Chapter Three

PLAN OF THE STUDY

The aim of the present study is to look into the Extent, Growth and Productivity of Informal Manufacturing Sector in India. The study is designed to look at factors across -

(a) Activity group (2 digit NIC),
(b) Types of enterprise (OAME, NDME, DME),
(c) Location (Rural and Urban Areas), and,
(d) Regions (States).

Firstly, the extent and growth of the informal sector both in terms of employment and number of enterprises, are looked into. After reporting the extent and growth of informal sector across activity groups, enterprise types, rural and urban areas and states, the variability in extent and growth are analysed. This gives us a picture of how the extent and growth of informal sector are varying across activity groups and regions.

Secondly, the reasons for difference in growth rates are enquired into. It is hypothesised that the growth of urban and rural informal sector are influenced by different sets of factors. In case of urban informal sector the hypothesis is that it is growing due to slackening growth of the factory sector i.e. growth of urban informal sector is a distress phenomenon. So we check whether the urban informal sector has high growth in the areas or regions where the growth rate of factory sector is low. It is also enquired whether the

7 Own Account Manufacturing Enterprises - manufacturing enterprises operating with no hired worker employed on a fairly regular basis;
Non-Directory Manufacturing Establishments - units employing less than 6 workers including household workers;
rise in the share of informal sector in total manufacturing employment is high in areas where growth rate of factory sector is low, incidence of poverty is high, etc. For rural informal sector the logical thinking is that the rural informal sector can grow only with the growth of agricultural sector. High growth of agricultural sector can generate substantial spread effect - both through supply of raw materials, and through creation of demand for non-farm products, leading to the growth of rural informal manufacturing sector. Thus, it is hypothesised that growth of rural informal sector is positively associated with the growth of per capita NSDP from agriculture and Rural Development Index (RDI). The RDI is developed as a composite index\(^8\) of Agricultural development, Rural electrification, Rural Roadlength etc.

It is to be noted that the above analysis is carried out also at disaggregated level to investigate whether the relationship or association are different for States with high PCNSDP and states with low PCNSDP (compared to Per Capita NNP of India).

The association between growth rate of informal manufacturing sector and growth rate of Bank Credit to Small Scale Industries is also looked into.

Thirdly, the productivity aspect of the informal manufacturing sector is discussed. Three dimensions of productivity are looked into -

i) Capital productivity (Value Added per unit of capital),
ii) Labour productivity (Value Added per unit of labour), and,
iii) Enterprise productivity (Value Added per enterprise)\(^9\).

Primarily, the levels of productivity and their variation across activity groups, enterprise types, area and states are reported. It is also checked whether the informal manufacturing sector has higher capital productivity than the factory sector. Next, the factors leading to variation in productivity levels across states and activity groups are sought to be identified. Technology, as measured by capital-labour ratio, is considered to be one of the most important factor affecting productivity. It is also checked whether higher

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8 RDI was prepared using the MODPCA approach as discussed in the section on Methodology.
9 Value Added per Enterprise is not a conventional measure of Productivity. Still, it is included here because it measures the contribution of the unit to the economy and is thought to be an important performance parameter for the informal sector.
availability of capital per enterprise leads to higher Labour Productivity and VA per Enterprise. The above analysis is not done across industry groups because it is assumed that different activity groups have different nature of production process, technology, productivity etc. If it can be concluded that higher capital labour ratio and higher capital availability lead to higher productivity, then the importance of capital in the production process can be underlined. An attempt is also made to identify the factors determining Capital availability in the informal sector.

Fourthly, it is also investigated whether the productivity levels are diverging or converging over time by regressing growth rate of productivity on base year productivity level.

Fifthly, to bring in a broader dimension of productivity Total Factor Productivity Growth in the informal sector was also measured and its correlates were sought to be identified.

Sixthly, to outline future prospects of the informal sector in India the activity groups showing signs of dynamism and having potential for future growth are identified using different criteria.

Lastly, a detailed case study of informal manufacturing sector units of Durgapur city of West Bengal is undertaken. The aim of this case study is to investigate whether the formal informal relationship revealed by the macro level analysis holds true at the city level. However, more important is the insight that such a case study will offer into the qualitative characteristics of the informal manufacturing units in Durgapur and the constraints faced by the entrepreneurs regarding their present operation and future expansion. Only by knowing the participants' needs, difficulties and suggestions can one formulate appropriate policies to properly nurture the informal sector.

