Unorganised Manufacturing Industry in the Era of Globalization: A Study of Punjab

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2006

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I

Introduction

It is a widely held view that the very survival of the small sized manufacturing firms is in danger as these firms have a limited capacity to face fierce competition from the global firms, which are increasingly invading the markets of the less developed countries. In the era of fast globalization, the small firms can be divided into three segments according to their probability of survival. First, modern small scale manufacturing units, which are producing substitute goods supplied by the global firms. This segment of firms has high risk and uncertainty in relation to their survival. Some have already started disappearing from the markets. Second, small firms, which produce complementary goods and services and serve as sub contractors to global firms, have high survival probability. Third, small and tinny manufacturing units, which produce goods to cater the lower end of the local market, have also high survival probability. This is quite obvious because of the undisputed fact that income inequalities are rising at a rapid rate. Marginalised segment of the population has to consume certain goods and services. Therefore, the small and tiny units especially operating in the lower end of the markets have chances to keep on going. Small-scale industries have been generally considered as incapable of reaping economies of scale and scope and thus are at a disadvantageous position in comparison to the large firms. However, recent technological developments not only reduced the optimal plant size but also enabled small firms to reap economies of scale through flexible manufacturing systems as well as reduce costs through cooperation and networking. The developing regions, which could adopt such strategies for smaller firms to reap economies of scale and scope from cooperation and networking will have some chances of survival. Industrial economy of Punjab is a grooming ground for small-scale industries. Therefore, it is an opportune time to enquire as to how are small scale unorganised industries performing in the period of globalization. In this paper an attempt is made to examine the growth propelling experience drawn from the detailed information collected by the National Sample Survey Organisation in its two rounds i.e. 1994-95 and 2000-01. The paper is divided into six sections. Apart from

the first customary introductory section, the question, 'why small-scale industry persists and survives in the fierce competitive environment dominated by the multinational companies?' is addressed in second section. Data sources, adjustments and limitations are presented in third section. Growth dynamics of Punjab's unorganised industrial sector in a comparative perspective has been examined in the fourth section. The structure and growth of unorganised industrial sector of Punjab during the 1990s is presented in fifth section. In the final section, we have presented summary and conclusions along with some concrete policy suggestions to facilitate the growth of Punjab's unorganised industry.

<div align="center">II</div>

Future of Clusters and Punjab's Small-Scale Industry

Firms of different size class have been coexisting since times immemorial. However, recently the small firms of some of the European countries in the fast globalising world have emerged as competitive as large firms in national and international markets. The emergence and competence of small firms in the national and international markets has led to a spurt of studies that put forward a plausible explanation of this phenomenon. It has been argued that mass production is increasingly being replaced by the flexible manufacturing systems (FMS), which have been allowed by the developments and innovations in the field of microelectronic, information and organisational changes. These recent technological changes have enabled firms to produce a variety of outputs efficiently in smaller batches and in a short span of time (Alcorta, 1992). Japanese model of industrial development enabled small firms to manufacture commodities in parts, which are assembled by the main unit. This model of flexible manufacturing systems generates interdependence among the small and large firms. It also enables firms to achieve essential economies of scale which reduces cost of production compared to mass production technology where increasing the scale of production has been crucial for cost reduction. The developments in new technologies and FMS have created opportunities for dramatic reduction of optimal size of the plant and firm and generated possibility of the entry of the small flexible firms. This process is known as de-scaling in manufacturing industry. The phenomenon of de-scaling has wide ranging consequences for smaller scale firms in particular and industrialization in general. Dosi (1988) has argued that de-scaling would increase the efficiency of small-scale production. There is a

possibility that de-scaling can reduce the importance of 'world factories' producing on a global scale and thus can alter the pattern of industrialisation (Kaplinsky, 1990). The Italian model (Emilian model) has shown the successful experience of smaller firms to establish competitive position in the international markets in some of the traditional products. This success story has been presented as a blue print for competitive success of clusters of small firms. Industrial cluster of small firms is quite closer to the concept of industrial districts developed by Alfred Marshall. In a recent study, Rabellotti (1995) has defined the industrial clusters (districts), which are based on the following four fundamental factors:

(i) a cluster of mainly small and medium enterprises spatially concentrated and sectorally specialized.

(ii) a set of forward and backward linkages among economic agents, based both on market and non market exchanges of goods, information and people.

(iii) a common cultural and social background linking the economic agents and creating a behavioural code, sometimes explicit but often implicit, and

(iv) public and private local institutions acting to support the cluster.

The fundamental feature of industrial districts or clusters is that it consists of predominantly small-scale firms, which can gain economies of scale and scope through specialisation and inter-firm cooperation. The process of specialisation in production through networking and cooperation among smaller sized firms has a tendency to eliminate the disadvantages of being small and can become as or more competitive than that of the large firms. The studies examining the Italian model tend to show that small firms are more competitive in exporting large volume of traditional products in the international market (Humphrey, 1995). The competitive advantage secured by the small sized firms of Europe and Japan opened up new policy options for the small-scale sector. The countries looking for restructuring their industrial sector to make it more internationally competitive can experiment with the policies promoting small enterprises by focussing on networks of firms and the promotion of inter-firm cooperation. An important implication for industrial growth, which emerges from the new technological innovations, is that the industrial policy that focuses on large sized firms has to pay a penalty for foregone industrial growth (Singh, 2004 and Audretsch, et.al, 2002).

The industrial development experience of Punjab clearly shows that it has been following the natural path of developing small-scale plants and firms which has been suggested by the recent developments in the theory of growth of the firm and confirm to the Italian and Japanese model of industrial development. It is important to note that there exist more than 15 clusters in Punjab's industrial structure (Table 1). These industrial clusters have thrived on the basis of networking among the cultural communities and inter-firm cooperation among small firms, a natural outcome of the market led private initiatives. However, it needs to be noted here that clusters has been promoted by the Union government of India on the pattern of Japanese model since the mid-seventies in other parts of the country, prominent among them are Bangalore and Gurgaon. Thus, identification of clusters has been made on the basis of market driven and state sponsored respectively which are described as natural and unnatural industrial clusters (Gulati, 1996).

Table1: Characteristics of Industrial Clusters in Punjab

Sn.	Cluster	Location	Export Potential	Natural/ Unnatural	Modern SSI	Nature of cluster	Scope for Technology Upgradation
1	Automobile Components	Ludhiana	H	Natural	Yes	Horizontal	Yes
2	Electric Fans	Ludhiana	H	Natural	Yes	Large unit centered	Yes
3	Hosiery	Ludhiana	H	Natural	Yes	Vertical	Yes
4	Bicycles	Ludhiana	M	Natural	Yes	Large Unit centred	Yes
5	Sewing Machine components	Ludhiana	M	Natural	Yes	Large Unit Centred	Yes
6.	Hand Tools	Jalandhar	H	Natural	Yes	Horizontal	Yes
7	Sports Goods	Jalandhar	H	Natural	No	Horizontal	Yes
8	Rubber Goods	Jalandhar	H	Natural	Yes	Vertical	Yes
9	Shoddy Yarn	Amritsar	H	Natural	Yes	Horizontal	Yes
10	Woollen Shawls	Amritsar	H	Natural	No	Large Unit Centred	No
11	Agricultural Implements	Bhadson Patiala	H	Natural	Yes	Horizontal	Yes
12	Machine Tools	Batala	H	Natural	Yes	Horizontal	Yes
13	Wheat Threshers	Moga	L	Natural	Yes	Horizontal	Yes
14	Diesel Components	Phagwara	M	Natural	Yes	Vertical	Yes
15.	Re-rolling Steel Mills	Mandi Gobingarh	M	Natural	Yes	Vertical	Yes

Source: Adapted from Gulati, M. (1996) Restructuring and Modernization of SME Clusters in India, New Delhi: United Nations Industrial Development Organization reproduced by Mohan R. (2002).
Note: 1. H, L and M in third column stands for High-tech, Low-tech and Medium-tech respectively.

