Productivity in the Small Manufacturing Enterprises: Determinants and Policy Issues

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PRODUCTIVITY IN THE SMALL MANUFACTURING ENTERPRISES DETERMINANTS AND POLICY ISSUES

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The role of Micro and Small Enterprises (MSEs) in employment creation is widely acknowledged. But their contribution to national income is questioned because of their low productivity. The present paper tries to identify important determinants of productivity level in Small Manufacturing Enterprises (SMEs) and suggest appropriate policies for augmenting productivity levels therein. Factors like technology, access to resources and inputs, general macroeconomic atmosphere, etc. emerge as important determinants of productivity. A close association between productivity levels and emolument per worker is also observed. Policies for proper development of these enterprises should include technological upgradation, better access to land ownership and formal credit system, improvement of general economic condition of the states, ensuring remunerative wages and better working conditions etc. For best results, a targeted approach is recommended and for that Focus groups, both at National and State level, have been identified. A co-ordinated approach is the need of the hour.

I. INTRODUCTION

Socio-economic progress of a neo-independent developing country rests on the pillars of maximum income for maximum possible people. In this context the small scale sector, especially the micro and small enterprises (MSEs) have a vital role to play. Substantially large mass of people can be gainfully employed in these enterprises that are extremely heterogeneous in nature. In India too the MSEs have played a crucial role in creating jobs and expanding the penetration of market based economic activities. Transformation of the occupational structure has been possible due to spread of the MSEs to a large extent. However, with changing times, the contribution of this segment has been questioned on grounds of the returns from these enterprises. It is often alleged that the MSEs have acted as a sink where people having no alternative opportunities are deposited. Consequently, productivity levels are low (Oberai and Chadha, 2001, Unni et al, 2001, Shah, 2002). Thus, though their role in employment generation and reduction of poverty is widely acknowledged, it is often argued that their contribution to national income is not substantial. It is thereby suggested that unless productivity level in the MSEs can be raised considerably, the objectives behind encouraging this sector would remain unfulfilled. The present paper

tries to explore the role of technology and access to services in determining productivity levels in the MSEs. The importance of various factors in improving productivity levels, and segments within MSEs where such policies are likely to be most successful, are also sought to be identified.

There has been various ways by which small enterprises in India have been defined – in terms of their investment volume, registration status and employment size. We use the employment size criterion and concentrate on the unorganised manufacturing sector[1]. Thus, the focus is on the small manufacturing enterprises (SMEs) within the MSEs. Similarly, there can be multiple definitions regarding technology. In the present study technology is defined simply by the capital-labour ratio because of its conceptual simplicity and availability of comparable data. The reference period chosen for the study is the period 1994-95 to 2000-01, as determined by the two latest NSSO surveys on Unorganised Manufacturing Sector (the 51st and 56th Round Surveys). The study is carried on at the disaggregated level of 2-digit National Industrial Classification.

The paper consists of five sections. The next section discusses the broad trends in productivity levels in the SMEs over the years. The third section discusses the various plausible factors affecting the productivity levels. The relationship between productivity levels and wages are explored in the fourth section. The final section discusses certain policies suggested for improvement of productivity levels in the SMEs.

II.   TRENDS IN PRODUCTIVITY LEVELS

At an aggregate level, Labour productivity, measured in terms of the conventional parameter of Value Added per Labour per annum increased from Rs 2979 in 1984 to Rs 3125 in 1989, Rs 3616 in 1994 and to Rs 4402 in 2000 (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 1 and Table 2). It can be seen that over the years labour productivity level in the SMEs 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. The rising trend is followed during the 1994-2000 period also, and during this period labour productivity has increased for all the segments except urban OAMEs where it has decreased marginally.

Table 1
Employment, Value Added and Labour Productivity in SMEs in India – 1984 - 2000

