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2004

Online at <http://mpra.ub.uni-muenchen.de/4859/>
MPRA Paper No. 4859, posted 12. September 2007

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Abstract

The study uses a disaggregated approach to look into Labour Productivity in the informal manufacturing sector in India over the last two decades, specially Trends in productivity levels and regional disparities, its regional pattern, and Factors affecting the productivity levels. Wide variation in productivity levels is observed. The Western and North-western states are found to be doing better. Regional disparities are higher for intermediate goods compared to others. However, converging tendencies are also perceived. General economic condition of the state and Availability of loan are identified as factors affecting productivity levels. Policies for improving productivity levels in this sector, specially in lagging regions, should include general economic upliftment, development of proper infrastructure, technological upgradation and easy and cheap credit availability.

PRODUCTIVITY IN THE INFORMAL MANUFACTURING SECTOR - REGIONAL PATTERNS AND POLICY ISSUES

The term informal sector is a newcomer in the jargon of economic literature and has gained wide recognition recently. The specific term 'Informal Sector' and the formal-informal dichotomy was first used by Keith Hart in his study on Ghana¹ in 1971. Since then, it has attracted significant attention in economic literature. Though there is no precise and standardized definition, this sector is conceptualised as one where entry by new enterprise is easy; where enterprises rely on indigenous resources and are family owned, operating on a small scale in unregulated and competitive market using labour intensive and adoptive technology; and where workers acquire their skill outside the formal training system. Researchers have used different operational definitions depending on their objectives, level of study and data availability to identify the informal sector. This concept thus covers a wide spectrum of activities and units with significant heterogeneity within it.

The role of the informal sector in shaping the economic profile of a region has been widely debated over. The substantial employment opportunities provided by the informal sector is perhaps its most salient feature. While the entry is easiest into the informal trade and service sector, substantial numbers of job-seekers take up informal manufacturing activities. These small manufacturing units usually tap local resources, use indigenous methods, cater to local demand and very often use personal network for marketing their products. More than two-third of manufacturing sector employment in India is provided by the informal sector². It has been observed that in the Post-liberalisation era, while Usual status employment rates have declined, that of Current status has moved up. This is a

clear indication of increase in volume of Part time and Casual workers, reflecting informalisation of the economy. A part of this can be attributed to the official launching of the Structural Adjustment Programme, whereby a number of households are forced to send more of their members to seek and create employment for themselves as part of their survival strategy. This has enhanced the significance of the informal manufacturing sector in the economy even further. This overwhelming presence of the informal manufacturing sector has its own heterogeneity regarding both extent & growth over time on one hand, and productivity on the other. There exists huge variation across states, activity groups, enterprise types, location and over time. This paper tries to explore different issues related to the Productivity levels exhibited by the informal manufacturing sector in India. The first section provides an outline of the methodological issues and data sources. Extent and growth of informal manufacturing sector in India are outlined in the next section. The subsequent sections deal with - Trends in Productivity levels; Trends in Regional disparities in Productivity levels; Regional pattern of Productivity levels; Factors affecting Productivity levels; and, Policy issues related to improving the productivity levels.

Data Sources and Methodology

One of the major concerns of researchers working on Informal sector is the heterogeneity and often the unreliability of the available data. Most comprehensive data on unorganised manufacturing sector in India has been made available by the National Sample Survey Organisation through its periodical Sample Survey Reports on OAMEs and NDMEs. This paper uses data available from the NSSO on the Unorganised Manufacturing Sector obtained from its surveys during 40th (1984-85), 45th (1989-90) and 51st (1994-95) rounds. The first two rounds were supplemented by similar database published by the CSO on Directory Manufacturing Establishments (DMEs). For the 51st round NSSO itself includes

DMEs as a part of the unorganised manufacturing sector. This provides us with a comprehensive database on the informal manufacturing sector. The data from the 55th Round Survey (1999-2000) could not be incorporated due to its definitional incomparability with the earlier rounds.

NSDPs were taken from CSO publication on State Domestic Products. Price indices for converting Current values into Real Values, and other variables were taken from the Statistical Abstract.

One of the major concern was to bring the value items - Output, Value Added, Capital, etc. of different time points to a common base to ensure comparability between them. A good deal of recent discussion [for a detailed discussion see Goldar and Mitra 1999] has been regarding the procedure to be adopted for correcting value items for price changes over time. The appropriate method seems to be 'double deflation procedure' where the output and material input for each industry are deflated separately by sub-sectoral deflators individually for each state. However, this could not be done due to two reasons - want of required data, and the procedural complicity involved. Consequently, the single deflation procedure has been used. The value items are deflated by the sub-sectoral Wholesale Price Index of All India with 1981-82 as base, i.e. with 1981-82 prices equal to 100, to obtain Real Values of Output, Value Added, and Capital. Even individual WPI series for each state could not be used due to their non-availability at the sub-sectoral level. This method assumes that the output price and material input price have increased at the same rate in all the states. This is a major compromise that could not be avoided due to reasons already mentioned.

The study is carried on at a disaggregated level of -

- (a) Regions (States),
- (b) Activity groups (2 digit NIC),
- (c) Types of enterprise (OAME, NDME, DME), and,

(d) Location (Rural and Urban Areas).

Extent and Growth of Informal Manufacturing Sector in India

A broad overview of the informal manufacturing sector in India over the last two decades suggests that it has grown in leaps and bounds. From a mere 85 lakh units providing jobs to 185 lakh people in 1978, it expanded to 145 lakh units providing employment to 332 lakh employees in 1994 (Table 1). This increase, however, has been neither smooth nor homogeneous. While the growth in employment and enterprise had been substantially positive during 1978-84, it became negative thereafter. This may have been due to some sort of 'shedding of extra flab', whereby inefficient and poorly performing units closed down. Also, in recent years, specially after economic liberalisation, many erstwhile manufacturing units were found to have outsourced their jobs to small household units and declared themselves as service sector units. On the other hand, many of the household units have remained outside the enumeration net or have underreported the employment therein. These factors may have caused the recent negative growth. This negative growth in recent years has not been all pervasive though. Both Rural and Urban DMEs during 1984-89 and urban segments of NDMEs and DMEs during 1989-94 expanded both in terms of employment and enterprise number. Moreover, in many of the states and activity groups, positive growth has been experienced in recent years.

The largest component within the informal sector has been the Rural OAMEs with over 95 Lakh units and 178 Lakh employees in 1994. Considering both rural and urban areas together the OAMEs provide jobs to more than 226 lakh people, followed by the DMEs with 57 lakh employees and the NDMEs with 49 lakh employees. In terms of Employment the largest employers are Uttar Pradesh (59 lakh employees), West Bengal (43 lakh employees) and Orissa (31 lakh employees). Highest numbers of people were engaged in Food Product sector (56

lakh) followed by Wood Products (54 lakh), Repair Services (36 lakh) and Textile Products (30 lakh).

The share of informal sector in total manufacturing sector employment³ has also grown from 70% during 1978 to 81% during 1994. Of this, 55% is accounted for by the OAMEs, 12% by the NDMEs and 14% by the DMEs (Table 2). The remaining 19% is provided by the factory sector. This share however varies from 56% in Haryana and 63% in Punjab to 96% in Orissa and 90% in Uttar Pradesh.