It is significant to note here that all the industrial clusters in Punjab are identified as natural industrial clusters. Industrial clusters are highly concentrated in Ludhiana city (i.e. five out of fifteen), Jalandhar (Three) and Amritsar (Two). Another important characteristic emerging from the analysis of Table 1 is that the ten out of fifteen industrial clusters have high export potential. Fourteen industrial clusters are producing industrial goods through the modern small-scale firms. Punjab's industrial clusters have a scope for improvements in technology. A distinctive feature of industrial clusters of Punjab compared with the Italian and Japanese model is that technological progress and investment is endogenous in these, whereas it is exogenous in case of Punjab. The R & D expenditure of small industrial units in Punjab is lower (0.5 per cent of the total R&D expenditure of the SIRO units) than that by the small-scale enterprises of other Indian states (Government of India, 2003). Two fundamental drawbacks that can be noticed in Punjab's small-scale industry are: one, small-scale industry is competitive in international market but technology is a big constraint and is dependent on external sources which are costly; two, small and community based industry is largely using household savings and thus devoid of incentives to use resources more efficiently (Banerjee, 2000). A comparison of the performance of Punjab's small-scale industry with other Indian states reveals that the higher productivity mainly due to the economies of scale is achieved through industrial clusters. Internationally, it has low productivity but surviving on the basis of cost cutting while providing low level of living conditions to the workforce.

<div align="center">III</div>

Data Sources & Adjustments

National Sample Survey Organisation (NSSO) is the main agency engaged in the collection of information about various dimensions like output, employment, capital, gross value added etc. of unorganised manufacturing industries. It started collecting information on unorganised manufacturing since 1958-59 and continued its endeavours with surveys during 1968-69, 1974-75, 1978-79, 1984-85, 1989-90, 1994-95 and 2000-01 in different rounds. These rounds differ from each other in terms of coverage, sampling approach and the definition of various concepts[1]. Moreover, the data collected during pre-1994-95 period is available in reports only. As these surveys conducted during different time periods are based on different National Industrial Classifications (NIC), there arises the need for maintaining comparability between the

data available at different points of time. But, this exercise can be done only with the unit level data. This unit level data is available in CD-ROM for 1994-95 (51st Round). Similar data set is available for 2000-01 (56th Round) also. So, in this paper, we are relying mainly upon these two NSSO Rounds (51st and 56th) for analytical purposes. The 51st Round of NSSO is based on the NIC 1987 whereas the NIC 1998 laid the basis for NSSO's 56th round. Owing to the concerns for maintaining comparability within these two rounds, we have looked thoroughly into each round and made the relevant adjustments with each round[2]. We also reclassified the industrial codes in the 51st Round on the basis of Part-III of CSO (1998).

IV

Growth Performance of Unorganised Industry Across Indian States

Punjab's industrial economy has grown at a fast rate in the post-green revolution period. The contribution of the small and tiny industry (unorganised manufacturing sector) in the manufacturing sector's income was 47 per cent in 1966-67, which was higher than the all India (43 per cent in 1966-67). The contribution of unorganised industrial sector in the Punjab state's manufacturing income increased continuously during the post-green revolution period and was 53 per cent in the mid-seventies. Thereafter, its contribution in the state's manufacturing income declined continuously and was just 33 per cent in the year 2000-01. However, the contribution of unorganised industrial sector to the all India manufacturing income was almost constant (hovering around 43 per cent) during the late sixties and seventies. The contribution of the unorganised manufacturing sector to total manufacturing sector has declined during the eighties and nineties. The share of unorganised industry in all India manufacturing income was higher (that is 36.5 per cent) compared with the state of Punjab (33 per cent) in the year 2000-01. It is pertinent to note here that the national accounts statistics show the decreasing share of the unorganised industries in the national and Punjab state's manufacturing income in the 1990s. This is generally considered in the theory of economic transformation as a healthy sign of economic growth and development. But the NSSO data show a turnaround in the unorganised manufacturing sector of India as well as of Punjab state during the period 1994-2000.

Table 2: Growth of Enterprises and Employment in the Unorganised Manufacturing Sector Across States (1984-2000)

States	Enterprises			Employment		
	1984-89	1989-94	1994-2000	1984-89	1989-94	1994-2000
Andhra Pradesh	0.00	-5.1	4.4	1.3	-4.9	4.8
Bihar	-3.4	1.9	-1.1	-4.2	3.5	-0.7
Delhi	4.3	5.3	3.3	11.9	9.1	1.7
Gujarat	4.8	3.7	-3.0	17.6	3.7	-5.0
Haryana	-5.2	-6.8	5.3	5.9	-4.6	3.9
Himachal Pradesh	11.8	-9.1	-0.1	20.0	-11.4	0.7
Karnataka	0.5	-0.5	3.5	2.3	0.2	1.7
Kerala	-1.1	-13.6	9.6	-1.4	-12.6	7.9
Madhya Pradesh	-9.6	-1.7	7.2	-3.3	-0.2	6.5
Maharashtra	-6.0	-3.9	6.2	2.2	-1.0	3.4
Orissa	4.7	6.9	-5.6	6.1	5.0	-5.4
Punjab	-0.7	-2.9	5.3	7.2	-2.0	5.2
Rajasthan	-2.1	-6.4	5.0	1.4	-7.8	4.8
Tamil Nadu	-5.1	-4.1	4.8	-5.1	-2.6	3.1
Uttar Pradesh	-15.1	0.9	-0.7	-12.4	1.9	-0.9
West Bengal	5.5	-7.9	6.4	5.7	-6.6	5.0
India	-3.7	-2.3	2.7	-0.7	-1.3	1.9

Source: Adapted from Mukherjee (2004).

Growth rates of enterprises and employment based on NSSO data of the unorganised manufacturing sector across states and over time are presented in Table 2. The analysis of the Table 2 reveals that the growth of enterprises and employment therein declined during the period 1984-85 and 1989-94. However, there is a clear turnaround in the growth of enterprises and number of persons employed therein at least at the all India level of unorganised manufacturing sector. This trend has also been recorded by the states like Andhra Pradesh, Haryana, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu and West Bengal. Contrary to this, Gujarat, Orissa, Bihar and Uttar Pradesh's unorganised manufacturing sector recorded negative trends during 1994-2000 compared with earlier two periods. Delhi state's unorganised sector showed positive growth rates both of the enterprises and employment, but recorded deceleration more sharply during the period 1994-2000. The unorganised manufacturing sector of Punjab state recorded more than double the rate of growth of enterprises and employment as compared with the all India. Comparison across states shows that four states (Kerala, Madhya Pradesh, Maharashtra and West Bengal) achieved higher growth rate of enterprises than that of Punjab during the period 1994-2000. However, the growth rate of enterprises in Haryana was equivalent to Punjab during the same period. So far as growth rate of employment generation by the unorganised sector is concerned, only two states (Kerala and Madhya Pradesh)

recorded higher growth rates compared with Punjab's unorganised manufacturing sector. The turnaround in the growth rates of enterprises as well as of employment may be due to the effect of the non availability of work in organised manufacturing sector and also of the non availability of remunerative jobs in the government sector during the period of decade and a half before the mid-nineties. Labour absorption capacity of industrial and agriculture sector has declined dramatically during this period (Singh and Gill, 2002).

