

PB-219 639

CAPITAL INTENSITY, ABSOLUTE SIZE AND
GROWTH RATE OF THE SMALL INDUSTRIES
SECTOR IN INDIA: A CRITIQUE OF OFFICIAL
ESTIMATES

Jan H. van der Veen

Cornell University
Ithaca, New York

July 1972

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

IN
338.0954
V241

Csd - 2805
PB 219 689
July, 1972

**Capital Intensity, Absolute Size and Growth Rate of
the Small Industries Sector in India:
A Critique of Official Estimates**

By
Jan H. van der Veen
Cornell University

Reproduced by
**NATIONAL TECHNICAL
INFORMATION SERVICE**
U S Department of Commerce
Springfield VA 22151

Occasional Paper No. 56
Department of Agricultural Economics
Cornell University
USAID—Employment and Income Distribution Project

BIBLIOGRAPHIC DATA SHEET		1. Report No. IN-338.0954-V241	2.	3. Recipient's Accession No. PB-219 689
4. Title and Subtitle "Capital Intensity, Absolute Size and Growth Rate of the Small Industries Sector in India: A Critique of Official Estimates"				5. Report Date July, 1972
7. Author(s) Jan H. van der Veen.				6.
9. Performing Organization Name and Address Cornell University Department of Agricultural Economics Ithaca, N.Y. 14850				8. Performing Organization Rept. No.
				10. Project/Task/Work Unit No. Proj. 931-17-140-523
				11. Contract/Grant No. AID/csd-2805
12. Sponsoring Organization Name and Address Department of State Agency for International Development Washington, D.C. 20523				13. Type of Report & Period Covered Paper 12/70-7/72
				14.
15. Supplementary Notes				
16. Abstracts This paper provides a criticism of official estimates of the capital intensity, absolute size, and growth rate of the small industries sector in India. In order to evaluate these estimates, it was necessary to examine the procedures adopted by the official agencies in collecting the data and to understand the assumptions made by those agencies in using the data upon which the estimates are based. Estimates by the Central Statistical Organization show that "unregistered" industrial units have contributed over 35% of the industrial share of India's gross product. "Small scale" industrial units have contributed approximately 52% of the industrial share of India's gross product. The aggregate capital/labor ratios of both the "unregistered" and "small scale" industrial subsectors are relatively low. As a result, the potential employment creation capacity of small industrial units, no matter which definition is applied, is great.				
17. Key Words and Document Analysis. 17a. Descriptors				
17b. Identifiers/Open-Ended Terms (*Sector analysis, Small business), *Sector analysis methodology, *Industrialization, *Economic development				
17c. COSATI Field/Group 338 <i>i</i>				
18. Availability Statement			19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 30
			20. Security Class (This Page) UNCLASSIFIED	22. Price \$3.00-0.95

July, 1972

CAPITAL INTENSITY, ABSOLUTE SIZE AND GROWTH RATE OF
THE SMALL INDUSTRIES SECTOR IN INDIA:
A CRITIQUE OF OFFICIAL ESTIMATES

By

Jan H. van der Veen

Cornell University

Occasional Paper No. 56
Department of Agricultural Economics
Cornell University
USAID-Employment and Income Distribution Project

la

PREFACE

This paper discusses some official estimates relating to small industries in India. It is intended to serve as a detailed background paper to studies being conducted by the author on small industrial units in Gujarat State.

Estimates by the Central Statistical Organization show that "unregistered" industrial units have contributed over 35 percent of the industrial share of India's gross product. "Small scale" industrial units, which are defined more generously, have contributed in the neighborhood of 52 percent of the industrial share of India's gross product. The aggregate capital/labor ratios of both the "unregistered" and "small scale" industrial subsectors are relatively low. As a result, the potential employment creation capacity of small industrial units, no matter which definition is applied, is great.

The current revival of interest in small industries in India has its origin in the changed conditions which are following in the wake of the "green revolution". That revival of interest focuses on the employment creation capacity of the small industries subsector. Unfortunately, uniform and reliable data on small industries in India are not yet available. Interest in the data that are available has prompted this study.

This study is part of the Cornell University-USAID Employment and Income Distribution Project, directed by John W. Mellor. The author is particularly grateful to Professor Mellor for the assistance and encouragement he offered as this paper was being written.

Acknowledgements are due not only to USAID, but also to the U. S. Office of Education which, through a Fulbright Fellowship, provided financial assistance for the author's field research in India. Additional gratitude is expressed to R. J. Matthal, then Director of the Indian Institute of Management, Ahmedabad, with which the author was affiliated; P. B. Buch, Director, Gujarat Bureau of Economics and Statistics; and P. S. Dharwadkar, Joint Director of Industries (Small Scale Industries), Gujarat Directorate of Industries.

Special thanks are due to D. K. Desai, Director, CMA, Indian Institute of Management, and to all of his colleagues at the Centre for Management in Agriculture; to H. N. Pathak, Indian Institute of

Management; to S. P. Patel, Gujarat Bureau of Economics and Statistics;
and to J. B. Dave, Gujarat Directorate of Industries.

Jan H. van der Veen

Ithaca, New York
July 18, 1972

TABLE OF CONTENTS

<u>Chapter</u>	<u>Title</u>	<u>Page</u>
	Preface	i
I	Introduction	1
	Statement of Purpose	1
	Sources of Data	1
	The Nonconclature Problem	2
	Sequence of Presentation	4
II	The Planning Approach	5
	Introduction	5
	Data Gathering Procedures	5
	Estimates of Capital Intensity	8
	Conclusions	15
III	The Income Approach -- National Level	16
	Introduction	16
	Benchmark Year Estimates	16
	Estimates of Other Years	20
	Conclusions	21
IV	The Income Approach -- State Level	24
	Introduction	24
	Benchmark Year Estimates	24
	Projections to Other Years	28
	Conclusions	28
V	Conclusions	31
	References	32

LIST OF TABLES

<u>Number</u>	<u>Title</u>	<u>Page</u>
1.	Enrollment of Small Scale Units Since 1961, Gujarat State	9
2.	Registered and Unregistered Units Among Enrolled Units, by Year, Gujarat State	11
3.	Comparison of Key Ratios for Registered and Un- registered Units, by Year, Gujarat State	11
4.	Machinery and Equipment per Employee (Rs. '000) by Industry Group -- 1970, Gujarat State	12
5.	Comparisons of Key Ratios (Rs. '000) for Registered and Unregistered Small Scale Units Enrolled as of 1965, Gujarat State	13
6.	Comparisons of Key Ratios (Rs. '000) for Registered and Unregistered Small Scale Units Enrolled as of 1965, Gujarat State	14
7.	Contribution of the Unregistered and Registered Manufacturing Sectors to Gross Product in India, 1960-61	19
8.	Estimates of the Contribution of the Unregistered and Registered Manufacturing Sectors to the Gross Product of India, at Constant 1960-61 Prices	22
9.	Estimates of Gross Product per Worker and Work Force for the Unregistered Household Manu- facturing Subsector, Gujarat State, 1960-61	25
10.	Estimates of Gross Product per Worker and Work Force for the Unregistered Non-household Manu- facturing Subsector, Gujarat State, 1960-61	27
11.	Estimates of Work Force and Gross Product at Constant (1960-61) Prices for the Unregistered Household Manufacturing Subsector, Gujarat State	29
12.	Estimates of Work Force and Gross Product at Constant (1960-61) Prices for the Unregistered Non-household Manufacturing Subsector, Gujarat State	30

**CAPITAL INTENSITY, ABSOLUTE SIZE AND GROWTH
RATE OF THE SMALL INDUSTRIES SECTOR IN INDIA:
A CRITIQUE OF OFFICIAL ESTIMATES**

Chapter I

INTRODUCTION

Statement of Purpose

This paper provides a criticism of official estimates of the capital intensity, absolute size, and growth rate of the small industries sector in India. In order to evaluate these estimates, it is necessary to examine the procedures adopted by the official agencies in collecting the data and to understand the assumptions made by those agencies in using the data upon which the estimates are based.