OBJECTIVES

The major objectives of this study are:-


2. To enquire into the causes of variation in extent and growth of informal manufacturing sector across major states and industrial activity groups.
This would help us to identify the factors affecting the extent and growth of informal manufacturing sector.

3. To specifically enquire whether any relation exists between formal manufacturing sector employment and informal manufacturing sector employment. This is studied at national level, state level and micro level. This prompts us to choose Durgapur city of West Bengal as the site of case study since it has substantial number of both registered factories and informal units.

4. To measure the productivity of informal manufacturing activities i.e. to look into:-
   (a) Labour productivity (VA per worker).
   (b) Capital productivity (VA per unit of capital)
   (c) Per enterprise productivity (VA per unit).
   - across major states and activity groups.

5. To compare Capital Productivity levels of the Informal sector and the Factory sector.

6. To enquire into the causes of variation in the productivity levels across major states and activity groups.

7. To identify the activity groups within the informal sector showing signs of dynamism and having potential for future growth.

8. To undertake a detailed case study of informal manufacturing sector units in Durgapur city of West Bengal to examine –
   a) The extent of informal sector in Durgapur.
   b) Whether the factors affecting extent and growth of informal sector in the national and state level are operative in Durgapur also. Specifically, it will be examined whether the relationship between formal and informal manufacturing sector employment in Durgapur follows the same pattern that emerges from the national and state level studies.
   c) To enquire whether the units have easy access to institutional credit and marketing facilities or whether they are mainly dependent on private moneylenders and middlemen.
d) To identify the activity groups that are likely to have good prospect.

e) To look into the problems and prospects from the entrepreneurs’ point of view.

f) To propose suggestions for development of informal manufacturing sector in Durgapur, so that their fullest potential in augmenting economic development of the region can be utilised. This may also form the foundation for suggesting development plans for other regions of our country.

HYPOTHESES

The analysis of the Secondary Data started with formation of a few hypotheses. They are discussed below.

1. Low growth of factory sector employment is a crucial factor affecting the growth of urban informal manufacturing sector employment.

   The non-agricultural labour force who are not absorbed by the factory sector engage themselves in informal activities. So, when the factory sector employment grows slowly, urban informal manufacturing sector expands.

2. High incidence of poverty leads to presence of substantial urban informal sector activities.

   Poor cannot afford to remain unemployed. So they take up informal activities where entry is easier. Consequently urban informal sector expands.

3. Rural informal sector can grow only with the growth of Agricultural sector.

   The growth of agricultural sector can generate spread effect both through supply of raw materials and through creation of demand for non-farm products leading to the growth of rural informal manufacturing sector.
4. High level of rural development leads to high growth of rural informal sector.

High rural development leads to an expansionary rural economy and rise in rural income. This leads to demand push expansion of non-agricultural rural activities.

Apart from these, various other issues were also investigated. They are:

a) Whether growth of informal sector is affected by Growth of Bank credit to small scale industries.

b) Whether there is any association between productivity levels in the informal sector and its growth rates.

c) Whether Capital Productivity is higher in the informal manufacturing sector than in the registered factories.

d) Which factors affect Productivity levels in the informal sector.

e) Whether productivity levels are converging across regions over time.

f) What is the pattern of Total Factor Productivity Growth in the Informal sector and what factors affect TFGP.

METHODOLOGY

The methodology to be used in this study must be discussed in detail.

Firstly, the coverage of Informal Manufacturing Sector should be stated. In the present study Informal Manufacturing Sector consists of the following:

1. Own Account Manufacturing Enterprises (henceforth OAMEs) - Manufacturing enterprises operating with no hired workers employed on a fairly regular basis.
2. Non-Directory Manufacturing Establishments (henceforth NDMEs) - Units employing less than 6 workers including household workers.

3. Directory Manufacturing Establishments (henceforth DMEs) - Units employing 6 or more workers with at least one hired worker but not registered under the Factory Act.

In this study Total Manufacturing sector consists of OAME, NDME, DME, and the Factory sectors.

