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**Working Paper**

# Employment and growth potentials of rural industries, small-scale industries and medium and large-scale industries in India

Kiel Working Papers, No. 64

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Employment and Growth Potentials of Rural Industries,
Small-scale Industries and Medium and Large-scale
Industries in India: A Comparative Overview

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## I. Introduction

While small-scale industries have not gone unnoticed in India's
Industrial Policy Resolutions,[1] in practice it is largely the large and
medium-scale industries which have set the pace of industrialization in
the country. Recently, the wisdom of the prevailing pattern of indus-
trial growth has come increasingly under criticism. The reasons for
dissatisfaction with large and medium-sized industries are many, the
principal ones being the very limited impact these industries have had
on the serious problems of unemployment, income distribution and re-
gional disparities.[2] It is being felt, in other words, that the pre-
vailing approach towards industrialization is not truly development
oriented when seen in the perspective of both economic growth and the
general unemployment situation of the country. It seems, however, the
pendulum is now swinging in the opposite direction; according to the
current thinking of the Indian government - if the sporadic procla-
mations are any guide to it - the emphasis in industrial policy ought

[1] It is the broad principles of the Industrial Policy Resolutions of
1948 and 1956 that guide policies in regard to India's industrial
development. Balanced regional development and the protection and
encouragement of small enterprises are two among the major principles
of these resolutions.

[2] See, for example, J. Bhagwati and P. Desai, India: Planning for
Industrialization and Trade Policies since 1951 (London, New York,
Bombay, 1970); J. Bhagwati and T. Srinivasan, Foreign Trade Regimes
and Economic Development, India, National Bureau of Economic Research
(New York, London, 1975); R. Banerji, Exports of Manufactures from
India: An Appraisal of the Emerging Pattern (Tübingen, 1975).

now to shift away from the large towards small-scale and rural industries.

If policies are indeed changed in the new direction and effectively pursued, they may result in far-reaching changes in the Indian economy. In this light, this paper attempts to provide a comparative picture of some economic implications of a given amount of investment in the rural industrial sector, small-scale industrial sector and the medium and large-scale industrial sector. The implications to be examined are the additions to employment, output and investible surplus resulting from an equal amount of investment in the three sectors starting from a given situation. The analysis will be confined to a comparative static framework. The basic hypothesis is that the three sectors differ from one another in the economic environment facing them, in the mix of industries and in terms of production functions. These differences lead to observed variations by sectors in capital intensity as well as in partial and total factor productivities. If the observations made in the recent past with regard to the basic parameters of technology in the three sectors are assumed to hold in the foreseeable future, it should be possible to quantify the order of magnitude in respect of potential employment and output growth when investment is diverted from one sector to another.

It must be stressed that this paper is purely exploratory in nature, its main purpose being to illustrate, apart from the orders of magnitude involved, a) whether, in some sense, a conflict exists between the goal of maximising employment and that of maximising the growth of output in Indian manufacturing when seen in a three sectoral framework; and, b) in which sector the potentials for economic growth and employment are likely to be the greatest.

## II. Definitions and Basic Data

Official Indian definitions are used to demarcate the dividing lines between the three sectors under consideration. This facilitates our task from the point of view of statistics and perhaps also makes the exercise relevant to the policy makers in India.

The village or rural industries are those which come within the purview of Village and Khadi Industries Commission (VKIC) of India, which is the official agency looking after the development of village-based industries. The principal industries in this category are: khadi (which is that part of the textile industry in which the yarn is both hand-spun and hand-woven), processing of cereals and pulses, ghani oil, village leather, cottage match, manufacture of cane sugar, palm sugar and other products of palm, non-edible oils and soaps, hand-made paper, beekeeping, village pottery, fibre, carpentry and blacksmithery, lime manufacturing, methane gas, collection of forest plants and fruits for medicinal purposes, shellac, manufacture of gums and resins, manufacture of katha, fruit processing and preservation, bamboo and cane, and manufacture of household aluminium utensils. As can be inferred from the list of industries quoted, the village industries are traditional cottage-type household industries and are characterised by their use mainly of locally available raw materials and human resources.

The term small-scale industries is used to define those production units which fall within the purview of Small Industries Development Organisation (SIDO) but covering only the modern (as opposed to traditional) small-scale sector for which recently a census at the all-India level was conducted by the Office of the Development Commissioner of Small-scale Industries.[1] In this census, the size of a unit is defined in terms of invested fixed capital. A small-scale unit (ancillary small-scale unit) is one with Rs. 0.75 million or less (Rs. 1 million or less) worth of plants and machinery in original value. It is important to note that though not all small units are necessarily urban based the village industries mentioned above are not included in the scope of the small industry census.

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[1] See, Development Commissioner, Small-scale Industries, All-India Report on the Census of Small-scale Industries, Vols. I and II, New Delhi, (1976).

The medium and large-scale sector is defined to include those production units which are covered on a census basis in the Annual Survey of Industries (ASI) conducted by India's Central Statistical Organisation (CSO). The coverage of this census extends to all factories in the organised sector employing 50 and more workers with the aid of power or 100 and more workers without the aid of power (the so-called census sector).[1]

Industries in each category of the three sectors are varied in character and treating them individually on a comparative basis would result in a very diffused picture. Instead, an attempt is made in this paper to provide an average picture by aggregating all or broad groups of industries. The basic statistics concerning the three sectors are set out in Tables 1 to 6.

Table 1 indicates that on an aggregative basis, while engineering and chemicals claim the major share of output in the small-scale and medium-large sectors, it is primary-resource-based consumer goods that are relatively most important in village industries. Of these consumer goods, khadi alone accounts for over two-fifths in terms of value added (but far less - 22 per cent - in terms of value of output) and over one-half in terms of employment (taken part and full-time together) in the village industry sector.[2]

What is khadi among village industries, are metal products among small-scale industries. Metal products account for nearly one-quarter of production units, about one-fifth of the value of gross output, and

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[1] It shall be noted that smaller units, i.e. factories employing 10-49 workers with the aid of power or 20-99 workers without the aid of power are covered by the ASI on the basis of probability sample and the results are published separately as the so-called sample sector results. Part of this sample sector is apparently covered by the scope of the small industry census described above.

[2] The data cited are annual average figures for the 1970/71-1974/75 period and derived from the Annual Reports of Khadi and Village Industries Commission.