Table - 1
Enterprises and Employment in the Informal Manufacturing Sector in India 1978 - 1994

		ENTERPRISE NO.				EMPLOYMENT			
		O.A.M.E.	N.D.M.E.	D.M.E.	TOTAL	O.A.M.E.	N.D.M.E.	D.M.E.	TOTAL
1978	Rural	6228.2 (73.5)	*	*	*	10585.5 (58.2)	*	*	*
	Urban	1906.0 (22.5)	*	*	*	3790.3 (20.8)	*	*	*
	Total	8134.3 (96.0)	*	334.9 (4.0)	8469.2 (100.0)	14375.7 (79.0)	*	3813.5 (21.0)	18189.2 (100.0)
1984	Rural	13438.5 (68.1)	1025.2 (5.2)	179.2 (0.9)	14642.9 (74.3)	21912.5 (59.5)	2362.3 (6.4)	1993.8 (5.4)	26268.6 (71.3)
	Urban	3648.1 (18.5)	1133.6 (5.7)	295.7 (1.5)	5077.4 (25.7)	5315.2 (14.4)	2537.0 (6.9)	2704.6 (7.3)	10556.8 (28.7)
	Total	17086.7 (86.6)	2158.8 (10.9)	474.9 (2.4)	19720.4 (100.0)	27227.7 (73.9)	4899.3 (13.3)	4698.4 (12.8)	36825.3 (100.0)
1989	Rural	11281.7 (69.2)	737.7 (4.5)	224.0 (1.4)	12243.4 (75.1)	19530.9 (55.1)	2174.9 (6.1)	2752.0 (7.8)	24457.8 (68.9)
	Urban	2822.1 (17.3)	889.4 (5.5)	343.1 (2.1)	4054.6 (24.9)	4985.2 (14.1)	2937.4 (8.3)	3093.5 (8.7)	11016.1 (31.1)
	Total	14103.8 (86.5)	1627.2 (10.0)	567.1 (3.5)	16298.0 (100.0)	24516.2 (69.1)	5112.3 (14.4)	5845.5 (16.5)	35473.9 (100.0)
1994	Rural	9534.9 (65.7)	668.0 (4.6)	294.2 (2.0)	10497.1 (72.4)	17844.7 (53.7)	1828.9 (5.5)	2452.4 (7.4)	22126.0 (66.6)
	Urban	2714.8 (18.7)	932.0 (6.4)	360.2 (2.5)	4007.0 (27.6)	4817.3 (14.5)	3057.0 (9.2)	3202.5 (9.6)	11076.8 (33.4)
	Total	12249.7 (84.5)	1600.0 (11.0)	654.4 (4.5)	14504.1 (100.0)	22662.0 (68.3)	4885.9 (14.7)	5654.9 (17.0)	33202.8 (100.0)

- 1978 figures on OAME include those of NDMEs. For DMEs only Total figures without Rural-Urban break-up are available.
- Numbers in Thousands, Figures in parenthesis are Percentages to Total informal manufacturing employment. Percentage figures may not add up due to rounding off.
- *Source:* NSSO (1978), NSSO (1989), NSSO (1990), NSSO (1995), NSSO (1998), NSSO (1998a), CSO (1978), CSO (1979), CSO (1985), CSO (1985a), CSO (1990), CSO (1995), CSO (1995a).

Table 2
Share of Informal sector in Total Manufacturing Sector Employment and Output

Shares in Total Manufacturing Sector Employment					
	OAME	NDME	DME	All Informal	Factory
1984	62.2	11.2	10.7	84.2	15.9
1989	56.8	11.8	14.7	83.3	16.7
1994	54.9	11.9	13.7	80.5	19.5
Shares in Total Manufacturing Sector Output					
	OAME	NDME	DME	All Informal	Factory
1984	8.2	5.2	8.9	22.2	77.8
1989	5.9	4.4	10.2	20.5	79.5
1994	5	3.3	6.6	14.9	85.1

- *Source:* Author's calculations based on sources same as Table 1, and Statistical Abstract, CSO, Govt of India, Various Years.

The size of the informal sector in terms of Value Added (VA) and Output also increased over time. Measured at constant 1981-82 prices, the VA by the informal sector increased from Rs 4592 crores in 1978 to Rs 10969 crores in 1984, Rs 11085 in 1989 and further to Rs 12009 crores in 1994. Among the states, highest Value Added originated from Uttar Pradesh, followed by Maharashtra, Tamil Nadu, Gujarat and West Bengal, who among themselves accounted for about 60% of the total Value Added by the informal manufacturing sector during 1994. Historically too, these five states have been the highest contributors to Value Added. The share of informal sector in total manufacturing sector output increased from 14% in 1978 to 22% in 1984, but thereafter decreased to 20% in 1989, and 15% in 1994 (Table 2). In 1994, the shares varied from 8% in Haryana and 10% in Andhra Pradesh to 31% in West Bengal and 29% in Delhi.

A major feature of informal manufacturing sector in India has been the variation in the extent and growth across the states and activity groups. This signifies that the contribution of informal sector also varies substantially across regions and activity groups. Thus the role played by this sector in shaping economic profile of a region is also different across regions.

Productivity in the Informal Manufacturing Sector

It has often been accused that the informal sector is a low productive sector where returns are poor. The comment may be true for a part of the informal sector, but not for all. We now analyse Productivity trends in this sector using the conventional parameter of Labour Productivity, i.e. Value Added per Labour.

At an aggregate level, Labour productivity, measured in terms of Value Added per Labour per annum increased from Rs 2979 in 1984 to Rs 3125 in 1989 and Rs 3616 in 1994 (at constant 1981-82 prices). The labour productivity is higher in the Urban segment than the Rural segment, and highest in the DMEs followed by NDMEs and OAMEs in all the four years (Table 4 and Table 5).

The productivity level in 1994 varies from as low as Rs 779 in rural OAMEs of Orissa to Rs 16120 in the Urban DMEs of Haryana. Among industry groups the labour productivity is lowest in Rural OAMEs producing Natural Fibre Products (Rs 692) and highest in Rural DMEs producing Basic Metal Products.

It is also observed that few activity groups enjoy higher labour productivity than the others consistently. They are Food Products, Leather products, Basic Chemicals, Rubber & Plastic, Basic Metals and Machinery & Equipment sectors.

An inquiry into the marginal productivity levels measured by the elasticity of output with respect to labour revealed that increasing returns are obtained in 1994 for Tobacco and Beverages, Basic Metals and Transport Equipment sector where the elasticity is greater than unity. Similar results were obtained for OAMEs producing Wool & Silk Textile, NDMEs producing Natural Fibre Products, Leather Products, Electrical & Electronic Equipment, and DMEs producing Textile Products.

Table - 4 (a)
Value Added per Labour by the Informal Manufacturing Sector 1994
At Constant 1981-82 Prices (Rupees per Labour) by States

	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN

States	OAME	OAME	NDME	NDME	DME	DME
AndhraPr	1449	3221	4933	4834	3234	5744
Bihar	1913	4442	3034	5526	2444	5525
Delhi	6380	6215	4388	9062	3579	9694
Gujarat	2988	6050	5135	7099	7079	8256
Haryana	3746	7513	7097	10167	11412	16120
HimachalPr	2342	4970	3489	7444	3920	8147
Karnataka	1724	3447	3081	6592	1954	8402
Kerala	2162	2479	4883	6107	3900	6150
MadhyaPr	2005	3921	3982	11732	2229	12160
Maharashtra	2473	4866	4433	8816	3200	12346
Orissa	779	3157	3485	5459	3467	4689
Punjab	4025	7577	5993	7519	7424	10073
Rajasthan	3352	4759	5218	7216	10346	8240
Tamilnadu	2388	3148	4236	5596	5128	9796
UttarPr	1869	3642	3333	5454	5214	7008
WBengal	1617	3381	3666	5307	3791	6394
INDIA	1762	4119	3975	6943	4307	9288

- *Source:* Authors calculations based on sources same as Table 1

Table - 4 (b)
Value Added per Labour by the Informal Manufacturing Sector 1989
At Constant 1981-82 Prices (Rupees per Labour) by States

States	RURAL OAME	URBAN OAME	RURAL NDME	URBAN NDME	RURAL DME	URBAN DME
AndhraPr	1329	2165	3484	3847	1346	933
Bihar	2757	4336	3224	6576	3368	8937
Delhi	-	7641	-	10111	6369	10866
Gujarat	2952	5036	5615	16355	4164	3329
Haryana	2271	3866	4274	6059	3990	23347
HimachalPr	4857	5879	4684	8460	7827	22827
Karnataka	1594	2511	3551	5120	919	5730
Kerala	1470	1920	4629	6169	1915	7461
MadhyaPr	1586	3257	3228	5443	2554	6452
Maharashtra	1875	3673	4850	8715	10221	14650
Orissa	776	2236	3356	4227	1838	9070
Punjab	3408	5762	4319	7462	3875	10261
Rajasthan	2405	2956	1482	6194	8221	7986
Tamilnadu	1435	2076	2484	4564	4447	5086
UttarPr	1388	3276	3259	5789	2762	6862
WBengal	1641	2906	3579	4681	3054	8084
INDIA	1697	3194	3506	6647	3442	8134