		Employment (in thousands)			Value Added (in '00 Million Rs)			Labour Productivity VA per Worker (in Rs)		
		Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
1984	OAME	21912.5	5315.2	27227.7	346.1	169.6	515.7	1579	3190	1894
	NDME	2362.3	2537.0	4899.3	77.5	204.9	282.4	3280	8078	5764
	DME	1993.8	2704.6	4698.4	57.5	241.3	298.8	2885	8922	6360
	Total	26268.6	10556.8	36825.3	481.1	615.8	1096.9	1832	5833	2979
1989	OAME	19530.9	4985.2	24516.2	331.4	159.3	490.7	1697	3194	2001
	NDME	2174.9	2937.4	5112.3	76.3	195.3	271.5	3506	6647	5311
	DME	2752.0	3093.5	5845.5	94.7	251.6	346.4	3441	8134	5925
	Total	24457.8	11016.1	35473.9	502.4	606.1	1108.6	2054	5502	3125
1994	OAME	17844.7	4817.3	22662.0	314.5	198.4	512.9	1762	4119	2263
	NDME	1828.9	3057.0	4885.9	72.7	212.2	284.9	3975	6943	5832
	DME	2452.4	3202.5	5654.9	105.6	297.4	403.1	4306	9288	7128
	Total	22126.0	11076.8	33202.8	492.8	708.1	1200.9	2227	6393	3617
2000	OAME	19147.2	5914.0	25061.2	455.9	234.1	689.9	2381	3958	2753
	NDME	1932.9	3628.8	5561.7	100.1	308.2	408.3	5180	8494	7342
	DME	2905.7	3552.2	6457.9	167.1	366.6	533.8	5751	10321	8265
	Total	23985.8	13095.0	37080.8	723.2	908.9	1632.3	3015	6941	4402

Note: Value Added is at Constant 1981-82 prices.
Source: Author's calculations based on data from CSO (1985, 1995), NSSO (1989, 1990, 1995, 1998, 1998a, 2002, 2002a).

There is substantial variation across region and activity groups regarding labour productivity levels. While highest productivity is exhibited by the Machinery-Equipment sector, lowest productivity is exhibited by the Tobacco-Beverage sector. At the regional level, the northern states of Delhi, Punjab, Haryana and Himachal Pradesh top the list of labour productivity, whereas the eastern and central states of Orissa, Bihar, West Bengal, Uttar Pradesh, and Madhya Pradesh lag behind.

Table 2
Labour Productivity (Value added per Worker) in SMEs by Industry Groups – 2001 (Rs)

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products	2751	4636	4348	7099	3666	9137	3044	6287	3840
Tobacco-Beverages	1121	1282	2838	4753	2006	6316	1224	1585	1296
Textiles	1516	2322	3378	7155	4329	7513	2056	5145	3318
Textile Products	4412	6378	7286	12671	8935	15248	4979	10179	7230
Wood Pr & Furniture	995	2127	2825	3751	4142	4396	1144	3093	1498
Paper Pr & Printing	2805	2664	4646	6838	6892	8755	3700	6395	5959
Leather Products	3585	4813	6285	7394	5992	10573	3962	7562	6357
Basic Chemicals	2054	1982	7840	11271	4838	16945	3773	7852	5668
Rubber & Plastic	2875	5567	11189	12608	11994	17854	8484	13837	12223
Non-metallic Pr	2081	2944	6980	10486	6926	7750	4288	6093	4576
Basic Metals	3522	6692	3853	8708	27982	13304	12382	10001	10785
Metal Products	2843	5392	7000	8554	8057	10077	3877	8221	6369
Machinery	3844	8635	6879	13140	12442	17113	5536	14684	12266
Transport Equipment	4950	7712	6618	13657	23359	15477	11575	14257	13876
Miscellaneous	4552	8827	8956	14250	9609	15509	5709	11876	9631
Manufacture n.e.c.	2065	4121	3974	8699	3885	8569	2985	6996	5956
All Activities	2381	3958	5180	8494	5751	10321	3015	6941	4402

Note: Value Added per Worker is in Rupees per worker at Constant 1981-82 prices.
Source: Same as Table 1.

III.   FACTORS AFFECTING PRODUCTIVITY

1.   Technology

i)   Technology and Labour Productivity

It is generally argued that technology plays an important role in determining the productivity level. Consequently, the association between capital-labour ratio and labour productivity has been explored for each of the activity groups separately with the states as observations. It is found that for almost all activities the association is significantly positive (Table 3). Even then, substantially high correlation coefficients are obtained for Food product, Tobacco-Beverage, Textile product, Wood product, Paper product, Basic chemical, Rubber & plastic, Metal product and Electrical & Non-electrical equipment sectors. This signifies that the level of technology employed determines the labour productivity level in the SMEs.