Table 1 - Product-mix of India's Village Industry Sector, Small-
scale Industry Sector and the Medium-large scale Industry
Sector in Terms of Three Broad Industry Groups

(Unit: Percentage share of total output)

|  | Village industries (1974/75) | Small-scale industries (1972/73) | Medium-large scale industries (1969) |
|---|---|---|---|
| Industry Group I | 63.0 | 35.2 | 24.4 |
| Industry Group II | 32.0 | 9.4 | 20.6 |
| Industry Group III | 5.0 | 55.4 | 55.0 |
| T O T A L | (100.0) | (100.0) | (100.0) |

Group I industries: Food products, beverages, wood products,
    mineral products, metal products, and miscellaneous manu-
    facturing industries.
Group II industries: Textiles, ready-made garments and
    leather products.
Group III industries: Paper products, printing, rubber, plastics,
    chemicals, basic metals and alloys, machinery and parts,
    electrical machinery, apparatus etc., transport equipment
    and parts and repair and service.

Source: Khadi and Village Industries Commission, Statistical
        Statements to Annual Reports 1974-75, Bombay (1976);
        Development Commissioner of Small-scale Industries,
        Annual Report on the Census of Small-scale Industrial
        Units, Delhi (1977); Central Statistical Organisation,
        Annual Survey of Industries (Census Sector), 1969,
        Delhi (1977).

about 30 per cent of employment in the small-scale sector.[1]

Structural changes in the medium and large-scale sector (the census sector) has been fast both in terms of value added and employment. Yet, although declining over time in relative importance, textiles appear to be the major industry in this sector, accounting for little less than a quarter of value added, a little over that much of employment, and about a quarter of the value of output of the organised sector in the 1968-69 period.[2]

Since the three sectors are defined by different cirteria, it is interesting to examine whether the sectors also differ when a uniform criterion is applied. Thus, when measured by average employment per production unit, the three sectors are seen to vary widely in size from one another (Table 2). A typical village industry is family based engaging one to two persons on the average. Although modern small-scale units are also in part family based their average size is nevertheless higher than traditional village industries.

The medium-large sector is the largest in size in terms of average employment per unit. It is this sector which also employs the largest number of people in manufacturing industries (Table 3). While in both modern small-scale and medium-large scale sectors the employment is mostly full time (i.e. abstracting from any discontinuities due to capacity underutilization), part-time employment is more important in village industries, a characteristic typical of cottage-type household industries.

Wage rates are also seen to differ appreciably between the village industries sector on the one hand and the small and medium-large scale

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[1] This was the situation during 1972/73. See Report on the Census of Small-scale Industrial Units, op.cit., p. 25, Vol. I.

[2] Data are from the Annual Survey of Industries of the Central Statistical Organisation.

Table 2 - Average Number of Persons Engaged per Production
Unit in Village Industries, Small-scale Industries
and Medium-large scale Industries in India

(Unit: No. of persons)

|  | Village industries | Small-scale industries | Medium-large scale industries |
|---|---|---|---|
| 1953/54 | 1.2 | - | $254^1$ |
| 1955/56 | 1.4 | - | $267^2$ |
| 1958/59 | 1.2 | - | $346^3$ |
| 1968/69 | 1.5 | - | $335^4$ |
| 1972 | - | 12.0 | - |
| Number employed (millions) | | | |
| $^1$ 1953    $^2$ 1956    $^3$ 1960    $^4$ 1969 | | | |

Source:  Village (rural) industries: National Sample Survey, Govern-
ment of India, various rounds; Small-scale industries: All
India Report on the Census of Small-scale Industrial Units,
Development Commissioner Small-scale Industries, Government
of India (1977); Medium-large industries: Annual Survey of
Industries, Central Statistical Organisation, Government of
India, various issues.


sectors, on the other.  This difference may arise due to many reasons,
both institutional and production related.  Thus, the labour market is
not organised in the traditional sector, as it is in the modern sector.
In addition, wage rate differences may reflect productivity differentials
as well as differences in the skill composition of workers between the
sectors.  It shall also be noted that employment in  village industries
is largely part-time in nature; the wages in this sector thus tend to
supplement the incomes of rural households from agricultural activities.
It may not be unimportant to note in this context that the wage rate in

Table 3 - Total Employment and Average Wages per Man-year in Village Industries, Small-scale Industries and Medium-large scale Industries in India

| | Village industries[1] | | Small-scale Industries[2] | | Medium-large scale industries[3] |
|---|---|---|---|---|---|
| | Full-time | Part-time | Wage employment | Self employment | |
| Employment (million man-year) | 0.24 | 1.66 | 1.44 | 0.21 | 4.17 |
| Wage Rate (Rs. per man-year) | 482.0 | | 3090.0 | | 3722.0 |

Note: Employment in all three cases refers to total number of persons engaged i.e. taking workers and salaried personnel together.

[1] Four-year annual average for the period 1969/70 to 1972/73. Wage rate is computed using a factor of 0.25 for converting part-time into full-time equivalents.

[2] 1972/73; self-employed is an entrepreneur-worker.

[3] 1969; share of working proprietors and family workers is negligible in this category.

Source: Computed from: Khadi and Village Industries Commission, Annual Report 1975-76, Bombay (1977); Development Commissioner for Small-scale Industries, All-India Report on the Census of Small-scale Units, New Delhi (1976); Central Statistical Organisation, Annual Survey of Industries (Census Sector), 1969, New Delhi (1976).

the traditional sector appears to be near the average wages prevailing in agriculture, as one would expect.[1]

From Table 4 it is seen that as a percentage of total manufacturing costs, as well as that of value added, the labour costs are highest in the village industry sector and lowest in the medium-large sector, while that in the small-scale sector they fall in between the two. In all three cases, raw materials are the major component of costs, though these costs are relatively higher in the modern small-scale sector.

Table 5 shows that the relative importance of capital input is very different between the traditional and the modern sectors. While fixed capital is relatively more important as a percentage of productive capital in both modern small-scale and medium-large scale sectors, it is the relative share of working capital which is high in village industries. This difference may imply different types of needs with regard to the financing of the three sectors. In particular it seems to indicate that it is the short-term finance of working capital which may be most crucial for the traditional village industries.[2]

Turning to the relationships between capital intensity and partial factor productivities in the three sectors some interesting differences can be observed (Table 5). These differences need to be interpreted with care, however, in the light of a basic limitation of the underlying data, namely, that the reference year is not the same for the three sectors. Hence we have to make the assumption that the estimated

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[1] Data on average wages in agriculture in India are extremely scanty. However, according to one tentative estimate, the gross earnings per worker in agriculture in 1960-61 period was Rs. 501.5 as compared to Rs. 2320.0 in manufacturing. See S.N. Kulshreshtha, "Economics of Agricultural Labour in India", in J.S. Uppal, ed.: India's Economic Problems: An Analytical Approach, New Delhi (1975), p. 195.