- *Source:* Authors calculations based on sources same as Table 1

Table - 4 (c)
Value Added per Labour by the Informal Manufacturing Sector 1984
At Constant 1981-82 Prices (Rupees per Labour) by States

States	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN
	OAME	OAME	NDME	NDME	DME	DME
AndhraPr	1531	2306	3213	4191	12436	15915
Bihar	2578	3372	2372	6977	26025	23260
Delhi	8683	11766	6265	26420	55946	10371
Gujarat	3743	6208	4501	7355	52546	9052
Haryana	3339	4690	4119	23667	83087	202023
HimachalPr	2640	30744	4565	11026	not av.	not av.
Karnataka	1574	2981	2919	4487	6711	6526
Kerala	1694	6324	3025	7562	4259	4566
MadhyaPr	1954	2714	4520	9797	7296	2185
Maharashtra	1980	3865	4986	14265	35140	9916
Orissa	1025	1944	1851	3700	7897	5710
Punjab	3931	6944	3478	10791	135850	29364
Rajasthan	1805	3085	4311	4939	19519	9875
Tamilnadu	1246	1899	1579	4690	12626	5698
UttarPr	1183	3042	2233	5134	8978	11872
WBengal	1334	2530	2903	4723	18800	8714
INDIA	1579	3191	3280	8078	2885	8922

- *Source:* Authors calculations based on sources same as Table 1

Table - 5 (a)
Value added per Labour by Informal Manufacturing Sector 1994
At Constant 1981-82 prices (Rupees per Labour) - By Industry Groups

Industry Groups	RURAL	URBAN	RURAL	URBAN	RURAL	URBAN
	OAME	OAME	NDME	NDME	DME	DME
20-21	2149	4594	4102	6929	2896	8722
22	1096	1970	4334	3550	2741	3510
23	1403	1944	3518	6199	4549	7197
24	2351	3323	3604	8371	5806	8941
25	692	1203	1552	4981	1869	1900
26	1317	2732	2857	5930	4412	8652
27	1107	2180	2966	6181	2739	6377
28	1038	3139	3883	6124	2163	7690
29	2945	5312	5717	5597	6333	7648
30	1408	2212	5820	7166	5381	11870
31	1500	6252	7872	12883	13744	14025
32	1481	2478	3190	4707	4768	4746
33	1603	6577	4633	7425	18229	12602
34	2029	4204	4361	6510	4462	8163
35-36	2430	5869	5115	9009	8948	15479
37	3942	4975	4925	13475	7509	12224
38	1323	9310	6020	10723	8796	16701
39	3014	5765	3836	5817	7336	17954
97	3270	5419	3760	5524	5203	6646
All Industry	1762	4119	3975	6943	4307	9288

- *Source:* Authors calculations based on sources same as Table 1

Table - 5 (b)
Value added per Labour by Informal Manufacturing Sector 1989
At Constant 1981-82 prices (Rupees per Labour) - By Industry Groups

Industry Groups	RURAL OAME	URBAN OAME	RURAL NDME	URBAN NDME	RURAL DME	URBAN DME
20-21	2309	5345	3760	6867	2999	8811
22	1197	1164	2432	3518	903	4172
23	1328	1799	3411	6336	4759	4720
24	1622	2753	3103	11903	5087	10745
25	483	451	714	1907	881	3023
26	1539	2692	2878	5948	1851	8991
27	1627	3215	4607	6285	662	7994
28	957	1820	4206	5672	4453	9727
29	2215	3878	5770	4854	4035	4968
30	780	1479	6900	11850	13079	10900
31	2132	2613	8532	8911	8559	14087
32	1340	2219	2055	6530	2916	4536
33	2432	2786	3909	6942	89684	8754
34	1603	3902	3922	5347	7192	8126
35	1976	6011	5879	9943	11443	14927
36	3408	4570	6776	9118	14952	-2953
37	2520	3619	5248	7507	7182	14297
38	2243	5707	5575	10741	4857	12240
39	2595	4939	3707	5131	5487	7241
97	3108	4583	3075	4858	5808	5583
All Industry	1697	3194	3506	6647	3442	8134

• Source: Authors calculations based on sources same as Table 1

Table - 5 (c)
Value added per Labour by Informal Manufacturing Sector 1984
At Constant 1981-82 prices (Rupees per Labour) - By Industry Groups

Industry Groups	RURAL OAME	URBAN OAME	RURAL NDME	URBAN NDME	RURAL DME	URBAN DME
20-21	1478	4338	3773	8947	2231	10598
22	1474	1540	2204	4459	1646	7727
23	1042	1992	2124	8074	2646	4666
24	1587	1997	3626	4805	3822	10453
25	873	598	1402	1037	1534	5290
26	1641	2773	3017	4916	2459	6126
27	1812	2478	3906	6608	3602	7341
28	1048	2006	2946	7979	10413	7687
29	3640	4911	3757	6145	3928	11911
30	932	3478	3895	7260	7043	14987
31	1067	1290	5740	17745	6318	6607
32	1199	2970	1599	5255	2570	3075
33	1794	4057	5114	6563	12549	12020
34	2024	5205	3270	69591	6369	15419
35	4086	4961	4290	9557	5340	11832
36	4435	9397	3331	17289	6795	12410
37	4894	7605	3948	197781	5417	38933
38	1824	3902	3407	6231	3337	6985
39	2113	5574	3964	5592	5950	6210
All Industry	1579	3191	3280	8078	2885	8922

- *Source:* Authors calculations based on sources same as Table 1

It can thus be seen that over the years productivity in the informal sector has been increasing for almost all the enterprise types, only exception being the Urban DMEs and Urban NDMEs where the productivity level decreased during 1984-89 period but thereafter improved substantially and in 1994 overtook even the 1984 levels. This points to the fact that the enterprises are becoming more efficient. Moreover, it has been observed that in the earlier years expansion of employment occurred mostly in the activities where the productivity was low in almost all the regions. However, in the recent years, in few regions and few enterprise types, the trend has reversed and the high productive activity groups are showing higher expansion. This trend is more pronounced in case of DMEs. Whereas during 1984-89 only in Haryana a positive association was observed between productivity level and employment growth for the DMEs, during 1989-94 the high productive DMEs exhibited higher employment growth rate in Maharashtra, Rural Madhya Pradesh and in Urban areas of Andhra Pradesh, Gujarat, Kerala, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal. This may be due to the fact that after the economic reforms, market considerations started overtaking ad hoc responses and adjustments geared only towards survival. Under the new dispensations, State support got diluted and competition became more intense. Consequently, entrepreneurs became more discerning and started looking at productivity and prospective profitability before setting up units. This market orientation and efficiency orientation in the informal sector, specially in Urban DMEs in certain regions, is certainly a welcome fall out of economic reforms.

Regional Disparity in Productivity Levels

However, the most important factor that has to be noted is the variation in the productivity levels within the informal manufacturing sector across both

regions and activity groups, as also among the different types of enterprises. The Coefficient of Variation (CV) in Labour Productivity across states and across NIC groups has been substantial. Disparity across activity groups is quite normal and expected since the products themselves are different and follow different production functions and processes. But disparity across states is something that needs careful analysis. These productivity levels of different components of informal manufacturing sector, its regional variation, and the plausible factors affecting those productivity levels have been studied in the following sections.

Regional Variation in Productivity Levels

It has been observed that there exists substantial inter-regional differences in Labour Productivity in all the segments of the informal manufacturing sector. The differences, measured by Coefficient of Variation (CV) are as high as 500 - 600 % in some cases. The average level of CV is around 75%. On an average the differences are higher in DMEs compared to the OAMEs and NDMEs (Table 6).