Sources of Data

The Government of India has adopted two distinct approaches in an attempt to provide meaningful estimates of economic variables relating to the small industries sector.

The first, called the "planning" approach, yields estimates of key economic ratios, such as capital/output and capital/labor ratios, as well as estimates of the size and growth rate of the small industries sector. Unfortunately, all planning estimates are subject to considerable bias. Planning estimates of the size and growth rate of the small industries sector are so biased that they are useless for purposes of economic analysis.

The second, called the "income" approach, yields estimates only of the size and structure of the small industries sector. On the national level, the income approach faces serious problems caused by deficiencies in the availability of the raw data. Heroic assumptions are still required to overcome these deficiencies, but the resulting national income estimates are the best currently available on the size and structure of the small industries sector.

On the state level, the income approach suffers from data problems which are even more severe. As a result, current estimates of the contribution of the small industries sector to state income are projections from benchmark year estimates. The current estimates do not reflect structural changes or short run fluctuations.

The material presented in Chapter II on the planning approach is based on the procedure followed by and the data generated by the Directorate of Industries of Gujarat State. Similarly, the material presented in Chapter IV on the income approach at the state level is based on the procedures followed by and the data generated by the Bureau of Economics and Statistics of Gujarat State.^{1/} The problems faced by these two Gujarat government agencies are much the same as the problems faced by comparable agencies in the other states of India. Similarly, the procedures adopted to overcome these problems are much the same as the procedures adopted in the other states. Thus, although the particulars of Chapters II and IV relate to Gujarat State, much of the material presented there is applicable to all the states of India.

The Nomenclature Problem

The nomenclature problem is not easily solved. Presented below is a series of definitions. In the growing literature on small industrial units in India, the same term often refers to two or three different groupings of manufacturing units. The confusion which usually attends discussions of the small industries sector can be overcome if the following definitions are used.

(a) "Registered" units are manufacturing units compulsorily registered under the provisions of the Factories Act, 1948.^{2/} For a more complete definition, see the Annual Survey of Industries.

(b) "Census" units are manufacturing units which are registered under the Factories Act and which employ at least 50 workers if the unit uses power or which employ at least 100 workers if the unit does not use power. For details, refer to ASI.

(c) "Sample" units are manufacturing units which are registered under the Factories Act and which employ at least 10 but less than 50 workers if the unit uses power or which employ at least 20 but less than 100 workers if the unit does not use power. For details, refer to ASI.

(d) "Unregistered" units are manufacturing units which are too small under the employment criteria of the Factories Act to be registered. These manufacturing units employ less than 10 workers if the unit uses power or less than 20 workers if the unit does not use power.

^{1/} Both the Gujarat Bureau of Economics and Statistics and the Gujarat State Directorate of Industries very kindly supplied unpublished information to the author. A particular debt of gratitude is owed to S. P. Patel of the Bureau of Economics and Statistics and to J. B. Dave of the Directorate of Industries.

^{2/} Central Statistical Organization, Annual Survey of Industries, Government of India, New Delhi (annual), hereinafter referred to as ASI.

(e) "Small scale" units are manufacturing units which have a total investment (undepreciated purchase value), in machinery and equipment only, not exceeding rupees 7.5 lakhs (Rs. 750,000). This is the current definition. Units which qualify as "ancillary" units are classified as small scale units if the total investment in machinery and equipment, similarly defined, does not exceed rupees 10 lakhs (Rs. 1,000,000). Small scale units may be registered under the Factories Act or not, depending on their employment levels and use or non-use of power.^{3/}

(f) "Enrolled" units are those small scale units which are enrolled with the appropriate State Department of Industries. Enrollment is strictly voluntary. Units which are not enrolled are not eligible for a host of rapidly expanding and increasingly valuable concessions such as tax rebates, raw materials procurement, foreign exchange licenses, technical and managerial assistance, banking services and marketing aids.

Comprehensive definitions of these and similar terms can be found in appropriate publications, the most important of which are ASI, National Sample Survey Report Number 94, and the Census of India, 1961.^{4/} When necessary, clarifications will be made in the text below.

It is clear that there are considerable differences between the various groupings of industrial units most frequently referred to as "small" industries sectors. For example, the small scale sector (planning approach) includes virtually all unregistered urban manufacturing units, a very large portion of sample units and a considerable number of census units. The unregistered sector (income approach) includes only unregistered units, rural as well as urban. Clearly, a survey of the "small" industries sector composed of small scale units is not the same as a survey of the "small" industries sector composed of unregistered units.

^{3/} The definition of a small scale unit frequently is expressed in terms of a limitation in the value of "plant and machinery." In practice, the undepreciated book value of installed machinery and fixed capital equipment, at purchase price, is used as the criterion for eligibility as a small scale unit. Therefore, instead of the phrase "plant and machinery," the more accurate phrase "machinery and equipment" is used in this paper.

It should be noted that the operational definition of an ancillary unit incorporates considerable discretionary latitude at the present time.

^{4/} Directorate of National Sample Survey, National Sample Survey Report Number 94 (Tables with Notes on Small Scale Manufacture: Rural and Urban), Government of India, New Delhi (1965), hereinafter referred to as NSS Report 94, and Bureau of the Census, Census of India, 1961, Government of India, New Delhi (various years). The economic tables for the recently conducted 1971 census have not yet been prepared.

Sequence of Presentation

Chapter II deals with the planning approach. Some of the procedures used in collecting the data are examined and are found to result in seriously biased estimates. However, as alternative official estimates of key economic ratios are not available, the estimates are presented and discussed in the second section of Chapter II.

Chapter III deals with the income approach at the national level, while Chapter IV deals with the income approach at the state level. The first section of each chapter is concerned with the basic assumptions which underlie the estimates of the unregistered sector's contribution to total income in the benchmark year. The second section examines the estimates of the growth of this contribution over time.

In Chapter V some very brief comments are offered which indicate how the official estimates will be upgraded, especially in the state income approach, in the near future.

Chapter II

THE PLANNING APPROACH

Introduction

Data obtained in the planning approach originate in the many programs which are coordinated, on the all-India level, by the Development Commissioner, Small Scale Industries, New Delhi. The primary mission of the Development Commissioner's Office (DCO) is to promote the growth of small industrial units in India. The promotional activities of the DCO appear to be very successful. However, as this paper is concerned only with the estimation of economic variables relating to small industrial units, no discussion of the promotional activities of the DCO will be presented here.

The figures compiled by the DCO are prepared at the state level. It is necessary to analyze the procedures adopted at the state level in order to understand the figures released at the all-India level.^{5/}

Data Gathering Procedures

The main point regarding the data generated in the planning approach is that these figures refer to enrolled units only. They do not refer to the complete set of small scale units. Since the enrollment programs began in 1961, and since the benefits of enrollment have become both more obvious and more generous over time, the rate of growth of enrolled units is not a reasonable proxy for the rate of growth of the number of small scale units. The DCO does not have any reasonable estimates of the size or the growth rate of the small scale sector. All figures released by the DCO refer to enrolled units only.

Other arguments can be raised which further compromise the value of the data generated in the planning approach. Four such arguments are presented below.

The first argument involves the dominant attitude taken by small scale industrialists toward the programs of the various states' Departments of Industries. The attitude is this: among those units which qualify as small scale, the larger the unit, the greater the benefits of enrollment.^{6/} To the industrialists who are directly involved, the

^{5/} As indicated in Chapter I, this chapter is based on the procedures followed by the Department of Industries in Gujarat State. The other states of India follow similar procedures.

^{6/} This attitude was expressed frequently, in one form or another, both privately and publicly, during the author's field work in Gujarat from November 1970 to October 1971.

programs which assist small scale manufacturing units appear to favor the larger units. This attitude may have no basis in fact. But even if this attitude is wholly unjustified, it does exist, it is firmly held, and it is widespread. It imparts a bias to the data collected by the Departments of Industries. The smaller units, among those which are eligible, respond to what are perceived as relatively weak incentives by enrolling in fewer numbers in the voluntary programs of the Departments of Industries. As a result, the various characteristics of the enrolled units are not an accurate reflection of the corresponding characteristics of the larger set of all small scale units. For example, the portion of registered units among all enrolled units is likely to be greater than the portion of registered units among all small scale units. A related bias is likely to be imparted to all key economic ratios such as the capital labor ratios, the capital output ratios and the output labor ratios.