[2] The question of finance, because of its importance, deserves a special study of its own. The point is not further pursued in this paper.

Table 4 — Principal Components of Manufacturing Costs and the Share of Value Added in Total Output in Village Industries, Small-scale Industries and Medium-large scale Industries in India

(in percentages)

| | Village industries (1965/66) | Small-scale industries (1972/73) | Medium-large scale (1969) |
|---|---|---|---|
| Raw materials (% of manufacturing costs[1]) | 59.0 | 66.7 | 65.5 |
| Labour costs (% of manufacturing costs[1]) | 28.0 | 22.9 | 16.1 |
| Other costs (% of manufacturing costs[1]) | 13.0 | 10.4 | 18.4 |
| Value added[2] (% of value of output) | 37.5 | 32.3 | 25.0 |

[1] excluding non-wage value added;     [2] wage plus non-wage.

Source: Computed from: Ministry of Commerce, Report of the Khadi and Village Industries Committee, New Delhi (1968); Ministry of Industry and Civil Supplies, All-India Report on the Census of Small-scale Industries, New Delhi (1977); Ministry of Planning, Annual Survey of Industries (Census Sector), New Delhi (1977).

Table 5 - Principal Components of Capital Structure (in percentages) and
some Basic Technological Parameters of Village Industries,
Small-scale Industries and Medium-large scale Industries
in India (expressed in 1972 prices)

| | Village industries (1965/66) | Small-scale industries (1972/73) | Medium-large scale industries (1969) |
|---|---|---|---|
| Fixed Capital (% of total productive capital[1]) | 20.0 | 63.0 | 76.4 |
| Working Capital (% of total productive capital[1]) | 80.0 | 37.0 | 23.6 |
| Fixed Capital/Output Ratio | 0.34 | 0.31 | 0.76 |
| Productive Capital/Output Ratio | 1.73 | 0.54 | 0.99 |
| Fixed Capital/Value-added Ratio | 0.92 | 0.95 | 3.02 |
| Productive Capital/Value-added Ratio | 4.60 | 1.70 | 3.96 |
| Fixed Capital/Labour (Rs.) | 126.0 | 4822.0 | 21152.0 |
| Productive Capital/Labour (Rs.) | 635.0 | 8588.0 | 27708.0 |
| Output/Labour (Rs.) | 367.0 | 15904.0 | 27987.0 |

[1] Productive capital is fixed plus working capital. Fixed capital is measured at book values of plants, machinery, building and other fixed assets. Working capital includes raw materials in stock, semi-processed goods, finished products in stock, cash in hand/bank, outstanding factor payments, purchases of goods and services not paid for, short-term loans and advances, etc. Labour input is in man-years.

Source: Computed from: Ministry of Commerce, Report of the Khadi and Village Industries Committee, New Delhi (1968); Ministry of Industry and Civil Supplies, All-India Report on the Census of Small-scale Industries, New Delhi (1977); Ministry of Planning, Annual Survey of Industries (Census Sector), New Delhi (1977).

average coefficients hold at the margin as well. Moreover, to facilitate comparison among the three sectors, all the coefficients have been expressed in constant (1972) prices.

Keeping in mind the tentative nature of data, it seems that capital intensity (i.e. K/L ratio) increases as we move from the traditional small sector through the modern small sector to the organised medium-large sector, both in terms of fixed capital and total productive capital (i.e. taking fixed and working capital together). At the same time, the output/capital ratio (or alternatively value added/capital ratio) as well as the output/labour ratio are substantially lower in the traditional small sector as compared to the other two sectors. If, in a capital scarce, labour abundant economy like India's, the average productivity of capital is assumed to reflect social efficiency in production, then it would appear that it is the modern small-scale sector which has much to recommend itself in the sense of maximising the ratio between output and capital.[1] This is a point, however, which we shall go into in more detail in section III.

## III. Some Comparative Static Implications

The average ratios observed in Table 5 provide a basis for drawing some implications of policies or circumstances which divert resources and markets from one sector to another. We are assuming that the observed average relations hold at the margin as well.

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[1] It is important to note that the output-related coefficients in Table 5 are at 50 % capacity for the modern small-scale sector, and at 80 % capacity for the medium-large sector. These appear to be the average rate of capital utilization in the two sectors in India. No data concerning the degree of capacity utilization could be obtained for India's village industries sector.

This is, of course, a questionable assumption to make in a changing world. The partial average factor productivities will, however, remain constant even when allowance is made for changes in output volume if returns to scale in production are constant and factor price ratios do not change (i.e. when prices of all factors change in the same proportion). As will be shown in section IV, the assumption with regard to constant returns to scale in Indian manufacturing overall may not be an unrealistic one. As to the changes in factor price ratios, it is not possible to predict their course because in reality at least in the organised sector of the Indian manufacturing (which includes the medium-large and also a part of the modern small-scale sectors) the factor prices are distorted due to several market imperfections, and are and will be influenced to a great extent by government policies. But, even if the changes in factor price ratios in future prove to be erratic, our conclusions based on the observed average relations of the past will tend to hold as long as no significant reversals of capital intensity between the three sectors take place.

In light of the above, it must be stressed that the empirical arti-fact presented below only serves to indicate the possible directions of change rather than claiming to provide an exact forecast. The directions of change are illustrated in numerical terms by observing the alternative scenarios of investing a sum of 10 million rupees in each of the three sectors (Table 6).

The gains in terms of employment are the greatest in the village industry sector because this sector has the highest ratio of labour to capital. At the same time, since the partial productivities of capital and labour are the lowest, the gains in terms of surplus generated (obtained after deducting the wage bill from the value added) are the lowest in this sector as compared to the other two sectors.