Table 3
Correlation Coefficients between Labour Productivity and Technology

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products	0.90**	0.93**	0.92**	0.77**	0.94**	0.80**	0.92**	0.94**	0.95**
Tobacco-Beverages	0.76**	0.75**	0.94**	0.71**	0.18	0.86**	0.96**	0.99**	0.99**
Textiles	0.63**	0.53*	0.94**	0.47	0.87**	0.62*	0.82**	0.59*	0.53*
Textile Products	0.94**	0.90**	0.82**	0.73**	0.39	0.71**	0.95**	0.92**	0.96**
Wood Pr & Furniture	0.92**	0.79**	0.91**	0.74**	0.63**	0.19	0.98**	0.77**	0.94**
Paper Pr & Printing	0.60*	0.68**	0.80**	0.74**	0.60*	0.92**	0.92**	0.89**	0.94**
Leather Products	0.54*	0.65**	0.46	0.56*	0.81**	0.53*	0.76**	0.38	0.57*
Basic Chemicals		0.76**	0.69**	0.43	0.89**	0.57*	0.96**	0.77**	0.80**
Rubber & Plastic	0.93**	0.67**	0.58*	0.79**	0.78**	0.80**	0.50	0.80**	0.88**
Non-metallic Pr	0.75**	0.50*	0.95**		0.80**	0.41	0.69**	0.39	0.56*
Basic Metals	0.85**	0.39	0.88**	0.61*	0.29	0.80**	0.51*	0.70**	0.45
Metal Products	0.77**	0.83**	0.81**	0.80**	0.07	0.85**	0.91**	0.90**	0.95**
Machinery	0.66**	0.68**	0.72**	0.60*	0.76**	0.63**	0.90**	0.64**	0.85**
Transport Equipment	0.43	0.83**	0.83**	0.57*		0.54*	0.22	0.59*	0.25
Miscellaneous	0.61*	0.91**	0.52*	0.78**	0.52*	0.47	0.89**	0.89**	0.92**
Manufacture n.e.c.	0.34	0.63**	0.75**	0.51*	0.98**	0.52*	0.69**	0.50*	0.61*
All Activities	0.97**	0.97**	0.85**	0.81**	0.82**	0.90**	0.95**	0.94**	0.97**

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported
Source: Same as Table 1.

ii)   Improvements in Technology and Labour Productivity Levels

The close association between base level productivity and technology prompt us to examine the dynamic aspect of it. Consequently we examined the relationship between growth in capital-labour ratio and growth in labour productivity[2]. It is observed that the association is positive for almost all activity groups (Table 4). Among them, the coefficients are significant for Tobacco-Beverage and Transport equipment sectors for all the three segments in both rural and urban areas; for Textile product, Leather product, Basic chemical, Rubber & plastic, Non-metallic mineral product and Basic metal sectors in the rural areas; and the Machinery-Equipment

sector in the urban areas. Thus it is evident that improvement in technology has gone hand in hand with rise in labour productivity level, thereby underlining the importance of technology as a determinant of productivity.

Table 4
Correlation Coefficients between growth in Labour Productivity and Technological Upgradation

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products	0.22	0.13	0.96**	0.59*	0.99**	0.58*	0.35	0.56*	0.65**
Tobacco-Beverages	0.93**	0.99**	0.95**	0.99**	0.88**	0.98**	0.86**	1.00**	0.99**
Textiles	0.94**	0.26	1.00**	0.20	0.91**	0.92**	0.97**	0.27	0.22
Textile Products	0.59*	0.56*	0.58*	0.04	0.93**	0.99**	0.69**	0.51*	0.68**
Wood Pr & Furniture	0.12	0.35	1.00**	0.17	0.82**	0.31	0.53*	0.51*	0.59*
Paper Pr & Printing	0.94**	0.83**	1.00**	0.58*	0.99**	0.38	0.53*	0.32	0.47
Leather Products	0.90**	0.48	0.92**	0.85**	0.97**	0.99**	-0.146	0.34	0.57*
Basic Chemicals	0.64**	0.99**	0.96**	0.24	0.82**	0.40	0.07	0.72**	0.50*
Rubber & Plastic	0.99**	0.49	0.98**	0.46	0.99**	0.63**	0.99**	0.14	0.26
Non-metallic Pr	0.99**	0.53*	0.83**	0.67**	0.92**	0.92**	0.77**	0.48	0.56*
Basic Metals	0.98**	0.63**	0.99**	0.99**	0.88**	0.01	0.81**	0.99**	0.99**
Metal Products	0.24	0.55*	0.99**		0.98**	0.42		0.52*	0.21
Machinery	0.23	0.77**	0.61*	1.00**	0.98**	1.00**	0.35	0.52*	0.80**
Transport Equipment	0.95**	0.98**	0.95**	0.99**	0.88**	0.96**	0.91**	0.97**	0.98**
Miscellaneous	0.70**	0.82**	0.92**	0.01	0.97**	0.99**	0.71**	0.76**	0.93**
Manufacture n.e.c.	0.90**	0.99**	0.97**	0.98**	0.99**	0.98**	0.93**	0.98**	0.98**
All Activities	0.60*	0.82**	0.52*	-0.03	0.59*	0.41	0.48	0.55*	0.56*