The second argument involves the changing definition of a small scale unit. Before November 1966 the definition of a small scale unit was as follows: a manufacturing unit with a total fixed capital (undepreciated purchase value) including land and buildings not in excess of rupees 5.0 lakhs (Rs. 500,000). In November 1966 the current definition came into effect. The new definition made eligible a large number of manufacturing units which previously had been too large to qualify for enrollment. Due to this change in definition, comparisons of key economic ratios over time are somewhat compromised.^{2/}

The third argument involves the relatively recent origins of these voluntary small scale industries programs. Very small units are notoriously suspicious of government programs. It is highly likely that larger units, units run by "opinion leaders" and units run by individuals who are able to obtain convincing personal reassurances from government officials, are sharply overrepresented on the enrollment lists, particularly the earlier enrollment lists. Overrepresentation of the larger units will of course introduce a bias.

The fourth argument involves non-producing units. The practices and procedures of the Departments of Industries are such that figures on the number of enrolled units are highly inflated. Many of these non-producing units are "fictitious" units. The bias introduced by these fictitious and other non-producing units cannot be known given the available data. The enrollment practices and procedures which contribute to this bias are noted below.

^{2/} It should be noted that the money measures of "total fixed capital" and of "machinery and equipment" (undepreciated book value) are in current -- not constant -- prices. Additionally, these prices are the original prices paid by the current owners, regardless of when the goods were purchased, whether the goods were new or used when purchased or whether the goods in question were purchased at prevailing market rates.

i) Over 25 percent of all units enrolled in a given year in Gujarat during the years 1967, 1968 and 1969 were enrolled in the same year that they were "established."^{8/} There is usually a considerable time lag between the establishment of a unit, on paper, and the start of production of that unit. Many of the units enrolled during a given year have neither produced anything nor employed any production labor during the year in which they were enrolled with the appropriate Department of Industries.

ii) Many businessmen enroll "prospective" industrial units. At the time of enrollment, these prospective units may be little more than the ill-formed plans of sometime entrepreneurs. Quite often such plans never come to fruition. The reasons for enrolling these prospective units vary. In some cases the businessmen anticipate delays in obtaining the assistance which will flow to them after enrollment. The earlier the unit is enrolled, the shorter and less costly is the effective delay. In other cases, enrolling a unit as early as possible may discourage potential competitors from trying to establish similar businesses. Whatever the reasons, many units are enrolled which never begin actual production. These units, which for all practical purposes are fictitious units, are maintained on the enrollment lists.

iii) Units which once were fully operative but which, for whatever reason, went out of business are not removed from the enrollment lists. Indeed, one can generalize: there is no procedure by which a unit, once enrolled, can be disenrolled.^{9/}

iv) The main reason that a businessman enrolls his small scale manufacturing unit is the promise of material concessions which include greater access to scarce foreign exchange and scarce domestic raw materials at low cost. It is likely that some businessmen abuse this aspect of the small scale industries assistance programs. By going through the paperwork involved in establishing a dummy production unit, some businessmen are able to obtain scarce goods at low cost and then sell the goods in illegal markets at premium prices. This practice is admittedly infrequent but specific instances are not unknown.

^{8/} J. B. Dave, "Study of Small Scale Industrial Units Registered with the Industries Department During the Years 1967 to 1969," Directorate of Industries, Government of Gujarat, Ahmedabad (n.d.), pp. 2-3, mimeo, hereinafter referred to as Study 67-69.

^{9/} This is a damaging defect, particularly when applied to a sector which traditionally is characterized by high mortality rates.

It also should be noted here that the information submitted to the Departments of Industries is rarely, if ever, updated. Since newly established producing units tend to be characterized by "overcapitalization" of machinery and equipment, a potentially serious bias is introduced in estimates of capital intensity.

There can be little doubt that, due to the above arguments, the value of the data generated in the planning approach is severely compromised, even after considering that these data refer only to the subset of enrolled small scale units. However, very few alternative sources of data on small industrial units exist.^{10/} For example, planning approach data are the only data available for the examination of questions relating to the capital intensity of units in the "small" manufacturing sector in India. Clearly, these data must be used with great caution.

Estimates of Capital Intensity

Two documents released by the Gujarat State Directorate of Industries will be reviewed below. The first is a published booklet entitled Survey of Small-Scale Industries: Gujarat State.^{11/} This booklet is the report of a survey of all enrolled units in Gujarat as of 31 March 1965. At that time a small scale unit was defined as having a total fixed capitalization of less than rupees 5.0 lakhs (Rs. 500,000). Because this booklet reports on a field survey of enrolled units, only those units which are properly enrolled are included. The bias caused by the inclusion of units which should have been dropped from the enrollment lists is not present.

The second document is the brief Study 67-69 noted above. With the kind cooperation of the Gujarat Department of Industries, some of the information contained in this mimeographed study has been updated through 1970. It should be noted that, during this entire period, the broader definition of a small scale unit applied. The bias introduced by the inclusion of units which should have been dropped from the enrollment lists is present.

The growth rate of enrolled units has been, on paper, remarkable. Table 1, below, shows the enrollment figures for Gujarat since 1961 when the small scale industries programs were initiated. The table attests to the success of the promotional activities of the DCO and the Gujarat State Directorate of Industries. But it would be wholly incorrect to come to any conclusions regarding the growth rate of small scale industrial units in Gujarat from a reading of Table 1. All-India figures based on state data of this sort, such as are issued by the DCO, must be similarly regarded.

^{10/} An attempt to gather all official plus unofficial statistical information on inputs and outputs in the unregistered sector has been made by J. K. Kamath: See J. K. Kamath, An Input-Output Table for the Unregistered Manufacturing Sector in India for 1963, Gokhale Institute of Politics and Economics, Poona (1971), unpublished Ph.D. dissertation.

^{11/} Directorate of Industries, Survey of Small Scale Industries: Gujarat State, Government of Gujarat, Ahmedabad, (1969), hereinafter referred to as Survey SSI.

TABLE 1. Enrollment of Small Scale Units Since 1961, Gujarat State

Year	Units Registered (Number)	Cumulative Total
1961	2,169	2,169
1962	1,006	3,175
1963	993	4,168
1964	959	5,127
1965	816	5,943
1966	1,479	7,422
1967	1,723	9,145
1968	1,745	10,890
1969	2,591	13,481
1970	2,287	15,768

Sources: a) Survey SSI, p. 4
b) Study 67-69, p. 2
c) Directorate of Industries, Gujarat State

Information presented in the Survey SSI gives a rough idea of the magnitude of the problem caused by the lack of any disenrollment procedures in the small industries programs. As of 31 March 1965 5,422 units were enrolled in Gujarat. All these units were to be contacted in the survey. Of the 5,422 units, 99 had not started production. 539 units were reported closed. An additional 681 units could not be located.^{12/} 560 units refused to cooperate in the survey. Of the total population of 5,442 units, information was processed for only 2,896 units.^{13/} Thus the "census" covered little more than half of the

^{12/} If these 581 units could not be located for the purposes of the survey, then it is difficult to understand how they could be given material assistance. It would appear that these are fictitious units, or have closed -- if ever they were open -- or have moved to a new location without bothering to advise the Directorate of Industries.

^{13/} Survey SSI, p. 6. The reasons for the nonresponse of the remaining 547 units are not stated in the survey report.

A very crude picture of business mortality emerges. 639 of 5,323 were closed, or about 12 percent of all enrolled units over a five year

initial population. But the crucial point is this: subsequent figures on the total size of, and the annual increment to, the enrolled small scale sector in Gujarat continue to include all the closed and untraced units identified in the survey.