The increase in employment resulting from the same amount of investment in the modern small-scale sector is much higher (less) than

Table 6  -  Comparative Picture with regard to Generation of
Employment, Value Added, Output and Surplus Resul-
ting from 10 mill. Rupees investment in India's
Village Industries Sector, Small-scale Industries
Sector and Medium-large scale Industries Sector

| | Village industries sector | Small-scale sector | Medium-large sector |
|---|---|---|---|
| Λ Employment (No.) | 5473[1] | 1164 | 361 |
| Λ Value Added (Rs. mill.) | 2.2 | 5.9 | 2.5 |
| Λ Output (Rs. mill.) | 5.8 | 18.5 | 10.1 |
| Wage bill (Rs. mill.) | 1.6 | 3.5 | 1.4 |
| Surplus generated (Rs. mill.) | 0.6 | 2.4 | 1.1 |
| Surplus per unit of investment | 0.060 | 0.240 | 0.110 |

[1] in full-time equivalents.

Source:  See Table 5.

that in the medium-large sector (village industries sector). At the same time the gains per unit of investment in terms of output, value added or surplus are the highest in the modern small-scale sector. The medium-large sector, because of its high capital intensity, does not contribute much towards generating additional employment, nor is the sector's surplus generating capacity as high as that of the modern small-scale sector. It is important to remember, as we pointed out before, that the potentials of the small sector are actually under-estimated since the output related parameters are estimated at 50 % capacity (as compared to 80 % for the medium-large sector).

Before going into the production function analysis (Section IV) and drawing overall conclusions (Section V) it should be pointed out that what we have presented here are essentially the results of direct first-round effects. The multiplier effect as well as the implications of possible forward and backward linkages between the three sectors and of each sector with the rest of the economy and abroad were not con-sidered. The possibility that their considerations may change the short-run, comparative static results cannot be ruled out.


## IV. A Production Function Analysis

Assume homogeneous output, constant returns to scale and a homo-geneous production function for the manufacturing sector of India. Additionally, assume that the same choices of techniques and the same factor price ratios (to make matters simple, consider two primary factors, labour and capital) are open to all producers. If these sim-plifying assumptions did hold in practice, the scale curve (which is the same as the long-run average cost curve as derived from the expan-sion path of the production function) in Indian manufacturing would be horizontal in shape. This would mean that from the plant level scale economy point of view no optimal size of establishment exists; it is only the size and segmentation of market that would determine the number and the average size of plants in manufacturing.

In reality, the industry composition of small-scale and medium-large scale sectors is different, as are the market size and factor prices facing the two sectors. It is possible that the form of the production function tends to vary by size classes of establishments and that their respective scale curves are also different.[1]

In order to gain some insight into the nature of production functions in Indian manufacturing, two sets of estimates are attempted, one for the modern small-scale sector and the other for the medium-large sector.[2] Because of data limitations, both production functions are estimated across industries.[3] This means that we are comparing the average production characteristics of small-scale plants in producing the bundle of output in this sector vis-à-vis those associated with the bundle of output produced in the medium-large sector.

Estimating the parameter values of the production function implies, of course, that we are deviating from the assumptions made in the previous section with regard to the constancy of the technological parameters such as capital-output (labour) ratios, capital intensity etc. However, the production function approach helps us to see intuitively in what ways the changing factor prices may affect the choice of techniques in the two sectors, it also suggests (if some simplifying assumptions are allowed) the possible sectoral growth patterns of·

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[1] Griliches and Ringstad observed for Norwegian manufacturing that returns to scale tend to decline as one moves from lower size classes of establishments to higher classes, though not without breaks. See Z. Griliches and V. Ringstad, Economies of Scale and the Form of the Production Function, Amsterdam (1971), pp. 85-90.

[2] For lack of sufficient data, a separate production function estimate could not be undertaken for India's traditional village industries sector.

[3] For similar type of estimates in another context see, for example, D.M. Leipziger, "Production Characteristics in Foreign Enclave and Domestic Manufacturing: The Case of India", World Development, Vol. 4 (1976), pp. 321-325.

productivity levels and points towards the relative technical efficiency of the small versus large sectors.

A Cobb-Douglas production function is posited for both sectors.[1] Results are shown in Table 7.[2]

Since the Cobb-Douglas formulation imposes a constant unit elasticity of substitution between capital and labour and as this formulation was not rejected, we are inclined to conclude, first of all, that capital intensity (i.e. K/L ratio) in both sectors is directly proportional to the wage rate/interest rate ratio. This is the well-known Ricardo effect: the higher the real wage rate, the higher is the capital intensity. The proportionality factor, the ratio between the parameters of capital and labour, determines the degree of capital intensity in equilibrium, given the wage rate/interest rate ratio. The proportionality factor in Indian manufacturing turns out to be higher for the small-scale sector as compared to the medium-large sector. This implies that capital intensity in the small sector would be higher than in the medium-large sector unless it is offset by a substantially lower wage/interest ratio in the former as compared to the latter. In reality, as was already observed, the ratio between wage and interest appears indeed to be lower, as does the capital intensity, in the small

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[1] We also tried a more generalised function represented by the logarithmic approximation to the CES function (the so-called Kmenta approximations) but the Cobb-Douglas form was not thereby rejected. For details concerning Kmenta approximation see: J. Kmenta, "On the Estimation of the CES Production Function", International Economic Review, Vol. 8, No. 2 (1967), pp. 180-189. See also Griliches and Ringstad, op.cit., Ch. 2.

[2] The units of observations in the production function analysis are 31 industries in the small-scale sector in 1972/73 and 52 industries in the medium-large scale sector in 1969. Labour is measured in man-years and capital consists of fixed and working capital. Fixed capital stock has been adjusted for capacity utilization. Basic survey data are All-India Report on the Census of Small-scale Industries and the Annual Survey of Industries.

Table 7  --  Production Function Estimates for Total Manufacturing by
Small-scale and Large-medium scale Industries of India

| Coefficient of | Size Class | |
| --- | --- | --- |
| | Small-scale | Medium-large scale |
| $\ell$n  L (t-ratio) | 0.31 (2.44) | 0.32 (3.91) |
| $\ell$n  K (t-ratio) | 0.74 (6.54) | 0.65 (8.94) |
| intercept (t-ratio) | 0.32 (1.03) | -1.18 (-3.28) |
| $\bar{R}^2$ | 0.85 | 0.95 |
| (No. of observations) | (31) | (52) |

Source:  Based on census data cited in Table 5.

scale manufacturing sector as compared to the medium-large sector.

The sum of the coefficients of labour and capital in neither sector
is significantly different from unity, indicating that returns to scale
may be constant both in small-scale and in medium-large scale sectors
of Indian manufacturing.