Table 6 (a)

**Convergence-Divergence in Labour Productivity - σ Test
Coefficient of Variation (%) in Labour Productivity across States OAME**

NIC_CODE	Rural OAME			Urban OAME		
	1984	1989	1994	1984	1989	1994
20	83	72	52	156	39	28
21	89	60	57	149	106	60
22	43	56	41	138	104	104
23	41	46	147	88	103	55
24	97	78	51	120	88	69
25	92	105	67	78	178	82
26	65	70	56	57	42	45
27	62	54	73	90	44	39
28	83	81	113	61	50	45
29	57	48	65	52	71	58
30	78	132	151	101	83	113
31	87	124	141	107	62	288
32	67	42	26	203	45	31
33	77	175	98	84	67	92
34	64	90	56	71	115	30
35	51	67	67	80	71	52
36	96	143	81	85	114	55
37	54	131	38	121	101	60
38	99	73	101	64	37	38
39	50	52	52	88	27	48

All Industry	75	57	51	120	44	35
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- *Source:* Authors calculations based on sources same as Table 1

Table 6 (b)

Coefficient of Variation (%) in Labour Productivity across States NDME

NIC_CODE	Rural NDME			Urban NDME		
	1984	1989	1994	1984	1989	1994
20	183	46	86	121	111	32
21	103	79	77	165	103	54
22	77	130	134	70	104	35
23	222	120	87	84	58	49
24	80	117	36	231	123	51
25	145	198	169	124	177	124
26	48	268	118	45	40	34
27	44	73	31	52	28	60
28	137	89	42	63	26	35
29	74	100	77	52	49	48
30	138	95	82	66	68	78
31	207	157	40	55	52	192
32	335	187	116	196	75	45
33	80	149	62	72	63	31
34	123	68	23	138	36	24
35	77	61	49	84	79	72
36	89	115	95	119	51	44
37	93	95	37	314	57	51
38	134	90	37	55	54	41
39	49	41	61	43	27	24
All Industry	36	39	25	73	45	28

- *Source:* Authors calculations based on sources same as Table 1

Table 6 (c)

Coefficient of Variation in Labour Productivity across States DME

NIC_CODE	Total DME	Rural		Urban	
	1984	1989	1994	1989	1994
20	143	97	53	103	52
21	100	115	79	243	40
22	68	136	102	75	111
23	63	111	86	107	51
24	65	94	89	135	55
25	60	259	96	116	79
26	85	69	76	68	68
27	76	204	51	58	56
28	46	108	129	59	29
29	68	108	55	34	67
30	273	149	89	51	107
31	53	115	62	169	87
32	218	43	84	200	84
33	69	265	85	185	73
34	157	120	52	52	34
35	135	68	62	80	63
36	148	121	69	468	81
37	203	91	38	235	36
38	71	580	55	229	112
39	42	45	157	51	104

All Industry	112	64	57	65	35
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- *Source:* Authors calculations based on sources same as Table 1

However, such disparities are not similar across all product lines. Substantially high CV (and hence regional variation) is observed for Beverages; Natural Fibre and Textile products; Intermediate goods like Basic Chemicals, Rubber & Plastic, Basic Metals and Non-metallic Mineral products; Electrical & Non-electrical Equipment sector; and the Miscellaneous manufacturing products. Labour productivity levels for these activities are found to suffer from wide regional variation in all the three time points. Compared to this, low regional disparity is observed in case of Paper products, Metal products and Transport Equipment sector in all the three reference years. A part of this may be explained by the fact that performance of the intermediate goods sector depends crucially on the regional pattern of industrialisation.

Convergence - Divergence in Productivity Levels

Substantial Variation in the Productivity levels were observed across states for each industry group. So it was investigated whether this inter-state variation is increasing or decreasing.

To test Convergence or Divergence both σ and β tests were used. The σ test looked into the movement in CV over time. On the other hand in the β test, growth rate of Productivity was regressed on initial levels of productivity for each industry group with states as observations. A positive Regression Coefficient would indicate divergence and a negative one would indicate Convergence.

A. σ test: The σ test revealed that inter-state differences are decreasing over time for most of the activity groups with the magnitude of CV decreasing from 1984-85 levels to 1989-90, and from 1989-90 levels to 1994-95 (Table 6). However, increasing CV have been observed for Beverages, Leather Products and Basic Chemicals sector.

Table 7 (a)
Convergence-Divergence in Labour Productivity - β Test
Regression coefficient of Growth Rates on Base Year Levels 1989-94

Industry Group	OAE		NDME		DME	
	Rural	Urban	Rural	Urban	Rural	Urban
20	-0.0221	-0.0020	-0.0569	-0.0007	-0.0040	-0.0007
21	-0.0286	-0.0031	-0.0015	-0.0009	-0.0005	-0.0009
22	-0.0331	-0.0147	-0.0066	-0.0018	-0.0240	-0.0030
23	-0.1580	-0.0017	-0.0024	-0.0018	-0.0096	-0.0009
24	-0.0401	-0.0049	-0.0150	-0.0033	-0.0171	-0.0035
25	-0.0502	-0.0192	-0.1120	-0.0166	-0.0203	-0.0090
26	-0.0499	-0.0032	-0.0023	-0.0020	-0.0017	0.0012
27	-0.0534	-0.0023	-0.0269	-0.0023	-0.0155	-0.0127
28	-0.1230	-0.0074	-0.0301	-0.0011	0.0026	-0.0022
29	-0.0483	-0.0026	-0.0044	-0.0029	-0.0704	0.0049
30	-0.0756	-0.0054	-0.0125	-0.0020	-0.0019	-0.0056
31	-0.0058	-0.0037	-0.0035	0.0001	-0.0042	-0.0035
32	-0.0051	-0.0046	-0.0014	-0.0071	0.0019	-0.0005
33	-0.0127	-0.0040	-0.0259	-0.0011	-0.0006	-0.0009
34	-0.0182	-0.0228	-0.0029	-0.0027	-0.0116	-0.0033
35	-0.0398	-0.0193	-0.0203	-0.0122	0.0022	-0.0007
36	-0.0204	-0.0036	-0.0098	-0.0015	-0.0079	-0.0024
37	-0.0177	-0.0271	-0.0304	-0.0020	-0.0191	-0.0005
38	-0.0236	-0.0011	-0.0060	-0.0010	-0.0071	0.0000
39	-0.0467	-0.0014	-0.0307	-0.0015	-0.0040	-0.0028
97	-0.0855	-0.0016	-0.0821	-0.0012	-0.0106	-0.0009

- Source: Authors calculations based on sources same as Table 1

Table 7 (b)
Convergence-Divergence in Labour Productivity - β Test
Regression coefficient of Growth Rates on Base Year Levels 1984-89

Industry Group	OAE		NDME		DME
	Rural	Urban	Rural	Urban	Total
20	-0.0085	-0.0005	-0.0022	-0.0009	-0.0061
21	-0.0047	-0.0016	-0.0029	-0.0006	-0.0032
22	-0.0659	-0.0113	-0.0468	-0.0046	-0.0175
23	-0.0057	-0.0031	-0.0015	-0.0168	-0.0072
24	0.0018	-0.0174	-0.0010	-0.0011	-0.0059
25	-0.0145	0.0450	-0.0103	-0.0078	-0.0188
26	-0.0062	-0.0032	0.0055	-0.0021	-0.0060
27	-0.0020	-0.0020	-0.0054	-0.0017	-0.0113
28	-0.0292	-0.0323	-0.0023	-0.0017	-0.0090
29	-0.0041	-0.0015	-0.0047	-0.0018	-0.0006
30	-0.0272	-0.0145	-0.0247	-0.0013	-0.0006
31	-0.0730	-0.0093	0.0000	-0.0167	-0.0068
32	-0.0161	-0.0009	-0.0004	-0.0017	-0.0028
33	0.0023	-0.0131	-0.0164	-0.0012	-0.0069
34	0.0008	-0.0024	-0.0007	-0.0006	-0.0014
35	-0.0024	-0.0006	-0.0031	-0.0007	-0.0014
36	-0.0107	-0.0188	-0.0212	-0.0064	-0.0007
37	-0.0071	-0.0054	-0.0137	0.0000	-0.0001
38	-0.0077	-0.0028	-0.0038	-0.0050	-0.0067
39	-0.0144	-0.0021	-0.0141	-0.0027	-0.0290

- Source: Authors calculations based on sources same as Table 1

B. β test: It was found that for Labour Productivity, the regression coefficients were significantly negative for almost all activity groups during 1984-89 and during 1989-94 indicating a converging tendency. As exceptions, insignificant but positive coefficients were yielded by Rural OAMEs producing Wool & Silk Textile and Metal Products, during 1984-89, and Rural DMEs producing Paper products, and Urban DMEs producing Textile & Leather Products, during 1989-94.