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported
Source: Same as Table 1.

iii)   Technology and Total Factor Productivity

The relationship between capital-labour ratio and partial productivity levels are sometimes questioned on grounds of factor substitution effect. It is argued that mere substitution of one factor by another will lead to changes in partial productivity levels and a 'capital deepening' technological change will cause rising labour productivity and declining capital productivity. Under such circumstances, productivity levels are sought to be measured by total factor productivity (TFP). It measures the overall efficiency of the production process and Growth in TFP (TFPG) indicates an improvement in factor use[3]. The association between improvement in capital-labour ratio and TFPG would indicate the effect of improved technology on production efficiency. It is observed that significantly positive association between these two exists for various activity groups (Table 5). They include Tobacco-Beverage for urban OAMES; Wood products, Basic chemicals, Basic metals and Metal products for rural NDMEs; Basic metals, Electrical and Non-Electrical equipment for urban NDMEs; Food product, Tobacco-Beverage, Textile products, Basic metal, and Metal product sectors for rural DMEs; and Textile product, Leather product, and Transport equipment sectors for urban DMEs.

Table 5
Correlation Coefficients between TFPG and Technological Upgradation

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products					0.94**				
Tobacco-Beverages		0.82**			0.78**	0.56*			0.32
Textiles					0.10		0.05		
Textile Products					0.83**	0.99**			
Wood Pr & Furniture			0.98**						
Paper Pr & Printing				0.02	0.44				
Leather Products					0.62*	0.97**			
Basic Chemicals			0.86**					0.05	
Rubber & Plastic				0.02					
Non-metallic Pr			0.21		0.05	0.11			
Basic Metals			0.66**	0.63**	0.71**			0.51*	0.57*
Metal Products			0.70**		0.92**				
Machinery				0.78**	0.61*				
Transport Equipment	0.11				0.54*	0.67**	0.44	0.41	0.97**
Miscellaneous					0.57*	0.73**		0.12	
Manufacture n.e.c.			0.15	0.15		0.33		0.03	
All Activities									

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported

Source: Same as Table 1.

It can thus be argued that there are segments within the SMEs where improvements in technology leads to more than proportionate improvements in output and hence a rise in TFP. These segments are likely to have tremendous potential for improvement if nurtured properly.

It may be noted that TFPG for the SMEs envelope effects of various factors. The SMEs use indigenous resources and technology, and innovation plays a substantial role in their choice of technology. With their limited resource, they use *'trial and error'* method to hit upon the most appropriate technique that suits their individual purpose. This adaptation process is perhaps the most salient feature of the SMEs. Against this backdrop, the close association between technological upgradation and TFPG assumes greater significance as the former can then be said to bring in a comprehensive improvement in the production system itself of the SMEs.

2. Access to Services and Inputs

One of the major determinants of productivity levels for the SMEs are their ability to access inputs and services easily and economically. Even within this, access to financial resources and land for operation seems to be more important.

i) Availability of Financial Resources

Ability of the units in arranging for credit provides them with necessary working capital for their operation. Consequently, they are able to reap the benefits of 'economies of scale.' It is observed that the association between labour productivity and outstanding loan per enterprise is significantly positive for almost all activity groups and segments of SMEs (Table 6). Predictably, the association is stronger for

the relatively larger units within the SMEs compared to the smaller ones because of their larger scale of operation. Significant association is exhibited by Wood products in both rural and urban areas; larger units producing Food Products in the rural areas; larger units producing Basic Chemicals, Transport Equipment, along with smaller units producing Electrical and Non-electrical Equipment in the urban areas.

Table 6
Correlation Coefficients between Labour Productivity and Loan per Enterprise

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products	0.10		0.67**		0.89**	0.74**	0.49		0.25
Tobacco-Beverages	0.31		0.21	0.68**	0.31		0.96**	0.27	0.41
Textiles	0.33	0.06	0.16	0.21	0.46	0.41	0.41	0.71**	0.67**
Textile Products				0.17		0.21		0.79**	0.74**
Wood Pr & Furniture	0.78**		0.56*	0.54*	0.51*	0.75**	0.47	0.59*	0.41
Paper Pr & Printing	0.02	0.12	0.33	0.16	0.38		0.47	0.27	0.37
Leather Products	0.45		0.46	0.23	0.64**	0.39	0.10	0.53*	0.61*
Basic Chemicals			0.10	0.63**		0.57*	0.05	0.65**	
Rubber & Plastic	0.29	0.45	0.62*	0.24	0.46	0.84**	0.25	0.72**	0.72**
Non-metallic Pr					0.93**	0.63**	0.48	0.45	0.44
Basic Metals	0.13		0.48	0.58*	0.97**	0.67**	0.93**	0.49	0.77**
Metal Products	0.09		0.48	0.34		0.39	0.21	0.53*	0.62*
Machinery	0.37	0.62*	0.66**	0.80**	0.27	0.30	0.43	0.46	0.75**
Transport Equipment	0.18		0.37	0.54*		0.56*	0.68**	0.53*	0.23
Miscellaneous Manufacture n.e.c.	0.57*								
All Activities	0.35	0.12	0.58*	0.44	0.56*	0.59*	0.19	0.80**	0.37