Table 3: Compound Growth Rates (at 1993-94 constant prices) of Selected Indicators (1994-95 to 2000-01)

State	Fixed Capital	Fixed Capital / unit	Capital Intensity (K/L)	Gross Output	GVA	GVA / worker	GVA / K
Punjab	15.60	7.03	7.89	10.30	8.95	1.68	-5.75
Maharashtra	-0.22	-4.63	-2.84	17.30	3.83	1.10	4.06
Haryana	14.71	8.26	10.16	6.97	0.46	-3.53	-12.42
Gujrat	-0.04	5.90	4.76	4.19	-0.63	4.14	-0.59
Tamil Nadu	8.77	5.13	6.25	5.53	2.49	0.12	-5.77
Karnataka	8.93	6.52	7.68	10.47	7.55	6.32	-1.27
Himachal Pradesh	14.67	15.43	14.77	33.34	9.64	9.73	-4.39
Kerala	19.94	12.81	12.77	8.77	12.01	5.31	-6.61
Andhra Pradesh	10.31	8.63	7.15	9.78	8.43	5.32	-1.71
West Bengal	14.24	6.53	8.22	8.31	9.66	3.88	-4.02
Rajasthan	10.79	5.91	5.61	11.40	9.33	4.22	-1.31
Madhya Pradesh	5.53	2.04	3.24	2.48	-3.29	-5.39	-8.36
Assam	4.34	4.75	7.17	9.01	8.47	11.41	3.96
Uttar Pradesh	5.35	6.09	6.53	1.11	0.10	1.21	-4.99
Orissa	0.71	6.53	6.33	-0.31	1.46	7.12	0.74
Bihar	-2.67	4.08	4.93	0.60	-0.39	7.38	2.33
All-India	7.58	5.00	5.61	9.20	5.17	3.25	-2.24

Source: Based on the data generated from the NSSO's CD-ROM for 51st and 56th Rounds (Schedule 2.2)

Growth rates of selected indicators across states between the periods of two latest NSSO rounds (1994-95 and 2000-01) are presented in Table 3. Capital intensity of the Indian unorganised manufacturing sector has increased at the compound growth rate of 5.61 percent per annum during the period 1994-2000. It is worth noting here that eleven states recorded growth in capital intensity higher than the all India growth rate. Punjab state is one among sixteen states under consideration, which observed rapid capital deepening in the unorganised manufacturing sector. High growth rate of capital intensity is highly correlated with high growth rate of output and value added. This clearly suggests that capital deepening is the major source of fast growth in the value addition as well as of the output growth in the unorganised manufacturing sector of the major Indian states. It is pertinent to note here that labour productivity

has also increased at a fast rate but lower than the capital intensity in majority of the states. Three states (Assam, Orissa and Bihar) recorded higher growth rates of labour productivity compared with the capital intensity. This shows that the source of output growth and value addition done in the unorganised manufacturing sector of these states has been the labour productivity. The analysis of the table 3 clearly brings out the fact that capital productivity has increased at a reasonably high rate of growth in four states (Maharashtra, Assam, Orissa and Bihar). However, the rest of all the states under consideration have recorded negative capital productivity trends. This clearly suggests that high capital intensity has not resulted into improvements in the technology of the production structure. This factor clearly places the unorganised industrial sector of majority Indian states at a comparative disadvantage in comparison with others, which utilise expensive capital stock more efficiently. This also implies that technological progress is an exogenous process in the unorganised manufacturing sector and requires policy initiatives to make it efficient so that this sector can compete in the fast globalising manufacturing industries. To make capable the unorganised industries to meet the competition challenge from the global firms, investment in changing production practices and technological improvements is urgently required.

V

Structure and Growth of Punjab's Unorganised Industry during 1990s

The unorganised industry has occupied a place of significance in Punjab's manufacturing sector by emerging as the employer of larger workforce. Punjab's organised industry in spite of generating output at high rate could not provide enough employment. The employment elasticity of output in organised industry during 1994-2001 remained only 0.14, which is much lower in comparison to that (0.41) of unorganised industry. There has been an increase in the contribution of unorganised industry in state's total industrial employment, fixed capital, gross value added and output. In 2000-01, the unorganised industry in Punjab accounted for 63.63 percent of total industrial employment and 37.86 percent of the total fixed capital of the industrial sector. Further, the contribution of unorganised industry to total output and gross value added increased during the period 1994-2001. Owing to its growing significance, we, in this section discuss the structure, growth, and factor-use pattern

along with major hindrances faced by Punjab's unorganised industry during the 1990s.

A. Size Structure

A primary look at the size structure of the industry before delving into various dimensions related to its growth process holds significance. This size structure of unorganised industry can be examined in terms of number of persons employed (L) and the investment in plant and machinery (K*). When examining the size distribution of unorganised industry in terms of L, we, following the same norm as the NSSO, have classified the unorganised industry into three categories viz. OAMEs, NDMEs and DMEs. OAMEs are the manufacturing enterprises that use the services of household members (Hh_L) only and do not employ any hired worker whereas NDMEs and DMEs are the establishments and refer to such manufacturing enterprises, which along with Hh_L employ hired labour (H_L) in their production process. If $1 \leq H_L \leq 5$, the NSSO identifies a manufacturing unit as NDME but if $6 \leq H_L \leq 10$, the manufacturing unit is identified as DME.

Table 4: Distribution of Punjab's Unorganised Industry in terms of Employment

Enterprise Type	Number of units	L	H_L	K (Rs. Million)	K* (Rs. Million)	Y (Rs. Million)	GVA (Rs. Million)
OAME	192370 (73.29)	279016 (44.48)	0 (0.00)	10932.63 (21.13)	1627.56 (15.02)	8736.65 (13.77)	4919.37 (24.98)
NDME	51464 (19.61)	164169 (26.17)	95800 (38.62)	18325.48 (35.41)	3005.40 (27.74)	18644.50 (29.39)	6496.31 (32.99)
DME	18651 (7.11)	184123 (29.35)	152235 (61.38)	22491.55 (43.46)	6201.84 (57.24)	36062.47 (56.84)	8277.83 (42.03)
All	*262486*	*627308*	*248036*	*51749.66*	*10834.81*	*63443.62*	*19693.52*

Note: The figures in parentheses represent percentages to the total.
Source: the data on unorganised manufacturing is generated from the NSSO's CD-ROM for 56th Round (Schedule 2.2).

It can be observed from the NSSO's 56th Round (Table 4) that the OAMEs dominate Punjab's unorganised industry in aspects like the number of units and the total workers whereas the establishments dominate in terms of fixed capital (K), K*, total output (Y) and gross value added (GVA). Further, within establishments, a large contribution is made by the DMEs. More interesting results about the size structure of unorganised industry are obtained when we classify different units in unorganised industry as per K*. It can be observed from Table 5 that more than 50 percent of the units belong to the investment category of K* ≤ Rs. 5,000. The contribution of this smallest category of units in total employment provided by unorganised industry is

more than 30 percent. But these units account for only 7 percent of the total production (Y) in the unorganised manufacturing sector. The quantum of fixed capital (K) in these units is also low. It constitutes only 7.39 percent of the total fixed capital in unorganised industry. The large units (K* ≥ Rs. 50,000), on the other hand, accounting for 63 percent of total fixed capital contribute to 68.11 percent of the total output.

Table 5: Distribution of Punjab's Unorganised Industry in terms of Investment in Plant and Machinery (K*)

Size Class (as per K*)	Number Of units	L	H$_L$	K (Rs. Million)	Y (Rs. Million)	GVA (Rs. Million)
Up to Rs. 1,000	76943 (29.31)	111533 (17.78)	1193 (0.48)	1118.20 (2.16)	1053.57 (1.66)	787.35 (4.00)
Rs.1,000 – Rs.5,000	69164 (26.35)	103757 (16.54)	8722 (3.52)	2709.02 (5.23)	3612.07 (5.69)	2058.38 (10.45)
Rs.5,000 – Rs.10,000	18777 (7.15)	38039 (6.06)	10996 (4.43)	1690.60 (3.27)	1926.63 (3.04)	931.32 (4.73)
Rs.10,000 – Rs.20,000	23297 (8.88)	50968 (8.12)	18078 (7.29)	3870.90 (7.48)	3905.33 (6.16)	1673.62 (8.50)
Rs.20,000 – Rs.30,000	17026 (6.49)	40462 (6.45)	15055 (6.07)	3862.28 (7.46)	3257.09 (5.13)	1306.73 (6.64)
Rs.30,000 – Rs.50,000	20156 (7.68)	59855 (9.54)	30003 (12.10)	5896.44 (11.39)	6476.33 (10.21)	2119.13 (10.76)
Above Rs. 50,000	37122 (14.14)	222693 (35.50)	163987 (66.11)	32602.23 (63.00)	43212.59 (68.11)	10816.99 (54.93)
All	*262486*	*627308*	*248036*	*51749.66*	*63443.62*	*19693.52*

Note: The figures in parentheses represent percentages to the total.
Source: Same as Table 4

When we consider the proportion of gross value added in final output, we find that the share of gross value added in small units is relatively high in comparison to units in other investment groups. In fact, the share of gross value added in total output is much lower for the units with high K* in comparison to the units with lower K*. It can be observed from the figures in Table 5 that the share of gross value added in output is more than 60 percent in the units with K* ≤ Rs. 5000 whereas it is only 25 percent in case of units with Rs. 30,000 ≤ K* ≥ Rs. 50,000.