Although the planning approach does not give a meaningful picture of the size and growth rate of small scale industrial units, it may be possible to make some rough comparisons of key economic variables based on planning data. Since registered enrolled units generally are larger than unregistered enrolled units, comparisons of variables covering these two size groups may be of interest; since the data in both the Survey SSI and Study 67-69 are suitably classified, such comparisons can be made. They are, of course, subject to the severe limitations outlined in the preceding section of this chapter.

Registered units accounted for 27.7 percent of the 2,896 units surveyed in 1965.^{14/} For the years 1967, 1968 and 1969, the corresponding figures are 13.6 percent, 6.5 percent and 16.1 percent respectively (see Table 2, below). An estimated 12.5 percent of the units enrolled in 1970 were registered under the Factories Act.^{15/} These figures reflect a sharp drop in the proportion of registered units, despite the relaxed definition of a small scale unit noted above.

As shown in Table 3, the registered units which were enrolled on or before 31 March 1965 are characterized by a greater number of workers per unit, and a higher value of machinery and equipment per worker than the corresponding unregistered enrolled units. Thus the commonly held assumption that the smaller the unit, the less capital-using the unit, appears to be supported. But during the four years ending in 1970, this

span. If the 681 units which could not be located are also considered victims of business mortality, the mortality of enrolled units rises to about 25 percent over a five year span.

^{14/} Survey SSI, p. 20. It should be noted that, on the one hand, small scale industrialists may be slow to register their units under the provisions of the Factories Act. On the other hand, enrollment with the Department of Industries probably is accomplished with alacrity once the decision to enroll has been made. Thus there may be a gap between the number of enrolled units which should be registered and the actual number of enrolled units which are in fact registered. In addition, it is common knowledge that many industrialists under-report the employment levels of their units in an attempt to evade the provisions of the Factories Act.

^{15/} Author's estimates. Units reporting nine or fewer employees, plus varying portions of units (at the two-digit ASI classification level) reporting between ten and nineteen employees inclusive, were recorded as unregistered. The remaining units were recorded as registered.

TABLE 2. Registered and Unregistered Units Among Enrolled Units, by Year, Gujarat State

	Survey SSI	Study 67-69			Author's Estimate*
	1965	1967	1968	1969	1970
Registered (percent)	801 27.7	235 13.6	113 6.5	417 16.1	285 12.5
Unregistered (percent)	2095 72.3	1488 86.4	1632 93.5	2174 83.9	2002 87.5
Total	2896	1723	1745	2591	2287

* -- estimate: see text, footnote 15.

Sources: a) Survey SSI, p. 20
b) Study 67-69, p. 4
c) Department of Industries, Gujarat State

TABLE 3. Comparison of Key Ratios for Registered and Unregistered Units, by Year, Gujarat State

	Employment per Unit (number)	Machinery & Equipment per Unit (Rs.000)	Machinery & Equipment per Worker (Rs.000)
Survey SSI			
Registered	37.1	72.6	2.0
Unregistered	8.4	13.9	1.7
1967			
Registered	16.2	39.7	2.5
Unregistered	6.8	18.4	2.7
1968			
Registered	28.1	60.9	2.2
Unregistered	7.6	19.9	2.6
1969			
Registered	21.6	46.3	2.1
Unregistered	7.1	20.0	2.8
1970			
Registered*	33.7	94.7	2.8
Unregistered*	4.7	21.1	4.5

* -- estimate: see text, footnote 15.

Sources: a) Survey SSI, pp. 21-23
b) Study 67-69, p. 4
c) Department of Industries, Gujarat State

assumption is not supported at the level of enrolled small scale units in Gujarat.^{16/} On average, the unregistered units appear to be characterized by higher capital labor ratios than the larger registered units, when capital is defined as machinery and equipment.

The estimates for the year 1970, disaggregated into ten industry groups, are presented in Table 4. It is clear that unregistered, smaller,

TABLE 4. Machinery and Equipment per Employee (Rs.'000) by Industry Group -- 1970, Gujarat State*

Industry Group	Unregistered	Registered
1. Food, Beverages and Tobacco	3.3	2.9
2. Textiles	4.2	3.9
3. Textile Piece Goods, Leather and Rubber	6.0	4.9
4. Wood and Cork	2.2	1.6
5. Paper and Paper Products	4.2	3.9
6. Chemicals	7.4	4.8
7. Non-metallic Mineral Products	3.8	1.1
8. Basic Metals and Metal Products	3.2	4.1
9. Machinery and Transport Equipment	4.4	3.3
10. Miscellaneous	8.5	5.6
All Groups Average	4.4	2.9

* -- estimate: see text, footnote 15

Source: Department of Industries, Gujarat State

^{16/} To obtain a broader perspective, the figures given in Table 2 should be compared with ASI census figures for industry groups in which very large units predominate, such as steel and cement. But the fact remains that Table 2 provides evidence suggesting a higher "productive capital" labor ratio for smaller units in the enrolled small scale industrial sub-sector in Gujarat for 1967 and the following years. One should note the wide year-to-year fluctuations revealed in Table 2. Factors contributing to these fluctuations include the recent industrial recession, the following credit squeeze, fluctuations in the production of key agricultural inputs, and specific government policies of varying impact.

enrolled units are characterized by higher capital labor ratios than are the registered, larger, enrolled units in almost all industry groups. The larger units are more capital using only in industry group number 8, Basic metals and metal products.

The unexpected finding that smaller units are more capital using than the larger units has two possible explanations. First, the high degree of aggregation present within each of the ten industry groups of Table 4 may be hiding some very important structural changes in the industrial composition of those groups. For example, plastic goods manufacturing units of both sizes, which are very capital using, may account for a rapidly increasing proportion of the number of enrolled units in the chemicals industry group.

Second, the proportion of registered and unregistered sub-sectors within any one industry group may be shifting markedly. For example, small bidi manufacturing units, which are very labor using, may be resisting the inducements to enroll, while the larger, registered, bidi manufacturing units, being also very labor using, may be enrolling in great numbers.

A third explanation is also possible. Especially in the years since 1965, unregistered units may have become, in general, more capital using than their larger registered counterparts. All these speculative "explanations," limited as they are to enrolled units, hinge on the reliability of estimates which, as shown in the preceding section, are subject to considerable doubt.

The 1965 survey generated a considerable amount of data. Some of that data can be used to explore other commonly held assumptions regarding the relationship between the size of an industrial unit and certain key economic ratios. Some key ratios are presented in Table 5 below.

TABLE 5. Comparisons of Key Ratios (Rs.'000) for Registered and Unregistered Small Scale Units Enrolled as of 1965, Gujarat State

Economic Ratio	Registered	Unregistered
Gross Output/Employee	11.63	12.58
Gross Output/Machinery and Equipment	5.94	7.60
Gross Output/Fixed Capital	3.32	4.90
Gross Output/Working Capital	3.62	3.82
Gross Output/Total Capital	1.73	2.15
Working Capital/Fixed Capital	0.92	1.28

Source: Constructed from data in Survey SSI, pp. 21-23

Table 5 suggests that the smaller, unregistered units may be more "efficient" than larger, registered units. In general, the unregistered

units produce a higher gross value of output per unit of capital than the registered units. As expected, the working capital to fixed capital ratio is higher for the unregistered units.

Table 6 repeats the first five ratios listed in Table 5, with a proxy for value added being substituted for gross value of output. This proxy value was obtained by deducting the value of raw materials consumption from the value of gross output for both the registered and the unregistered sub-sectors. Since this procedure does not in fact yield accurate estimates of value added, these proxy figures must be regarded as rough estimates only. They are simple proxies for the value added figures which are not available.^{17/}

TABLE 6. Comparisons of Key Ratios (Rs.'000) for Registered and Unregistered Small Scale Units Enrolled as of 1965, Gujarat State

Economic Ratio*	Registered	Unregistered
Value Added/Employee	4.21	4.46
Value Added/Machinery and Equipment	2.15	2.70
Value Added/Fixed Capital	1.20	1.74
Value Added/Working Capital	1.31	1.36
Value Added/Total Capital	0.63	0.76

* -- estimate: see text, footnote 17.