The intercept of the Cobb-Douglas function is a multiplicative
technical efficiency parameter.  The difference between the intercepts
suggests that industries in the modern small-scale sector tend to
operate more efficiently than industries in the medium-large sector.
This result in itself should not come as a surprise since India's
medium-large industries are known to have been promoted behind a shield
of protection (from both outside and inside competition) at the cost of
efficiency.[1]  Although India's small-scale sector has also been

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[1] See Bhagwati and Desai, op.cit.; Bhagwati and Srinivasan, op.cit.

receiving various incentives from the government, its degree of protection is not as high or widespread as the large-medium sector. In this light, the estimated production function parameters may appear to make some sense. On the other hand, not too much should be made of the estimated intercept parameter since it fails to be significantly different from zero at 5 per cent probability level for the small-scale sector, though it is significant in the case of the medium-large sector.

The production function estimates, though necessarily tentative, provide a basis for drawing a number of possible implications with regard to the growth rates of output and productivities of the two sectors. These implications are derived simply by manipulating the Cobb-Douglas function

$$0 = A L^{\alpha} K^{\beta}$$

where

$$0 = \text{value added}$$
$$L, K = \text{labour and capital inputs}$$
$$A = \text{a constant}$$
$$\alpha, \beta = \text{coefficients of labour and capital respectively.}$$

to obtain:

(i)     the relative growth of value added:

$$\frac{d0}{0} = \alpha \frac{dL}{L} + \beta \frac{dK}{K} + \frac{dA}{A}$$

(ii)     the relative growth of average labour productivity:

$$\frac{d(0/L)}{(0/L)} = (\alpha-1) \frac{dL}{L} + \beta \left( \frac{dK}{K} \right) + \frac{dA}{A}$$

(iii)    the relative growth of average capital productivity:

$$\frac{d\ (O/K)}{(O/K)}\ =\ \alpha\ \frac{dL}{L}\ +\ (\beta-1)\ \frac{dK}{K}\ +\ \frac{dA}{A}$$

The relative change in the constant term, $\left(\frac{dA}{A}\right)$, reflecting the effect of technological progress may be ignored here because the production function is not estimated from time series data.

It must be said that the following exercise has a meaning strictly in an arithmetical sense only, since any difference between the two sectors arises purely out of the differences in the parameters $\alpha$ and $\beta$ without considering whether these differences are also statistically significant (this test was in fact not made by us). It is possible to derive alternative scenarios by making alternative assumptions with respect to the relative growth rates of labour and capital; we shall, however, confine our illustration to the simplest (though not necessarily the most realistic) case.

For simplicity it is assumed that the same rate of capital accumulation and that of growth of labour applies to the small-scale and the medium-large scale sector. Referring back to Table 7, the estimated coefficients then suggest that for a given $\left(\frac{dK}{K}\right)$ and $\left(\frac{dL}{L}\right)$, the small sector as compared to the large sector has potentials for a) higher rate of growth of output, b) higher rate of growth of average labour productivity and implies c) slower rate of decline in average capital productivity. In other words, assuming the same rate of capital deepening in the two sectors, it is the small-scale sector which seems to represent a greater growth potential than the medium-large sector. If these estimated parameters were to characterise the real underlying production relations in the Indian manufacturing and unless the composition of output and factor prices in the two sectors changes, then our estimates would suggest that over time the modern small sector is potentially capable of overcoming any initial small scale-large scale

gap in the average productivity of labour.[1]

The conclusion derived above, of course, hinges on a number of
assumptions, including the one that small-scale units will operate
efficiently.  We did find that the small-scale sector tends to operate
more efficiently than the medium-large sector and our basic data were
also corrected for average capacity utilization (50 per cent in the
case of small-scale industries and 80 per cent in the case of medium-
large industries).  Still we will need additional confirmation at the
disaggregated level before policy recommendations can be formulated
with confidence on the basis of our findings.  At this point we can
only say that if further findings confirm that returns to scale in the
small-scale sector of Indian manufacturing are indeed constant and the
sector is also efficient, then it would imply that promoting the
sector's growth would not mean resource misallocation.

V. Conclusions

Knowing, even on an aggregative basis, the relative social
efficiencies and capital intensities of India's traditional sector, the
modern small-scale sector and the medium-large sector of manufacturing
is important not only for evaluating existing policies but also to
suggest new directions.  However, because of the various limitations of
data and methodology which were discussed in the text, it is hazardous
to draw straightforward policy conclusions unless our findings are con-
firmed by further studies.

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[1] Ohkawa and Tajima in a recent paper argue that differences in average
labour productivity by scale actually represent different technologies
adapted at varied scale of production, even when the factor price
ratios are the same from scale to scale.  See K. Ohkawa and M. Tajima,
"Small-Medium Scale Manufacturing Industry: A Comparative Study of
Japan and Developing Nations", International Development Centre of
Japan, Working Paper Series No. A-02, Tokyo, March (1976).

Nevertheless, to the extent that our findings are correct at least in pointing out the overall differences between the three sectors, some tentative conclusions are in order. The first conclusion is that to the extent the existing policies encourage diversion of resources from the smaller to the medium-large sector, the opportunity cost to the economy in terms of output and employment foregone appears high.

If, on the other hand, resources are diverted to the traditional village industries sector, it seems the employment gains will be maximized but gains in output terms will be the least.[1] This is unless efforts are undertaken to introduce technological changes in the sector which will increase factor productivity without significantly increasing the sector's capital intensity.[2]

As possible directions for new policies our computations suggest that a major thrust towards the modern small-scale sector may bring desirable gains in terms of both employment and output. Social efficiency, as proxied by output/capital ratio, appears to be maximized when resources are diverted to this sector and it appears that the sector's private profitability position (i.e. the rate of surplus which may be an index of private efficiency) is also better than the other two sectors under consideration. Also it seems that promoting small-scale industries would not imply resource misallocation or inefficiency

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[1] Most of the gain in employment will accrue in the form of part-time employment; in Table 6, we converted the part-time employment into full-time equivalents, using a conversion factor of 0.25.

[2] In the light of the sector's low productivity, it is little wonder that village industries are heavily subsidised to keep them going. Taking net grants and loans together the government subsidy to village industries per employee was Rs. 418 (Rs. 615) on an annual average basis for the 1968/69-1971/72 (1972/73-1975/76) period. Alternatively, in the first (second) quoted period to produce one rupee worth of value added the subsidy required was Rs. 2 (Rs. 1.6). It shall be noted that the value added figures quoted in the tables in the text are net of subsidies. For details see, Khadi and Village Industries Commission, Annual Report 1975/76, op.cit.

due to diseconomies of small size[1] if, as the production function analysis suggest, the small-scale sector is indeed subject to constant returns to scale.