The study is disaggregated for the three enterprise types and wherever possible, effort has been made to analyse the characteristics separately for OAMEs, NDMEs and DMEs.

The main source of data is Survey reports of various rounds of NSSO. Consequently the time points for the analysis are - 1978-79, 1984-85, 1989-90 and 1994-95. The dynamics of the informal sector have been studied using Growth Rates. Unless otherwise mentioned, Growth Rate in this study refers to Annual Compound Growth Rate. If \( Y_0 \) and \( Y_t \) are the values of a variable at the 0\(^{th}\) and t\(^{th}\) period respectively, then the Growth Rate is calculated as \( r \) from the equation \( Y_t = Y_0 (1 + r)^t \). If any variable changed from zero to nonzero value, the initial value was replaced by 1. On the other hand any variable changing from non-zero value to zero is considered to have changed by 100%. These two steps were taken only for operational convenience so that no variable has undefined growth rate.

The study covers 16 major states of India. The study is carried on separately for Rural and Urban Informal Sector and tries to look into individual characteristics of these two locational settings. However, wherever appropriate, the informal sector in totality is also discussed.

The second 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 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 separately.

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10 The data sources are mentioned in the next section.
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. 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 variation in the extent, growth and productivity of the informal manufacturing sector has been looked into with the help of Coefficient of Variation (CV) in employment and enterprise number, growth rates and measures of productivity both for each industry group across states and each state across industry groups wherever appropriate. Employment and Enterprise number are both standardised for calculating CV to eliminate the effect of size of state in the following manner:

a) Enterprise number is standardised by dividing it by area of the state to get enterprise number per 1000 sq. km.

b) For determining CV for each industry group across states, employment in a particular industry group in a state is expressed as a percentage of total employment in the country in that industry group, and then it is divided by the share of the state in All India population.

c) For determining CV for each state across industry groups, employment in a particular industry group is expressed as a percentage of total employment in all industry in that state.

The relationships between growth of Informal Manufacturing sector and different hypothesised causal variables are measured with the help of Correlation Coefficients. To investigate how changes in the causal variables affect the growth rate of different components of informal sector, Regression Analysis has been done.

One of the causal variables used is Rural Development Index (henceforth RDI). The RDI reflects the general level of rural development and is a composite index of the following factors:

i) GCA as a % of geographical area.
ii) Cropping intensity (GCA as a % of NSA).

iii) Irrigation intensity (GIA as % of NIA).

iv) Value added from agriculture per hectare GCA.

v) Percentage of villages electrified.

vi) Pump sets and diesel engines per hectare GCA.

vii) Outstanding bank credit to agricultural sector per thousand agricultural workers.

viii) Rural road length per thousand square km. Rural area.

ix) Per Capita Rural Private Final Consumption expenditure on food grains.

The composite index has been prepared by using Principal Componer Analysis. The Modified Principal Component Analysis method was used for this purpose.\(^{11}\)

To compare the Capital Productivity between Informal and the Factory Sector, two measures of Capital Productivity were used:

I. **Value Added per unit of Capital using all India figures for each industry group was taken as a measure of average capital productivity.**

II. **A production function of the form** \(Q = A.K^\alpha L^\beta\) **was estimated for each industry group with the states as the observations, where**

\[
Q = \text{Output at Constant 1981-82 prices},
K = \text{Total Capital at Constant 1981-82 prices, and}
L = \text{Total Employment}.
\]

Estimated \(\alpha\) represents capital elasticity of output and can be taken as a measure of Marginal Productivity.

The average productivity and the marginal productivity are obtained separately for informal sector and factory sector and are then compared.

Effort has been made to measure Total Factor Productivity Growth (henceforth TFP). TFP is conceptualised as growth in output not due to growth in inputs but due to operation of other factors not incorporated in the

\(^{11}\) MODPCA method has been evolved by Amitabh Kundu et al. For a lucid explanation of alternate Principal Component methods see Kundu, Amitabh et al. (1982) and Kundu (1980).
material inputs. TFPG can be calculated using either the GROWTH ACCOUNTING APPROACH or the PRODUCTION FUNCTION APPROACH. The Growth Accounting approach assumes that there exists Constant Returns to scale and that markets are perfect and the factors are paid according to their Marginal Product. Consequently TFPG can be taken as the difference between Growth Rate of Output and the Weighted Average Of The Growth Rates of the Inputs. [For a more detailed discussion see Mitra and Goldar (1999), Nagraj (1999)].