Source: Survey SSI, pp. 21-23

Use of the value added proxies has not shifted the relative positions of the registered and the unregistered units. The smaller among the enrolled units still appear to use both labor and capital more efficiently than their larger, registered counterparts. While the registered units do use more capital per unit of labor, they use relatively more of both capital and labor per rupee of value added. In this very real sense, the 1965 survey of enrolled small scale units identifies the less mechanized, smaller, unregistered units as, on average, "better."^{18/}

^{17/} These value added proxies are probably biased. One would expect that the proxies overestimate the value added for the registered units by a greater amount than for the unregistered units due to the inclusion of power costs, industrial service payments and the like in the value added proxy figures. In that case, the proxies inflate disproportionately the value added ratios given in Table 6. The real advantages of the unregistered sub-sector may be significantly greater than the apparent advantages indicated in Table 6.

^{18/} The work of J. C. Sandesara addresses this point. See: D. T. Lakdawala and J. C. Sandesara, Small Industry in a Big City, University of Bombay, Bombay (1961), J. C. Sandesara, Size and Capital-Intensity in Indian Industry, University of Bombay, Bombay (1969).

Conclusions

The chief point to be made is not that some commonly held assumptions concerning "small" industries are unfounded, but rather that the evidence needed to support or to refute these assumptions is, at present, inconclusive. Propositions citing the data released by the DCO are based on data generated at the state level using procedures described above.

Clearly, planning approach data on the size and growth rate of the small scale industries sector are not useful for purposes of economic analysis. Planning approach estimates on some key economic ratios are available but are highly suspect. If these data are to be used, they must be used only with great caution.

Chapter III

THE INCOME APPROACH -- NATIONAL LEVEL

Introduction

In the income approach, only the size of the contribution of the "small" industries sector is estimated. No attempt is made to measure other variables. All-India estimates are released by the Central Statistical Organization (CSO) in the annual publication, Estimates of National Product.^{19/} On the state level, the state statistical bureaux make their own estimates of state product. The two sets of estimates are not, at present, comparable.

The assumptions used in determining the national benchmark year estimates of the contribution of the unregistered sector to national income are discussed in section one of this chapter. Section two examines the assumptions used in moving the benchmark year estimates to other years.

Benchmark Year Estimates

A general introduction to the national income approach of the CSO can be found in National Income of India: Trends and Structure.^{20/} Unfortunately, changes in national income estimation procedures in India have taken place so rapidly that parts of this book are already outdated. The brief Brochure on Revised Series of National Product for 1960-61 to 1964-65 includes an excellent account of the techniques used in making current estimates of the contribution of small industries to the national income of India.^{21/} The Brochure was intended to be an abridged form of a comprehensive document giving detailed estimation procedures. However, as this comprehensive document is a working paper for actual users, it has not been released to the general public.

The word "revised" in the title of the Brochure refers to the current series published by the CSO, a series which has replaced the older "conventional" series.^{22/} The chief differences between the two series are

^{19/} Central Statistical Organization, Estimates of National Product, Government of India, New Delhi (annual).

^{20/} M. Mukherjee, National Income of India: Trends and Structure, Statistical Publishing Society, Calcutta (1969).

^{21/} Central Statistical Organization, Brochure on Revised Series of National Product for 1960-61 to 1964-65, Government of India, New Delhi, (1967), hereinafter referred to as Brochure.

^{22/} The "conventional" series is sometimes referred to as the "official" series. This no longer implies that the revised series is in any way unofficial.

these: first, the conventional series estimates rely heavily on the economic tables of the 1951 census and some identifiable trends of the 1941 to 1951 period; the revised series estimates rely heavily on the economic tables of the 1961 census and some identifiable trends of the 1951 to 1961 period. Second, the conventional series estimates rely on some sources of data of varying quality which were replaced in the revised series estimates by the consistent and consistently better data published in NSS Report 94. It should be noted at this point that the revised series estimates of national income by industrial origin made, for instance, for the year 1969-70, are based on census data which are almost a decade old, reflect trends initiated almost two decades ago, and project value added per worker figures originating in the year July 1958 to June 1959.

For the revised series estimates, the definition of small industries is as follows:

"all manufacturing and processing activities, including repair and maintenance services undertaken by households and non-household small scale manufacturing units which are not registered under the Indian Factories Act, 1948. However, hand-pounding of rice, conversion of sugarcane into gur, slaughtering of animals for meat and preparation of milk products (e.g., ghee, dahi, etc. except khoa, ice-cream and chana) are treated as ancillary activities in the "agriculture" industry."^{23/}

The definition excludes categories such as construction which forms a separate category in the revised series. Hotels, restaurants and other eating houses; laundry, dyeing and drycleaning; and recreation and sanitary services all are included in other categories. This definition, now more precise, applies to the set of industrial units called "un-registered" in this paper.

Revised series figures are based on estimates of the gross product for the benchmark year of 1960-61, with appropriate adjustments for future years made on the basis of "indicators of physical output or input."^{24/} The unregistered manufacturing sector is divided into two sub-sectors, "household manufacturing" and "non-household manufacturing." Estimates then are made for each of seven industry groups.^{25/}

^{23/} Brochure, p. 32.

^{24/} Brochure, p. 32.

^{25/} The seven industry groups are: 1. Textiles, tailoring and leather footwear; 2. Leather and leather products except leather footwear; 3. Wood, glass, stone and ceramics; 4. Metal manufacturing and engineering; 5. Chemicals and chemical products; 6. Food, drink and tobacco; and 7. Other industries.

Estimates on the work force in the household sub-sector are built up from data given in the economic tables of the 1961 census. These data, separately for rural and urban areas and by states, are modified to exclude certain activities (e.g.: handpounding of rice, etc.) and are adjusted on the basis of state population growth rates between 1951 and 1961 to 1 October 1960, that is, mid-financial year 1960-61. The figures then are reclassified into the seven industry groups noted above.

Estimates on the work force in the non-household sub-sector are built up from 1961 census data on non-household manufacturing work force. After adjusting these figures to the mid-financial year 1960-61, appropriate work force figures from the ASI are deducted. These ASI figures are estimates of the work force in industries covered by the Factories Act. Deducting the ASI estimates yields estimates of the total work force in the unregistered non-household manufacturing sub-sector.

Estimates of gross product per worker in the household sub-sector are built up from adjusted value added figures obtained from the NSS Report 94. Since the report is based on data collected with reference to the fourteenth round (July 1958 to June 1959), an adjustment to mid-financial year 1960-61 is necessary. The adjustment is made on the basis of the index of average daily wages of skilled rural labor in agriculture for the rural estimates and on the basis of the index of earnings of factory employees in urban areas for the urban estimates. A further adjustment is necessary in order to take into account workers employed in household industries as a secondary occupation. Relevant data is available in NSS Report 94. These adjustments are worked out on the level of the seven industry groups for both rural and urban areas.

Estimates of gross product per worker in the non-household sub-sector are built up from

"scattered material collected through a number of surveys undertaken by different agencies like Central Small Industries Organization, the SSBs, Research Program Committee, etc. in different parts of the country as well as the estimates of gross product per worker engaged in household industries, and small and large factory establishments covered under the sample and census sectors of the ASI respectively."^{26/}

For both the household and the non-household sub-sectors, estimates of the work force are multiplied by the estimates of gross product per worker to obtain estimates of gross product, by industry group, in the base year 1960-61. These estimates are presented below in Table 7.

^{26/} Brochure, p. 33. The Brochure makes it clear that these gross product per worker estimates are the end result of a process composed of preconceptions, informed judgment, and occasional bits of suspect data. "SSBs" are State Statistical Bureaux.