Having derived these conclusions, it must of course be pointed out that the three sectors under consideration represent very different types of product-mix catering to different types of demand. In other words, the degree of product substitution between the three sectors is very limited from the consumer's point of view. On the supply side, it must also be kept in mind that for various products, however desirable their production might be on other grounds, small-sized units are precluded by technological considerations. Similarly, although small size may be desirable on various grounds, certain products may have to be precluded from production if other considerations such as those of comparative advantage point in that direction. In this light, a policy that combines in an optimal manner the three sectors together to obtain maximum gains in output and employment is most desirable. The question of optimal combination which is perhaps best tackled in a mathematical programming framework cannot, of course, be dealt with in the simple exercise of the type this paper represents. This paper only tried to show the immediate consequences of resource allocation assuming that planners were faced with a choice between the three sectors.

Finally, it should be said that since our analysis was pursued at an aggregative level, the possibility cannot be ruled out that results may diverge when attention is focussed on specific industries in the three sectors. It would be most desirable to extend the scope of analysis to specific industries which are represented in all the three sectors. In the way of suggesting directions for future research, it may prove to be quite rewarding to examine alternative employment coefficients, scale and techniques of production in textiles, grain milling, sugar, ceramics, leather, vegetable oil, light metal fabrication and wood processing.

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[1] This could have been the case, for instance, if small-scale plants were promoted even when they were subject to increasing returns to scale due to, say, the presence of fixed factors.

Table A 1 — Production in Selected Village Industries of India: 1968/69-1975/76

(Unit: Rs. million)

| I n d u s t r y | 1968/69 | 1969-70 | 1970-71 | 1971-72 | 1972-73 | 1973-74 | 1974-75 | 1975-76 |
|---|---|---|---|---|---|---|---|---|
| Khadi | 233.8 | 256.3 | 258.5 | 277.0 | 315.8 | 327.2 | 432.8 | 467.3 |
| Processing of Cereals and Pulses | 157.3 | 151.1 | 161.6 | 181.1 | 135.3 | 136.4 | 132.3 | 132.9 |
| Ghani Oil | 179.1 | 211.1 | 259.3 | 250.6 | 280.7 | 330.4 | 374.8 | 329.6 |
| Village Leather | 46.5 | 55.9 | 61.2 | 65.1 | 73.7 | 82.6 | 92.2 | 123.1 |
| Cottage Match | 2.2 | 2.5 | 2.6 | 1.9 | 3.2 | 5.7 | 7.0 | 5.1 |
| Cane Gut and Khandsari | 215.0 | 196.1 | 183.5 | 249.5 | 314.2 | 378.6 | 354.6 | 375.8 |
| Palm Gut Making and Other Palm Products | 72.4 | 63.1 | 59.9 | 51.9 | 63.2 | 77.9 | 87.4 | 115.3 |
| Non-edible Oils and Soap | 19.0 | 26.2 | 32.6 | 20.9 | 22.3 | 30.1 | 45.4 | 47.9 |
| Handmade Paper | 5.4 | 6.1 | 7.1 | 8.1 | 9.6 | 9.5 | 13.1 | 13.8 |
| Beekeeping | 10.3 | 11.6 | 13.1 | 13.8 | 14.5 | 17.2 | 18.9 | 32.0 |
| Village Pottery | 20.9 | 23.4 | 26.7 | 30.0 | 39.0 | 45.2 | 63.8 | 76.1 |
| Fibre | 8.8 | 12.6 | 17.1 | 24.3 | 31.8 | 41.9 | 47.7 | 50.2 |
| Carpentry and Blacksmithy | 9.6 | 13.2 | 22.9 | 26.3 | 35.9 | 43.8 | 68.1 | 82.2 |
| Lime Manufacturing | 1.7 | 1.8 | 2.4 | 2.9 | 7.1 | 10.3 | 12.7 | 15.4 |
| Gobar (Methane) Gas | 1.5 | 2.1 | 2.6 | 3.9 | 4.9 | 5.7 | 33.6 | 67.1 |
| New Industries | 1.5 | 3.1 | 3.4 | 6.6 | 6.5 | 8.7 | 11.5 | 18.3 |
| T O T A L | 985.0 | 1036.2 | 1114.5 | 1213.9 | 1407.1 | 1551.2 | 1795.9 | 1952.1 |

Source: Khadi and Village Industries Commission, Annual Report, 1975/76, p. 20.

Table A 2 - Employment in Selected Village Industries of India: 1968/69 - 1975/76
(unit: 100,000 persons)