The present study uses the Growth Accounting Approach to avoid the problems related with proper identification of the Production Function and related econometric problems of correct estimation. Moreover, Growth Accounting Approach considers TFPG as joint effect of technical progress and improvement in technical efficiency. Thus in the present study $\Delta Q = Q_0 / Q - \left[ a \Delta L / L + (1-a) \Delta K / K \right]$ where $Q$ is value of real output, $K$ is value of real capital, and $L$ is employment, $\alpha$ and $(1-\alpha)$ are shares of Labour and Capital in total output respectively. $\alpha$ is obtained by dividing total emoluments by value of output in the case of NDME and DME. Since data on emoluments for OAME are not available, they are excluded from this analysis.

It has also been investigated whether productivity levels are diverging or converging over space using the regression analysis. The growth rates of productivity levels have been regressed on base year productivity levels with states as the observations. A positive regression coefficient would indicate that higher base year productivity level leads to higher growth in productivity i.e. they are diverging. A negative regression coefficient would indicate convergence.

Efforts have been made to identify the dynamic groups within the Informal sector. Three different measures have been used to identify the dynamic activity groups:-

1. The activity groups where all three productivity levels [VA per labour, VA per capital and VA per enterprise] are rising over time are to be identified as dynamic groups. This analysis is done separately for each of the Six segments of Rural and Urban OAME, NDME and DME. Any activity group where all the three productivity levels are rising over time for at least 3 of the 6 segments, is taken as a dynamic group.
II. The second measure indicates those activity groups as dynamic where the share of the informal sector in total manufacturing sector output is rising. To ensure that a rise in share of a particular segment is not at the cost of the other segments, an additional criterion of checking whether the share of informal sector as a whole is rising or not is used. Also the rise in share may be due to rise in number of enterprise only. To eliminate these cases another criterion is imposed, namely, that the growth rate of output is more than the growth rate of enterprise number. Thus, those groups are said to be dynamic where share of the segment is rising, share of informal sector as a whole is rising and where output growth exceeds enterprise growth i.e. output per enterprise is rising.

III. Those activity groups are considered to be dynamic according to the third measure that are expanding in terms of their number, size (as indicated by employment per unit) and having rising productivity. The simple criterion that growth rate of VA is greater than growth rate of employment, which in turn is greater than growth rate of enterprise with all three growth rates positive is sufficient to ensure the above.

The micro level case study has used mainly primary data. The survey of the informal sector in Durgapur city of West Bengal has been done using a Stratified Random Sampling process.

The following procedure has been adopted:-

i) The major pockets of economic activities in the city have been identified.

ii) Each pocket was visited to prepare an extensive list of all the manufacturing units, the activities undertaken and the size of employment therein. Preliminary data of Economic Census 2000 was also collected from the Collecting Officer to identify the manufacturing units. A close correspondence between these two lists were observed.

iii) From these lists the informal units were identified using the same definition as used in the study using secondary data, to maintain uniformity.
iv) The units were then divided according to their activity groups into 2-digit level NIC groups separately for OAME, NDME and DME, and the numbers of units in each group were noted.

v) A 5% sample was drawn from each of these groups using the Random Number Series.

vi) Activity groups having total number of units less than 5 were excluded from the study.

vii) The sample units were then surveyed and their characteristics studied through both questionnaire and open interview methods.

viii) This method of Stratified Random Sampling gave proportional representation to almost all the major activity groups present in the city for each of the enterprise types.

ix) The information regarding the Employment and Enterprise Number of the registered factories in the city were collected from the city office of the Directorate of Factories.

x) Data thus collected were used to visualise the dynamics of the informal sector in the city, its similarities and dissimilarities with the macro-trend, assimilate the views expressed by the entrepreneurs, and to form policy suggestions for the development of informal sector in the region.

This, in brief, summarises the methodology adopted in the present study.

