throughout the period of analysis. It rose from 100 to 380. By 1997. Only a small part of the increase in the material per employee is due to a rise in material intensity of production. This is shown by the fact that the index for material/output ratio (M/O index) only rose from 100 to 110 during the period. This suggests that the increase in material per employee went mostly towards higher productivity per employee. This is confirmed by the last column of the table which shows that output per head (O/L) index during the period of analysis rose from: 100 to 346.

It follows from the above analysis, that the m/w ratio rose throughout the period 1973-97 only due to technical change.<sup>11</sup> Throughout the period, the materials used per employee increased. Most of this increase in materials per employee was reflected in an increase in the output per employee indicating a definite increase in the productivity per employee. It is beyond the scope of this paper to investigate the sources and nature of this rise in output per employee. However, the drastic change in the technical ratios indicates the clear contribution of technical change to the rise in the m/w ratio, and thereby to the

fall in the share of wages at the industry level.

## Conclusions

This study reveals that the share of wages declined considerably between 1973 and 1997. The end to end drop was 19 per cent, and the wage share fell from 51.7 per cent to 32.8 per cent. In proportionate terms, the decline in wage share was between 30-40 per cent.

The period of analysis divides into two phases. In the first phase of fifteen years (1973-87), wage share declined by 5½ percentage points, while the fall accelerated after 1987, and the decline from 1987-97 was by 13½ percentage points. If it is possible to identify the period 1987-97 with the period of liberalisation, it may be inferred that 70 per cent of the decline in the wage share was during the period of liberalisation. The period of liberalisation has witnessed an acceleration in the decline of the wage share.

About ½ (at least 1/3) of the total decrease in the wage share (1973-97) was due to the faster growth of low wage share industries. Growing importance of low wage share industries was the sole reason for the decline in wage share between 1973-87. After 1987, the relative growth of low wage share industries contributed only 9 per cent of the fall in the aggregate wage share.

In the period as a whole, the decline in wage share at the individual industry level contributed at least half (9½ percentage points) of the total decline in the aggregate wage share. In the first period, 1973-87, the industry level wage shares actually rose. However, in the second period, the industry level shares have been falling rapidly. They fell by 12.3 percentage points against the total decline of 13.5 percentage points in the wage share in this period. Thus, the decline in industry level wage shares contributed more than 90 per cent of the total decline in wage share in the second period (1987-97).

For the period as a whole, the decline in industry level wage share was entirely due to the rise in material/wage (m/w) ratio. Constant composition mark-up remained the same end to end between 1973-97.

There is an interesting sub-period pattern however. Between 1973-87, mark-ups declined, neutralising the downward pull of the rising m/w ratio, and actually increasing the industry level wage share by 2-3 percentage points. This industry level rise did not reflect in an overall increase in the aggregate wage share due to the faster growth of low wage share industries.

In the second period, 1987-97, mark-ups rose along with the m/w ratio, pulling down the industry level share of wages by about 12.3 percentage points. Both forces contributed nearly equally to this decline.

This study also examines the reasons for the consistent rise in m/w ratio and finds it to be due to technical change. Almost the entire increase in the m/w ratio was due to the rise in the material used per employee. This index rose from 100 to 380 over the period. Most of the increased material used found its way into greater output. Thus, O/L (index) rose from 100 to 346 over the time period. A small fraction of the rise in the material intensity per employee went into a rise in the material output ratio, whose index rose from 100 to 110.

Thus, the study reveals a drastic decline in the aggregate share of wages between 1973-97. This decrease came about as a result of a faster growth of low wage share industries over the period, as well as a rise in the material intensity per employee in the production process. Thus changes in output mix and technical change were responsible for the 19 percentage point drop in the share of wages. Mark-ups played no role in the decline in the period as a whole.