| Industry | 1968-69 F | 1968-69 P | 1969-70 F | 1969-70 P | 1970-71 F | 1970-71 P | 1971-72 F | 1971-72 P | 1972-73 F | 1972-73 P | 1973-74 F | 1973-74 P | 1974-75 F | 1974-75 P | 1975-76 F | 1975-76 P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Khadi | 1.32 | 12.03 | 1.27 | 9.73 | 1.17 | 8.24 | 1.21 | 8.42 | 1.26 | 8.72 | 1.07 | 7.77 | 1.10 | 7.91 | 1.13 | 7.11 |
| Processing of Cereals and Pulses | 0.10 | 0.48 | 0.08 | 0.34 | 0.10 | 0.20 | 0.11 | 0.16 | 0.09 | 0.21 | 0.08 | 0.13 | 0.10 | 0.09 | 0.10 | 0.13 |
| Ghani Oil | 0.22 | 0.11 | 0.19 | 0.14 | 0.23 | 0.10 | 0.21 | 0.13 | 0.22 | 0.12 | 0.24 | 0.10 | 0.22 | 0.11 | 0.24 | 0.11 |
| Village Leather | 0.13 | 0.13 | 0.16 | 0.13 | 0.16 | 0.17 | 0.18 | 0.16 | 0.18 | 0.16 | 0.15 | 0.21 | 0.18 | 0.18 | 0.32 | 0.18 |
| Cottage Match | 0.01 | 0.03 | 0.01 | 0.03 | 0.01 | 0.03 | 0.01 | 0.02 | - | 0.02 | 0.01 | 0.02 | 0.01 | 0.03 | 0.01 | 0.02 |
| Cane Gur and Khandsari | - | 0.91 | - | 1.14 | - | 0.92 | - | 0.94 | - | 1.09 | - | 1.07 | - | 1.11 | - | 1.30 |
| Palm Gur Making and Other Palm Products | - | 2.93 | - | 3.09 | - | 3.03 | - | 2.29 | - | 2.93 | - | 3.04 | - | 3.31 | - | 3.25 |
| Non-edible Oils and Soap | | | | | | | | | | | | | | | | |
|   Seed Collection | - | 1.18 | - | 1.58 | - | 1.60 | - | 0.74 | * | 0.42 | * | 0.92 | * | 0.93 | 0.01 | 0.93 |
|   Oil Production | - | 0.04 | - | 0.03 | 0.01 | 0.05 | - | 0.04 | * | * | * | 0.03 | * | 0.03 | * | 0.04 |
|   Soap Production | 0.02 | 0.03 | 0.02 | 0.04 | 0.02 | 0.04 | 0.01 | 0.05 | 0.01 | 0.04 | 0.01 | 0.03 | 0.01 | 0.03 | 0.01 | 0.06 |
| Handmade paper | 0.04 | 0.01 | 0.03 | 0.01 | 0.03 | 0.01 | 0.03 | 0.01 | 0.03 | 0.01 | 0.03 | 0.01 | 0.04 | 0.01 | 0.03 | 0.01 |
| Beekeeping | - | 1.10 | - | 1.24 | - | 1.32 | - | 1.38 | - | 1.48 | - | 1.50 | - | 1.43 | - | 1.47 |
| Village Pottery | 0.16 | 0.24 | 0.23 | 0.21 | 0.22 | 0.19 | 0.31 | 0.23 | 0.37 | 0.23 | 0.27 | 0.20 | 0.32 | 0.18 | 0.37 | 0.29 |
| Fibre | 0.07 | 0.12 | 0.09 | 0.08 | 0.20 | 0.08 | 0.25 | 0.12 | 0.31 | 0.14 | 0.39 | 0.19 | 0.43 | 0.21 | 0.45 | 0.22 |
| Carpentry and Blacksmithy | 0.02 | 0.01 | 0.03 | 0.01 | 0.05 | 0.01 | 0.07 | 0.02 | 0.07 | 0.03 | 0.08 | 0.03 | 0.17 | 0.04 | 0.20 | 0.05 |
| Lime Manufacturing | 0.02 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.04 | 0.01 | 0.05 | 0.05 | 0.03 | 0.04 | 0.05 | 0.03 | 0.04 | 0.04 |
| New Industries | - | 0.04 | 0.01 | 0.09 | 0.01 | 0.98 | 0.02 | 0.84 | 0.03 | 0.11 | 0.03 | 0.44 | 0.04 | 0.53 | 0.06 | 1.27 |
| T O T A L | 2.11 | 19.41 | 2.13 | 17.91 | 2.22 | 16.99 | 2.45 | 15.56 | 2.62 | 15.76 | 2.39 | 15.73 | 2.67 | 16.16 | 2.97 | 16.48 |

F = full-time;    P = part-time;    * = less than 500.

Source: Khadi and Village Industries Commission, Annual Report, 1975/76, pp. 22-23.

Table A 3 — Regional Distribution of the Small-Scale Sector in terms of number of units, gross value of output, value added and employment and the percentage share of the sector in total manufacturing value added and employment by regions: India 1971-73

| Region | Regional Distribution of Small Sector | | | | | | | | Small Sector as Share of Total Manufacture | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. of units | % of India total | Gross value of output (million) | % of India total | Value added (mill.) | % of India total | No. of employees | % of India total | Value added (%) | Employment (%) |
| Andhra Pradesh | 8 999 | 5.6 | 859.1 | 3.3 | 293.5 | 3.5 | 78 673 | 4.7 | 13.0 | 5.0 |
| Assam | 1 739 | 1.0 | 226.4 | 0.9 | 91.2 | 1.1 | 19 652 | 1.2 | 8.0 | 12.0 |
| Bihar | 6 368 | 3.9 | 720.3 | 2.8 | 271.5 | 3.2 | 61 465 | 3.7 | 7.0 | 7.0 |
| Gujarat | 11 599 | 7.2 | 2 086.2 | 8.0 | 674.6 | 8.0 | 114 500 | 6.9 | 17.0 | 11.0 |
| Haryana | 5 361 | 3.3 | 1 017.9 | 3.9 | 303.6 | 3.6 | 48 503 | 2.9 | 25.0 | - |
| Himachal Pradesh | 1 729 | 1.0 | 45.2 | 0.2 | 16.1 | 0.2 | 5 851 | 0.3 | 9.0 | 11.0 |
| Jammu & Kashmir | 1 232 | 0.7 | 110.3 | 0.4 | 33.8 | 0.4 | 9 598 | 0.6 | 17.0 | 10.0 |
| Karnataka | 7 062 | 4.4 | 797.7 | 3.1 | 287.6 | 3.4 | 64 385 | 3.9 | 14.0 | 6.0 |
| Kerala | 6 902 | 4.3 | 1 156.5 | 4.4 | 361.8 | 4.3 | 126 514 | 7.6 | 27.0 | 13.0 |
| Madhya Pradesh | 8 727 | 5.4 | 700.3 | 2.7 | 208.6 | 2.5 | 59 612 | 3.6 | 7.0 | 6.0 |
| Maharashtra | 17 338 | 10.9 | 5 294.7 | 20.3 | 1 912.2 | 22.7 | 239 770 | 14.5 | 15.0 | 10.0 |
| Manipur | 518 | 0.3 | 33.2 | 0.1 | 13.8 | 0.2 | 3 409 | 0.2 | 48.0 | 8.0 |
| Meghalaya | 179 | 0.1 | 12.0 | 0.05 | 4.5 | 0.05 | 1 188 | 0.07 | - | 11.0 |
| Nagaland | 46 | 0.03 | 4.8 | 0.02 | 2.1 | 0.02 | 448 | 0.03 | - | 15.0 |
| Orissa | 2 163 | 1.3 | 222.6 | 0.8 | 91.2 | 1.1 | 18 624 | 1.1 | 9.0 | 5.0 |
| Punjab | 14 827 | 9.3 | 2 433.8 | 9.3 | 635.9 | 7.6 | 123 544 | 7.5 | 36.0 | 28.0 |
| Rajasthan | 8 055 | 5.0 | 563.8 | 2.2 | 160.3 | 1.9 | 45 860 | 2.8 | 10.0 | 9.0 |
| Tamil Nadu | 18 547 | 11.6 | 3 217.8 | 12.4 | 1 042.2 | 12.4 | 215 182 | 13.0 | 16.0 | 11.0 |
| Tripura | 275 | 0.1 | 14.5 | 0.05 | 5.4 | 0.06 | 1 698 | 0.1 | - | 15.0 |
| Uttar Pradesh | 13 939 | 8.7 | 2 226.7 | 8.6 | 679.0 | 8.1 | 160 027 | 9.7 | 13.0 | 8.0 |
| West Bengal | 16 904 | 10.6 | 2 702.2 | 10.4 | 887.4 | 10.5 | 176 198 | 10.6 | 16.0 | 10.0 |
| Arunachal Pradesh | 12 | 0.01 | 1.1 | 0.004 | 0.7 | 0.01 | 181 | 0.01 | - | 18.0 |
| Chandigarth | 349 | 0.2 | 63.5 | 0.2 | 14.6 | 0.2 | 2 882 | 0.2 | - | 24.0 |
| Dadra & Nagar Hareli | 36 | 0.02 | 4.7 | 0.02 | 1.4 | 0.02 | 361 | 0.02 | - | 36.0 |
| Delhi | 5 327 | 3.3 | 1 369.8 | 5.3 | 363.4 | 4.3 | 64 880 | 3.9 | 20.0 | 22.0 |
| Goa, Daman & Diu | 641 | 0.4 | 108.0 | 0.4 | 44.5 | 0.5 | 7 253 | 0.4 | 45.0 | 23.0 |
| Mizoram | 84 | 0.05 | 3.0 | 0.01 | 1.6 | 0.02 | 36 | 0.002 | - | - |
| Pondicherry | 362 | 0.2 | 31.4 | 0.12 | 7.5 | 0.09 | 2 570 | 0.15 | - | 10.0 |
| India - Total | 159 321 | | 26 027.4 | | 8 410.0 | | 1 653 178 | | 14.5 | 10.0 |