Thus it can be concluded that labour productivity is converging across space over time and the regional disparities in productivity levels are decreasing. This indicates some sort of catching up by the lagging regions and slowing down of the advanced regions whereby the states are coming closer to each other in terms of Labour Productivity for most of the activity groups.

Regional Pattern of Productivity Levels

It has already been seen that there exists considerable regional variation in productivity levels. Though the overall trend has been that of convergence, the disparity is still substantially high. Moreover, for a few product groups the variation seems to be increasing over time. It was thus investigated whether such disparities follow any regional pattern.

The state-relatives of productivity levels were determined by dividing the state's productivity level for a particular activity group for a particular segment by the All India productivity level of that segment and product. The comparison of the state relatives revealed interesting pattern.

It was observed that the Western and North-western regions, i.e. the states of Gujarat, Haryana, Maharashtra, Punjab, Rajasthan and Delhi lead the productivity tables consistently in almost all product lines. It is to be noted that

these are the High income states in the Indian context (except Rajasthan) as measured by Per Capita NSDP being higher than National Average. This indicates that the comparatively better-off states are enjoying higher productivity levels. Among the Low income states, Bihar has higher than average productivity levels in Wood products and Paper products while Uttar Pradesh have higher than average productivity in Natural Fibre products. West Bengal has higher than average productivity level in Natural Fibre products consistently (Table 4).

Thus a regional pattern clearly emerges from the productivity trends in the informal manufacturing sector. There also seems to be a close correspondence between the productivity levels and the economic profile of the states. Thus the possible factors explaining such variation and pattern in productivity levels were sought to be analysed.

Factors affecting Productivity levels

While identifying the factors affecting productivity levels, it was observed that the states exhibiting higher than average productivity levels are the High Income states in Indian context. Thus it seems that the basic economic condition of a state has an effect in determining productivity levels. The link perhaps lies in the availability of greater amount of resources in these states leading to greater Capital availability to the units and better productivity. This hypothesis was sought to be tested with the available data, and was started from backwards. The association between Capital intensity (Capital Labour Ratio) and Capital per Enterprise on one hand and Labour Productivity levels on the other were examined (Table 8).

a) Capital Intensity and Productivity

It was observed that during 1994 the Correlation Coefficient between capital-labour ratio and labour productivity was significantly positive for almost all

industry groups for OAMEs, NDMEs and DMEs, barring a few exceptions where the association was negative, though insignificant. The Regression results of the productivity measures on Capital-Labour ratio yield similar results.

During 1989 and 1984 also, positive Correlation Coefficients, most of them significant, were obtained between Capital-Labour ratio on one hand and Value Added per unit of Labour on the other. Regression Analysis supported the above results.

This supports the hypothesis that higher Capital-Labour Ratio enables the Units to have higher productivity. It may be that higher Capital intensity leads to improved mechanisation and availability of adequate tools with the labourers, and consequently, higher productivity levels. Notable exceptions had been the Equipment sector where the association were negative till 1989 but has turned positive recently.

b) Capital per Enterprise and Productivity

The association between capital per enterprise and labour productivity was also enquired into. It was observed that for all activity groups the association was positive, and most of them were found to be significant, for 1984, 1989 and 1994. Only for a few exceptional cases the association was found to be negative but highly insignificant. Regression of Productivity levels on Capital availability yielded similar results.

Table 8 (a)
Correlation Coefficient between Labour Productivity and
(Fixed) Capital Labour Ratio & Capital per Enterprise 1994

Industry Group	(Fixed) Capital Labour Ratio						Capital per Enterprise					
	OAME		NDME		DME		OAME		NDME		DME	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
20	0.351	0.506*	0.916**	0.836**	0.760**	0.351	0.277	0.531*	0.910**	0.839**	0.746**	0.263
21	0.421	0.377	0.518*	0.255	0.487	0.138	0.123	0.126	0.362	0.379	0.383	-0.033
22	0.834**	0.923**	0.933**	0.190	0.954**	-0.016	0.666*	0.634*	0.913**	0.040	0.950**	0.086
23	0.709**	0.724**	0.908**	0.618*	0.338	0.047	0.764**	0.594*	0.895**	0.616*	0.227	0.031
24	-0.192	0.835**	-0.511	0.610*	0.753**	0.655*	0.167	0.623*	-0.471	0.680**	0.643*	0.785**
25	0.476	0.651*	0.033	-0.109	0.968**	0.493	0.702*	0.713*	0.933*	-0.051	0.930**	0.707
26	0.772**	0.726**	0.530*	0.120	0.623*	0.495	0.863**	0.765**	0.699**	0.168	0.792**	0.723**
27	0.984**	0.756**	0.640*	0.095	0.391	0.528*	0.947**	0.726**	0.548*	0.254	0.421	0.646**
28	0.173	0.631**	0.000	0.666**	0.986**	0.305	0.082	0.726**	0.024	0.645**	0.994**	0.323
29	0.101	0.481	0.544*	-0.363	0.504	0.714**	0.222	0.474	0.534*	-0.399	0.574	0.516
30	0.218	0.741**	0.235	0.273	0.228	0.439	0.240	0.721**	0.355	0.403	0.748**	0.455
31	0.891**	0.749**	0.270	0.503*	0.808**	-0.016	0.742**	0.672**	0.267	0.110	0.312	0.301
32	0.376	0.476	0.945**	0.669**	0.603*	0.147	0.271	0.444	0.824**	0.680**	0.417	0.134
33	0.918**	0.254	0.063	0.030	-0.146	-0.238	0.947**	-0.025	-0.051	0.170	0.475	-0.090
34	0.515*	0.478	0.524*	0.334	0.514	0.578*	0.650**	0.386	0.570*	0.365	0.495	0.550*
35	0.521*	0.695**	0.027	0.002	0.557	-0.038	0.509	0.628*	0.225	0.455	0.334	0.588*
36	0.339	0.077	0.390	0.217	0.290	0.535	0.412	0.206	0.690*	0.306	0.677*	0.397
37	-0.007	0.616*	0.740*	0.465	0.105	-0.212	-0.049	0.578*	0.874**	0.659*	0.082	-0.121
38	0.942**	0.810**	0.309	0.680**	0.380	0.754**	0.950**	0.680**	0.308	0.587*	0.503	0.588*
39	0.891**	0.530*	-0.284	0.459	0.847**	0.219	0.875**	0.547*	-0.203	0.516*	0.376	0.373
97	0.941**	0.887**	0.821**	0.679**	0.346	0.867**	0.938**	0.867**	0.746**	0.693**	0.340	0.838**

Table 8 (b)
Correlation Coefficient between Labour Productivity and
(Fixed) Capital Labour Ratio & Capital per Enterprise 1989