A cross-classification of K* with L (Enterprise type) provides another interesting explanation of the size structure. It can be observed from Table 6 that the number of units in the OAME category is declining with increase in size of K* across manufacturing units. Most of the manufacturing units with K* ≤ Rs. 5,000 are the OAMEs whereas there is a negligible proportion of establishments in this K*

category. This size of K* is quite high in case of establishments. Further within establishments, NDMEs dominate in number till K* ≤ Rs. 50,000 but when K* crosses Rs. 50,000, the industrial structure is dominated by the DMEs. Such pattern indicates that the DMEs are quite capital intensive as can also be noticed from the shares of K and K* in Table 4. It needs to be noted here that the DMEs are modern small-scale units, which are operating in the unorganised industrial sector.

Table 6: Classification of Enterprises as per their Investment in Plant and Machinery

Enterprise Type K*	OAME	NDME	DME	Total
less than Rs. 1000	76487 (39.76)	429 (0.83)	29 (0.16)	76945 (29.31)
Rs.1000 - Rs.5000	64143 (33.34)	4845 (9.41)	176 (0.94)	69164 (26.35)
Rs.5000 - Rs.10000	13200 (6.86)	5421 (10.53)	156 (0.84)	18777 (7.15)
Rs.10000 – Rs.20000	14152 (7.36)	8435 (16.39)	709 (3.80)	23296 (8.88)
Rs.20000 – Rs.30000	9223 (4.79)	7222 (14.03)	581 (3.11)	17026 (6.49)
Rs.30000 – Rs.50000	8230 (4.28)	9458 (18.38)	2468 (13.23)	20156 (7.68)
Above Rs.50000	6934 (3.60)	15655 (30.42)	14533 (77.92)	37122 (14.14)
Total	*192369*	*51465*	*18652*	*262486*

Note: The figures in parentheses represent percentages to the total.
Source: Same as table 4

B. Industrial Pattern and Inter-industry Growth Variations

Punjab's unorganised industry is a blend of different industries like manufacturing of rubber products, basic metals, dressing and wearing apparel, electrical machinery, publishing and printing, other transport equipments, leather products, machinery and equipments, wood products, fabricated metals, other non-metallic minerals, other manufacturing, textiles and the manufacturing of food products and beverages. But, among these industries, there are few dominating industries that hold their significance in the overall structure of the unorganised industry. These industries are textiles, food products, machinery and equipments, fabricated metals, other non-metallic minerals, wood products, other transport equipments (mainly the bicycle industry). In 2000-01, these industry groups together contributed to an aggregate share of 79.54 percent of total output, 76.74 percent of total gross value additions,

76.83 percent of total fixed capital employed, 83.33 percent of total investment in plant and machinery, 77.86 percent of total employment (Table 7).

Table 7: Contribution of Major Industries in Punjab's Unorganised Manufacturing Sector

Industry-type	Output		GVA		Fixed Capital		Total Workers	
	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01
Food Products & Beverages (15)	12.83	17.23	15.57	14.86	18.43	18.36	16.66	13.73
Textiles (17)	9.56	12.82	13.30	14.03	8.11	12.94	21.71	26.65
Dressing and Wearing Apparel (18)	2.21	1.12	2.01	1.21	1.44	1.60	1.57	1.16
Leather Products (19)	2.59	2.09	3.63	2.62	1.08	1.55	2.24	3.62
Wood Products (20)	3.20	6.42	6.27	8.57	4.83	7.44	8.06	8.88
Publishing and Printing (22)	1.09	1.19	2.21	1.71	1.67	2.31	1.60	1.42
Rubber Products (25)	2.06	1.87	1.46	1.44	1.39	1.44	0.90	0.72
Other Non-metallic Minerals (26)	3.95	12.13	6.52	10.46	4.14	9.47	8.05	9.58
Basic Metals (27)	3.61	2.20	1.19	1.35	1.06	1.39	0.55	0.74
Fabricated Metals (28)	5.12	13.98	4.56	10.90	6.28	12.54	4.18	8.96
Machinery and Equipments (29)	23.43	10.44	19.47	11.28	21.39	10.12	16.86	6.90
Electrical Machinery (31)	2.45	1.16	1.61	1.43	6.09	1.24	1.34	1.16
Other Transport Equipments (35)	8.96	6.52	5.68	6.66	6.43	5.95	4.05	3.18
Other Manufacturing (36)	6.32	6.71	9.07	9.98	9.20	10.04	7.35	10.15

Source: the data on unorganised manufacturing is generated from NSSO's CD-ROM for 51st & 56th Rounds (Schedule 2.2).

The textile industry continues to maintain its dominating position in Punjab's unorganised industry by contributing the largest share in total employment generated by unorganised industry. This share was 21.71 percent in 1994-95. The employment growth in this industry took place at the average annual rate of 10.86 percent during 1994-2001 period and consequently, the contribution of this industry in total employment increased to 26.65 percent in 2000-01. This industry employed 14.03 percent of total hired workers. The textile industry has 12.94 percent of total fixed capital in the unorganised industry. It recorded growth in output and gross value added at the rate of 15.83 percent and 9.92 percent respectively during the period 1994-2001. It contributed 12.82 percent of output and 14.03 percent of gross value added in the aggregate total of Punjab's unorganised industry in 2000-01. The prevalence of sub-contracting is the highest in the textile industry. 61.83 percent of the manufacturing units in this industry reported the practice of sub-contracting.

The manufacturing of food products & beverages make the highest contribution in output (17.23 percent) and gross value added (14.86 percent) in 2000-01. The use of fixed capital is also very high in this industry. The average annual growth rate of output and gross value addition in this industry has been 15.85 percent and 8.10

percent during the period 1994-2001. This industry accounted for 13.73 percent of the total employment in 2000-01 and recorded the employment growth of 3.74 percent during the period 1994-01.

Table 8: Compound Growth Rate of Important Parameters (at constant 1993-94 prices) of Punjab's Unorganised Industry during 1994-01 period

Industry-type	Units	Output	GVA	Fixed Capital	Total Workers
Food Products & Beverages (15)	3.23	15.85	8.10	15.52	3.74
Textiles (17)	15.35	15.83	9.92	24.98	10.86
Dressing and Wearing Apparel (18)	7.71	-1.47	0.12	17.64	1.85
Leather Products (19)	13.69	6.41	3.17	22.78	16.08
Wood Products (20)	8.79	23.89	14.76	24.21	8.89
Publishing and Printing (22)	6.98	11.90	4.42	21.94	5.01
Rubber Products (25)	14.45	8.51	8.68	16.24	3.37
Other Non-metallic Minerals (26)	1.25	32.99	17.88	32.69	10.28
Basic Metals (27)	6.55	1.55	11.26	21.07	12.65
Fabricated Metals (28)	18.37	30.42	25.97	29.72	21.66
Machinery and Equipments (29)	-12.08	-3.60	-0.53	2.05	-7.69
Electrical Machinery (31)	-4.01	-2.55	6.90	-11.40	4.71
Other Transport Equipments (35)	0.58	4.60	11.87	14.10	2.89
Other Manufacturing (36)	13.69	11.40	10.68	17.29	13.08
All Unorganised Industries	*8.00*	10.30	8.95	15.60	*7.14*

Note: the growth rates are calculated after adjusting the fixed capital with the Gross Fixed Capital Formation deflator (at all India level) at 1993-94 prices. Similarly, the output and GVA figures are adjusted by using the Gross State Domestic Product deflator at 1993-94 prices.
Source: Same as table 7

The manufacturing of machinery and equipments witnessed a drastic change in its size and contribution during the period 1994-2001. This industry accounted for the largest share of total output, gross value added, fixed capital, total employment and a relatively larger share of total employment of hired workers in 1994-95. But, during the period1994-2001, the number of manufacturing units in this industry has recorded negative average annual growth rate of -12.08 percent. Consequently, the share of this industry in the state total fell to 10.44 percent, 11.28 percent, 10.12 percent and 6.90 percent in terms of output, gross value added, fixed capital and total workers respectively in 2000-01. The industry group viz. fabricated metals, on the other hand, recorded robust growth. The number of manufacturing units in this industry group has grown at the average annual rate of 18.37 percent during the period 1994-2001. Consequently, its share in all the indicators increased (Table 7).