TABLE 7. Contribution of the Unregistered and Registered Manufacturing Sectors to Gross Product in India, 1960-61

Industry Group	Household Sector			Non-household Subsector			Total Gross Product (Rs. lakhs)
	Work Force (000)	Gross Product (Rs./worker)	Gross Product (Rs. lakhs)	Work Force (000)	Gross Product (Rs./worker)	Gross Product (Rs. lakhs)	
1. Textiles, tailoring & leather footwear	4,603	356	16,383	1,169	936	10,942	27,325
2. Leather & leather products except leather footwear	120	440	528	39	795	310	838
3. Wood, glass, stone & ceramics	2,421	251	6,084	1,004	1,047	0,511	16,595
4. Metal manufacturing & engineering	519	513	2,661	620	1,245	7,719	10,380
5. Chemicals & chemical products	47	983	462	135	1,162	1,569	2,031
6. Food, drink & tobacco	1,112	598	6,653	800	1,010	8,080	14,733
7. Other industries	457	620	2,832	489	1,188	5,808	8,640
Total Unregistered Manufacturing Sector	9,279	384	35,603	4,256	1,056	44,939	80,542
Total Registered Manufacturing Sector							118,900
Total Gross Product							1,410,100

Sources: Unregistered industry groups: Directorate, p. 33.
Registered industry groups: Central Statistical Organization, Government of India, Estimation of National Product, 1971, New Delhi, 1971, p. 10.

Estimates of Other Years

The physical indicators used to project these base year estimates to other years are obviously of crucial importance. If these indicators are chosen satisfactorily, the projected estimates will reflect the short-term, annual shifts in the contribution of the unregistered sector to national income. It would be worthwhile knowing the precise composition of these indices.

". . . for "textiles, tailoring and leather footwear" group the physical indicator was constructed by taking the weighted average of the production relatives of cloth in decentralized sector representing textiles, total cloth available for consumption representing tailoring and the indicator of the production of leather footwear in the small scale [i.e., unregistered] manufacturing sector. The last indicator has been obtained by taking the average of the physical indicator described below for the group "leather and leather products, except leather footwear" and the indicator of production of leather footwear in the large-scale [i.e., registered] manufacturing sector. In the case of "leather and leather products, except footwear" weighted average of the production relatives of raw hides and skins and tanned hides has been taken as the indicator of growth rate of this group. For the group "wood, glass, stone and ceramics," the indicator has been built up by taking the average of the indices of production of non-metallic mineral industries and total population. In the case of "metal manufacturing and engineering," the indicator has been constructed by taking the average of the indices of production of basic metal industries and total population. Similarly, for "chemicals and chemical products" group the indicator has been obtained by taking the average of the indices of production of chemicals in the large-scale [i.e., registered] manufacturing sector and total population. For the group "food, drink and tobacco," the gross product in the benchmark year has been divided into three subgroups viz., (i) fats and oils, (ii) pan, beedi and tobacco, and (iii) other food items and the indicators used are amount of oil produced by ghannies, quantity of tobacco required for manufacturing by the decentralized [i.e., unregistered] sector and total food grains respectively. Finally in the case of "other industries" group the weighted average of the indicators of the six specified industry groups discussed above has been used."^{27/}

These indicators are subject to serious question; however, given the paucity of data, it is not likely that any other set of indicators would be better.

Since the indicators are physical indicators, the estimates of gross product for the years following the 1960-61 benchmark year are in constant (1960-61) prices. The constant price estimates can be converted into current price estimates by using appropriate price indices.^{28/}

Table 8 below, presents the official estimates of the contribution of the unregistered manufacturing sector to the gross product of India, by broad industry group, at constant (1960-61) prices over the decade beginning with the year 1960-61.^{29/} A glance at the estimates presented in Table 8 suggests a growing, but in recent years only a slowly growing, industrial sector. It is clear that the direct impact of the poor crop years of 1965-66 and 1966-67 was severe. It is likely that the less direct but lingering implications of those two poor crop years are major factors in the relatively low rates of growth of recent years.

Conclusions

Two points must be made in closing this section on the all-India estimates of the contribution of unregistered manufacturing units to national income. First, the revised series estimates are in substantial

^{28/} These indices are built up as follows: for Textiles, etc.: the weighted average of the index of wholesale prices for handloom cloth (weight of three) and the index of wholesale prices for leather shoes (weight of one). For Leather, etc.: the index of wholesale prices for leather. For Wood, etc.: the weighted average of the index of wholesale prices for logs and timber (weight of one), the index of wholesale prices for bricks and tiles (weight of one) and the index of wholesale prices for pottery goods and glass (weight of one). For Metals, etc.: the index of wholesale prices for metal products. For Chemicals, etc.: the weighted average of the index of wholesale prices for soaps (weight of two) and the index of wholesale prices for matches (weight of one). For Food, etc.: the weighted average of the index of wholesale prices of food articles (weight of three) and the index of wholesale prices for liquor and tobacco (weight of two). For Other industries: the index of wholesale prices of all manufactured articles.

These indices, permitting conversion of constant price estimates into current price estimates, are used by the CSO. Current price estimates are not presented in this paper.

^{29/} These gross product estimates can be converted to official estimates of net product by applying a 2.5 percent depreciation allowance against the gross product figures arbitrarily across all seven industry groups. The 2.5 percent figure is based on the depreciation-to-fixed-assets ratio taken from the ASI sample sector and the fixed-assets-to-gross-product ratio of the household sub-sector of unregistered manufacturing units. Thus, the 2.5 percent figure is little more than an informed guess applied without discrimination to the entire unregistered manufacturing sector. That guess is based on imaginative use of the only two sources which provide any useful data in this area: ASI and NSS Report 94.

TABLE 8. Estimates of the Contribution of the Unregistered and Registered Manufacturing Sectors to the Gross Product of India, at Constant 1960-61 Prices

Industry Group	'60-61	'61-62	'62-63	'63-64	'64-65	'65-66	'66-67	'67-68	'68-69	'69-70
	- - - - - (Rupees Lakhs) - - - - -									
1. Textiles, tailoring & leather footwear	27,325	30,850	31,342	35,277	37,217	37,244	37,408	37,845	40,851	40,332
2. Leather & leather products except leather footwear	838	846	882	923	913	909	938	903	864	834
3. Wood, glass, stone & ceramics	16,595	17,292	18,487	19,682	20,727	21,441	21,856	22,619	22,885	24,959
4. Metal manufacturing & engineering	10,380	11,314	12,892	14,106	14,407	14,719	15,279	15,030	16,162	16,660
5. Chemicals & chemical products	2,031	2,183	2,287	2,466	2,602	2,693	2,866	2,947	3,235	3,469
6. Food, drink & tobacco	14,733	15,214	15,249	14,394	16,324	13,599	13,657	16,913	16,000	17,120
7. Other industries	8,640	9,340	9,746	10,437	11,076	10,886	11,059	11,569	12,018	12,424
Total Unregistered Manufacturing Sector	80,542	87,044	90,885	97,285	103,266	101,491	103,063	107,826	112,015	115,798
Annual % Change	(8.1)	(4.4)	(7.0)	(6.1)	(-1.7)	(1.5)	(4.6)	(3.9)	(3.4)	
Total Registered Manufacturing Sector	118,900	132,100	149,600	162,800	178,200	182,100	187,500	189,200	197,600	209,400
	- - - - - (Rupees Crores) - - - - -									
Total Gross Product	14,101	14,623	15,040	15,871	17,044	16,175	16,456	17,959	18,401	19,350

Source: Unregistered industry groups: Central Statistical Organization, Government of India, New Delhi.
Registered industry groups: _____, Estimates of National Product, 1971, New Delhi, 1971, p. 10.

disagreement with the older, conventional series estimates. Care must be taken that the two series are not confused with each other. Second, the chief causes for the disagreement between the two series, and the principal improvements in the estimation techniques of the revised series are these: 1) data from NSS Report 94 overcame the marked urban bias of the conventional series; 2) 1961 census data resulted in more detailed estimates of the work force: by broad industry group for the rural and urban household and non-household sub-sectors; 3) benchmark estimates for 1960-61 were carried forward on the basis of indices of physical indicators. In addition, current price estimates were made on the basis of tightly defined price indices. Needless to say, the fact that the revised series relies heavily on the 1961 census, and to a lesser extent on the 1951 census, is a source of substantial improvement over the older conventional series.