Industry Group	(Fixed) Capital Labour Ratio						Capital per Enterprise					
	OAME		NDME		DME		OAME		NDME		DME	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
20	0.572*	0.829**	0.829**	0.972**	0.279	0.244	0.593*	0.810**	0.491	0.971**	0.793**	0.496
21	0.129	0.834**	0.451	0.796**	0.627**	0.814**	0.152	0.964**	0.480	0.338	0.642**	0.767**
22	-0.222	0.643**	0.300	0.628**	0.859**	0.085	0.005	0.222	0.330	0.610*	0.924**	0.818**
23	0.550*	0.379	0.111	0.422	0.792**	0.827**	0.523*	0.724**	0.104	0.291	0.828**	0.831**
24	0.620*	0.529*	0.845**	0.302	0.183	0.212	0.568*	0.629**	0.914**	0.617*	-0.103	0.064
25	0.531*	0.473	0.767**	0.609*	0.956**	0.822**	0.446	0.530*	0.552*	0.536*	0.957**	0.313
26	0.760**	0.611*	0.884**	0.606*	0.036	-0.148	0.766**	0.589*	0.416	0.586*	-0.141	0.217
27	0.824**	0.818**	-0.318	0.870**	-0.163	0.133	0.833**	0.723**	-0.225	0.769**	0.215	0.265
28	0.703**	0.579*	0.866**	0.292	0.096	0.003	0.541*	0.517*	0.822**	0.300	0.197	0.202
29	0.698**	0.199	0.499*	0.559*	0.758**	-0.223	0.675**	0.253	0.255	-0.128	0.689**	-0.208
30	0.811**	0.767**	0.708**	0.472	0.301	0.277	0.678**	0.791**	0.650**	0.569*	0.521*	0.554*
31	0.395	0.821**	0.979**	0.153	0.431	0.188	0.494	0.766**	0.940**	-0.008	0.583*	0.159
32	0.605*	0.586*	0.974**	0.224	0.365	-0.030	0.609*	0.552*	0.971**	0.212	0.409	0.130
33	0.863**	0.754**	0.432	0.659**	0.304	0.988**	0.610*	0.749**	0.340	0.729**	0.644**	0.985**
34	0.809**	-0.372	0.712**	0.719**	0.059	0.500*	0.808**	0.104	0.632**	0.771**	0.046	0.592*
35	0.753**	0.568*	0.008	0.849**	0.677**	-0.151	0.720**	0.531*	0.032	0.831**	0.895**	0.103
36	0.536*	-0.019	0.417	0.624**	0.721**	0.099	0.157	0.014	0.364	0.728**	0.586*	-0.011
37	0.943**	0.839**	0.774**	0.587*	0.312	0.290	0.225	0.688**	0.862**	0.609*	0.397	0.131
38	0.726**	0.829**	0.287	0.784**	0.579*	-0.053	0.670**	0.876**	0.347	0.818**	0.475	0.001
39	0.373	0.591*	0.464	0.723**	0.643**	-0.143	0.335	0.650**	0.366	0.604*	0.704**	0.172
97	0.672**	0.926**	0.749**	0.455	0.230	0.197	-0.582*	0.912**	-0.057	0.487	0.212	0.191

Table 8 (c)
Correlation Coefficient between Labour Productivity and
(Fixed) Capital Labour Ratio & Capital per Enterprise 1984

Industry Group	(Fixed) Capital Labour Ratio					Capital per Enterprise				
	OAME		NDME		DME	OAME		NDME		DME
	Rural	Urban	Rural	Urban	Total	Rural	Urban	Rural	Urban	Total
20	0.335	-0.115	0.924**	0.124	-0.012	0.336	-0.129	-0.179	-0.059	0.245
21	0.509	0.722**	0.609*	-0.159	0.475	0.184	0.669**	0.460	-0.140	0.224
22	0.795**	0.235	0.601*	-0.052	-0.076	0.791**	0.500	0.344	0.041	0.668**
23	0.547*	0.010	0.085	0.070	0.580*	0.599*	-0.168	-0.060	0.119	0.706**
24	0.232	0.889**	0.930**	0.456	0.809**	0.282	0.779**	0.907**	0.942**	0.466
25	0.194	0.277	-0.348	0.914**	0.349	-0.052	-0.258	-0.429	0.210	0.215
26	-0.051	0.127	-0.150	-0.144	-0.167	-0.084	0.120	-0.177	-0.174	-0.074
27	0.449	0.044	0.027	0.644**	0.049	0.420	-0.026	-0.075	0.605*	-0.059
28	0.700**	0.566*	0.693**	0.223	0.184	0.621*	0.260	0.845**	0.029	0.285
29	0.126	-0.209	0.004	-0.052	-0.276	0.048	-0.216	-0.197	-0.076	0.219
30	0.544	0.780**	0.124	0.656**	0.054	0.565	0.748**	0.130	0.590*	-0.064
31	0.098	0.045	0.679*	0.017	0.501	0.259	-0.002	0.856**	0.041	0.744**
32	0.356	0.939**	0.117	0.200	0.380	0.205	0.723**	-0.078	0.008	0.255
33	0.496	0.481	-0.001	0.439	0.044	0.354	0.458	-0.003	0.228	-0.014
34	-0.131	0.505*	0.919**	0.173	-0.161	-0.157	0.427	0.003	-0.039	-0.132
35	0.461	0.474	0.571*	0.566*	0.002	0.455	0.461	0.645**	0.156	-0.022
36	0.541	0.100	0.741*	-0.214	0.947**	0.461	0.143	-0.015	-0.215	0.290
37	0.438	0.819**	0.862**	-0.109	0.172	0.288	0.770**	0.861**	-0.106	-0.101
38	-0.004	0.173	0.396	0.081	0.448	-0.042	-0.020	0.403	-0.284	0.734**
39	0.194	0.797**	-0.077	0.617*	0.631*	0.164	0.914**	-0.098	0.595*	0.410

Thus it can be concluded that Capital Use and Availability of Capital play a key role in determining the productivity levels of the units for almost all activity groups. Also, increase in Capital use and availability leads to significant rise in productivity levels.

It was therefore established that regional variation in productivity levels could be explained adequately by regional variation in Capital intensity and Capital availability of the units. Consequently, it was investigated which factors affect Capital availability of the informal units. Two likely factors were identified. On one hand, it has already been postulated that at the macro level, the economic condition of the region may affect capital availability. Also, at the Unit level, availability of loan was thought to be an important factor affecting Capital availability. Both of these issues were probed further.

Regional Variation in Capital Availability

In the earlier sections we suggested that the regional variation in productivity levels could have been caused by regional variation in Capital intensity and availability. So, it was investigated whether there is any regional pattern in Capital intensity and Capital availability. The association between both Capital Intensity and Capital per enterprise on one hand and economic condition of the state indicated by Per Capita NSDP of the states (PCNSDP) on the other, were looked into.

The association between PCNSDP and both Capital intensity and Capital per enterprise was found to be significantly positive for all enterprise types in 1994 when all activity groups were taken together (Table 9). When each of the activity groups was tested separately across states, then also the association was significantly positive for almost all the activity groups. During 1989 also similar results were obtained.

Table 9
Correlation Coefficient between PCNSDP and
Capital per Enterprise & Fixed Capital-Labour Ratio

	Fixed Capital-Labour Ratio						Capital per Enterprise					
	OAME		NDME		DME		OAME		NDME		DME	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1994	0.100	0.305**	0.318**	0.363**	0.325**	0.347**	0.129**	0.313**	0.309**	0.370**	0.220**	0.183**
1989	0.160**	0.242**	0.205**	0.166**	0.070	0.093	0.211**	0.241**	0.205**	0.327**	0.103	0.103
1984	0.119**	-0.031	-0.071	-0.054	0.041	b	0.100	-0.046	-0.086	-0.051	0.156**	b
1978	0.131*	0.158*	a	a	-0.001	a	0.204*	0.129	a	a	0.052	a
1994												
Low Income	-0.249**	-0.106	-0.075	-0.084	0.010	-0.200**	-0.200**	-0.183**	-0.095	-0.102	0.094	-0.134*
High Income	-0.055**	0.213*	0.070	0.292**	0.147	0.334**	-0.062**	0.201*	0.050	0.285**	0.153	0.285**

a 1978 OAME figures include those of NDMEs also. For DMEs only Total figures are available;

b For 1984 for the DMEs only Total figures are available

However, during 1984, contrasting results were obtained for NDMEs and urban OAMEs where the association was negative. Only for the DMEs and the

rural OAMEs the association were significantly positive. In fact for many of the activity groups of OAMEs and NDMEs also the relationship was negative.