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported

Source: Same as Table 1.

ii)   Ownership of Land

Ownership of land provides the SMEs with both operational advantages and a security for emergencies. They also serve as collateral for credit off-take. Units without any land of their own, especially those established on unauthorised land, are constantly in a fear of eviction. As a result, they cannot pile up any reasonable stock of raw materials or finished products, cannot ask for electrical or telephone connections, and therefore cannot bring about desired improvements in scale or technique of production. It is thus natural that they will not be able to reach the desired efficiency levels. The association between ownership of land and productivity levels are observed to be positive for the SMEs confirming this notion (Table 7). The coefficients are significant and substantial in magnitude for Food product, Tobacco-Beverage, and Wood product sectors, along with urban units producing Textile products, Metal products, and rural units producing Textiles.

Table 7
Correlation Coefficients between Labour Productivity and Land per Enterprise

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products	0.85**	0.89**	0.76**	0.61*	0.54*	0.75**	0.72**	0.87**	0.93**
Tobacco-Beverages	0.28	0.86**	0.91**	0.60*	0.38	0.88**	0.96**	0.85**	0.86**
Textiles	0.60*	0.47	0.83**	0.45	0.73**	0.81**	0.80**	0.91**	0.96**
Textile Products	0.67**	0.83**	0.49	0.83**	0.23	0.57*	0.39	0.88**	0.92**
Wood Pr & Furniture	0.94**	0.89**	0.62*	0.58*	0.69**		0.86**	0.73**	0.94**
Paper Pr & Printing	0.87**	0.55*	0.42	0.70**	0.41	0.27	0.60*	0.62*	0.73**
Leather Products	0.49		0.35	0.34	0.42	0.35		0.24	0.46
Basic Chemicals	0.22	0.29	0.67**	0.32	0.80**	0.41	0.90**	0.62*	0.30
Rubber & Plastic	0.77**	0.46	0.60*		0.37		0.43	0.68**	0.75**
Non-metallic Pr	0.63**	0.33	0.95**		0.19	0.40		0.52*	
Basic Metals	0.75**	0.36	0.78**	0.57*	0.20	0.59*	0.25	0.68**	0.37
Metal Products	0.60*	0.71**	0.33	0.61*		0.58*	0.93**	0.73**	0.81**
Machinery		0.46	0.79**	0.49	0.29	0.35		0.49	0.53*
Transport Equipment	0.49	0.67**	0.74**	0.41		0.57*	0.26	0.43	0.10
Miscellaneous		0.83**	0.45	0.63**	0.31	0.42	0.78**	0.76**	0.83**
Manufacture n.e.c.		0.23	0.85**		0.87**		0.80**		0.35
All Activities	0.92**	0.90**	0.43	0.75**	0.57*	0.74**	0.72**	0.85**	0.90**

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported

Source: Same as Table 1.

Thus it is evident that ownership of land and access to loans play an important role in determining the productivity level in the SMEs.

3. Structural Factors

Apart from unit level factors, the general structure of the economy also plays a major role in determining efficiency level of the SMEs. The development level of the regional economy (as indicated by the Per Capita Net State Domestic Product – PCNSDP of the states), and inducement to Small Scale Industries (as indicated by Bank Credit to SSIs) may serve as important indicators of structural factors affecting SMEs.

It is observed that in most of the cases, productivity levels of the SMEs are positively associated with PCNSDP of the states (Table 8). The association is particularly strong for Textile product sector in both rural and urban areas. In addition to this, Textiles, Basic Chemicals, Metal Products along with smaller units producing Paper products in the urban areas, and smaller units producing Food Products in the rural areas also exhibit such strong positive association.

The association between productivity levels and Bank Credit to SSIs are also positive in most of the cases (Table 9). The correlation is found to be significantly positive for Chemical Product, Paper Product, Tobacco-Beverage and Machinery-Equipment sectors.