The manufacturing of other non-metallic minerals is another industry group where there has been a very small growth in the number of manufacturing units during the period 1994-2001. But there took place the highest growth in the use of fixed capital.

It also recorded the highest growth in output. The growth recorded by this industry in gross value added has also been the second highest among major industry groups. The industry group manufacturing other transport equipments is another similar industry group, which in spite of recording a marginal growth in the number of units, have recorded a considerably high growth in the volume of output and gross value added. This growth can be attributed to the adoption of capital-intensive technique of production. The use of fixed capital per unit and per worker has grown in this industry at the growth rate of 13.45 percent and 10.90 percent respectively during the period 1994-2001 (see Table 10). The analysis of this industry group at a more disaggregate level reveals that it is the manufacturing of bicycles and invalid carriages (NIC'98 code 3592) that constitute the major industry in this broad industrial category. This industry account for 66.48 percent of total manufacturing units, 69.57 percent of total fixed capital, 72.50 percent of total workers, 72.96 percent of total hired workers and 70.67 percent of total gross value added in 2000-01.

C. Factor Use Pattern

The unorganised industry has limited resource base. It always faces the scarcity of resources at its disposal. Under such situation, the most desirable thing is to ensure the efficient use of resources. The need to become efficient gets strengthened further in the era of liberalisation when the unorganised industry is going to face competition[3]. It can compete with others only if it is able to utilise its resources properly and efficiently. In order to analyse and ascertain the factor use efficiency in the unorganised industry in Punjab during the 1990s, we have examined its factor use pattern as follows:

Labour Mix

Punjab's unorganised industry is dominated by the male workers, which constitute 76.82 percent of the total workers in 2000-01. Most of the industries employ more than 90 percent of male workers. The share of female workers in total employment provided by unorganised industry is high in only few industry groups like manufacturing of textile products, leather products, other non-metallic minerals and other manufacturing. In these industry groups, the share of female workers is 64.12 percent, 35.17 percent, 21.62 percent and 12.08 respectively. We get further

interesting results when we consider the distribution of employment among male and female workers across OAMEs, NDMEs and DMEs. These are only the OAMEs where female workers account for relatively better (46.22 percent) share in total employment. The share of female workers in employment provided by NDMEs and DMEs is only 3.46 percent and 5.86 percent respectively. The hired male workers account for 48.58 percent of total workers in Punjab's unorganised industry. Though the share of female hired workers is much low at the aggregate level, it is quite high in some industry groups like the manufacturing of dressing and wearing apparel, other non-metallic minerals and fabricated metals. It is important to note here that the share of female workers in total workers is much high in textile industry (64.12 percent) but hired female workers are only 3.19 percent of total workers in this industry.

Table 9: Dependence on Hired Labour in 2000-01 across Different Unorganised Industries

Industry-type	Hired workers (% of total workers)			Degree of casualisation		
	Males	Females	Total	Males	Females	Total
Food Products & Beverages (15)	32.62	5.71	31.44	0.48	0.06	0.46
Textiles (17)	52.27	3.19	20.81	1.10	0.03	0.26
Dressing and Wearing Apparel (18)	61.36	34.99	60.12	1.59	0.54	1.51
Leather Products (19)	27.87	1.44	18.57	0.39	0.01	0.23
Wood Products (20)	26.21	0.00	25.04	0.36	0.00	0.33
Publishing and Printing (22)	52.55	0.00	50.30	1.11	0.00	1.01
Rubber Products (25)	56.34	2.09	52.13	1.29	0.02	1.09
Other Non-metallic Minerals (26)	81.33	73.83	79.70	4.35	2.82	3.93
Basic Metals (27)	59.09	0.00	58.77	1.44	0.00	1.43
Fabricated Metals (28)	57.41	26.63	57.08	1.35	0.36	1.33
Machinery and Equipments (29)	59.35	4.44	59.01	1.46	0.05	1.44
Electrical Machinery (31)	60.96	0.00	60.85	1.56	0.00	1.55
Other Transport Equipments (35)	75.11	0.00	74.75	3.02	0.00	2.96
Other Manufacturing (36)	34.04	1.37	30.09	0.52	0.01	0.43
All Unorganised Industries	*48.58*	*9.59*	*39.54*	*0.94*	*0.11*	*0.65*

Source: Same as table 4

In order to measure the magnitude of the use of hired labour, we have estimated the degree of casualisation[4] across different unorganised industries. The degree of casualisation is about nine times high in case of male workers than that for the female workers. In most of the industries, the degree of casualisation for male workers is more than one, which indicates that these industries are employing more hired male workers in comparison to their own male workers. The only industry having very high degree of casualisation in case of female workers is the manufacturing of other non-metallic minerals.

The casualisation of labour is more an urban phenomenon. The urban unorganised industry contributed more towards the casualisation of labour in 2000-01. The rural unorganised industry too has shown some signs of the casualisation of labour force though not at the same level as noticed in case of urban unorganised industry (0.37 and 0.98 in rural and urban unorganised industry respectively). In rural areas, 65.01 percent of the workers are self-employed i.e. they are working in OAMEs. There are very few who work in establishments. The number of hired workers in rural establishments in Punjab is 2.28 times less than that in the urban establishments in 2000-01. This phenomenon can be explained in terms of the Harris-Todaro model (1970) of migration, which proposes that the rural to urban migration is a conscious choice and is induced by the rural-urban wage differences and migrants' expectations of higher urban wages in comparison to the rural wages. Moreover, employment in urban areas may provide better employment opportunities and thereby facilitate easy entry to the organised sector.

Factor Allocation

We noticed in section IV that Punjab's unorganised industry stands different from its counterparts in other states by recording the high levels of capital usage. There has been a growth in the use of both fixed capital per unit and fixed capital per worker. This trend indicates the capital-intensive technique of production in Punjab's unorganised industry. However, this pattern is not uniform across different industries as the different industry groups differ from each other in terms of capital-labour allocation in their manufacturing process.

In 1994-95, the level of fixed capital per unit was the highest in industries manufacturing electrical machinery. The use of fixed capital per unit in this industry declined significantly during 1994-2001. In fact, this is the only one industry group, which recorded deceleration in the use of fixed capital per unit. This industry also recorded a decline in the capital-labour ratio. Such trend can be explained in terms of the number of units, which have recorded a negative average annual growth of – 4.01 percent in 1994-01 (see Table 8). The manufacturing of other non-metallic minerals recorded the highest growth in the use of fixed capital per unit. The machinery and equipments industry achieved second highest growth rate in terms of use of fixed

capital per unit. The use of capital per unit of labour has been the highest in industries manufacturing rubber products. This industry did not record much high growth in capital-labour ratio. The highest growth in capital-labour ratio has been recorded by the industries manufacturing other non-metallic minerals.