However when the states were divided into low-income and high income groups according to their PCNSDP being lower or higher than national average, certain interesting results were obtained in 1994. In 1994, in case of urban OAMEs, urban NDMEs and urban DMEs the association between PCNSDP and both Capital intensity and Capital per enterprise were negative in low income states and significantly positive in High income states. Thus, the presence of a U-Shaped relationship between PCNSDP and capital intensity may be inferred for 1994. Starting from very low income states, as PCNSDP rises capital intensity initially falls, but as PCNSDP crosses a certain level (national average PCNSDP) and rises further, capital intensity rises. Thus the middle income states seem to be having lower Capital labour ratio and Capital per enterprise than either the High income or the Low income states. One possible explanation may be that in the high income states there are substantial resources and hence have higher capital intensity and availability. In the very low income states, resources are scanty but the incidence of informal manufacturing sector (both employment and enterprise number) is also relatively low. But in the middle income states, the capital availability is moderate, but there is overwhelming presence of informal sector. Hence, Capital intensity and availability in these states are substantially lower than not only the High income but also the Low income states.

This indicates that the general economic condition of a region crucially affects both Capital Use and Capital availability of the informal units of that region.

Unit level Variation in Capital Intensity

At the Unit level, availability of loan was thought to be an important factor affecting Capital availability. The association between Outstanding Loan per

Table 10 (b)
Correlation Coefficient between Outstanding Loan and Capital per Enterprise 1989

Industry Group	Working Capital						Fixed Capital					
	OAME		NDME		DME		OAME		NDME		DME	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
20	0.324	-0.294	0.888**	0.053	0.743**	0.865**	0.643**	-0.211	0.333	-0.074	0.994**	0.772**
21	0.210	-0.147	0.166	0.195	0.643**	0.852**	0.305	0.098	0.425	-0.358	0.389	0.689**
22	0.001	0.653**	0.934**	0.374	0.133	0.954**	-0.199	0.825**	0.211	0.707**	0.189	0.010
23	-0.097	-0.159	0.773**	0.931**	0.155	0.136	0.434	-0.339	0.255	0.261	0.717**	0.944**
24	-0.041	0.776**	0.065	0.502*	0.010	0.972**	0.324	0.897**	0.756**	0.193	0.216	0.849**
25	-0.112	0.971**	0.861**	0.102	-0.066	0.305	0.015	0.713**	0.331	0.141	-0.024	0.025
26	0.251	0.724**	0.390	0.114	0.305	0.766**	0.827**	0.247	0.173	-0.042	0.955**	0.866**
27	-0.038	0.813**	0.457	0.358	0.122	0.628**	-0.093	0.265	0.723**	0.425	0.159	0.310
28	0.298	0.291	-0.094	-0.083	0.596*	0.865**	0.478	0.410	0.357	-0.145	0.587*	0.001
29	0.411	0.329	0.311	0.147	-0.111	0.402	0.252	0.131	0.069	0.341	-0.036	0.794**
30	0.023	-0.247	0.268	0.671**	0.900**	0.766**	0.944**	-0.006	0.454	0.043	0.940**	0.841**
31	0.811**	-0.259	0.809**	0.432	0.309	0.978**	0.926**	-0.390	0.923**	0.453	0.952**	0.952**
32	0.089	0.040	-0.105	0.743**	0.423	0.957**	-0.230	-0.220	-0.134	0.754**	0.979**	0.858**
33	0.680**	0.625**	0.797**	0.663**	0.959**	0.968**	0.809**	0.021	0.232	0.251	0.188	0.954**
34	0.005	0.369	0.594*	-0.207	0.457	0.308	0.120	0.394	0.556*	-0.094	0.752**	0.958**
35	0.933**	0.060	0.765**	0.330	0.704**	0.580*	0.530*	0.001	0.782**	0.400	0.619*	0.619*
36	0.623**	-0.042	0.051	0.323	0.426	0.695**	0.888**	0.502*	0.045	0.418	0.862**	0.830**
37	0.125	-0.093	-0.122	0.599*	0.763**	0.990**	0.225	0.001	0.361	0.637**	0.809**	0.542*
38	0.148	-0.123	0.335	0.611*	0.322	0.793**	0.001	0.432	-0.065	0.009	0.703**	0.378
39	0.612*	-0.101	0.567*	-0.039	0.853**	0.748**	0.147	-0.072	0.260	0.147	0.753**	0.239
97	0.030	0.653**	-0.022	0.717**	0.644**	0.486	-0.277	0.146	0.207	0.194	0.786**	-0.019
All	-0.134	0.685**	0.805**	0.324	0.312	0.961**	-0.274	0.163	0.363	-0.054	0.761**	0.985**
Industry												

This supported the notion that at the micro level, units with higher loan availability do enjoy higher capital per enterprise. Since it has already been seen that higher capital use raises productivity, it can be pointed out that easier loan availability will enhance the productivity levels of the units.

It is sometimes argued that for small and medium units, the ownership of land affects productivity levels as it enhances credit worthiness. The association between Land Owned per enterprise and Outstanding Loan per enterprise was thus examined. No significant association (measured by linear correlation coefficient) was found to exist between these two variables at any point of time. This may be due to the reason that whether land is owned or not is a more important factor rather than the amount of land owned in determining credit worthiness. Such investigation could have been done using a dummy variable for

land ownership. But that requires Unit-level data which were unfortunately not available. This issue thus could not be probed further.

It is evident from the analysis that Loan availability to the Units and General Economic Condition of the region (indicated by Outstanding loan per enterprise and PCNSDP of the state, respectively) affects Capital use by the units. And since higher Capital use was found to enhance productivity level, the importance of loan availability and general economic condition of the state in determining productivity levels can be underlined. This is also supported by the fact that the relationship between productivity levels and both loan availability per enterprise and PCNSDP of the states were significantly positive. It is quite natural that better economic condition creates an optimistic atmosphere and provides favourable demand condition thereby encouraging the entrepreneurs to invest capital. The availability of loan on the other hand supplies the capital for investment. Thus the regional disparity in productivity levels can be explained substantially by regional variations in general economic environment. Policies for enhancement of productivity levels must take cognizance of this fact.

Policy Suggestions

The general impression regarding informal sector is that it has low productivity levels. Though it has been brought out in this paper that this allegation is not applicable to all segments and activities within this sector, this issue still needs to be taken care of. It would most certainly benefit both the entrepreneurs and the national economy if the productivity levels can be improved. It is also to be noted that after liberalization and opening up of the economy, there has been a demand spurt specially in the consumer non-durable sector. The informal sector, by virtue of its very nature has been in the best position to take advantage of this situation. In fact, the informal sector has an overwhelming

presence in this sector, both in terms of employment and value added. The only thing that is required is channelisation of this demand to the informal sector and improvement in their performance. Moreover, bridging the regional disparity in productivity levels should also be an objective of economic authorities.

Upgradation of productivity at the regional level depends crucially on adopted technology and capital use. Both capital labour ratio and capital per enterprise are found to be dependent on the general economic condition of the region and availability of resources. Thus the first major policy to be taken is to improve the macro-economic environment of the nation, specially those of the lagging states. These steps would include boosting the formal sector, specially the factory sector; providing better infrastructural facilities and taking up programmes for backward area development. These would improve the economic environment of the states providing resources for investment. Moreover, this would also improve the linkages between the formal and informal sectors specially those informal units producing intermediate goods.

The factor that would go a long way in improving productivity levels is that of improved technology. Economists have argued that the problems of low productivity in this sector can be mitigated substantially by improving technology employed herein. In this regard, one area that merits attention is that of availability of advanced technology for this sector. Any technological upgradation programme for this sector must keep in mind that this is predominantly a labour intensive sector and this is one of its basic characteristics. The upgradation process must not destabilise this character. So, the stress should not be on drastically changing the technology to a Capital intensive one, but on evolution of innovative and adaptive technology for this sector. This requires an active role by the research institutes, specially the Central Research Institutes, Industrial Training Institutes, Polytechnics, and the Regional Engineering Institutes. They

must innovate new techniques suitable for these units, train the workers and help them to upgrade the production process. These programmes should have two simultaneous sections. One of them may deal with transmitting sophisticated techniques to the informal sector so that they can strengthen their linkage with the factory sector and emerge as a complementary to it. The other should stress on using indigenous technology and resources in a more innovative and efficient manner. The focus should be to extend all kind of support to the sector so that they can use new techniques and mould the existing ones to yield better results.