DATA SOURCES

It has already been discussed that the informal sector can be and has been conceptualised by different researchers in different ways, using different criterion. Consequently, macro level studies on informal sector using secondary data can be undertaken using various alternative data sources, the choice of which would depend on the criteria used to define informal sector and the objective of the study. Various alternative data sources and their shortcomings can be discussed.
A. Informal manufacturing sector can be conceptualised as all such manufacturing activities outside the Factory sector. Data on Factory sector units are provided annually by the Annual Survey of Industries. The population census would provide data on total employment in the manufacturing sector for the census years. Deducting factory sector employment from the Census figures will give us employment in the informal manufacturing sector. The same procedure may be followed by replacing ASI data with the EMI data obtained from DGET. But these methods would not provide any information on number of enterprises, output, value added or any other performance parameters regarding the informal sector.

B. For the Census years 1961 and 1971 the preceding house-listing operations resulted in Establishment Tables of 1961 and 1971. These tables provided data on number of enterprises and employment separately for (i) Registered factories, (ii) Household Industries, and (iii) Non-Household non-registered units. The second and third group can be taken to comprise the informal sector. While the Establishment Tables were withdrawn from 1981 census onwards, they were replaced by Economic Census. The Economic Census 1980 and 1990 provide data on non-agricultural establishments for Own Account Enterprises (those without any hired labourer) and other enterprises according to size of employment. This can also provide data on informal manufacturing sector. However, the establishment tables or the economic census provide data only on number of enterprises and employment and not their performances.

C. Periodical survey on small-scale industries covers only those units that are registered under Directorate of Small Scale Industries. However, since a major characteristic of informal sector is their non-registration with any authority, this method would provide inaccurate estimates of the informal sector. Moreover, this census has taken place during 1973-74 and 1988-89 only.

D. The only direct effort to collect data on unorganised manufacturing sector has been done by the NSSO in its different rounds. Survey under 14th (1958-59), 23rd (1968-69), 29th (1974-75), 33rd (1978-79), 40th (1984-85), 45th (1989-90) and 51st (1994-95) round looked into the Unorganised
Manufacturing Sector. However, data from the first three rounds are not strictly comparable with those thereafter because of change in the criteria of classification. The 14th Round covered only the units working mainly with Family-labour. The 23rd round added the Non-Household Non-Factory sector units also. The 29th round continued with similar criteria but dropped those units employing more than 4 hired workers. From 33rd round onwards the units were classified under Own Account Enterprises and the Non Directory Manufacturing Establishments (NDME). Similar criteria were used in the subsequent rounds. These reports provide extensive data base on the informal manufacturing sector - Number of enterprises, Employment, Output, Input, Value Added, Fixed Assets, Working Capital, Rent etc. at the state level and for each of the 2 digit, and in some cases even 3 digit, NIC groups. Parameters like Land Owned and Outstanding Loan were included from 45th round onwards. These rounds were supplemented by similar database published by the CSO on Directory Manufacturing Establishments (DME). For the 51st round NSSO itself includes DMEs as a part of the unorganised manufacturing sector. The OAMEs, NDMEs and DMEs together can be taken as the informal manufacturing sector. This method gives the most extensive and temporally comparable (at least since 1978-79) Database for the Informal sector.

The present study conceptualises informal manufacturing sector as the OAMEs, NDMEs and the DMEs. Consequently the data source has been the NSSO survey reports on unorganised manufacturing sector for the 33rd, 40th, 45th and 51st rounds, supplemented by the CSO publication on DMEs for the years 1978-79, 1984-85 and 1989-90.

Data on different independent variables and the correlates of informal sector were collected mainly from different secondary sources like Statistical Abstract of India, Estimates of State Domestic Product, Indian Agricultural Statistics, NSSO reports on Employment and Unemployment, Annual Survey of Industries, and different Census Publications, among others.

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12 33rd Round data on NDME are not strictly comparable with the later ones since in the 33rd round NDME was defined as one which along with the employment criteria also had to have Annual Turnover not exceeding Rs. 1 lakh per annum. This turnover criterion was withdrawn in the later rounds.

13 NSSO Survey Report on Unorganised Manufacturing Sector for 55th round for the year (1999-2000) has been published in 2001. But the report is not strictly comparable with those of the preceding rounds due to conceptual and definitional changes adopted in the 55th Round report.
This section thus outlined the plan of the study, the basic objectives, the hypotheses that are to be tested and the issues to be examined. It also discussed the methodology to be followed and the data sources that have been used in this study.