Table 10: Pattern of Factor Allocation across Different Unorganised Industries

NIC2	Fixed capital per unit			Fixed capital per worker		
	1994-95	2000-01	Growth Rate* (1994-01)	1994-95	2000-01	Growth Rate* (1994-01)
Food Products & Beverages (15)	89693	234654	11.91	43429	110308	11.36
Textiles (17)	34148	73568	8.35	14661	40064	12.73
Dressing and Wearing Apparel (18)	145025	327732	9.22	36084	114097	15.51
Leather Products (19)	30525	64456	7.99	19026	35460	5.76
Wood Products (20)	40947	120724	14.17	23573	69140	14.07
Publishing and Printing (22)	112582	328812	13.99	41067	134086	16.12
Rubber Products (25)	285843	417903	1.57	60948	164087	12.45
Other Non-metallic Minerals (26)	143609	968882	31.06	20199	81618	20.32
Basic Metals (27)	223000	639182	13.63	75165	154226	7.47
Fabricated Metals (28)	174969	403535	9.59	59072	115549	6.62
Machinery and Equipments (29)	133437	434312	16.06	49831	121064	10.54
Electrical Machinery (31)	424522	349616	-7.69	179099	87508	-15.39
Other Transport Equipments (35)	319464	906868	13.45	62362	154483	10.90
Other Manufacturing (36)	100779	161743	3.16	49206	81585	3.72
All Unorganised Industries	*98488*	*197152*	7.03	*39275*	*82495*	7.89

Note: * implies that the fixed capital has been deflated by the gross fixed capital formation at all-India level at 1993-94 prices during both 1994-95 and 2000-01 period before calculating the growth rates.
Source: Same as Table 7

Factor Productivity

While exploring the factor-use pattern, another related concept is that of the factor productivity. We've attempted here to analyse the factor productivity by using only the partial factor productivity measures. We are fully aware of the fact that the partial productivity measures present only a partial picture of the efficiency in factor-use[5]. The gross value added per unit of fixed capital has declined in all the industry groups except electrical machinery during the period 1994-2001. This decline has been the highest for the units manufacturing leather products. But still in 2000-01, this industry maintained its position by generating relatively high magnitude of gross value added per unit of its fixed capital.

Table 11: Factor Productivity across industries

Industry-type	GVA per unit of fixed capital		Real GVA per unit of real fixed capital		GVA per worker		Real GVA per worker	
	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01
Food Products & Beverages (15)	0.42	0.31	0.41	0.28	18052	33976	16428	21039
Textiles (17)	0.81	0.41	0.80	0.37	11833	16523	10768	10231
Dressing & Wearing Apparel (18)	0.69	0.29	0.68	0.26	24829	32925	22595	20388
Leather Products (19)	1.65	0.64	1.64	0.58	31388	22728	28564	14074
Wood Products (20)	0.64	0.44	0.63	0.39	15049	30306	13695	18766
Publishing and Printing (22)	0.65	0.28	0.64	0.25	26683	37915	24282	23478
Rubber Products (25)	0.52	0.38	0.51	0.34	31549	62623	28711	38778
Other Non-metallic Minerals (26)	0.77	0.42	0.77	0.38	15637	34282	14230	21229
Basic Metals (27)	0.55	0.37	0.55	0.33	41694	56878	37942	35220
Fabricated Metals (28)	0.36	0.33	0.35	0.30	21102	38203	19203	23657
Machinery and Equipments (29)	0.45	0.42	0.44	0.38	22318	51328	20310	31783
Electrical Machinery (31)	0.13	0.44	0.13	0.40	23228	38629	21138	23920
Other Transport Equipments (35)	0.43	0.43	0.43	0.38	27093	65794	24655	40741
Other Manufacturing (36)	0.48	0.38	0.48	0.34	23863	30846	21716	19101
All Unorganised Industries	*0.49*	*0.38*	*0.49*	*0.34*	*19324*	*31394*	*17586*	*19440*

Source: Same as table 7

The industries manufacturing electrical machinery are the only ones to record an increase in the productivity of fixed capital. This point gets strengthened further when supplemented with the above observation of the negative growth in the use of fixed capital per unit and per worker by this industry (see Table 10). Other industries reporting a relatively high decline in this aspect are the dressing and wearing apparel, publishing and printing, textiles and other non-metallic minerals. Almost similar types of results are obtained when we estimate the productivity of capital in real terms[6].

Table 12: Growth of Factor Productivity during 1994-2001

Industry-type	GVA per unit of Fixed Capital	Real GVA per unit of real fixed capital	GVA per worker	Real GVA per worker
Food Products & Beverages (15)	-4.87	-6.43	11.12	4.21
Textiles (17)	-10.59	-12.05	5.72	-0.85
Dressing and Wearing Apparel (18)	-13.48	-14.89	4.82	-1.70
Leather Products (19)	-14.58	-15.97	-5.24	-11.13
Wood Products (20)	-6.07	-7.61	12.38	5.39
Publishing and Printing (22)	-12.95	-14.37	6.03	-0.56
Rubber Products (25)	-4.95	-6.50	12.10	5.14
Other Non-metallic Minerals (26)	-9.69	-11.16	13.98	6.89
Basic Metals (27)	-6.58	-8.10	5.31	-1.23
Fabricated Metals (28)	-1.28	-2.89	10.40	3.54
Machinery and Equipments (29)	-0.91	-2.53	14.89	7.75
Electrical Machinery (31)	22.65	20.65	8.85	2.08
Other Transport Equipments (35)	-0.33	-1.96	15.94	8.73
Other Manufacturing (36)	-4.06	-5.63	4.37	-2.12
All Unorganised Industries	*-4.19*	*-5.75*	*8.42*	*1.68*

Source: Same as table 7

There has been an increase in the productivity of labour in all the industries except units manufacturing leather products. The productivity of labour has been the highest in the basic metals industry in 1994-95 but during the period 1994-2001, this industry could not achieve as much growth in this aspect as her counterparts. The highest growth in labour productivity has been achieved by the manufacturing units producing other transport equipments. We noted above that the use of fixed capital per unit and per worker is quite high in this industry, so this high growth in labour productivity may be due to this factor. Unlike real capital productivity, there exist variations across industries in terms of real labour productivity. The growth in real labour productivity has been positive in some industries whereas it has been negative in other industries. The highest growth in real labour productivity has been recorded by the units manufacturing transport equipments. The manufacturers of machinery and equipments also recorded high growth in real labour productivity. The highest negative growth in real labour productivity has been recorded by the leather industry. Other industry groups like textiles, dressing and wearing apparel, publishing and printing, basic metals and other manufacturing recorded a relatively smaller negative growth in real labour productivity during the period 1994-2001.

D. Impediments to Growth of Unorganised Industry

The unorganised industry does not follow a smooth growth pattern rather it, because of its small size, is much vulnerable to various problems that hinder its growth in one way or the other. We, on the basis of NSSO's 56th Round, have tried to get the flavour of different kinds of problems faced by different kinds of manufacturing units in the unorganised industry.

Labour Problems

Labour is the major input in the unorganised industry due to its relatively labour intensive technique of production. The labour problems arise mainly due to factors like the unavailability of labour, strikes, accidents etc. The number of firms reporting the unavailability of labour as a problem is quite negligible (0.2 percent). Some explanations of this phenomenon may be relevant here. Firstly, the OAMEs constitute most of the unorganised industry (73.29 percent, Table 4) where only the family members are involved and therefore, the availability of labour is not a problem. Secondly, Punjab being an economically prosperous state attracts migrant workers

from relatively poor states like Uttar Pradesh, Bihar etc. who, because of poverty, may be willing to work without making any complaints. Thirdly, it may be the high rate of hire and fire[7], which discourages workers from creating any kind of problem at the work place.

Energy Problems

The availability of electricity connection is not the major constraint faced by Punjab's unorganised industry. The proportion of manufacturing units facing this constraint is quite negligible. It is 1.2 percent, 1.6 percent and 3.3 percent for OAMEs, NDMEs and DMEs respectively. In such a situation, it is not the availability of electricity connection rather it is the lack of adequate electricity availability that may reflect the energy problem in a better way. Most of the manufacturing units face this problem. These units reported the incidence of power cuts. This incidence is as high as 10.8 percent for OAMEs, 39.9 percent for NDMEs and 42.4 percent for DMEs. The manufacturing units in urban areas faced higher incidence of power cuts (25.6 percent) than that (13.2 percent) in rural areas. Another problem that may be faced by unorganised industry is the non-availability of cheap electricity[8].