Chapter IV

THE INCOME APPROACH -- STATE LEVEL

Introduction

The general methodology used in estimating the contribution of the unregistered sector to state domestic product by the various state statistical bureaux is the same as the methodology used on the national level by the CSO. Estimates of the work force are combined with estimates of the gross product per worker to obtain estimates of the state gross product in the base year. These base year estimates are then moved forward to obtain estimates for other years.

But the procedures actually applied at this time by the state bureaux reduce the status of the results to projections which do not reflect annual fluctuations or trends of recent origin. These projections do not measure relative changes in the industrial composition of the unregistered manufacturing sector.^{30/}

Benchmark Year Estimates

This section will present a discussion of the procedures followed by Gujarat State in estimating the contribution of unregistered units to state income.^{31/} Estimates of the work force in the household sub-sector are taken, with modifications, from the 1961 state population census figures. These census figures for urban and rural workers are disaggregated into the same seven broad industry groups noted in connection with the CSO national income estimates.^{32/}

The population census figures relate to workers whose primary economic activity is in household manufacturing. Since the census data are given as of 31 March 1961, they must be adjusted to 1 October 1960, that is, mid-financial year 1960-61. The adjustment is rather complicated. Because 1951 census data are not available disaggregated by household and non-household industry, by comparable industry group or by comparable urban and rural areas, a single work force growth rate is assumed to hold regardless of the broad industry group and regardless of whether the urban or the rural work force is being considered. This growth rate is 1.6 percent annually.

^{30/} Within two to three years, the various state bureaux will be following uniform estimation procedures which are substantially better than current procedures. See Chapter V of this paper.

^{31/} To reiterate: Gujarat is representative. All the states suffer from the same problems. All the states are forced to resort to similar procedural techniques.

^{32/} In the household sub-sector, gross product per worker data are not available disaggregated by industry group. Therefore, in this paper, household sub-sector data are divided into rural and urban components but not disaggregated into the familiar seven industry groups. See text, this section, below.

The 1.6 percent work force growth rate was obtained in the following way. The number of workers in registered factories in Gujarat State is known for both 1956 and for 1960.^{33/} This four-year growth rate in the work force of the registered sector is projected backward to 1951. These 1951 estimates are then deducted from the 1951 census figures on the total manufacturing work force. The difference is the state estimate for the household plus non-household unregistered sub-sectors work force for 1951. This estimate is compared to the unregistered sector work force figure generated in the 1961 census. A compound growth rate of 1.6 percent per year in the unregistered manufacturing work force is the result of this particular exercise.

The work force figures on primary workers in household manufacturing are adjusted downward at the rate of 1.6 percent per year to mid-year 1960-61. These adjusted work force estimates for the unregistered household manufacturing sector are given in Table 9 below.

A second adjustment is required to take into account persons who accept secondary employment in the household sub-sector. The 1961 census gives figures for persons who are engaged in household industries as a secondary means of livelihood as well as for persons who are engaged in household industries as a primary means of livelihood. The ratio of secondary to primary workers in rural areas is 68.4 percent. In urban areas this ratio is only 6.5 percent.^{34/} As indicated in Table 9, these ratios are used to estimate secondary employment, by rural and urban areas, in the household sub-sector.

TABLE 9. Estimates of Gross Product per Worker and Work Force for the Unregistered Household Manufacturing Subsector, Gujarat State, 1960-61

Means of Livelihood	Gross Product per Worker (Rs.)		Work Force (numbers)	
	Rural	Urban	Rural	Urban
Primary	265	1,057	225,486	77,435
Secondary	265	1,057	154,232	5,033

Source: Bureau of Economics and Statistics, Gujarat State

Work force estimates for the non-household sub-sector are prepared as follows. The 1961 census presents data on the number of non-household

^{33/} Bureau of Economics and Statistics, Gujarat State, Locations of Industries in Gujarat State, Government of Gujarat, Ahmedabad, 1963, p. 48.

^{34/} Data provided by the Bureau of Economics and Statistics, Gujarat State.

industrial workers, by broad industry group, for both rural and urban areas. The ASI for 1960 provides estimates for the registered non-household industrial work force. The ASI figures are adjusted for non-reporting units and moved to mid-year 1960-61 using the 1.6 percent work force growth rate noted above. These adjusted ASI figures are then deducted from the census figures. The difference is the estimated work force in the non-household sub-sector for 1960-61. These estimates are available by broad industry group and separately for urban and rural areas.^{35/} These estimates are given in Table 10 below.

Gross product per worker estimates for the household sub-sector, disaggregated by the seven broad industry groups for both rural and urban areas, are published in NSS Report 94. However, these published results are based on the central sample only. Gujarat State, as well as most other states, participated in the 14th round of the NSS with a matching sample. Pooled results of these two samples were taken as "best" estimates for state gross product per worker. Even so, the estimates were judged to be unsatisfactory at the industry group level. As a result, the pooled results were accepted at the aggregate level only, divided into rural and urban areas.

One further adjustment is required. The NSS gross product per worker estimates refer to the year 1958-59. For urban areas, these estimates are moved to the 1960-61 base year by applying half the rate of change of the index of the money earnings of factory workers who earn less than Rs. 400 per month. For rural areas, the estimates are moved to the 1960-61 base year using the index for the average daily wage of rural skilled workers. These gross product estimates are presented in Table 10.

Gross product per worker estimates for the non-household sub-sector originate in two sources. The first is the Survey SSI. The second is the CSO.

The results of the Survey SSI were retabulated to include only unregistered enrolled small scale units. Gross product per worker estimates, on an industry group basis, were examined. These Survey SSI estimates by broad industry group were accepted by the Gujarat Bureau

^{35/} In the non-household sub-sector, gross product per worker estimates cannot be made for rural and urban areas separately. Therefore, in this paper, non-household estimates are presented disaggregated by broad industry group but are not divided into rural and urban components. See text, this section, below. It should be noted at this point that "secondary workers in non-household industry are likely to be negligible and have not been estimated. Moreover relevant information for estimation is also not available." See "The Methodology Used by the Gujarat SSB for Estimating State Domestic Product (SDP) from the Small Scale Manufacturing Sector (Revised Series)," Bureau of Economics and Statistics, Gujarat, unpublished 1970, no pagination.

TABLE 10. Estimates of Gross Product per Worker and Work Force for the Unregistered Non-household Manufacturing Subsector, Gujarat State, 1960-61

Industry Group	Gross Product per Worker (Rs.)	Work Force (numbers)
1. Textiles, tailoring and leather footwear	1,850	65,948
2. Leather and leather products except leather footwear	2,355	1,495
3. Wood, glass, stone and ceramics	1,100	41,234
4. Metal manufacturing and engineering	2,706	10,402
5. Chemicals and chemical products	3,203	19,022
6. Food, drink and tobacco	1,825	18,706
7. Other industries	2,120	26,732
Total	1,911	183,539

Source: Bureau of Economics and Statistics, Gujarat State

if the employment in the reporting units of the industry groups in the survey "was about 15 percent or more when compared to the employment in that industry group in 1960-61."^{36/} Gross product per worker estimates for four broad industry groups were found acceptable. These industry groups are: Leather and leather products except leather footwear, Metal manufacturing and engineering, Chemicals and chemical products, and Other industries.^{37/} CSO estimates for gross product per worker in Gujarat State for the three remaining broad industry groups were accepted by the Gujarat Bureau of Economics and Statistics.

^{36/} "The Methodology Used by the Gujarat SSB for Estimating State Domestic Product (SDP) from the Small Scale Manufacturing Sector (Revised Series)," Bureau of Economics and Statistics, Gujarat, 1970 unpublished, no pagination.

^{37/} As suggested in the first section of this paper these estimates may be biased upward.