Source: Development Commissioner, Small Scale Industries: Annual Report on the Census of Small Scale Industrial Units, Vol. 1, Table 1.3, p. 10.

Table A 4 — Distribution of the Small-scale Sector in terms of the number of units and output by three broad industry groups and by regions:[1] India 1972

| Region | % Distribution by Units | | | % Distribution by Output | | |
|---|---|---|---|---|---|---|
| | Group I | Group II | Group III | Group I | Group II | Group III |
| Andhra Pradesh | 52.5 | 4.0 | 43.5 | 48.8 | 5.1 | 46.1 |
| Assam | 49.6 | 2.2 | 48.2 | 56.0 | 1.5 | 42.5 |
| Bihar | 50.4 | 4.8 | 44.8 | 48.0 | 2.0 | 50.0 |
| Gujarat | 41.0 | 6.0 | 53.0 | 30.3 | 5.6 | 64.1 |
| Haryana | 57.6 | 2.7 | 39.7 | 40.1 | 3.2 | 56.7 |
| Himachal Pradesh | 65.2 | 15.4 | 19.4 | 52.8 | 9.1 | 38.1 |
| Jammu & Kashmir | 77.9 | 3.0 | 19.1 | 64.7 | 2.5 | 32.8 |
| Karnataka | 49.4 | 3.4 | 47.2 | 41.2 | 3.3 | 55.5 |
| Kerala | 50.0 | 4.5 | 45.5 | 69.8 | 2.7 | 27.5 |
| Madhya Pradesh | 58.4 | 9.4 | 32.2 | 51.9 | 3.4 | 44.7 |
| Mahrashtra | 39.7 | 4.1 | 56.2 | 31.4 | 5.5 | 63.1 |
| Manipur | 66.4 | 14.8 | 18.8 | 63.6 | 16.7 | 19.7 |
| Meghalaya | 53.4 | 1.8 | 44.8 | 72.5 | – | 27.5 |
| Nagaland | 47.4 | 2.6 | 50.0 | 64.6 | 2.1 | 33.3 |
| Orissa | 55.3 | 7.8 | 36.9 | 48.5 | 2.5 | 49.0 |
| Punjab | 35.3 | 17.6 | 47.1 | 22.0 | 16.3 | 61.7 |
| Rajasthan | 49.2 | 19.8 | 31.0 | 39.0 | 7.8 | 53.2 |
| Tamil Nadu | 45.0 | 11.3 | 43.7 | 26.2 | 28.5 | 45.3 |
| Tripura | 57.7 | 2.0 | 40.3 | 71.7 | – | 28.3 |
| Uttar Pradesh | 49.6 | 5.4 | 45.0 | 40.8 | 7.2 | 52.0 |
| West Bengal | 45.3 | 7.0 | 47.7 | 32.8 | 6.8 | 60.4 |
| Arunachal Pradesh | 63.6 | 9.1 | 27.3 | 90.9 | – | 9.1 |
| Chandigarth | 47.9 | 0.4 | 51.7 | 43.3 | 0.2 | 56.5 |
| Dadra & Nagar Hareli | 52.0 | 4.0 | 44.0 | 44.7 | 8.5 | 46.8 |
| Delhi | 25.8 | 16.1 | 58.1 | 24.0 | 9.6 | 66.4 |
| Goa, Daman & Diu | 60.0 | 3.0 | 37.0 | 59.2 | 1.7 | 39.1 |
| Mizoram | 65.6 | 13.1 | 21.3 | 50.0 | 10.0 | 40.0 |
| Pondicherry | 51.0 | 2.4 | 46.6 | 39.5 | 1.3 | 59.2 |
| India – Total | 46.2 | 8.4 | 45.4 | 35.2 | 9.4 | 55.4 |

[1] Group I industries: Food products, beverages, wood products, mineral products, metal products, and miscellaneous manufacturing industries.
    Group II industries: Hosiery and ready-made garments, and leather products.
    Group III industries: Paper products, printing, rubber, plastics, chemicals, basic metals and alloys, machinery and parts, electrical machinery, apparatus etc., transport equipment and parts and repair and service.

Source: Development Commissioner Small Scale Industries, Annual Report on the Census of Small Scale Industrial Units, Vol. 1, Table 1.1 and 1.2, pp. 6-8.