Access to Raw Materials

The availability of raw material is another problem faced by unorganised industry. An analysis of this problem through classification of unorganised industry as per either enterprise type or industry type does not provide any meaningful results, as these classifications remain unable to capture this problem significantly[9]. But, a classification of unorganised manufacturing units as per their size (i.e. K*) reveals that majority of the small size units suffer from problems posed by the adequate availability of raw materials. About 62.6 percent of the units with K* ≤ Rs. 5,000 fall in this category. The proportion of units in other size categories is much lower. This seems to be a problem of having adequate working capital at their disposal. Unfortunately, the NSSO data does not provide any information on this variable but it can be inferred from the available data set with the help of chi-square test whose significant value (497.03) at 6 degrees of freedom[10] tells us about the association between the unit's size and the incidence of raw material problem.

Access to Markets

The unorganised industry faces the problem of access to markets. The access to markets can be captured through the indicators of marketing and threat of competition from large firms. 12.5 percent of DMEs face marketing problem followed by NDMEs (8.3 percent) and OAMEs (3.8). The proportion of firms in urban areas suffering from marketing problem is quite high in electrical machinery (15.6 percent), leather industry (15.3 percent), machinery and equipments (14.4 percent), fabricated metals (8.3 percent) and so on. The percentage of units facing the marketing problem in the urban textile industry is quite small (2.7 percent). Large units pose threat to the survival of small units. All the units in the industry experience this threat. The degree of this threat varies across units depending upon their size. It has been found that a relatively small proportion (6.5 percent) of OAMEs face this problem whereas the incidence of this problem is quite high (14 percent) in case of establishments. All the industries in urban areas faced this problem whereas the incidence of this problem is quite low in rural areas. In urban areas, the industries manufacturing rubber products reported the highest incidence (26.7 percent) of this problem. Other urban sector industries facing this threat are fabricated metals (18.1), machinery and equipments (17.1), dressing and wearing apparel (12.3), textiles (11.5), publishing and printing (10.5), basic metals (10.1), electrical machinery (9.7), wood products (9.3), other manufacturing (9.0), leather products (8.8), food products (7.1), chemical products (6.6), other transport equipments (6.4), other non-metallic minerals (6.0). In rural areas, the industries facing this threat are publishing and printing (66.9), electrical machinery (33.5), basic metals (23.5), other manufacturing (18.3), food products and beverages (13.3), other non-metallic minerals (10.8), machinery and equipments (10.3), wood products (7.2), leather products (3.4) and textiles (2.9).

Financial Constraints

The shortage of capital is another constraint faced by unorganised industry. 41.8 percent of the units face this problem. A classification of the manufacturing units as per K* reveals that 43.9 percent of the units with K* ≤ Rs. 5,000 reported the shortage of capital. The experience of this problem is quite low for the larger size categories. The manufacturing units in both the rural as well as urban areas experience the shortage of capital. However, the incidence of this problem is

relatively high in urban areas than in rural areas. 47.6 percent of the unorganised units reported this problem in urban areas compared to 37 percent in rural areas. The shortage of capital has been found to be associated with the nature of ownership. 95.2 percent of the proprietors reported the shortage of capital in comparison to only 4.8 percent firms having partnership. 56.8 percent of the stagnating firms reported the shortage of capital. The shortage of capital may be a major factor affecting the economic performance of a manufacturing unit. We cannot explore this aspect further owing to the data constraints but we can infer much from the significant value of chi-square test (1954.19, d f 8) that there is an association between the economic status of the enterprise and the problem of capital shortage.

The capital requirements of one industry differ from the other. An analysis across industries reveals that there exist differences among different industries on account of this problem. In urban areas, the percentage of firms facing the shortage of capital is the highest in basic metals industry (78.4 percent) followed by fabricated metals (63 percent), publishing and printing (60.1 percent), machinery and equipments (53.6 percent), food products (53.4 percent), other non-metallic minerals (51.6 percent), leather products (48.3 percent), other transport equipments (44.3 percent), other manufacturing (43.8 percent), wood products (43.5 percent), rubber products (43.5 percent), textiles (39.3 percent), dressing and wearing apparel (32.4 percent), electrical machinery (26.9 percent), chemical products (16.1 percent). In rural areas, all the industries manufacturing chemical products and basic metals reported the shortage of capital. Other industries reporting this problem are the rubber products (95.2 percent), fabricated metals (69 percent), machinery and equipments (65 percent), other manufacturing (59.2 percent), food products (58.8 percent), wood products (53.4 percent), dressing and wearing apparel (53.1 percent), electrical machinery (39.6 percent), other non-metallic minerals (37.8 percent), leather products (36.3 percent), publishing and printing (22.9 percent) and textiles (17.6 percent).

The NSSO data collected information on the non-recovery of service charges or fees. The incidence of this problem is very high in rural areas. Interestingly, it may be explained through the agrarian nature of rural economy where purchases are made generally on credit basis during lean periods and payments are generally made after harvest. The declining agricultural productivity[11] has weakened the backbone of the

rural economy and consequently, there have appeared cases of defaults in making payments. 27.4 percent of the units manufacturing wearing and dressing apparel in rural areas reported the non-recovery of debt. The manufacturers of machinery and equipment (26.7 percent) are another major group of units that reported the incidence of this problem. Other claimers of debts are enterprises manufacturing fabricated metals (11.7 percent), wood products (11.1 percent), food products (6.7 percent) and so on.

<div align="center">VI.</div>

Summary and Conclusions

The unorganised manufacturing sector continued to survive and thrive in an era of liberalisation mainly due to its direct or indirect linkages with organised sector units. Many Indian states have witnessed a spurt in unorganised manufacturing activity though at different pace during the 1990s. Punjab's unorganised industry has emerged distinctly among its counterparts in other major Indian states by recording a relatively high expansion in unorganised manufacturing activity. There has been a growth in both the number of units and the number of workers. This along, it also accounted for relatively high capital intensity. Such robust expansion in unorganised manufacturing activities provides a sound basis to raise various questions like how did Punjab's unorganised industry perform in terms of its growth during the 1990s? How efficiently it has utilised its factor inputs? Does there exist any constraint to its growth and survival?

In an effort to seek answer for these queries, we, in this paper, begin to delve into the growth profile of Punjab's unorganised industry by looking first at its size structure, followed by nature and growth of industrial activity and the factor use pattern. The analysis of the size structure reveals that these are the OAMEs, which dominate in terms of number of units and workers. The establishments (NDMEs and DMEs), on the other hand, dominate the structure of Punjab's unorganised industry in terms of output, gross value added and the usage of fixed capital. We also analysed this size structure across manufacturing units differing in terms of investment in plant and machinery. This investment-based classification provides an interesting explanation of the size structure. We found that the small units constitute a majority of the unorganised manufacturing units. These units provide employment to a large set of

people but do not contribute much in terms of output and gross value added. However, these units, in comparison to their large counterparts, contribute a relatively high proportion of the gross value added in their gross output! The next step in line has been to examine the inter-industry pattern of growth. We found that the textiles, food products and beverages, fabricated metals, other non-metallic minerals, manufacturing of other transport equipments especially the bicycle industry are some industry groups whose significance has grown in Punjab's unorganised manufacturing sector during the 1990s but the industry groups like the manufacturing of machinery and equipments have recorded a decline.

We also analysed the factor use pattern by analysing the labour mix, factor allocation and factor productivity. While analysing labour mix, we find that barring few industry groups like the manufacturing of textile products, leather products, other non-metallic minerals etc., the labour mix is highly dominated by male workers. Further, the hired workers constitute a significant proportion of total workers. We also analysed the degree of casualisation in Punjab's unorganised industry. We found it mainly as an urban phenomenon. While analysing the factor allocation pattern, we found that the technique of production has become more capital intensive with growth in the use of both fixed capital per unit and fixed capital per worker. The analysis of factor productivity reveals the inefficiencies of Punjab's unorganised industry. The level of labour productivity is quite high, which is essentially the result of capital-deepening process. In such situation, it was more desirable to examine the productivity of capital and unfortunately, the results are not very encouraging. The productivity of capital has remained very low. We also discuss, on the basis of NSSO's data, the major problems faced by Punjab's unorganised industry so as to reach at some possible policy proposals to end its plight.