Improved technology also generally involves a rise in Capital intensity. It has been a general experience that the informal sector suffers from capital scarcity and cannot accumulate enough internal resources to upgrade their production technique even if advanced technology is available for them. This situation is worsened by the fact of low credit availability to this sector. It is frequently observed that the financial institutions are not forthcoming in extending credit to the small and medium sized informal units, since they do not have any asset to serve as collateral. This mindset (and regulation) must be changed, and viability of a project and unit must be given more importance while sanctioning loans. Moreover, using the expertise available to them, the financial institutions must offer guidance to the entrepreneurs so as to make the projects viable. Certain indigenous solutions like creation of a Micro Credit system for the informal units will also help the situation. A common fund where entrepreneurs deposit small sums whenever possible and can borrow from it when needed, can be set up. The system may be such that for a sum of loan up to their accumulated saving they won't be charged any interest. But for loans in excess of that, they should be charged a moderate rate of interest. Such micro credit system using revolving fund is likely to solve the problem of capital availability to the micro enterprises to a great extent. This can be made more attractive by linking them to some insurance

schemes. Formation of Co-operatives among the entrepreneurs will also increase their collective bargaining power with the financial institutions.

Similarly, formation of Self Help Groups (SHG) can aid the viability of loan finance to small enterprises. It has been found, for example from the experience of Grameen Bank in Bangladesh and similar other experiments, that those taking loan feel much more conscious of their responsibility of returning loans when they are answerable to their fellow peers within the SHG since non-repayment of loans means loss of face among the peers. At the same time SHG can monitor the progress of projects of their clients in a much better way from close quarters and can also provide timely assistance. For these reasons loan recovery rate among the SHG tends to be much higher than in case of impersonal relationships with officials of financial institutions.

Apart from the apathy of the financial institutions, the factor that discourages credit off-take to the informal units has been the Cost of Credit. These units generally operate with very low profit margin and often find that the cost of credit is too high for them. Thus, the resultant rise in productivity and income must be greater than the cost of capital required for technological upgradation, so that the process becomes viable and sustainable. Hence, care must be taken to ensure that credit availability to them becomes cheap, hassle-free, and free from corruption.

Another way of solving the resource problem may be to encourage the informal manufacturing units to share their resources. It is often observed that various small units suffer from inability to purchase necessary implements while at the same time the existing capacity is not fully utilized. In such situations, neighbouring units engaged in the same operation may pool their resources together and share it among themselves.⁴ Once they start sharing machinery and implements it may lead to some sort of division of labour across units. While the

scale of operation may not be large enough to allow division of labour within a unit, such specialization across units must be encouraged. This will make the units interdependent among themselves and significant horizontal linkage within the informal manufacturing sector would be generated. This type of specialization may also facilitate technological innovation. Sharing of common premises, sheds, vehicles for transporting products to the market are some other steps towards solving the resource problem.

It is often observed that availability of cheap inputs may dilute the problem of resource crunch of the informal units by a large extent. In this regard they would be benefited substantially if they could purchase the scraps and by-products sold off by factories at floor rates. However the factories only entertain bulk purchase orders which are not feasible for the individual informal units. If these units can form a group among themselves, they will be in a position to undertake bulk purchases which they should share among themselves. Additionally, the government may stipulate that at least a part of the scraps and by-products should be earmarked for the small units under some quota system. These measures for solving the resource problem of the informal manufacturing sector can be effective only if there is an active participation of both the state and informal entrepreneurs in framing, designing and implementation of policies.

The formal institutions must also take a more active role by encouraging local informal sector suppliers to improve their performance and upgrade themselves by providing product specifications, quality control methods and transfer of technology. In-house training programmes for local entrepreneurs, apprenticeships, and greater partnership with local technical training institutes will go a long way in creating growth centres where a host of informal manufacturing units flourish under the leadership of one or more factories. While the latter are supplied with cheap, locally available and custom built inputs, the

former are assured of a ready market, making the system mutually beneficial and sustainable.

The informal manufacturing sector has tremendous potential, and if properly nurtured, can contribute substantially to the national economy. Economic reforms have opened up new vistas and posed new challenges for this sector. If properly nurtured through appropriate policies, this sector can contribute significantly to the national economy. Only a well targeted, whole hearted and co-ordinated approach is the need of the hour.

Endnotes

¹ Cited from Sethuraman, S. V. (1976)

² Informal Manufacturing Sector in India has been generally conceptualised as consisting of the following three segments

- i. Own Account Manufacturing Enterprises - manufacturing enterprises operating with no hired worker employed on a fairly regular basis;
- ii. Non-Directory Manufacturing Establishments - units employing less than 6 workers including household workers;
- iii. Directory Manufacturing Establishments - units employing 6 or more workers with at least 1 hired worker but not registered under the Factory Act.

³ Total Manufacturing Sector comprises of OAME, NDME, DME and the Factory sector in this study.

⁴ Resource pooling and Technological innovation have been successfully used by Kalpi Handloom Unit, UP.

References

CSO (1978) - Directory Manufacturing Establishments Survey, 1978-79 Summary Results for Central Sample, CSO, *Govt. of India*.

CSO (1979) - Annual Survey of Industries; Summary Results for Factory Sector 1978-79, CSO, *Govt. of India*.

CSO (1985) - Annual Survey of Industries; Summary Results for Factory Sector 1984-85, CSO, *Govt. of India*.

CSO (1985a) - Directory Manufacturing Establishments Survey, 1984-85 Summary Results, CSO, *Govt. of India*.

CSO (1990) - Annual Survey of Industries; Summary Results for Factory Sector 1989-90 CSO, *Govt. of India*.

CSO (1995) - Directory Manufacturing Establishments Survey, 1989-90 Summary Results, CSO, Govt. of India.

CSO (1995a) - Annual Survey of Industries; Summary Results for Factory Sector 1994-95, CSO, Govt. of India.

GOI - Estimates of State Domestic Product and Capital Formation, CSO, Govt. of India, Various Years

GOI - Statistical Abstract, CSO, Govt. of India, Various Years

Goldar, Biswanath and Arup Mitra (1999) - Productivity Growth in Informal Sector in India, Paper presented at the Workshop on Measurement of Productivity in India., July.

NSSO (1978) - Tables with Notes on Survey of Unorganised Manufacture: Non Directory Establishments and Own Account Enterprises, NSS 33rd Round (July 1978-June 1979) NSS Report No:

NSSO (1989) - Tables with Notes on Survey of Unorganised Manufacture: Non Directory Establishments and Own Account Enterprises, NSS 40th Round (July 1984-June 1985) NSS Report No : 363, NSSO, June, 1989.

NSSO (1990) - Processed Data on Survey of Unorganised Manufacture: Non directory Establishments and Own Account Enterprises, NSS 45th Round (July 1989-June 1990) on CD-ROM (CD 513)from NSSO.

NSSO (1995) - Tables With Notes on Survey of Unorganised Manufacture: Non directory Establishments and Own Account Enterprises, NSS 45th Round (July 1989-June 1990) NSS Report No: 396, NSSO, March, 1995

NSSO (1998) - Basic and Multiplier Data on Survey of Unorganised Manufacture:

Non directory Establishments and Own Account Enterprises, *NSS 51st Round (July 1994-June 1995)* on CD-ROM (CD 699 & 700) from NSSO.

NSSO (1998a) - Unorganised Manufacturing Sector in India : Its Size Employment

and Some Key Estimates, *NSS 51st Round (July 1994-June 1995) NSS Report no: 433*, NSSO, August, 1998.

Sethuraman, S.V. (1976) - The Urban Informal Sector: Concept, Measurement and

Policy, *International Labour Review*, Vol. 114.