Table 8
Correlation Coefficients between Labour Productivity and PCNSDP of the State

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products	0.82**	0.74**		0.62*	0.11	0.21	0.62*	0.78**	0.86**
Tobacco-Beverages		0.09	0.17					0.41	0.41
Textiles		0.68**		0.12		0.60*		0.53*	0.59*
Textile Products	0.80**	0.68**	0.67**	0.73**	0.60*	0.51*	0.82**	0.85**	0.90**
Wood Pr & Furniture	0.79**	0.81**	0.61*	0.38	0.31	0.38	0.79**	0.60*	0.82**
Paper Pr & Printing	0.17	0.73**		0.57*	0.51*	0.35	0.62*	0.72**	0.69**
Leather Products		0.13	0.03	0.22	0.49	0.36	0.73**	0.21	0.44
Basic Chemicals		0.87**	0.44			0.52*	0.39	0.61*	0.69**
Rubber & Plastic		0.54*	0.46		0.31	0.23	0.50	0.70**	0.76**
Non-metallic Pr	0.46	0.67**							
Basic Metals		0.51*		0.34		0.48		0.43	0.39
Metal Products	0.66**	0.60*	0.48	0.60*	0.20	0.57*	0.88**	0.71**	0.82**
Machinery	0.63**	0.67**	0.26	0.30	0.43	0.35	0.85**	0.37	0.57*
Transport Equipment		0.32	0.15	0.50		0.42		0.49	0.14
Miscellaneous	0.83**	0.63**	0.18	0.44	0.39	0.55*	0.78**	0.66**	0.81**
Manufacture n.e.c.	0.18	0.30		0.57*				0.78**	0.79**
All Activities	0.83**	0.75**	0.59*	0.64**	0.53*	0.63**	0.86**	0.79**	0.89**

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported

Source: Same as Table 1.

Table 9

Correlation Coefficients between Labour Productivity and Bank Credit to SSI of the State

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products	0.27	0.15				0.10		0.16	0.26
Tobacco-Beverages									
Textiles									
Textile Products	0.31	0.10	0.32	0.52*	0.34	0.26	0.30	0.36	0.46
Wood Pr & Furniture	0.24	0.14	0.22				0.21		0.25
Paper Pr & Printing	0.73**	0.41		0.35	0.19	0.15	0.49	0.48	0.50
Leather Products									
Basic Chemicals		0.40	0.59*			0.54*	0.27	0.28	0.50*
Rubber & Plastic		0.29	0.48		0.24			0.21	0.28
Non-metallic Pr									
Basic Metals			0.20		0.10	0.31			0.11
Metal Products	0.14		0.29	0.19	0.23	0.20	0.36	0.26	0.42
Machinery	0.14	0.58*			0.54*	0.17	0.36	0.18	0.38
Transport Equipment			0.58*	0.54*		0.26		0.29	0.09
Miscellaneous	0.28		0.35		0.22	0.19	0.17	0.15	0.29
Manufacture n.e.c.	0.52*			0.42		0.18		0.54*	0.54*
All Activities	0.34	0.14		0.20		0.19	0.29	0.28	0.40

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported

Source: Same as Table 1.

This indicates that along with micro level factors, macroeconomic factors like general economic condition of the region and institutional credit policy play a major role in determining productivity level of the SMEs. This has to be seen against the backdrop of the very nature of the SMEs. A major part of them, especially the smaller units, are the response of the entrepreneurs to their non-absorption in the formal sector and are formed with local demand in mind. Consequently, in economically vibrant regions, they are ensured of a brisk business and enjoy better productivity levels. On the other

hand, in economically stagnant regions, they act more as a sponge absorbing surplus labour, without any link with profitability and productivity. In recent years, especially after the Structural Adjustment Programmes in India, the SMEs are also entering the global market network. As the fruits of globalisation in India has been unequally spread with the developed regions reaping comparatively higher benefits (Ahluwalia, 2002, Shand and Bhide, 2000, Bhattacharya and Sakthivel, 2004), the economic health of the SMEs are also better in those regions. The other structural factor of Credit policy perhaps works through the technology factor. Liberal institutional credit provides the SMEs with necessary capital to both upgrade their production technology and increase working capital and turnover. That this leads to improvements in productivity is evident from the results.

IV. PRODUCIVITY AND WAGES

Better productivity levels are supposed to improve the economic condition of the labourers and entrepreneurs. Units with higher labour productivity are likely to pay relatively higher wages to the workers. It has been enquired whether such a process is existent in reality.