Projections to Other Years

The state's gross product estimates are obtained by multiplying the work force estimates by the figures on gross product per worker. Then the resulting 1960-61 benchmark estimates are moved to other years with the aid of a trend factor for the growth of the work force. As explained above, the work force is assumed to grow at a 1.6 percent rate across all industry groups for both rural and urban areas and for both household and non-household sub-sectors. Table 11 presents estimates of gross product at constant (1960-61) prices for both rural and urban areas in the household sub-sector from the year 1960-61 to the year 1969-70. Table 12 presents estimates of gross product at constant (1960-61) prices for the non-household sub-sector from the year 1960-61 to the year 1969-70.^{38/}

Although the figures presented as estimates of gross product in Tables 11 and 12 appear to be comprehensive and may give some general impressions regarding the size and growth rate of the unregistered sector in Gujarat State, it is clear that these estimates are, in fact, projections which do not reflect structural changes or annual fluctuations.

Conclusions

State statistical bureaux are forced to make a set of heroic assumptions in order to obtain a benchmark year estimate of the contribution of unregistered manufacturing units to state income. These assumptions are somewhat different from those made by the CSO in its attempt to estimate the contribution of unregistered manufacturing units to national income.

In moving the benchmark year estimates to other years, the state statistical bureaux use procedures which reduce their estimates to mere projections. The accuracy of these projections is based on a number of conditions which include, among others, an unchanging productivity of labor over time, a log-linear change in the working force, a constant proportion of secondary to primary workers for both rural and urban areas, an unchanging industrial structure in both sub-sectors, and the absolute "normalcy" of all years including especially the benchmark year. No one would argue that these conditions characterized the unregistered manufacturing sector in the decade of the 1960s.

^{38/} Current price estimates are made as follows: In the rural household sub-sector, the index of average daily wages of rural skilled workers is used to move the benchmark year estimates of gross output per worker. In the urban household sub-sector and in the entire non-household sub-sector, half the rate of change of the index of money earnings of workers in registered manufacturing industries is used. These new current price estimates are then multiplied by estimates of the growing work force to obtain estimates of gross product at current prices. Refer to footnote 28, above, for the procedures adopted by the CSO.

The gross product estimates can be converted to official estimates of net product by applying a 2.5 percent depreciation-to-gross output figure. The same procedures are used by the state bureaux as are used by the CSD in its conversion of gross to net estimates. Refer to footnote 29, above.

TABLE 11. Estimates of Work Force and Gross Product at Constant (1960-61) Prices for the Unregistered Household Manufacturing Subsector, Gujarat State

Year	Urban		Rural		Total Gross Product (Rs. lakhs)
	Work Force (numbers)*	Gross Product (Rs. lakhs)**	Work Force (numbers)*	Gross Product (Rs. lakhs)**	
1960-61	82,468	872	379,718	1,006	1,878
1961-62	83,788	886	385,794	1,022	1,908
1962-63	85,129	900	391,966	1,039	1,939
1963-64	86,491	914	398,237	1,055	1,969
1964-65	87,874	929	404,610	1,072	2,001
1965-66	89,280	944	411,083	1,089	2,033
1966-67	90,708	959	417,661	1,107	2,066
1967-68	92,160	974	424,343	1,124	2,098
1968-69	93,634	990	431,133	1,142	2,132
1969-70	95,132	1,005	438,030	1,161	2,166

* - Work force, urban, 1960-61, obtained by summing 77,435 (principal work force) and 5,033 (secondary work force). The annual rate of increase of the work force is assumed to be 1.6 percent per year. See Table 9 and text for details.

Work force, rural, 1960-61, obtained by summing 225,486 (principal work force) and 154,232 (secondary work force). The annual rate of increase of the work force is assumed to be 1.6 percent per year. See Table 9 and text for details.

* - Gross product, urban, obtained by multiplying work force estimates by Rs. 1,057; see Table 9.

Gross product, rural, obtained by multiplying work force estimates by Rs. 265; see Table 9.

Source: Bureau of Economics and Statistics, Gujarat State

TABLE 12. Estimates of Work Force and Gross Product at Constant (1960-61) Prices for the Unregistered Non-household Manufacturing Subsector, Gujarat State

Year	Work Force (number)*	Gross Product (Rs. lakhs)**
1960-61	183,539	3,507
1961-62	186,476	3,563
1962-63	189,460	3,620
1963-64	192,491	3,678
1964-65	195,571	3,737
1965-66	198,700	3,797
1966-67	201,879	3,858
1967-68	205,109	3,920
1968-69	208,391	3,982
1969-70	211,725	4,046

* - Work force (urban and rural combined) 183,539. The annual rate of increase of the work force is assumed to be 1.6 percent per year. See Table 10 and text for details.

** - Gross product obtained by multiplying work force estimates by Rs. 1,911; see Table 10.

Source: Bureau of Economics and Statistics, Gujarat State.

Chapter V

CONCLUSIONS

The planning approach does not yield useful estimates of the absolute size or growth rate of "small" industries. Furthermore, data collection procedures used in the planning approach yield estimates of key economic ratios which are very weak. These estimates, which should be used with great caution, provide limited evidence that many commonly held assumptions on the capital intensity of very "small" industrial units need to be examined empirically.

At present, the best estimates of the absolute size and growth rate of the "small" -- that is, unregistered -- industries sector are those made at the national level by the CSO. Table 7, page 19, above, indicates that the unregistered sector has grown by about 43.8 percent in the decade ending 1969-70. This is considerably less than the 76.1 percent growth of the registered industries sector. The unregistered industries' share in total industrial product, in 1969-70, was roughly 35.6 percent down from 40.4 percent in 1960-61. Of course, total industrial product accounts for only a small fraction of India's gross product.

The state income approach yields projections of the size and growth of the unregistered industries sector. In the near future, the quality of these state projections will be upgraded, and new procedures will be adopted. These procedures will be almost identical to the procedures currently followed at the national level by the CSO. Implementation of the new procedures awaits the tabulated results of the 23rd round of the National Sample Survey. Additional data is being generated at the state level which will reduce many weaknesses caused by limitations in the availability of data. Of course, the estimates will be improved substantially when the results of the 1971 population census are incorporated into the estimation procedures.

Accurate gross product estimates, disaggregated by states, will permit greater reliance on state level, decentralized, planning techniques. Decentralization of the planning process is essential if rapid growth of the "small" industries sector is to be encouraged within the context of a planned economy.

REFERENCES

1. Dave, J. B., "Study of Small Scale Industrial Units Registered with the Industries Department During the Years 1967 to 1969," Directorate of Industries, Government of Gujarat, Ahmedabad, (no date).
2. Gujarat, Government of, Directorate of Industries, Survey of Small-Scale Industries: Gujarat State, Ahmedabad, 1969.
3. _____, Bureau of Economics and Statistics, Location of Industries in Gujarat State, Ahmedabad, 1963.
4. _____, Bureau of Economics and Statistics, "The Methodology Used by the Gujarat SSB for Estimating State Domestic Product (SDP) from the Small Scale Manufacturing Sector (Revised Series)," 1970, (unpublished).
5. India, Government of, Census of India, 1961, New Delhi (various years).
6. _____, Central Statistical Organization, Annual Survey of Industries, New Delhi (annual).
7. _____, Brochure on Revised Series of National Product for 1960-61 to 1964-65, New Delhi, 1967.
8. _____, Estimates of National Product, New Delhi (annual).
9. _____, Directorate of National Sample Survey, National Sample Survey Report Number 94 (Tables with Notes on Small Scale Manufacture: Rural and Urban), New Delhi, 1965.
10. Kamath, J. K., An Input-Output Table for the Unregistered Manufacturing Sector in India for 1963, Gokhale Institute of Politics and Economics, Poona, 1971, unpublished Ph.D. dissertation.
11. Lakdawala, D. T. and J. C. Sandesara, Small Industry in a Big City, University of Bombay, Bombay, 1961.
12. Mukherjee, M., National Income of India: Trends and Structure, Statistical Publishing Company, Calcutta, 1969.
13. Sandesara, J. C., Size and Capital-Intensity in Indian Industry, University of Bombay, Bombay, 1969.