The problems faced by small and tiny industrial units are interrelated. The most important among them is high capital intensity and the low capital productivity. Lower capital productivity can be caused by backward technology, lack of uninterrupted supply of electricity and inadequacy of skilled manpower. Technology upgradation for small and tiny units is a substantive problem, which needs immediate solutions. However, exogenous arrangements of technology are not only very costly because of the technological obsolescence but it requires continuous import of

technology. Therefore, technological development process needs to be endogenized and endogenous technological progress is very costly as well as beyond the reach of small units compared to their capacity. Thus, cooperative R&D can be a possible choice where state should play a fundamental role to establish innovation institutions but small units must also contribute and work in close cooperation with the R&D units to solve the technology related problems. The continuous upgradation of technology has a capacity to improve the quality of goods produced in the unorganised industries. Financial constraint acts as deterrent for the expansion of small industry because of bias of the banking and financial institutions against the small units. Smaller industrial units are left with the choice of meeting its needs through household savings. It has been generally held that smaller units, which are using household saving, do not have incentive to use capital more efficiently as well as do not expand business to increase the size of an enterprise. Therefore, the solution for using capital efficiently in small-scale units lies in providing institutional finance on priority basis, which will also enable to increase the size. Good infrastructure-uninterrupted electricity and skilled manpower- is the precondition of any economic activity to flourish and is the fundamental responsibility of the state. Punjab state is deficient in both. Therefore, these problems need to be tackled on priority basis to make small units more efficient so that it can compete in the increasing competitive environment. Another problem which needs the attention of the policy makers' is that of self employed workers working in the small and tiny units which do not generate sufficient surpluses either for the expansion of the enterprises or sufficient for decent living. Therefore, when the workers due to health problems or due to old age cannot work and earn the livelihood, then there is nothing to fall back upon. This brings in the issue of social security for the attention of the policy makers. Social security not only can solve the problems of old age, but will also allow the owners of small and tiny units to expand the size of the units as well as to think of retiring from active work in the old age and also in the case of ill health.

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[1] For more detailed information about earlier rounds, see Saluja (1988), Kulshreshta and Singh (2001).

[2] There are some industrial categories of the 51st round like the repair and maintenance of computers and computer based systems (NIC'87 code 3941), repair of office, computing and accounting machinery other than computers and computer based systems (NIC'87 code 3942), repair of heavy motor vehicles (NIC'87 code 398), repair of household electrical appliances (NIC'87 code 971), repair of TV, VCR, radio, transistor, tape recorder and other electronic appliances (NIC'87 code 972), repair of watches, clocks and jewellery (NIC'87 code 973), repair of motor vehicles and motor cycles except trucks, lorry and other heavy vehicles (NIC'87 code 974), repair of bicycles and cycle rickshaws (NIC'87 code 975), repair of footwear and other leather goods (NIC'87 code 970), repair enterprises not elsewhere classified (NIC'87 code 979), which are not collected under the manufacturing sector in the 56th round rather these are collected under wholesale and retail trade, repair of motor cycles and personal and household goods (NIC '98 code 5260; see CSO, 1998). So, we have excluded these industrial categories from the 51st Round for making this round comparable with the 56th round. The NIC 1998 includes all tailoring establishments in the manufacture of wearing apparel (NIC'98; code 18105) category. We've excluded this manufacturing activity from the 56th round to make it comparable with 51st round. This apart, in both these rounds, we reclassified some of the OAMEs (which were found to be reporting as employing hired labour) as NDMEs and DMEs as per the number of hired workers employed by them.

[3] The small-scale industry was protected from competition in 1967 through the reservation of 47 items for exclusive manufacturing by it. This list went up to 873 in 1984. Abid Hussain Committee (GOI, 1997), in order to make this industry competitive, recommended the dereservation of these items. Subsequently, the process of dereservation started and few items are dereseved almost every year like 15 items were dereserved in 1997-98 (GOI, 1997-98), 9 items related to leather, farm implements and tools along with electronic toys were dereserved in 1998-99 (GOI, 1998-99), dereservation of ready made garments in 2000-01 (GOI, 2000-01), deservation of 14 items related to leather goods, shoes and toys in 2001-02 (GOI, 2001-02), dereservation of 51 items in 2002-03 (GOI, 2002-03), dereservation of 75 items in 2003-04 (GOI, 2003-04) and dereservation of 85 items in 2004 (GOI, 2004-05).

[4] The degree of casualisation is defined in studies like Chadha and Sahu (2002); Bhaumik (2003) either as the ratio of casual workers to the regular workers or as the ratio of casual workers to the self-employed workers. These studies used the NSSO's Employment Unemployment data, which classifies workers as casual, regular and self-employed workers. Since, for our analysis, we are relying solely upon the data on unorganised manufacturing which does not classify workers as is done by the Employment-Unemployment Surveys, we attempt to capture this indicator of employment vulnerability in the unorganised industry by examining the degree to which hired workers get employed in comparison to other workers. The hired workers either full-time or part-time in this secondary data source are considered as those workers who are not hired continuously but on a 'fairly regular basis' (NSSO, 2002). It is to be noted that the worker is getting employment on a 'fairly regular basis' and not on a 'regular basis'. This implies that this term per se involves some elements of casualness.

[5] The total factor productivity (TFP) measures are used in literature to capture the overall efficiency of different factors of production. Kendrick's method (1961) and Solow's method (1957) are two widely used measures for measuring TFP. Here, because of data limitations, we cannot use these methods. The use of Kendrick's method, for example, needs returns to labour and capital. The available NSSO data does not provide this information for both rounds. It provides the value of interest in the 56th round, which can be taken as the proxy for return to capital. But, it does not provide any information on returns to labour for a large part of workforce in Punjab's unorganised industry, which is constituted by workers in OAMEs and family workers in establishments. Neither can we impute the returns to this segment of labour on the basis of some plausible assumptions as it'll affect the share of other factor inputs in total gross value added. Similarly, Solow's method is based on the Cobb-Douglas production function, which assumes the operation of constant returns to scale in the manufacturing process. Keeping into mind the functioning of unorganised industry, such assumption seems to be unrealistic.

[6] We used the state gross domestic product deflator (at 1993-94 prices) to deflate the nominal gross value added. The nominal value of fixed capital stock is deflated with the deflator of gross domestic capital formation at all-India level (at 1993-94 prices).

[7] During my first visit to Ludhiana during July-August, 2005, one DME owner, in an informal interview, told, *"we don't care for anything in case we find that the worker is not working or behaving properly. We simply put him off the job. This has an effect on other workers and they work without creating unnecessary troubles for us".*

[8] Though the NSSO data on unorganised manufacturing does not capture this aspect, it has been highlighted by other studies that the Punjab State Electricity Board (PSEB) supplies electricity to the commercial and industrial sectors at much high price than its actual cost of supply so as to cross-subsidise the free/cheap supply of electricity to the domestic and agricultural sectors. The PSEB's average cost recovery from commercial and industrial sectors remained as high as 149.67 percent and 118.13 percent respectively during 1999-2000 (Jain, 2003).

[9] The classification of units by either enterprise type or industry type with the experience of raw material problem reveals the following percentage of manufacturing units: Enterprise type [OAME (2.4 percent), NDME (2.1 percent), DME (2.0 percent)], Industry type [machinery and equipments (2.9 percent), textiles (3.2 percent), fabricated metals (2.1 percent), basic metals (4.1 percent) and so on].

[10] There are 6 degrees of freedom as we have classified the manufacturing units as per their investment in plant and machinery (K*) in seven categories.

[11] The studies like Singh and Singh (2002: 581) point out that the growth rate of the agricultural sector during the period 1991-98 has been only 2.16 percent per annum, which is much lower than that (5.15 percent) achieved by this sector in the 1980s. This study further claims that within the agricultural sector, it is the agriculture sector proper which recorded the growth rate of 0.37 percent during 1991-98 period – a much lower growth rate than that of 4.87 percent achieved by this sector in the 1980s.