It is observed that the association between productivity levels and emolument per worker is significantly positive for almost all activity groups where hired labour exists, indicating that higher productivity levels are transformed to higher remunerations for the labourers (Table 10). Moreover, a rise in productivity level is found to be going hand in hand with a rise in emolument per worker.

This has wider socio-economic significance. It is sometimes argued that workers in the unorganised sector are severely exploited and deprived. However, in reality it is observed that the productivity improvements are transferred to the workers in the form of better wages. Substantially high magnitude of the correlation coefficients (above 0.90) for various activity groups, especially Consumer Non-durables, Consumer Semi-durables and the Machinery and Equipment sector indicate that the wages are almost proportional to productivity levels. This is perhaps due to operation of several factors like Un-ensured job-tenure of the workers; Sub-contracting and Wage-payment on the basis of specific assignments (payment on '*piece-meal*' basis); and the basic competitive character of the unorganised labour market. This is in sharp contrast to the formal sector where the wage increase and productivity changes are mostly divorced from each other.

Table 10
Correlation Coefficients between Labour Productivity and Wages per Worker

Industry groups	OAME		NDME		DME		Total SMEs		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Food Products		0.78**	0.85**	0.82**	0.78**	0.71**	0.61*	0.85**	0.90**
Tobacco-Beverages	0.35		0.88**	0.90**	0.83**	0.36	0.80**	0.72**	0.74**
Textiles	0.25	0.33	0.86**	0.83**	0.96**	0.96**	0.83**	0.93**	0.94**
Textile Products	0.88**		0.90**	0.90**	0.75**	0.95**	0.91**	0.90**	0.94**
Wood Pr & Furniture			0.86**	0.55*	0.89**	0.78**	0.87**	0.84**	0.93**
Paper Pr & Printing			0.27	0.91**	0.87**	0.66**	0.76**	0.86**	0.90**
Leather Products			0.85**	0.64*	0.89**	0.44	0.84**	0.66**	0.74**
Basic Chemicals			0.79**	0.71**	0.60*	0.66**	0.68**	0.84**	0.68**
Rubber & Plastic		0.71**	0.44	0.22	0.67*	0.65**	0.55*	0.90**	0.91**
Non-metallic Pr			0.57*	0.43	0.72**	0.77**	0.53*	0.69**	0.55*
Basic Metals			0.86**	0.53*	0.12	0.80**	0.27	0.75**	0.42
Metal Products	0.83**	0.15	0.70**	0.63**	0.45	0.85**	0.90**	0.76**	0.92**
Machinery	0.53*	0.01	0.92**	0.60*	0.70**	0.79**	0.87**	0.77**	0.85**
Transport Equipment		0.37	0.60*	0.78**	1.00**	0.81**	0.97**	0.88**	0.72**
Miscellaneous			0.69**	0.76**	0.92**	0.92**	0.78**	0.64**	0.73**
Manufacture n.e.c.		0.06	0.77	0.73**	0.93**	0.86**	0.93**	0.49	0.73**
All Activities	0.84**	0.61*	0.85**	0.89**	0.96**	0.84**	0.93**	0.91**	0.96**

Note: ** Significant at 1% level; * Significant at 5% level; Coefficients with sig. level above 20% are not reported

Source: Same as Table 1.

One must accept here that the relationship between wage and productivity may be bi-directional. Better wages may also ensure higher productivity under certain situations. With uncertain job-tenure, higher the wages, higher is the opportunity cost of loosing the job for the worker, and the more one strives to work hard and efficiently to ensure job continuation. As a result, productivity levels improve. One may also look at it from the human capital formation point of view. Better wages lead to healthy workers, lower incidence of sickness and absenteeism, resulting in higher output. This capability improvement leads to improvements in productivity and efficiency. Thus efforts to improve productivity will create reinforcing ripple effects whereby today's productivity rise will lead to tomorrows wage increase resulting in further productivity improvement, and a virtuous spiral will come into operation.

V.   AUGMENTING PRODUCTIVITY LEVELS – SOME POLICY ISSUES

It is evident that productivity levels in the SMEs are crucially affected by various micro- and macro-economic factors. Therefore, efforts to improve productivity levels should address these issues.