Less than a third of the decline in the wage share came in the first 15 years of analysis, and about 70 per cent of the decline took place between 1987-97. In the first 15 years of the analysis, the faster growth of the low wage share industries resulted in the decline in the aggregate wage-share. In the second period, 1987-97, rising mark-ups and material intensity together contributed to nearly 90 per cent of the total decline of 13½ percentage points in this period. The faster growth of low wage share industries contributed only 10 per cent of the total fall in the wage share.

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Chandok series.

CMIE All India Reports.

CSO Abstracts, ASI 3 digit data from [www.circonindia.com](http://www.circonindia.com)

Economic Survey, various issues,

## Notes

<sup>1</sup> Kalecki initially explains industrial mark-ups by reference to the degree of monopoly, and qualifies this explanation later by reference to a variety of other factors, such as overheads, selling costs, trade union activity, etc. For many, his explanation of mark-up pricing remains unsatisfactory. However, the limitations of the degree of monopoly explanation does not automatically prevent the use of mark-up pricing in economic analysis, for instance, in inflation studies. One does not have to subscribe to Kalecki's degree of monopoly explanation, in order to use mark-up pricing as a tool for analysing distribution of income.

<sup>2</sup> Since the Kaleckian method uses only information on wages, material and output that are available in industrial accounts, it circumvents the problems of

developing a series of 'real' capital and real output that is inherent in the production function approach to the question.

<sup>3</sup> This does not contradict a rise in real wage per worker (Fallon and Lucas, 1991; Tulpule and Dutta, 1989; Nagaraj R. 1994), which shows the improvement in the living conditions of individual workers. It is quite possible, as historical evidence indicates, for the rise of the individual to accompany the decline of a class.

<sup>4</sup> Kalecki includes salaries of employees into gross mark-up. It is only a matter of convention based on the assumption that white collar workers and blue collared workers are socially different. However, we feel that it is more appropriate to include them in wages, and salaries are also, by and large determined in a similar fashion.

<sup>5</sup> Income is measured gross of depreciation in this study on the grounds of symmetry. Depreciation is the compensation to property for wear and tear of physical capital. Since the wear and tear of human capital of the workers is met out of the workers' income and receives no compensation, it may be argued that the wear and tear of physical capital should also be met out of the income of property owners. Hence, depreciation is treated as the income of the surplus-sharing classes.

<sup>6</sup> The procedure adopted for this purpose is as follows. First, the 1982-85 share of each industry's output ( $o_i^{82-85}$ ) in aggregate output ( $O^{82-85}$ ) is calculated. Let us signify this by  $w_i$ . Then, for each year, the constant composition output of each industry ( $cco_i$ ) is calculated by:  $w_i * O$ . Then each variable (say  $x_i$ ) of the industry is scaled up or down by the formula:  $o_i : x_i :: w_i O : ?$  (which gives constant composition  $x_i$  as:  $w_i * O * x_i / o_i$ ). The constant composition  $x$  for the industry as a whole is then calculated by summing  $w_i * O * x_i / o_i$  across all individual industries. This formula is applied to wages and GVA, (as well as all other variables) and their ratio is referred to as the constant composition wage share.

<sup>7</sup> For instance, the CSO Abstracts stopped reporting non-cash benefits accruing to employees between the years 1973-78.

<sup>8</sup> This estimate may be compared to Agarwal (1997) who finds the share of wages in value added to be around 40 per cent between 1965-81.

<sup>9</sup> A rise in mark-up may associate with a rise in wage share if it is accompanied by a fall in material-wage ratio.

<sup>10</sup> The raw material price index has been constructed by assigning the weights: non-food: 75.9, minerals: 10.6, food: 2.4 and fuel etc.: 11.1. However, the

above result is independent of the weights since the wage cost per employee has grown much faster than any component of the raw material price index.

<sup>11</sup> The change in the technical input output ratios is referred to herein as technical change. It is not the purpose of this paper to analyse the nature of the technical change, or to assess the contribution of technical progress in Indian industry.