The foremost policy to be taken is to improve and upgrade the technology employed herein. Augmentation of capital use by the units will enable them to complement available labour force with improved machinery, thereby increasing *'effective labour'* and raising productivity levels. However, any technological upgradation programme for this sector must keep in mind that this is predominantly a labour-intensive sector. The upgradation process must not destabilise this basic character. So, the stress should

not be on transformation to a capital-intensive technology, but towards evolution of innovative and adaptive technology for the SMEs. Two related issues are that of availability of appropriate technology and accessibility to resources to augment capital stock. The first one may be addressed through proper coordination between research institutes, academicia and industry. Sophisticated techniques should be transmitted to the SMEs to strengthen their linkage with the organised sector so that the SMEs emerge as a complementary to the latter. Additionally, there should be stress on evolution of indigenous techniques so that existing resources can be used in innovative and more efficient manner. The second issue requires streamlining credit availability to the SMEs. Considering the close association between productivity, technology and loan availability obtained in this study, this emerges as an important policy instrument. One may proceed a step further and suggest that financial institutions must offer not only credit but also guidance to the entrepreneurs so as to make the enterprises productive and viable. Formation of Self Help Groups (SHGs), Revolving micro credit system and Co-operatives may be encouraged to supplement formal credit system.

However, given the capital scarce nature of our economy in general, and this sector in particular, such policies should be properly targeted to extract the greatest benefits. We have already identified activity groups that have strong association between technology and productivity levels and are likely to respond substantially to upgradation programmes. Along with them, activity groups like Textile products, Non-metallic mineral products in the urban areas, and Transport Equipment sector in the rural areas are already showing signs of dynamism in terms of rising productivity levels (both partial and total) at the national level. Such dynamic activities for each state are also identified (Box 1). In addition to these, activities like Non-metallic mineral products, Basic Metal and Transport equipment sectors have been observed to enjoy close association with the factory sector (as indicated by significant positive association between the growth rates of employment in the SMEs and that in the factories). This may be viewed as some kind of ex-post measure of linkage between the SMEs and the Factory sector. Therefore, these activities are also likely to reap substantial benefit from technological upgradation programmes.

Box 1
Dynamic Activity Groups in the States

States	*Rural Sector*	*Urban Sector*

Andhra Pr	Textiles, Textile Products	Textile Products, Non-metallic Mineral Product
Bihar	Non-metallic Mineral Product	Textile Products, Non-metallic Mineral Product
Delhi	Machinery	Metal Products, Machinery
Gujarat	Textile Products, Metal Products	Textiles, Textile Products
Haryana	Food Products	Transport Equipment
Himachal Pr	Textile Products	Textile Products, Rubber & Plastic
Karnataka	Food Products, Paper Products & Printing, Basic Chemicals	Leather Products, Rubber & Plastic
Kerala		Machinery, Transport Equipment
Madhya Pr	Textile Products	Basic Metals, Machinery
Maharashtra	Non-metallic Mineral Product, Basic Metals	Textile Products, Basic Metals, Basic Chemicals
Orissa	Leather Products, Metal Products, Transport Equipment	Basic Chemicals, Transport Equipment
Punjab	Metal Products	Textile Products
Rajasthan	Tobacco-Beverages, Non-metallic Mineral Product	Textile Products, Basic Chemicals, Non-metallic Mineral Product
Tamil Nadu	Paper Products & Printing, Transport Equipment	Textile Products, Leather Products
Uttar Pr	Basic Chemicals	Textile Products, Rubber & Plastic, Non-metallic Mineral Product
W Bengal	Basic Metals, Non-metallic Mineral Product, Transport Equipment	Basic Metals

Source: Same as Table 1.

Better access to land ownership and formal credit will enable the units to improve productivity levels substantially. Consequently, policies must be framed to provide SMEs with cheap and easy credit. Regularising and conferring ownership or rental rights on lands used by SMEs, Developing industrial sheds and warehouses, Providing better infrastructural facilities will boost productivity levels in the SMEs.

Regional economic levels should be improved through steps like special development programmes for the lagging regions, providing infrastructural facilities and boosting the organised sector, especially the factories. This would provide a vibrant business environment for the SMEs. In this context, the regional dynamic activity groups already identified may act as the main beneficiaries. Policies should aim to strengthen the linkage of these sectors with the organised sector.

In addition, if we accept the existence of a Wage-Productivity spiral, productivity may be improved through creation of better working atmosphere and ensuring remunerative wages. In this regard, the role of skill formation and on-job training becomes important.

Thus it is evident that the productivity levels in the SMEs may be improved through a coordinated policy approach with twin focus on improved technology and adequate

demand. Such improvements in productivity levels are necessary (though not sufficient) to ensure economic viability of this sector and for improvement of labour processes and labour conditions. At the same time, improved labour conditions and better wages would lead to higher investment in human capital, thereby bringing in second generation productivity rise for the SMEs. A collective action would complement the role of the SMEs as employment providers with a significant contribution to national income and growth.

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